BiPAC 2071

HomePlug AV 200 Ethernet Adapter

BiPAC 2072

HomePlug AV 200 Ethernet Bridge with AC-Pass Through

User Manual

Table of Contents

Safety Warnings

1. Do not use the adapter in high humidity or high temperature environment.

2. Do not open or repair the case yourself.

3. Avoid using this product and all its accesories outdoor.

4. Place the adapter on a stable surface.

5. Only "HomePlug AV" compliant Powerline Communication (PLC) adapter for remote access is necessary.

6. Plug your BiPAC HomePlug AV device directly to the AC outlet on the wall. It is best to avoid using extension power cable as it may possess noise filter or surge protector functions that may cause interference that may impact the performance of the device.

7. Use only IT products (eg. fax machine, router) that are below 6Amp for the built-in AC outlet of BiPAC 2072.

Chapter 1

Introduction

BiPAC HomePlug AV is a networking device that utilizes the existing wiring system as a path to transmit data signal through the inter-conversion between digital and analog signal. With this functionality, BiPAC HomePlug AV devices can be plugged into an AC outlet to draw power and at the same time establishing a network connection between two or more Ethernet devices.

BiPAC HomePlug AV device can be used to bridge any Ethernet device to your Powerline network in your home or office. With this technology, Ethernet devices in your home or office can equally share high speed data transmission rate without the need to spend excessive time and money installing expensive Ethernet cable. It can be plugged into an Ethernet port on a router to equip a network with powerline capabilities and take advantage of the router features. BiPAC HomePlug AV device can also be plugged directly into a cable or DSL modem that allows instant internet access over home Powerlines to each computer equipped with a HomePlug AV certified Powerline network adapter. BiPAC HomePlug AV device makes high-speed modem sharing as fast and simple as plugging the devices in the wall.
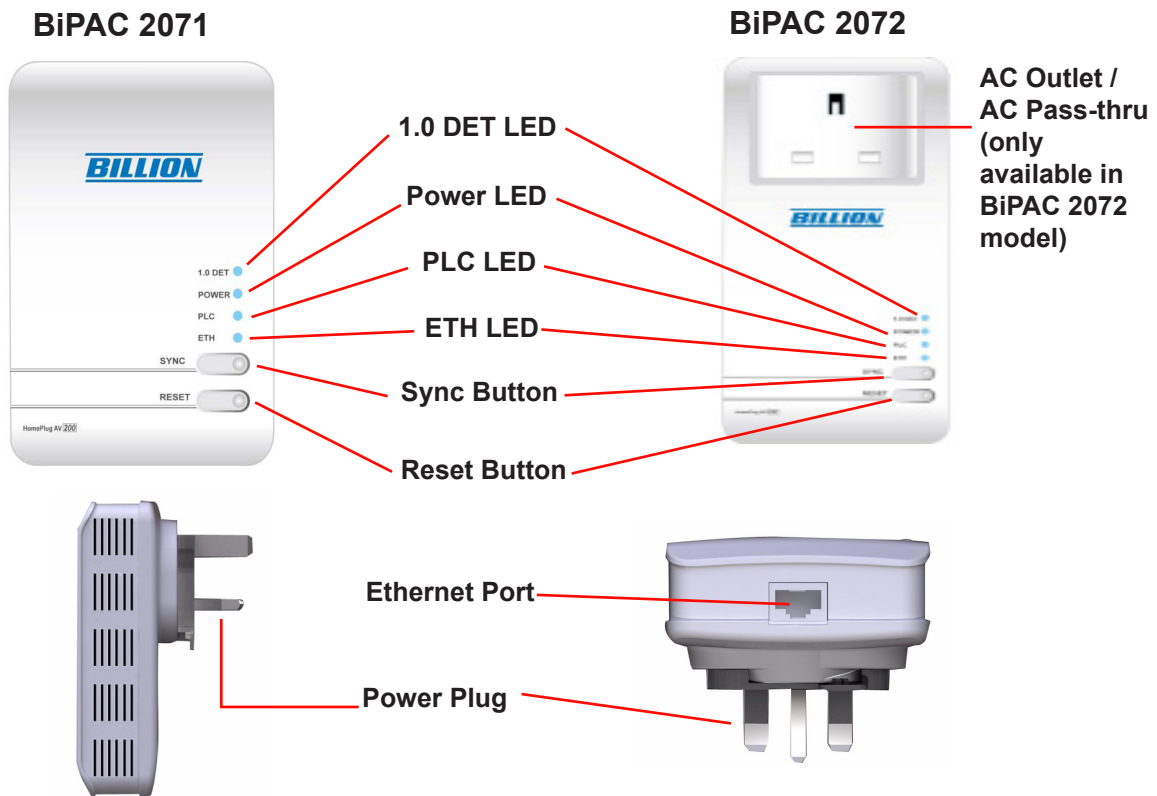
Specifications

Protocol	TDMA, CSMA/CA
Standard	Ethernet specification: IEEE 802.3, IEEE 802.3x, IEEE 802.3u, Auto MDI/MDIX
Transmission Speed	200Mbps
Optimal Coverage Range	200M
Modulation	Supports OFDM - 1155 carriers,1024 / 256/64QAM, QPSK, BPSK and ROBO
Frequency Band	2MHz ~ 30MHz
Security	128-bit AES encryption over household power supplier grid
Device Port	Ethernet RJ-45
Operating System	Windows 98_SE / Me / 2000 /XP(32 and 64 bit)/ Vista (32 & 64 bit)
RAM	128Mb
Power Supplier	Input: 100~240V AC, 50~60Hz
Physical Interface	Interface: Ethernet 10/100M (MDI/MDIX) switch Sync button Reset button Power AC Plug (for BiPAC 2071 only) Power AC socket (for BiPAC 2072 only) LED display: • 1.0 DET LED • POWER LED • PLC (Powerline Link/Act) LED • ETH (Ethernet Link/Act) LED
Dimension	BiPAC 2071: 112.35 X 77.70 X44.50 mmBiPAC 2072: 165 X 73 X 38.50 mm
Power Saving	Reduce power consumption by at least 60% during power saving mode.
Operating Temperature / Humidity	Operating temperature: 0 ~ 400C Storage temperature: -20 ~ 700C Humidity: 5~95% non-condensing

Features

1. Physical layer data rate up to 200Mbps over existing Powerline.

2. Uses powerline technology that takes advantage of the unused bandwidth of the electrical wiring in the home.

3. Ideal for Triple Play applications such as IPTV, VoIP telephony and high-speed Internet access.

4. Support 10/100 (MDI/MDIX) Ethernet switching.

5. Compliant with the HomePlug Powerline Alliance Industry specification HomePlug AV.

6. Power supplier design inside.

7. Ideal for Residential Users.

8. Power Saving mode: When PC or other Ethenet devices are completely power off, Billion HomePlug device will automatically enter power saving mode which will help to reduce power consumption by at least 60%.

9. Noise Filter (only available in BiPAC 2072): Allow the filtering of noise which may be generated by some electrical appliances such as vacumn cleaner and hair dryer to prevent possible interference with HomePlug AV network.

Chapter 2
Device Overview

BiPAC 2071

BiPAC 2072

1.0 DET LED

Power LED

PLC LED

ETH LED

Sync Button

Reset Button

AC Outlet / AC Pass-thru (only available in BiPAC 2072 model)

Ethernet Port

Power Plug

The Description of each labeled part is described in the table below.

AC Outlet / AC Pass-thru (only available in BiPAC 2072 model)	Allow the direct plug-in of another Ethernet device. The AC Pass-thru allows the filtering of noise to prevent HomePlug AV Network interference. *Note: The AC Outlet only support devices that use 6A (maximum) electric current.*
1.0 DET LED	Blink when detect the presence of other HomePlug 1.0 devices that have the transmission rate of 14 or 85 Mbps. *Note: Due to the incompatibility of HomePlug AV 200 with HomePlug 1.0 devices, the presence of the HomePlug 1.0 devices within the powerline network will thus reduce the performance of your powerline network.*
Power LED	Lit when the device is power on. Lit off when power is off or when the device has entered power saving mode.
PLC (Powerline Link/Act) LED	Lit when a network has been established. Blink when powerline data is transmitted or received.
ETH (Ethernet Link/Act) LED	Lit when an Ethernet data signal is transmitted or received.
Sync Button	Used to establish a LAN network with other Ethernet devices.
Reset Button	Press this button to restore the device configuration to its default setting.
Ethernet Port	Connect the HomePlug AV device with an Ethernet device (eg. PC or modem router) & the Ethernet cable included.
Power Plug / AC Power Cord	Plug into an AC outlet for power supply and to build a powerline network with other HomePlug AV devices.

Quick Start (Setup Powerline Network)

Push Button usage

There are 3 types of Sync Button trigger states:

1. Broadcast State: Enable BiPAC HomePlug AV device to provide information for another BiPAC HomePlug AV device to join its powerline network group (works even if it is the only device existing within the network group).

2. Join State: This allows an ungrouped BiPAC HomePlug AV device to join an existing power-line network group.

3. Ungroup State: Press the Sync Button for more than 10 seconds to detach the device from its network group.

4. Sync Button: This is used to add a HomePlug device to a Powerline network or enable it to join a network by pressing the Sync Button of the device to turn it into Broadcast state or Join state.

Application Scenarios:

Scenario 1: A BiPAC HomePlug AV device A wants to form a network group with another BiPAC HomePlug AV device B

You can assign whichever device (A or B) to be in the Broadcast State and the other in the Join State.

Example:

1. Press the Sync Button of device A for 1~3 seconds to turn it into Broadcast State, you should find the Power LED blinks signifying it is in Broadcast state.

2. Press the Sync Button of device B for 1~3 seconds to turn it into Join State, you should find the Power LED blinks signifying it is in Join state.

3. Wait for the devices to boot again (all LEDs will turn off and on) and when the PLC LEDs of both devices lit steadily, you will now have these devices being in the same network group.

NOTE:
1. Once the device is plugged into the AC outlet, connect it with an Ethernet cable within 60 seconds to prevent the device from entering power saving mode.
2. If you do not see the Power LED blink when pressing the Sync button, press the Sync button again to make sure that the your HomePlug device is in sync mode (Broadcast state / Join state). If it is not, your devices will not be able to sync with each other.

Scenario 2: A BiPAC HomePlug AV device wants to join an existing network group BC

Device A wants to join a network group "BC" currently consisting of device B and device C. Any devices within the "BC" group can become the "Broadcast State" and device A will be the "Join State".

Example:

1. Press the Sync Button of device A for more than 10 seconds to make sure that it is detached completely from any possible network group.

2. Press the Sync Button of device B or C of the BC network group for 1~3 seconds to turn it into Broadcast State, you should find the Power LED blinks signifying it is in Broadcast state.

3. Press the Sync Button of device A for 1~3 seconds to turn it into Join State, you should find the Power LED blinks signifying it is in Join state.

4. Wait for the devices to boot again and when the PLC LEDs of both devices lit steadily, you will now have device A joined with the BC network group.
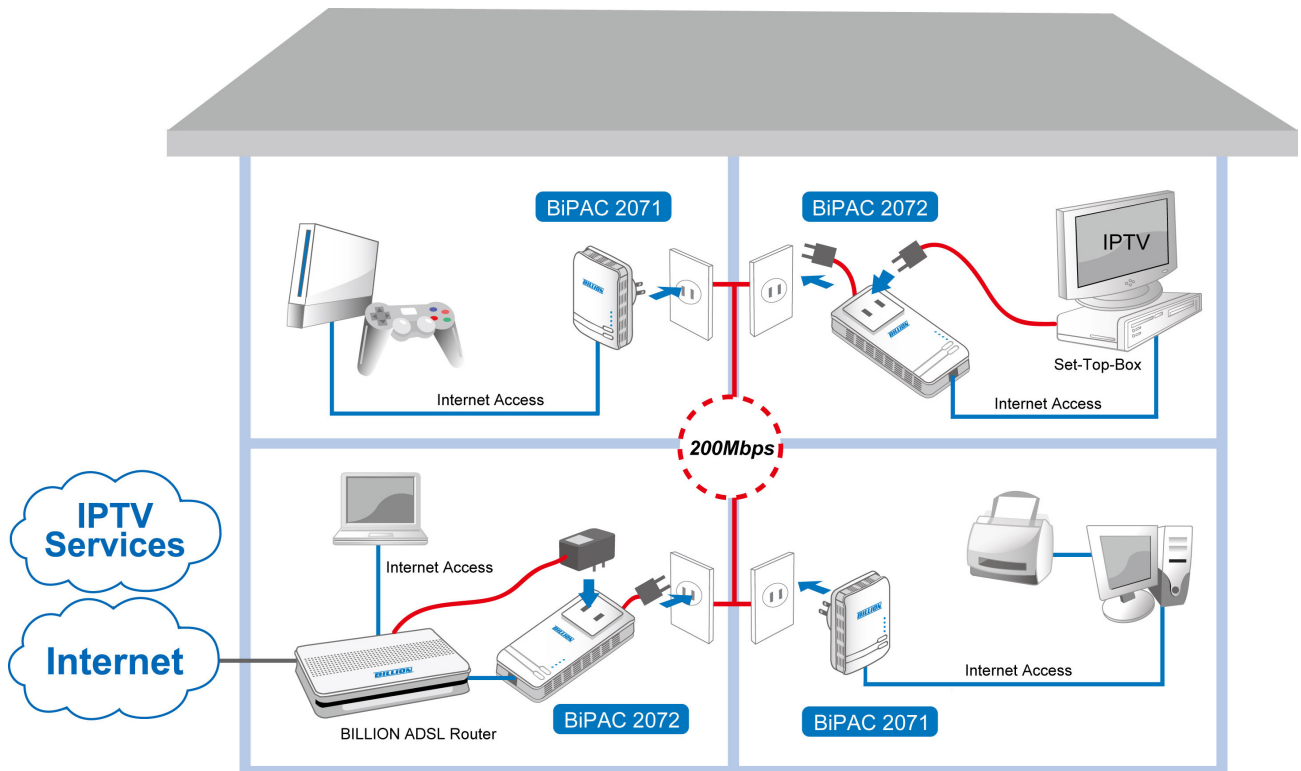
> **NOTE:**
> 1. Once the device is plugged into the AC outlet, connect it with an Ethernet cable within 60 seconds to prevent the device from entering power saving mode.
> 2. If you do not see the Power LED blink when pressing the Sync button, press the Sync button again to make sure that the your HomePlug device is in sync mode (Broadcast state / Join state). If it is not, your devices will not be able to sync with each other.

Scenario 3: A BiPAC HomePlug AV device A of network group AD wants to join an existing network group BC

For a device which already belongs to a network group is to join with a different network group, that device has to be ungrouped from its current attached group first.

Example:

1. Press the Sync Button of device A for more than 10 seconds to ungroup it from network group AD.

2. Then press the Sync Button of device (B or C) of network group BC for 1~3 seconds to turn it to Broadcast State, you should find the Power LED blinks signifying it is in Broadcast state.

3. Press the Sync Button of device A again for 1~3 seconds to turn it to Join State, you should find the Power LED blinks signifying it is in Join state.

4. Wait for the Sync LED of both devices A and (B or C) to lit steadily. Now you will have device A join the network group BC.

> **NOTE:**
> 1. Once the device is plugged into the AC outlet, connect it with an Ethernet cable within 60 seconds to prevent the device from entering power saving mode.
> 2. If you do not see the Power LED blink when pressing the Sync button, press the Sync button again to make sure that the your HomePlug device is in sync mode (Broadcast state / Join state). If it is not, your devices will not be able to sync with each other.

Powerline Network Illustration

Home / Office Setting

BiPAC 2071

BiPAC 2072

IPTV

Set-Top-Box

Internet Access

Internet Access

200Mbps

IPTV
Services

Internet Access

Internet

BILLION ADSL Router

BiPAC 2072

BiPAC 2071

Internet Access

▲The connected home using the BiPAC 2071/2072

Ethernet Cable   Power Cable

Chapter 3
Utility Installation

1. Place the BiPAC HomePlug AV Utility auto-installation CD into your CD-ROM/DVD-ROM drive and click on Utility for Easy Installation.

2. If you have not installed Microsoft .NET Framework 2.0, click on Install Microsoft .NET Framework 2.0 to install this program first before installing BiPAC HomePlug AV PLC Utility.

3. If you have already had Microsoft .NET Framework 2.0 installed, please click on Install the utility for Windows (32-bit / 64-bit) and proceed to the section on BiPAC HomePlug AV PLC Utility Installation.

4. If you are using Windows Vista operating system, do not have to install Microsoft .NET Framework 2.0. Simply click on Install the utility for Windows (32-bit / 64-bit) and proceed to the section on BiPAC HomePlug AV PLC Utility Installation.

BiPAC 2071 / BiPAC 2072
Homeplug AV 200 Ethernet Series

Utility for Easy Installation
To get started with utility, please follow the steps below:

Step 1: Install Microsoft .NET Framework 2.0
› Windows Vista user can skip this step!

Step 2: Install the utility for Windows 32-bit
› Utility for Windows 98/ME/2000/XP 32-bit/Vista 32-bit

Step 2: Install the utility for Windows 64-bit
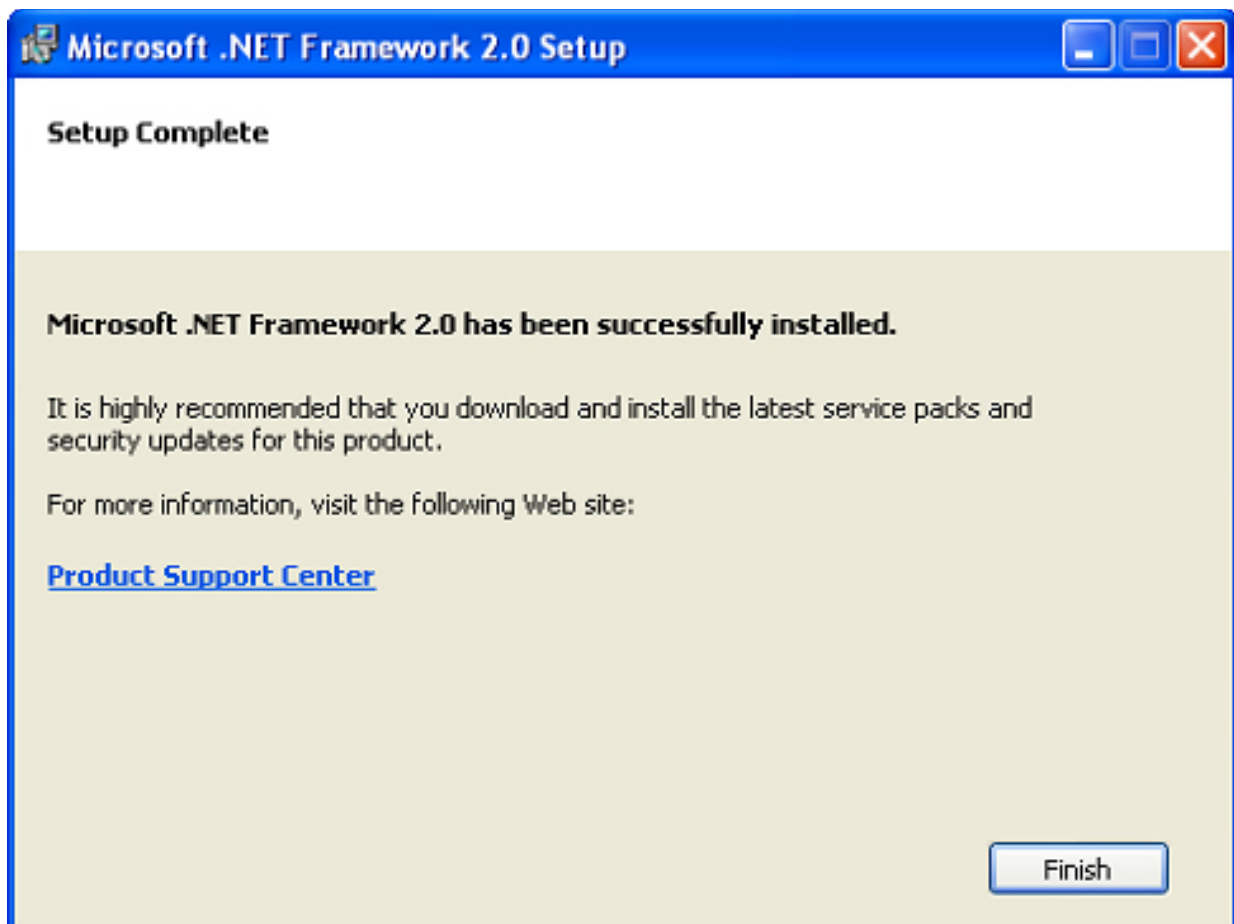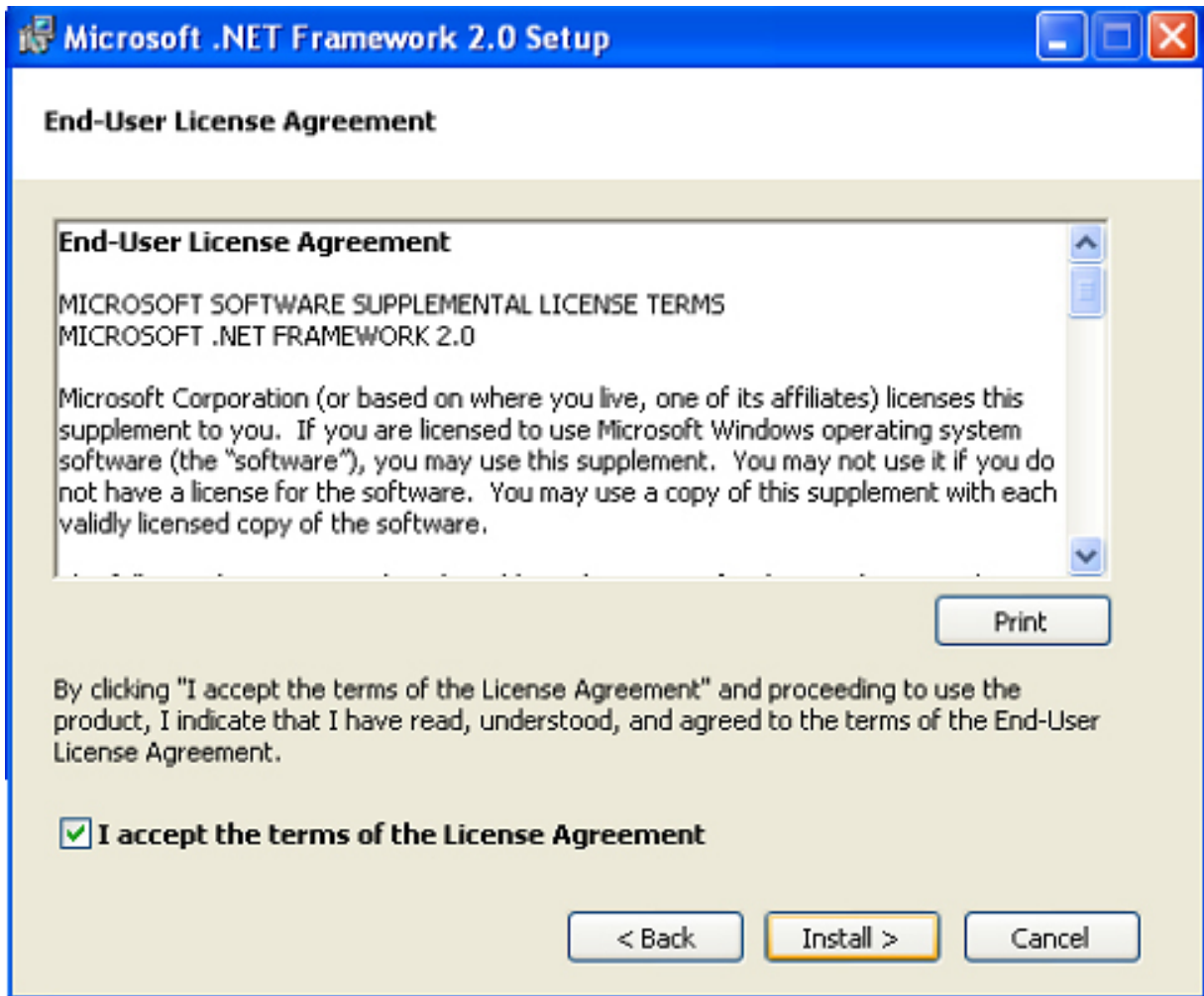› Utility for Windows XP 64-bit/Vista 64-bit

▶▶ *Back to main menu*

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Powering communications
with Security

Microsoft .NET Framework 2.0 Installation

1. After clicking on Install Microsoft .NET Framework 2.0, the Net Framework 2.0 installation wizard will be displayed.

2. Click Next to proceed with the installation.
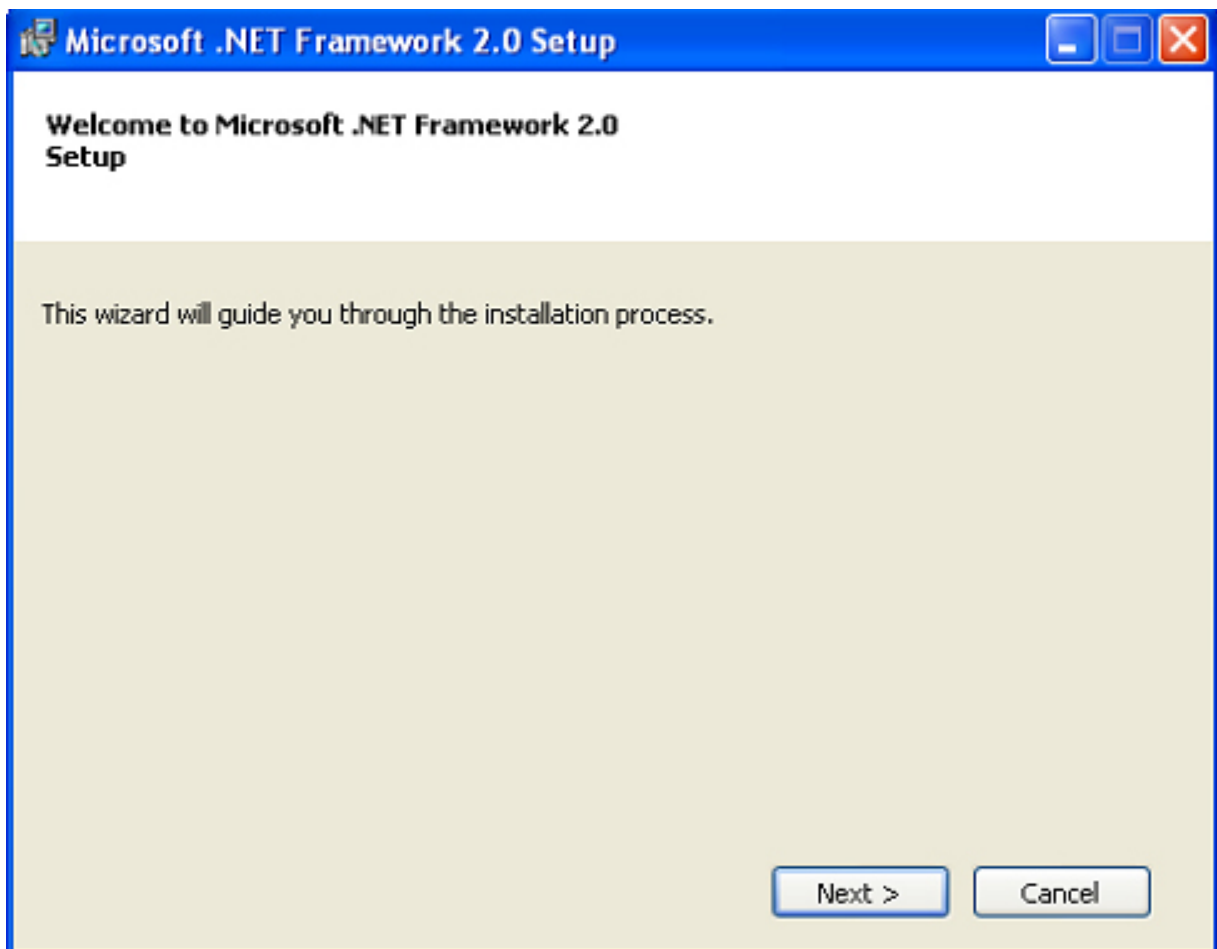
3. Check the Agreement acceptance box then press Install to start the installation. When the installation is complete, click Finish to exit.
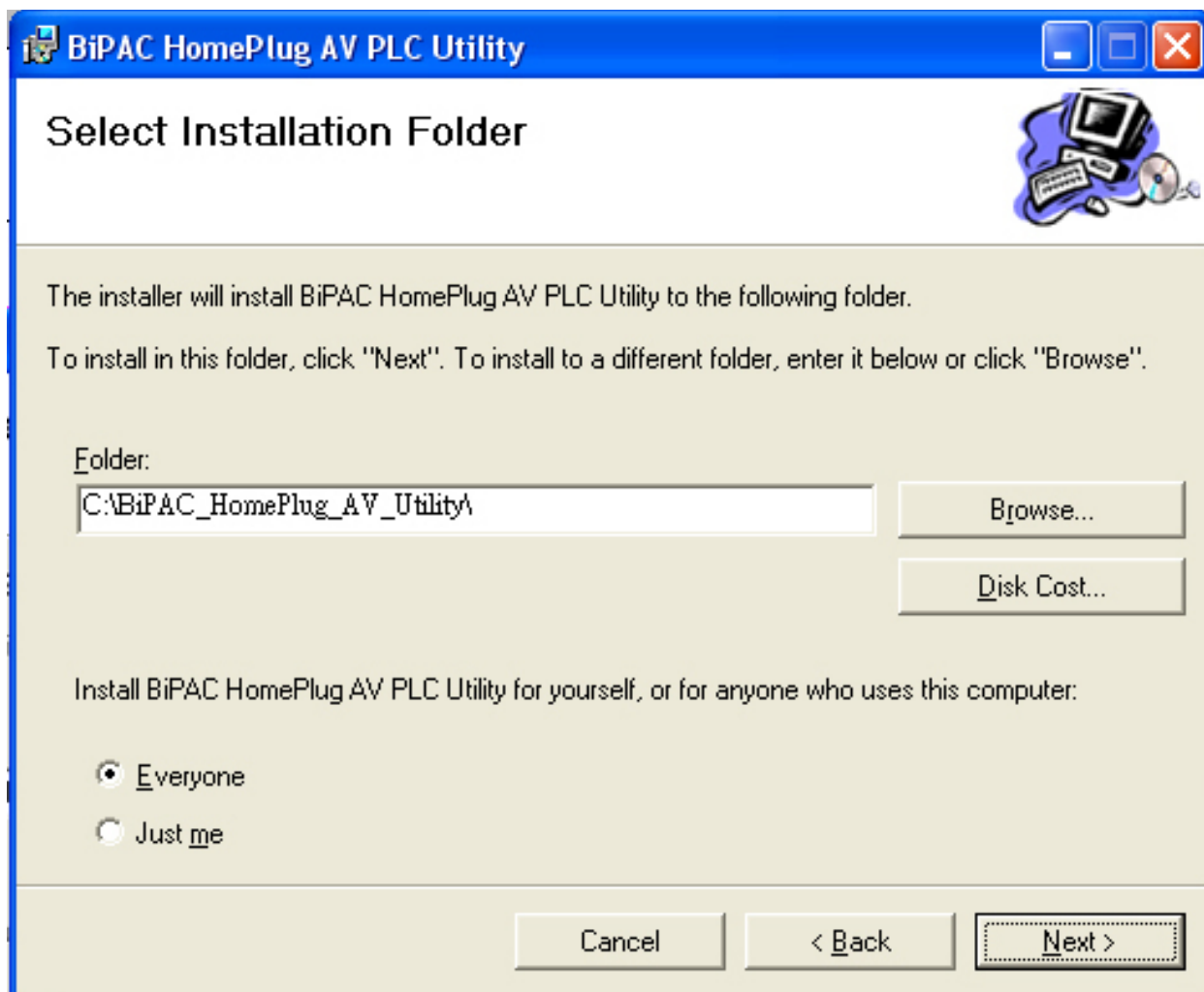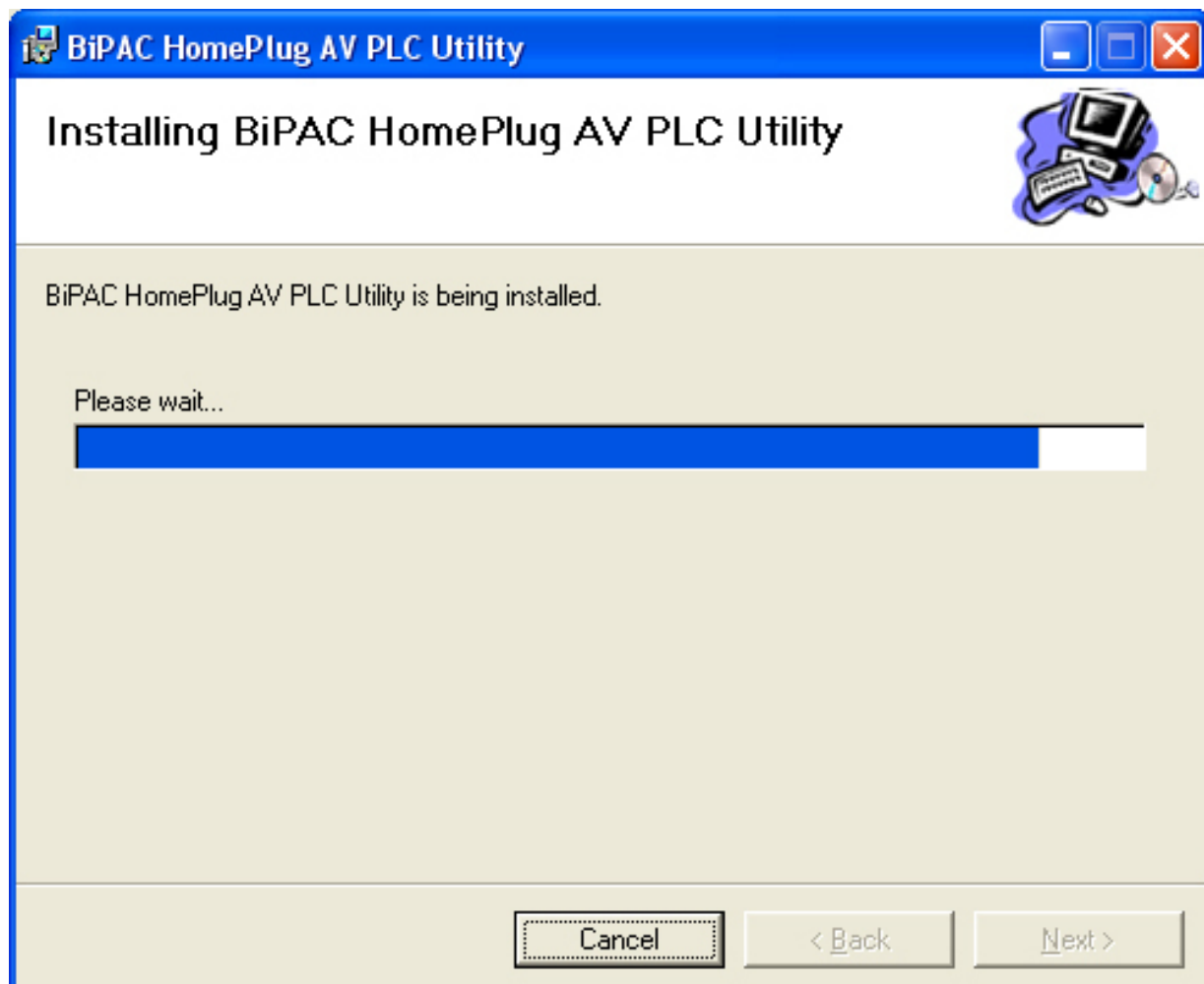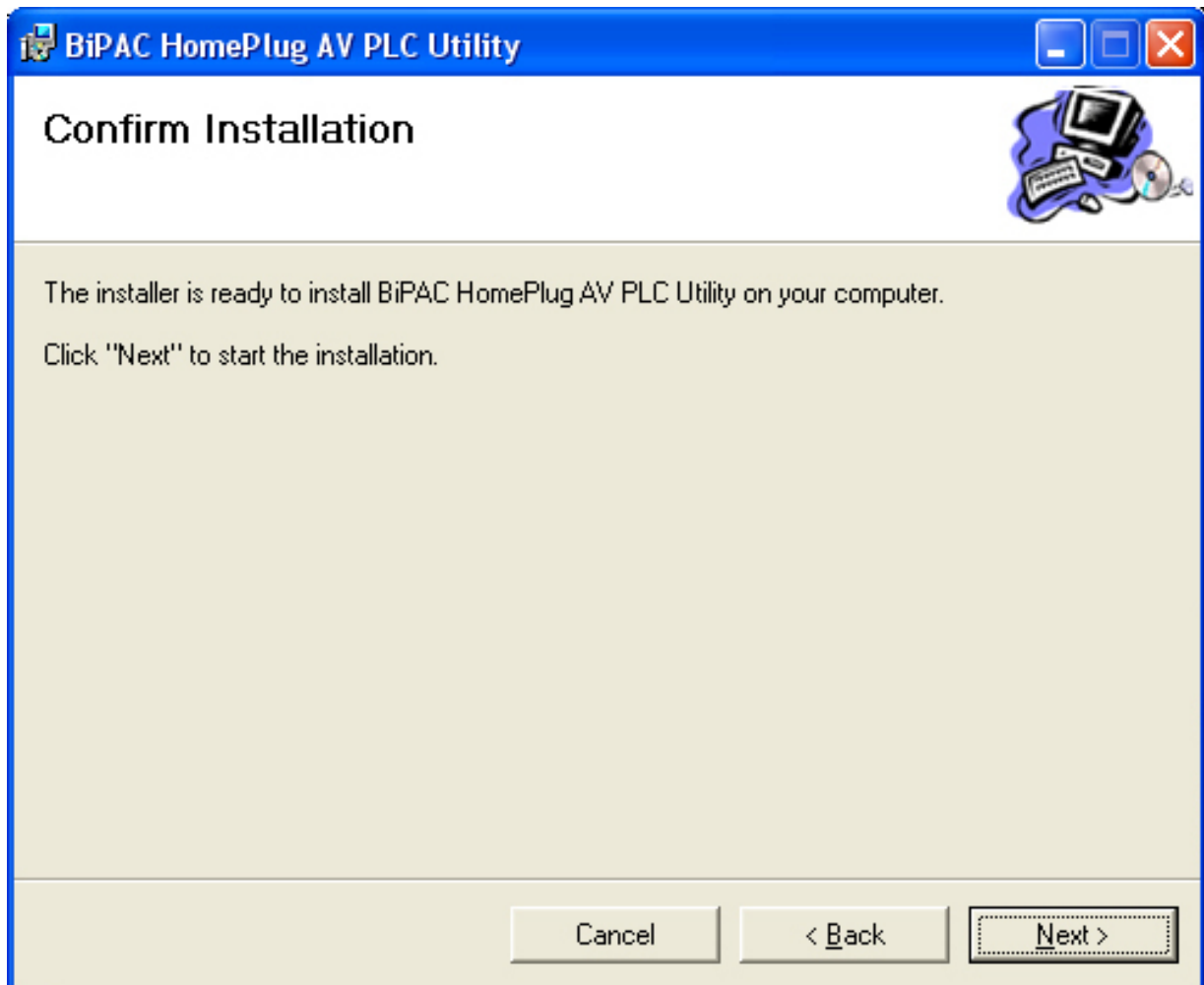
Microsoft .NET Framework 2.0 Setup

End-User License Agreement

End-User License Agreement

MICROSOFT SOFTWARE SUPPLEMENTAL LICENSE TERMS
MICROSOFT .NET FRAMEWORK 2.0

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[Print]

By clicking "I accept the terms of the License Agreement" and proceeding to use the product, I indicate that I have read, understood, and agreed to the terms of the End-User License Agreement.

☑ **I accept the terms of the License Agreement**

[< Back] [Install >] [Cancel]

Microsoft .NET Framework 2.0 Setup

Setup Complete

Microsoft .NET Framework 2.0 has been successfully installed.

It is highly recommended that you download and install the latest service packs and security updates for this product.

For more information, visit the following Web site:

Product Support Center

[Finish]

BiPAC HomePlug AV Utility Installation

1. After clicking on Install the utility for Windows (32-bit / 64-bit), the installation wizard will appear. Click Next.
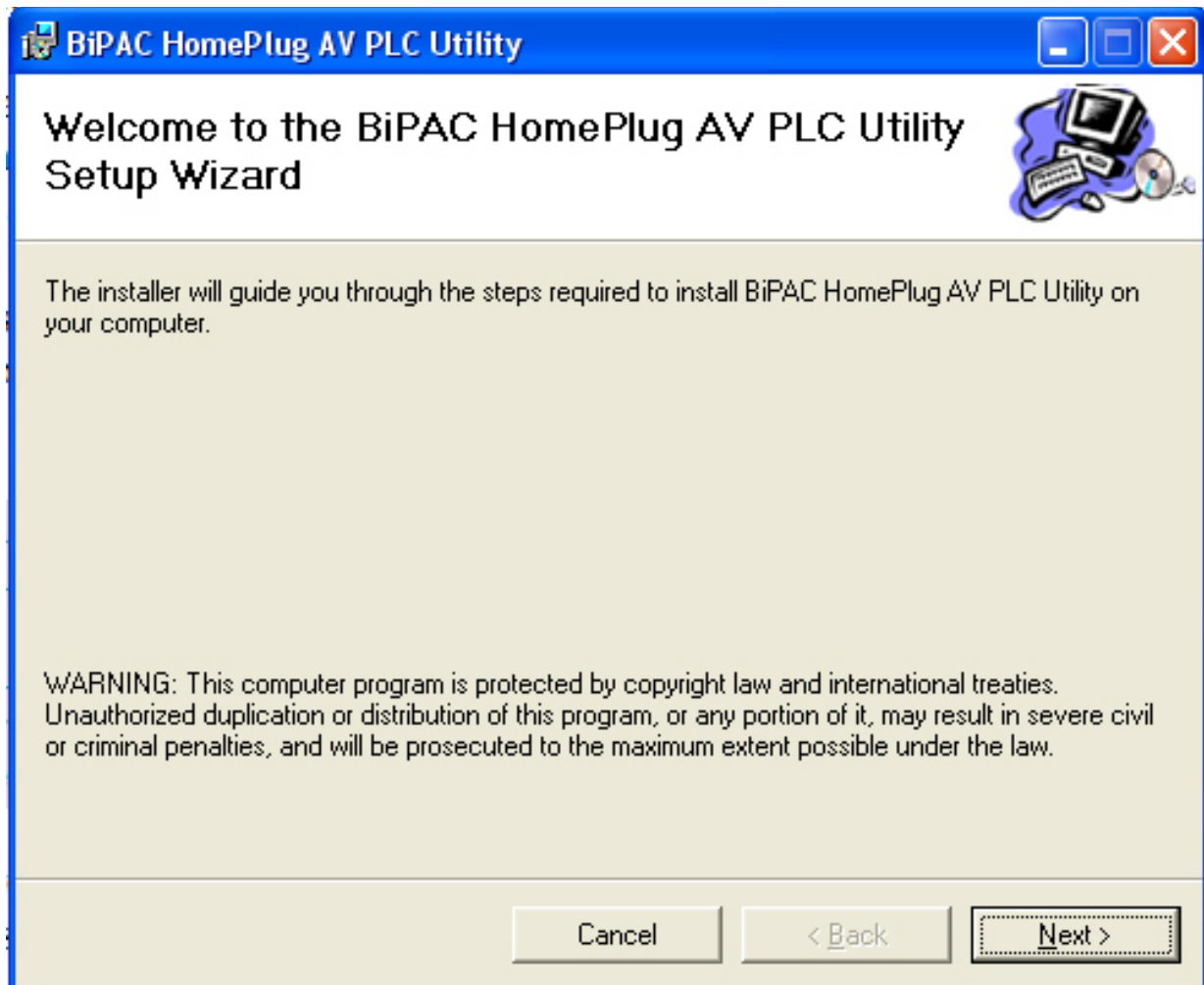
2. You may define the location of the installation folder using the Browser, however it is highly recommended that you use the default location. In addition, you can also choose to install Bi-PAC HomePlug AV PLC Utility only for yourself or for all the users who share your PC. When all necessary items are properly selected, press Next to proceed.

3. Press *Next* to confirm and start the installation.

BiPAC HomePlug AV PLC Utility

Confirm Installation

The installer is ready to install BiPAC HomePlug AV PLC Utility on your computer.

Click "Next" to start the installation.

| Cancel | < Back | Next > |

BiPAC HomePlug AV PLC Utility

Installing BiPAC HomePlug AV PLC Utility

BiPAC HomePlug AV PLC Utility is being installed.

Please wait...

| Cancel | < Back | Next > |

4. While the utility installlation is in progress, the system will automatically prompt you to install the WinPcap program in a separate window pop-up. Install this program in order for the utility to work well.

5. When the WinPcap installation window pops up, click Next to proceed with the installation.
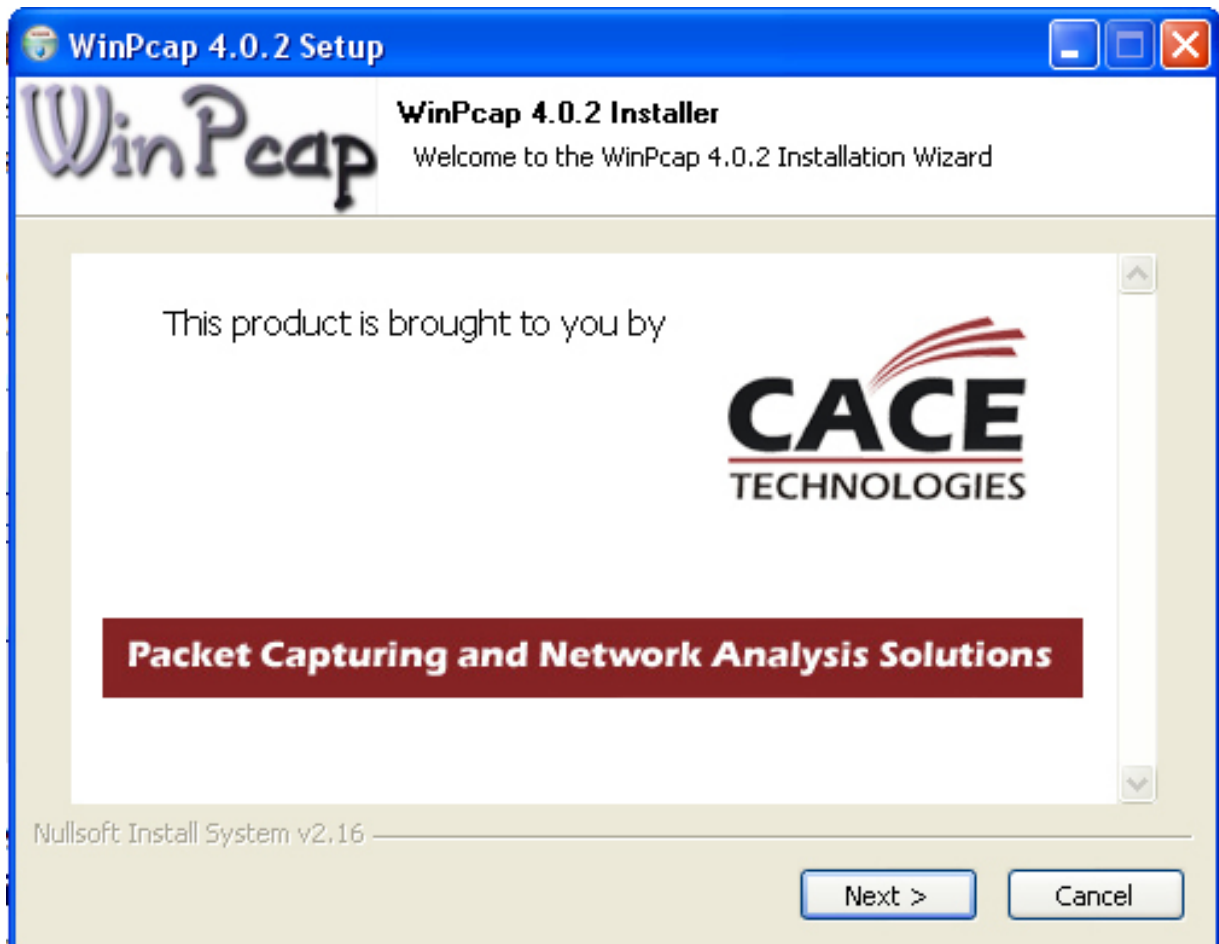
6. Click on Next to proceed to the next step.
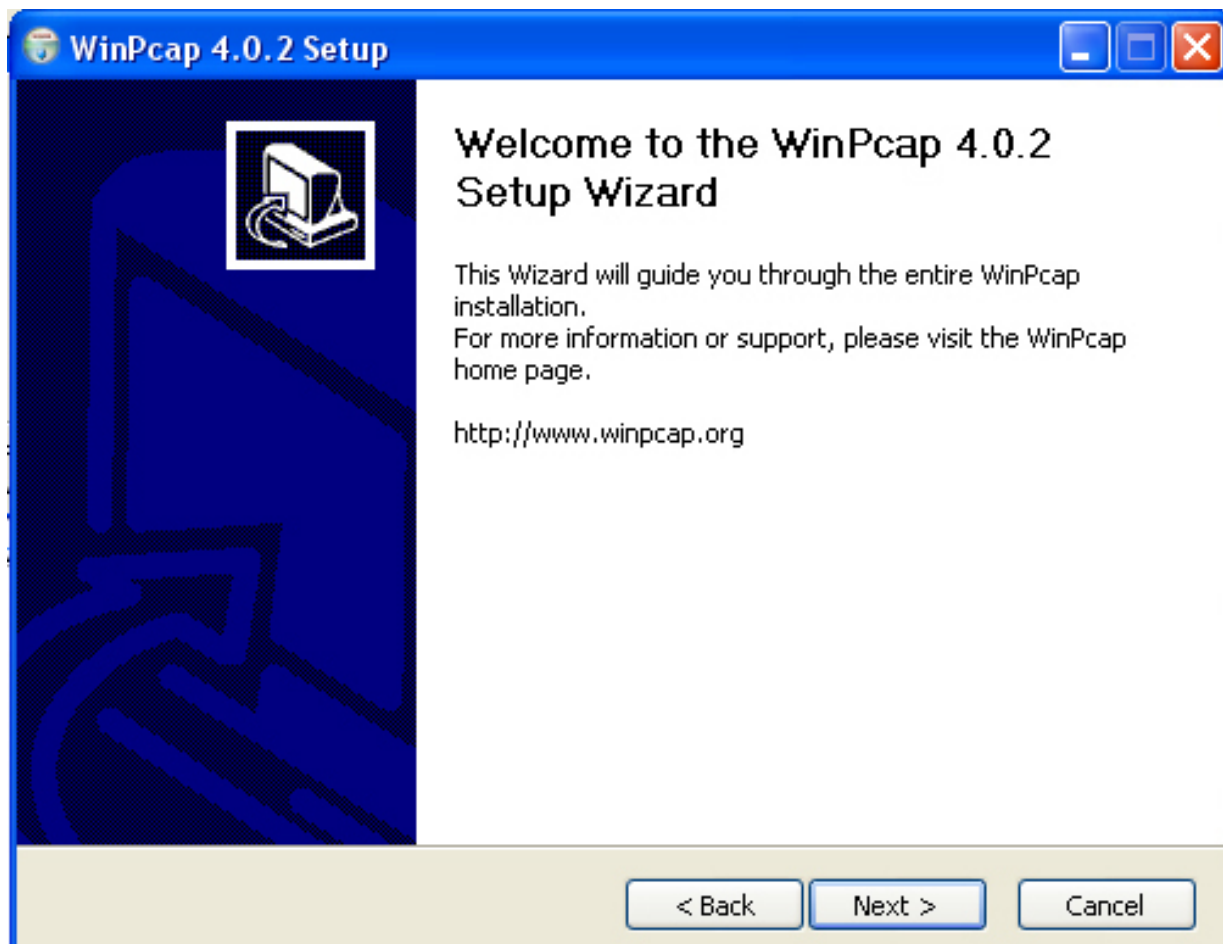
7. Read through the license agreement then click on I Agree button to accept the agreement term and to continue the installation.
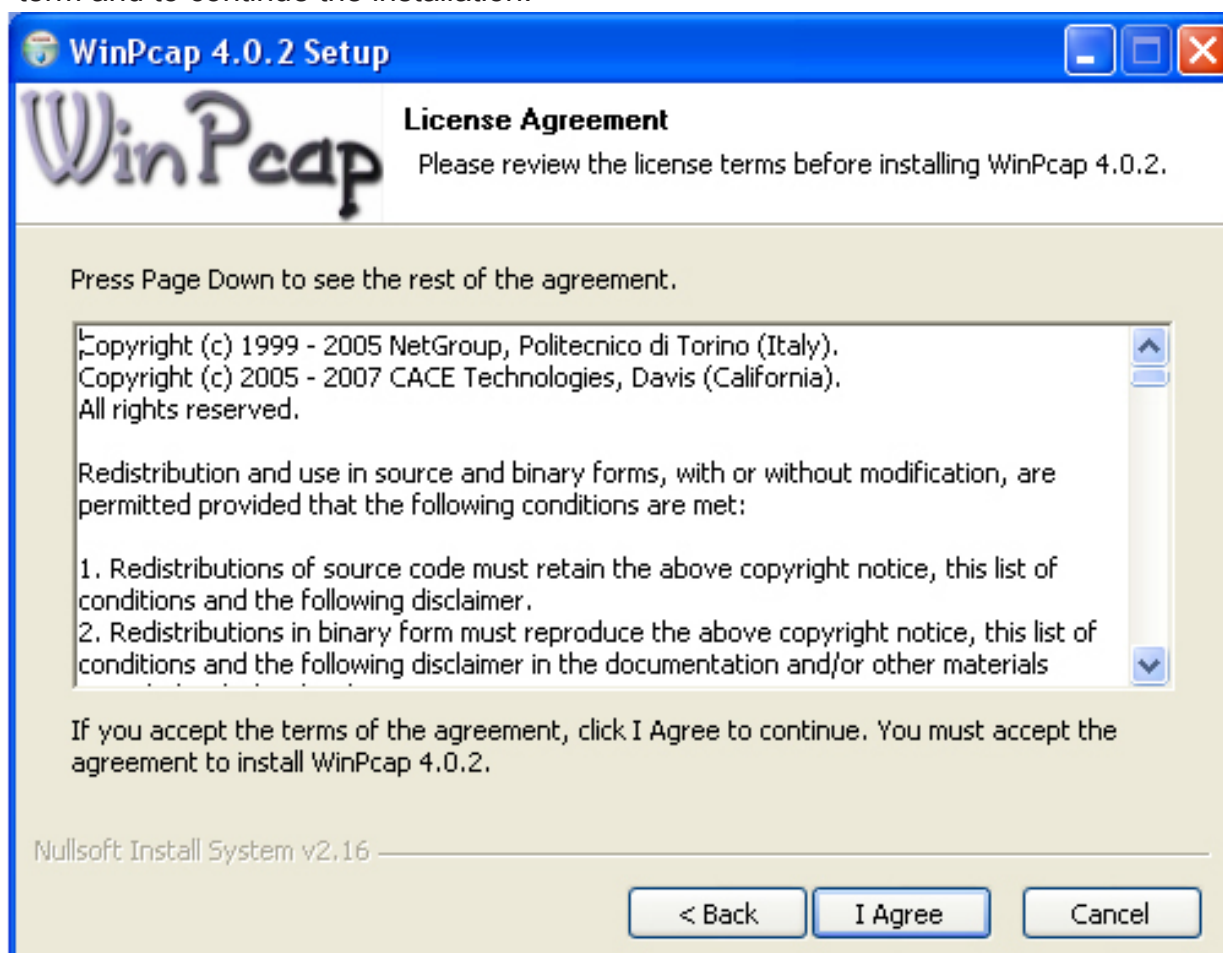
8. When the WinPcap installation is done, click on Finish to close the window.
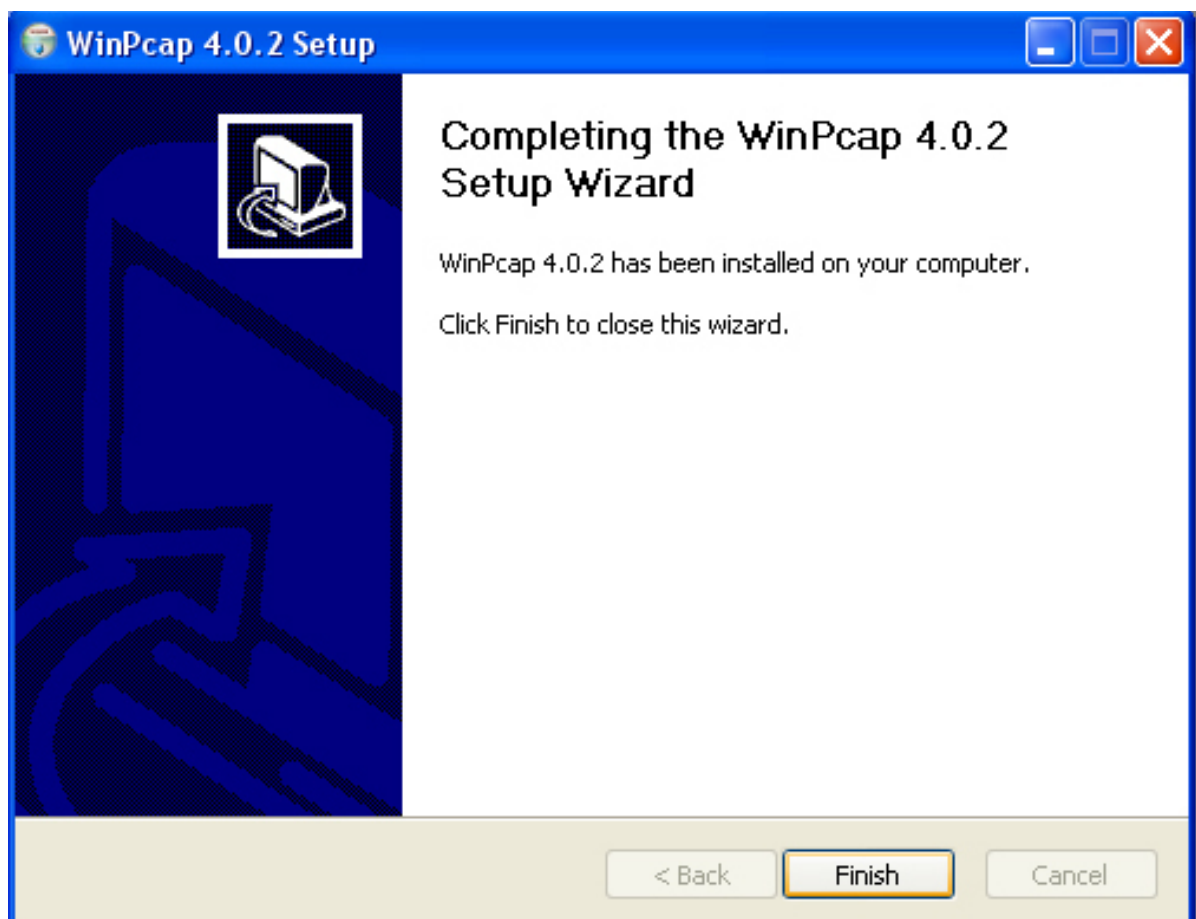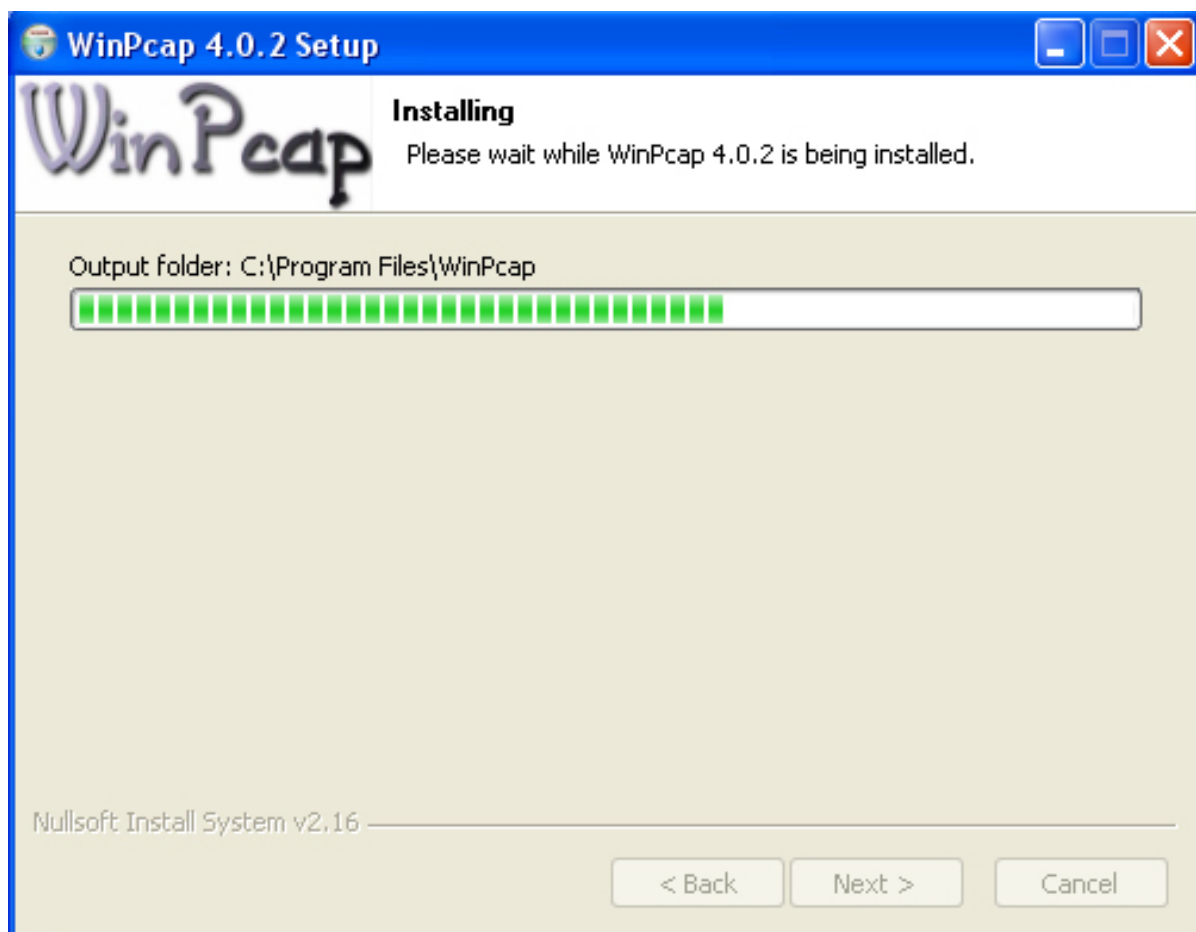
9. When the WinPcap installation is done, you will have also completed the BiPAC HomePlug PLC Utility installation as well. You may now click on the close button of the Utility installation window to finish the process.
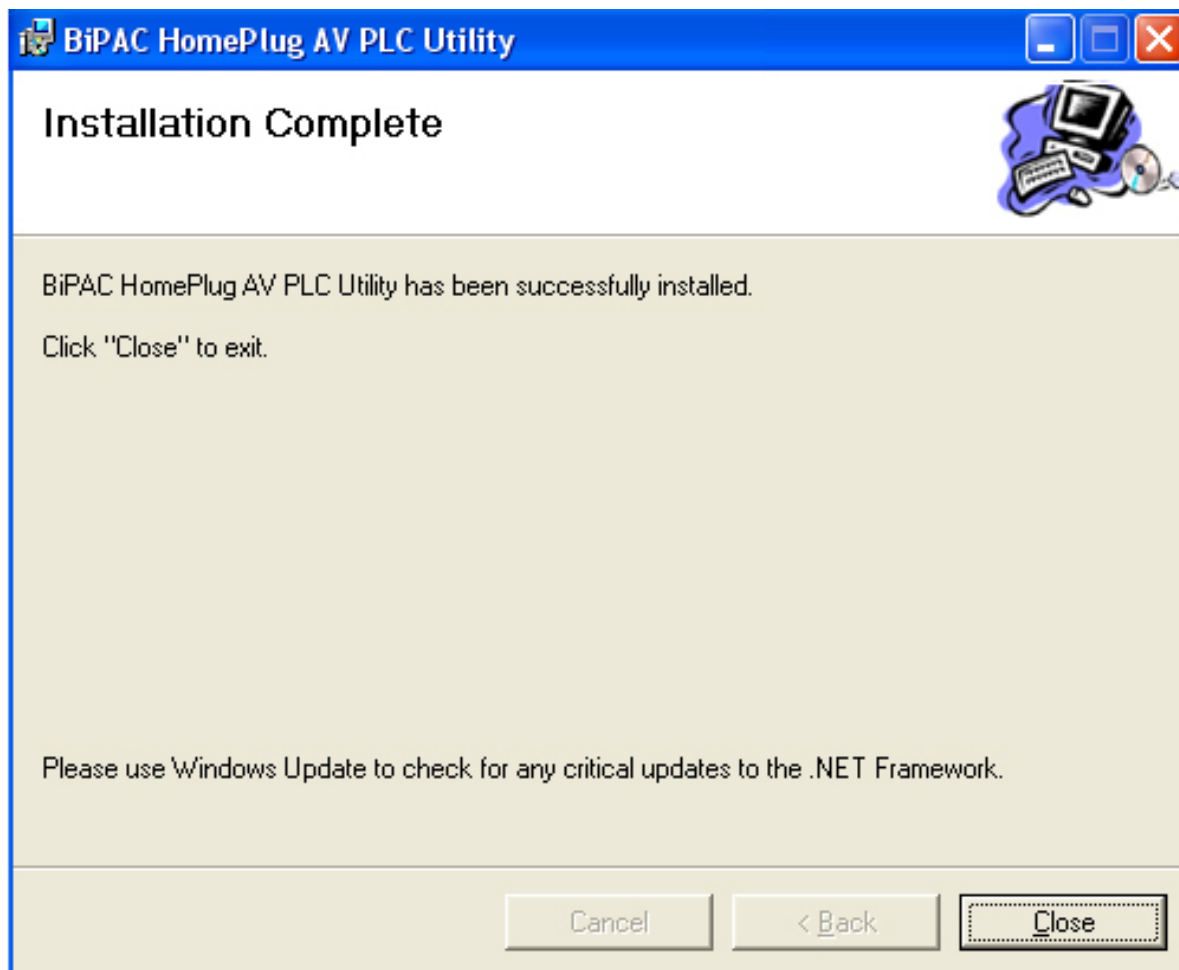
Chapter 4
Accessing BiPAC HomePlug AV Utility

Once the BiPAC HomePlug AV PLC Utility Setup Wizard is installed, a shortcut will appear on the desktop. You can start the BiPAC HomePlug AV Utility by double clicking on the shortcut, or go through "start"→ "All Program"→ "BiPAC HomePlug AV Utility" →"BiPAC HomePlug AV Utility".
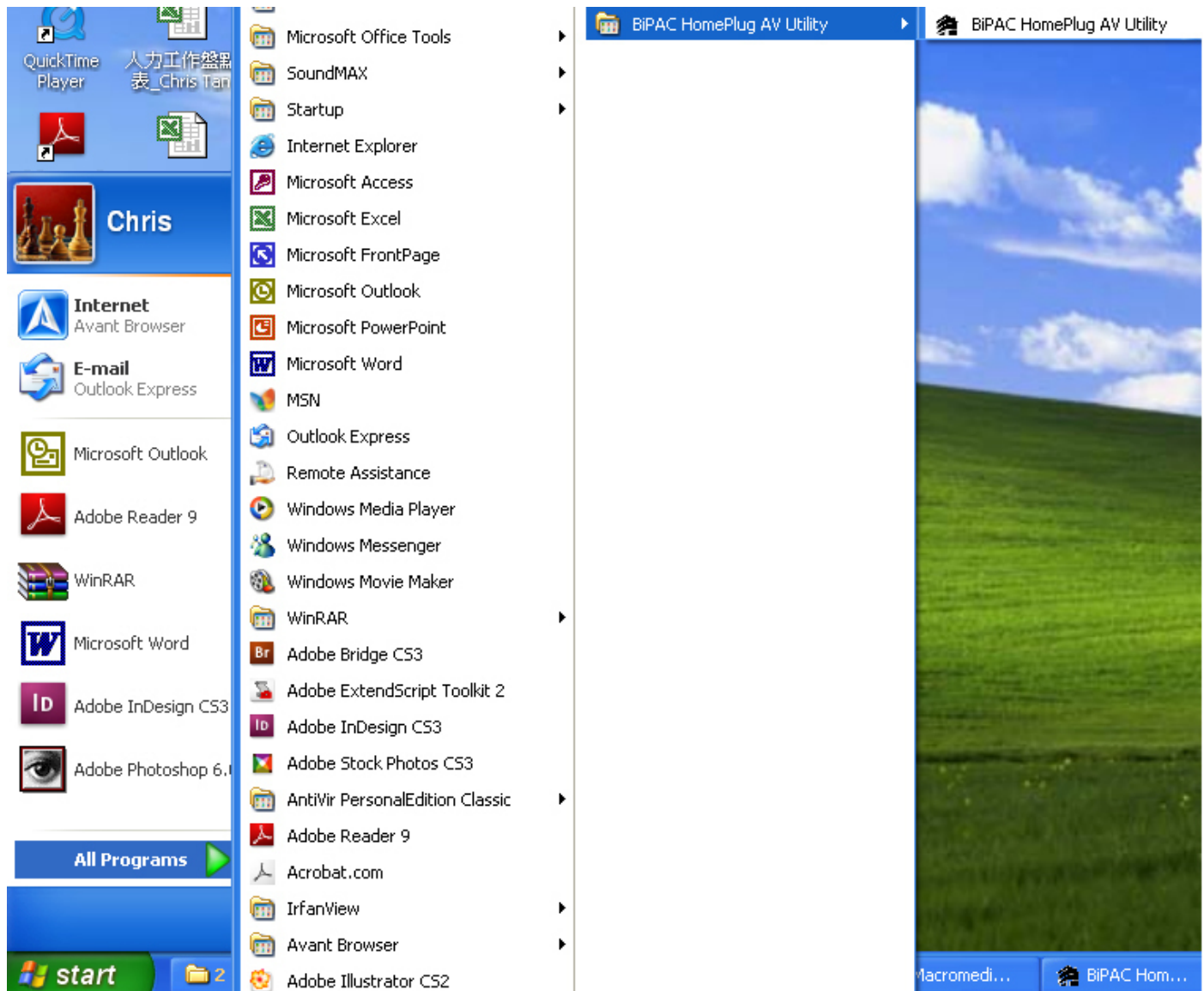
BiPAC HomePlug AV Utility

Billion BiPAC HomePlug AV Utility consists of 4 screens accessed through 4 panel tabs. The 4 panels are Main, Privacy, Diagnostics and About located on the top left corner of the program for configuration convenience.

Main Tab
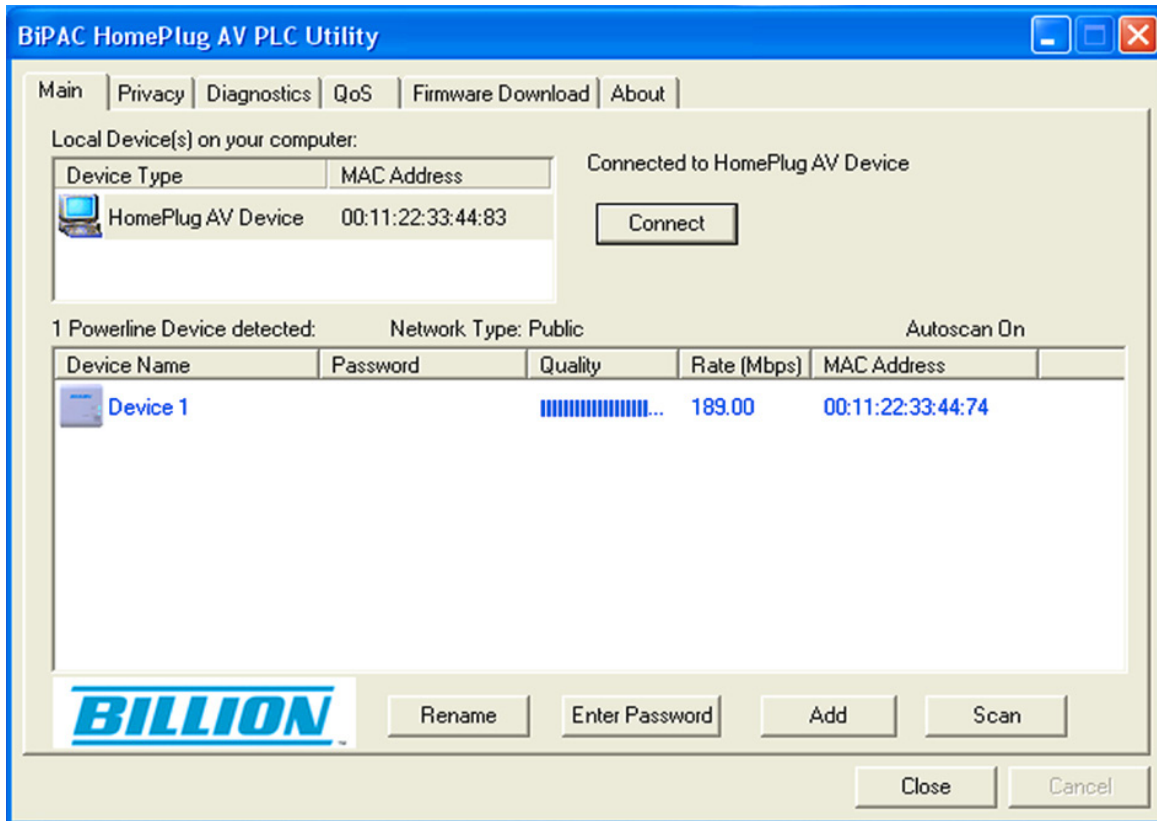
The Main Tab screen lists all the powerline devices that are connected to the host computer when the utility is running.

The top left window panel shows all the local HomePlug devices that are connected to the computer's NIC (Network Interface Card). Normally, only one device will be seen on the list. If there is more than one local device being connected, user can select the local device by clicking on it and then click the Connect button to its right to use it to connect to the internet. Once connected to the local device, the utility will automatically scan the power line periodically for other newly connected HomePlug devices. If no local HomePlug devices are discovered, the status area above the connect button will indicate with a message 'NO HOMEPLUG ADAPTERS DETECTED'.

The bottom window panel displays all the HomePlug remote devices that are detected on the current network. The total number of remote devices connected on the same network can be found on top of the Remote device panel. Within this panel, you can also find some useful informations of each remote device such as its password, the connection quality, transfer rate & MAC address.

The Network type (Public or Private) is also displayed based on the network status of the local device. The scan status option is displayed on the top right corner above the Remote devices panel showing whether the Autoscan function is turned ON or OFF.

The following information is displayed for all devices that appear in the lower panel:

Device Name:

Show the default device name. User can change the name by either clicking on the rename button or by clicking on the name and editing in-place. An icon is usually shown with the device name.

Password (*required when one needs to change the Private Network Name of the devices)

This column is left blank by default. The password will be displayed only after it has been entered. For detail information on password setup, please refer to section on Password Setup Procedure. Each device comes with a unique password and it can be found at the back of the device itself.

Rate (Mbps):

Display the data transmission rate of each device.

MAC Address:

Show the Remote device MAC address.

Quality:

Display the overall quality of the data transmission rate. When the transmission rate is good, the number of line appear will increase.

Password Setup Instructions:

This feature grants users the access level to change the Private Network Name of both the local & the remote HomePlug devices. Password is required if one is to change the Private Network Name of each devices within the powerline network in order for all devices to be able to communicate & synchronize with each other within the network.

1. To enter a password for a specific device, select the device and click on the Enter Password button at the bottom of the lower panel to call up the Set Device Password dialog box.
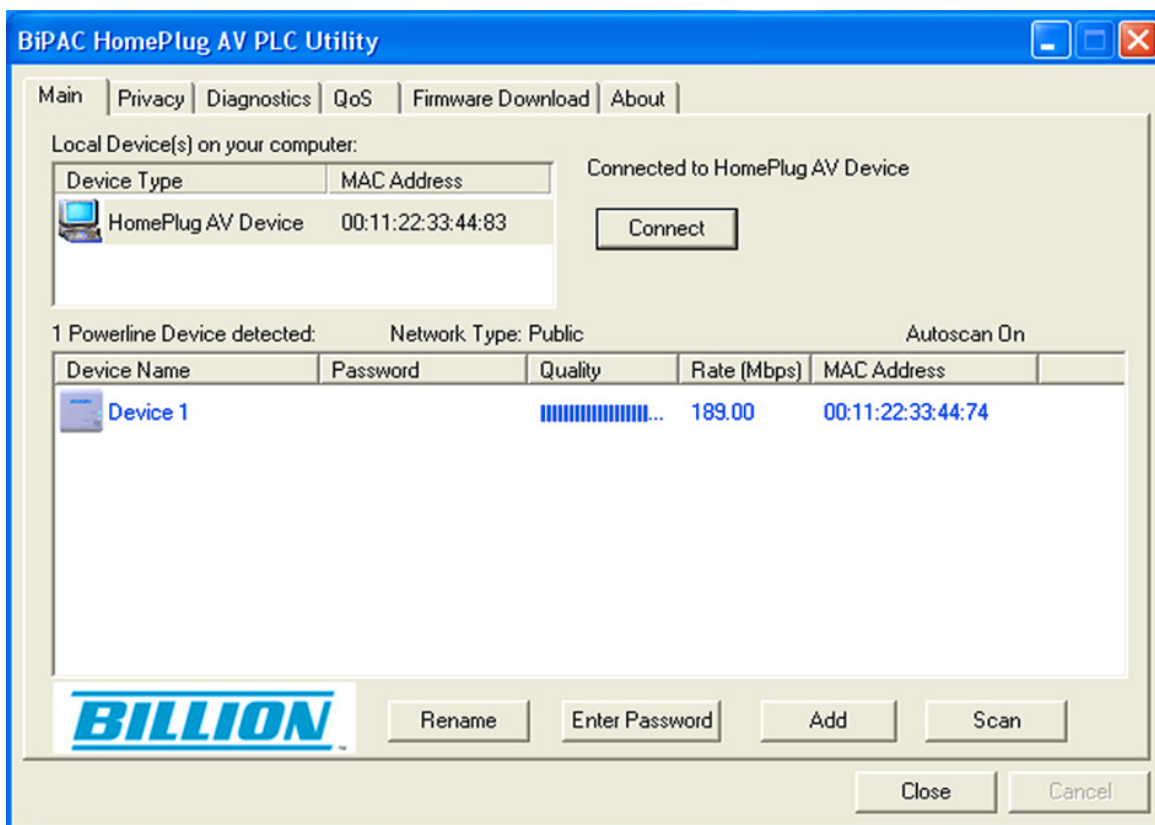
2. Then type in the password in the blank provided and then press OK.

Note: The password of each HomePlug device can be found at the back of the device.

3. If the password entered is not recognized or unacceptable, an error message box will pop up

prompting user to change the password. Click OK then re-enter the password again.
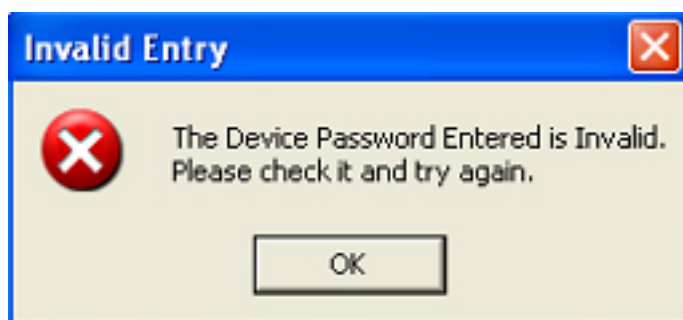
4. If the password entered is correct, you will see that the password will be displayed next to the device.
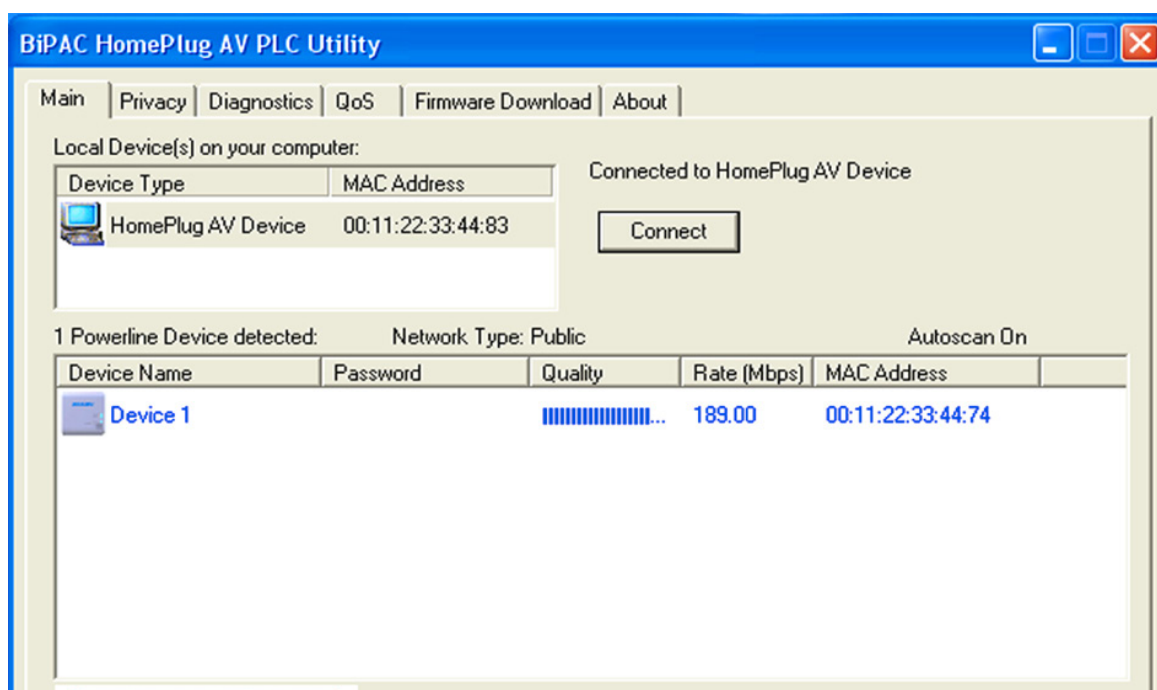
Privacy Tab
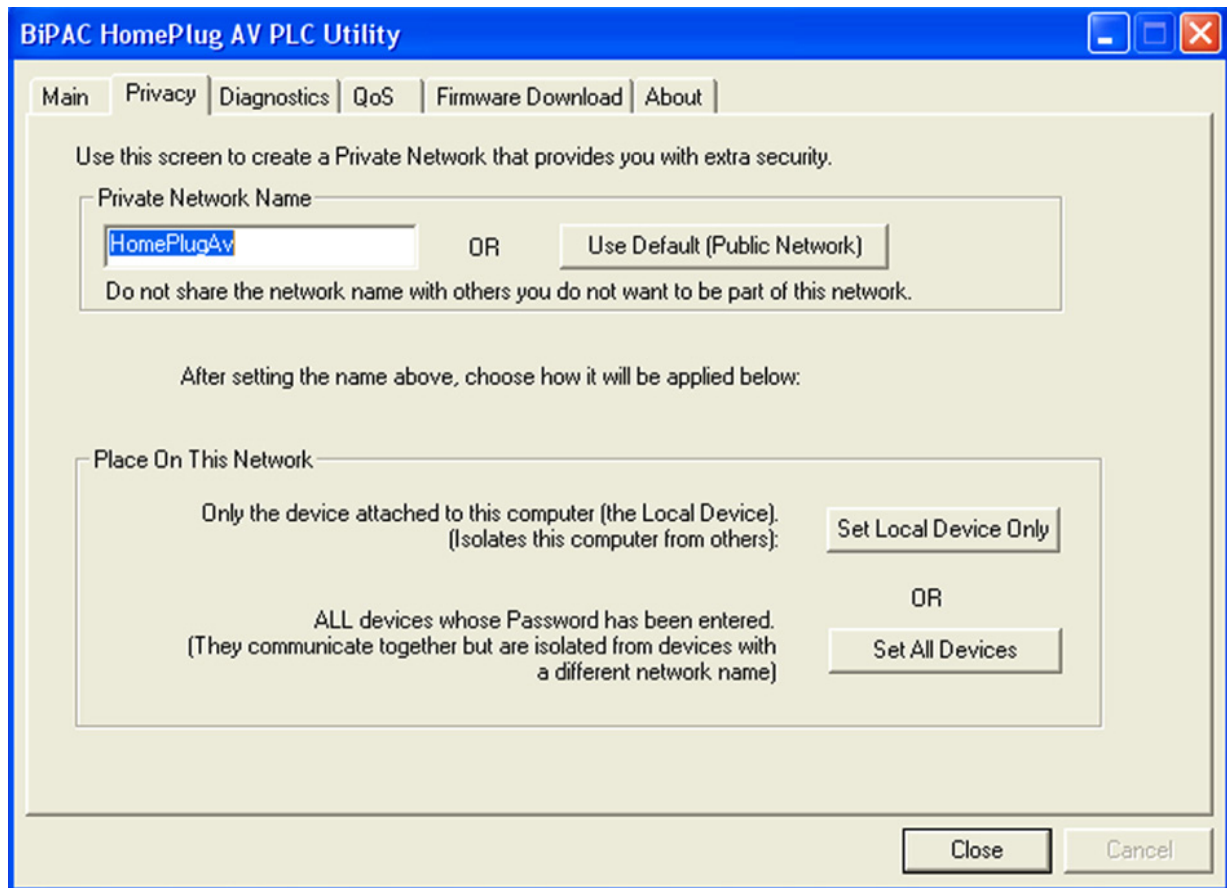
Privacy Tab allows user the convenience to manage the security of the private powerline network. In addition, user can also uitlize this feature to add a new HomePlug device to the private network instead of manually adding the device using its sync button. In order to add devices to the network through the utility GUI, Private Network Name of each device is required to be the same with the local device.

All HomePlug devices are shipped using a default logical network name "HomePlugAv". The Privacy tab screen allows user to change its default public network type to a private network by changing the network name (network password) of the device.

The user can always reset the network type to HomePlug network (Public) by entering "HomePlugAv" as the network name or by clicking on the Use Default button.

Note: Changing the network name to anything other than HomePlugAv will show the network type on the main screen as Private.

Set Local Device Only button can be used to change the Private Network Name of the local device. If a new Private Network Name is entered, all associated devices seen on the Main Tab previously will no longer be present in the new network, thus causing the local device unable to communicate with other devices which were in the network previously.

Set All Devices button is used to change the Private Network Name of all devices that appear on the Main tab screen whose Device Password had been entered correctly. For devices whose device passwords were not entered, this operation will fail and will report a failure message.

Diagnostic Tab
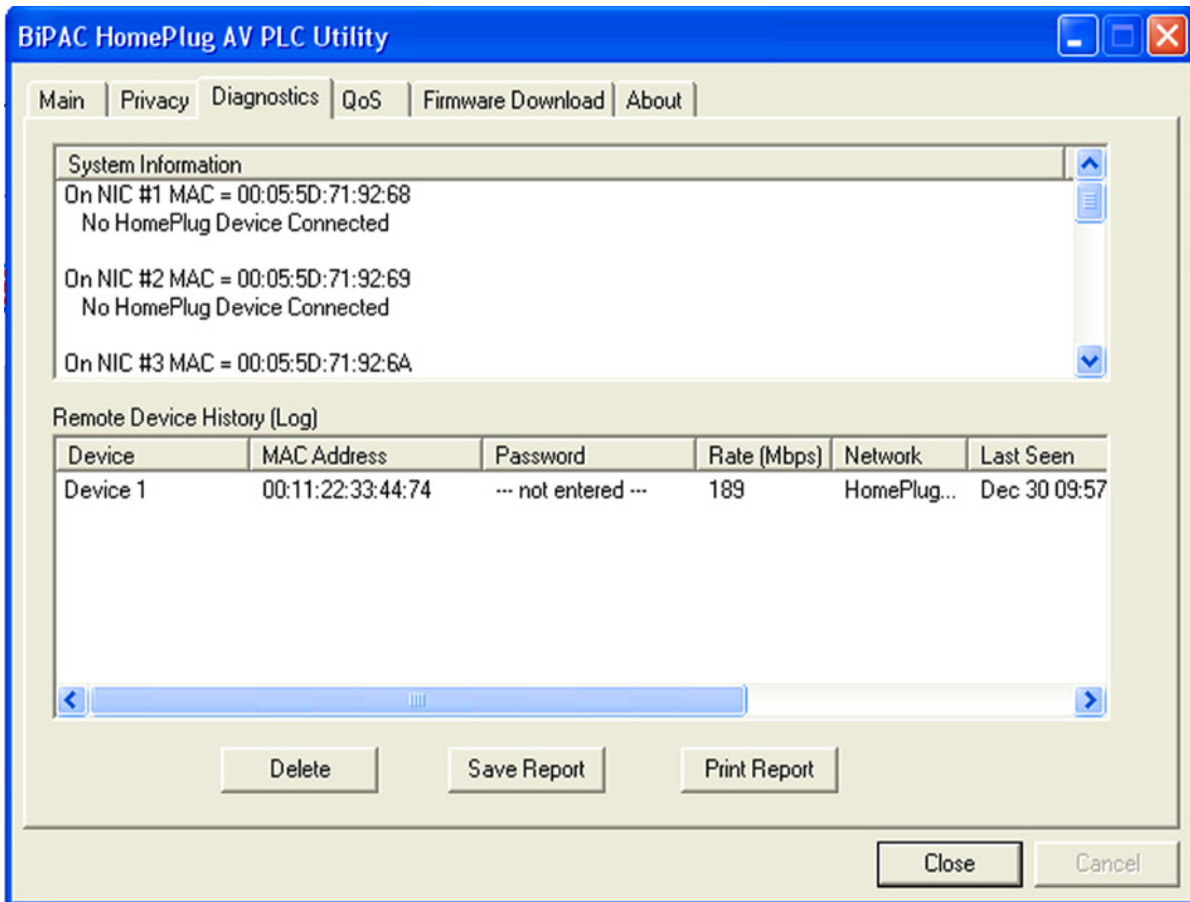
The Diagnostics Tab screen shows System information and a history of all remote devices seen over a period of time. This screen is available for OEM/ODM Customization.

The Upper panel shows technical data concerning software and hardware present on the host computer which were used for communication via HomePlug device on the Powerline network. The data includes the following:

• Operating System Platform/Version

• Host Network Name

• MAC Address of all NICs (Network interface card) connected to the host

• Identify versions of all Driver DLLs and Libraries used (NDIS) and optionally

• MAC Firmware Version

• MAC addresses of all devices connected locally to the host

• Version of the Configuration Utility

• Microprocessor

The Lower panel contains a history of all remote devices seen on the computer over a certain period of time. All devices that were on the powerline network are listed here along with a few other parameters. Devices that are active on the current logical network will show a transfer rate in the Rate column; devices on other networks, or devices that may no longer exist are shown with a "?" in the Rate column. The following remote device information is available from the diagnostics screen:

• Device Alias Name

• Device MAC Address

• Device Password

• Transfer rate

• Device Last Known Network name

• Vendor name

• Date device last seen on the network

• MAC Firmware version

The diagnostics information displayed may be saved as a text file for later use, or it can be printed for reference. Devices, which are not part of the network anymore, can be deleted using the delete button. A warning window will pop up requesting for a confirmation when we try to delete a device which password has been entered.

QoS Tab

This function allows user the flexibility to manage the bandwidth usage for each HomePlug device. The higher the QoS priority the more bandwidth usage is allocated to that particular device.
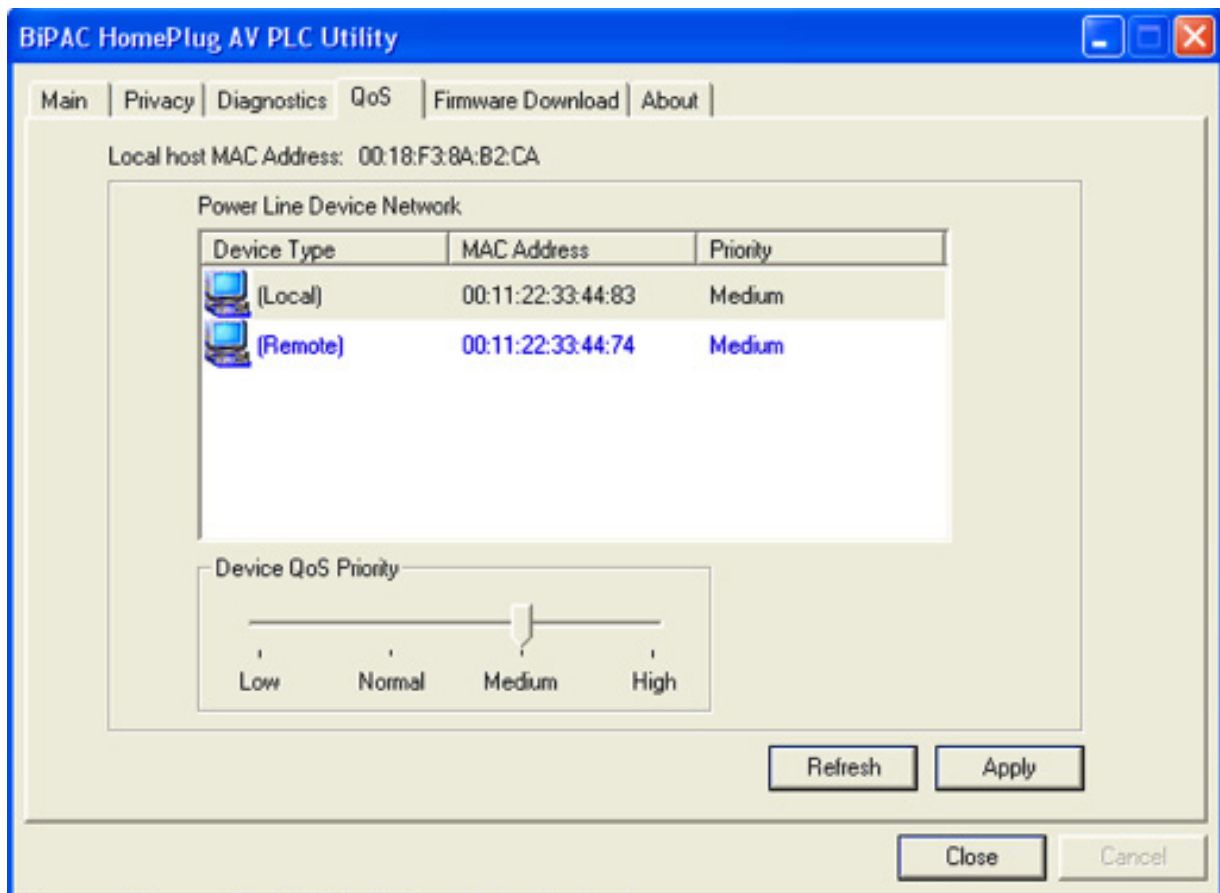

To set the QoS priority of each device:

1. Click to select the device that you want to set its QoS priority.

2. Then, drag the Device QoS Priority slider to either Low, Normal, Medium or High position.

3. When the position of the slider is set, click Apply to apply the setting.

Firmware Download Tab

This function gives users the convenience to download the free bundled Firmware Upgrade tool from Billion website. Thus, with this feature, users can always keep their PLC Utility updated with the latest firmware.
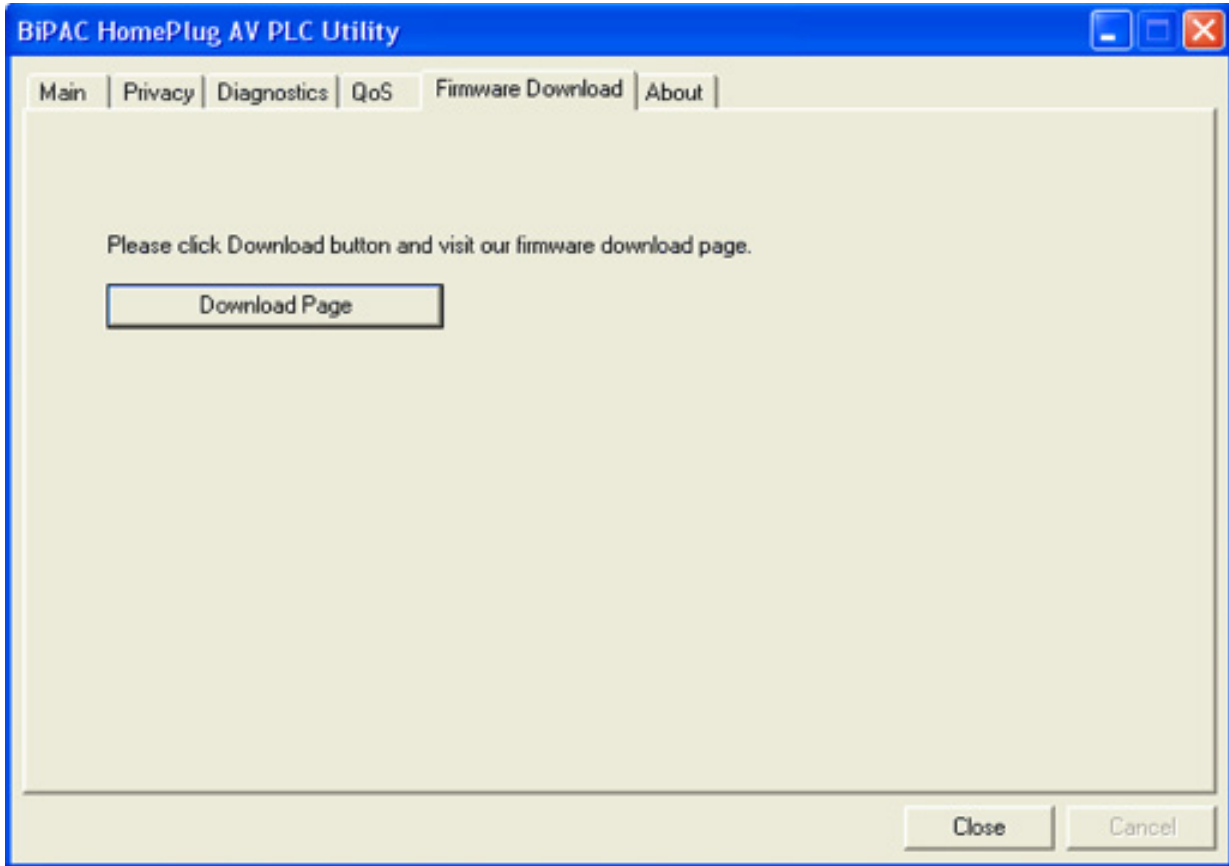
To Download the Free Bundled Firmware Upgrade Tool

1. Click on the Download Page button, you will automatically link to the Firmware Upgrade Tool webpage on Billion website.

2. Browse to the bottom of the page, then look for the firmware that corresponds to your Home-Plug model. Then click on the firmware icon to download the tool.

3. Once you have saved your download, you may run the firmware upgrade tool. For firmware upgrade, please refer to the Firmware Upgrade section for more detail.

About Tab
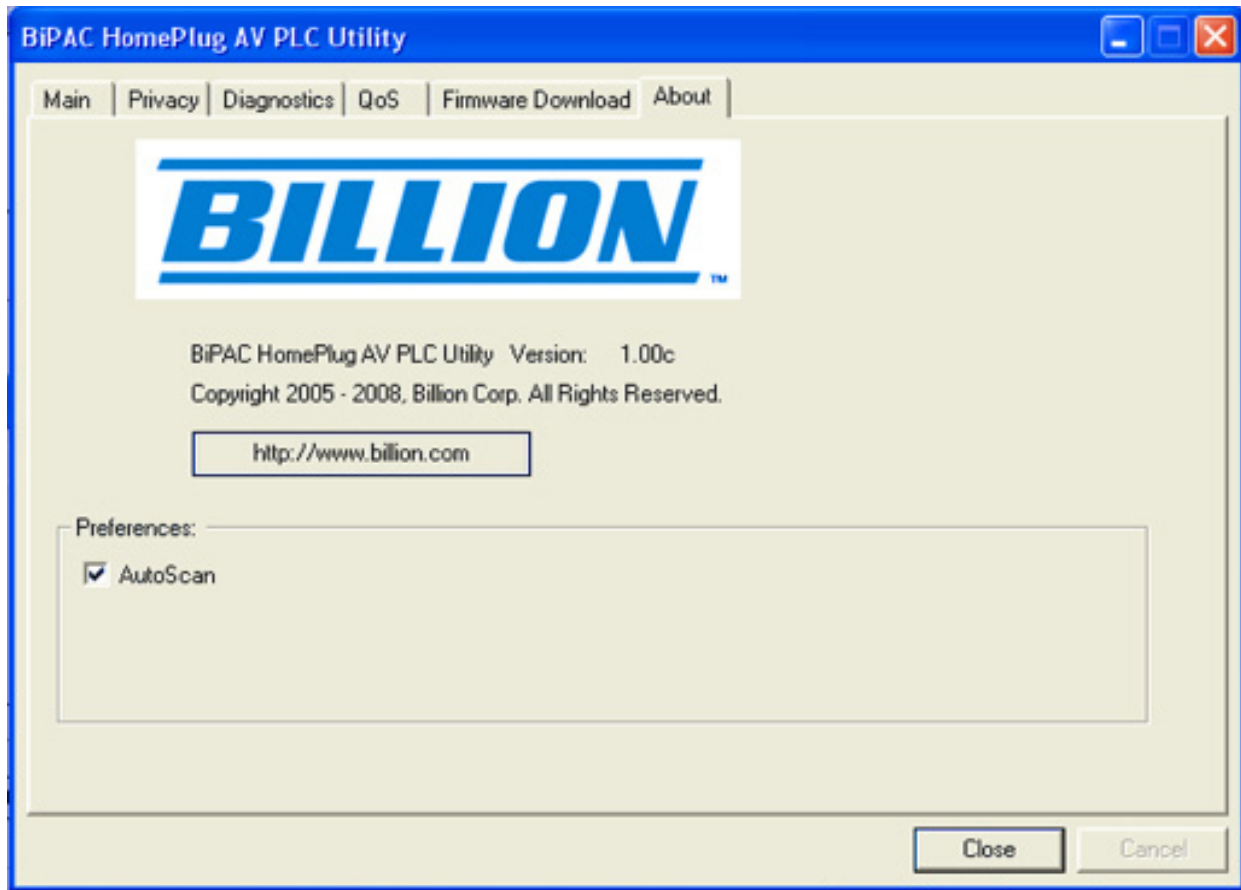
The About screen shows the software version and provides the HTML link to the Billion official website. Clicking on the web address field will open a web browser that link directly to the web site.

Under the Preferences panel, user can check the AutoScan box to turn on the Auto Scan function or check off the box to turn off the Auto Scan function.

Firmware Upgrade

Firmware upgrade allows users to keep their HomePlug Utility application to the most updated feature. This firmware upgrade tool is designed to provide user the most user friendly application that makes firmware upgrade process easy and fast.

Firmware Upgrade Instructions:

1. Locate the Firmware upgrade icon then double click on it to initiate the upgrade process. Then click on the Install button.
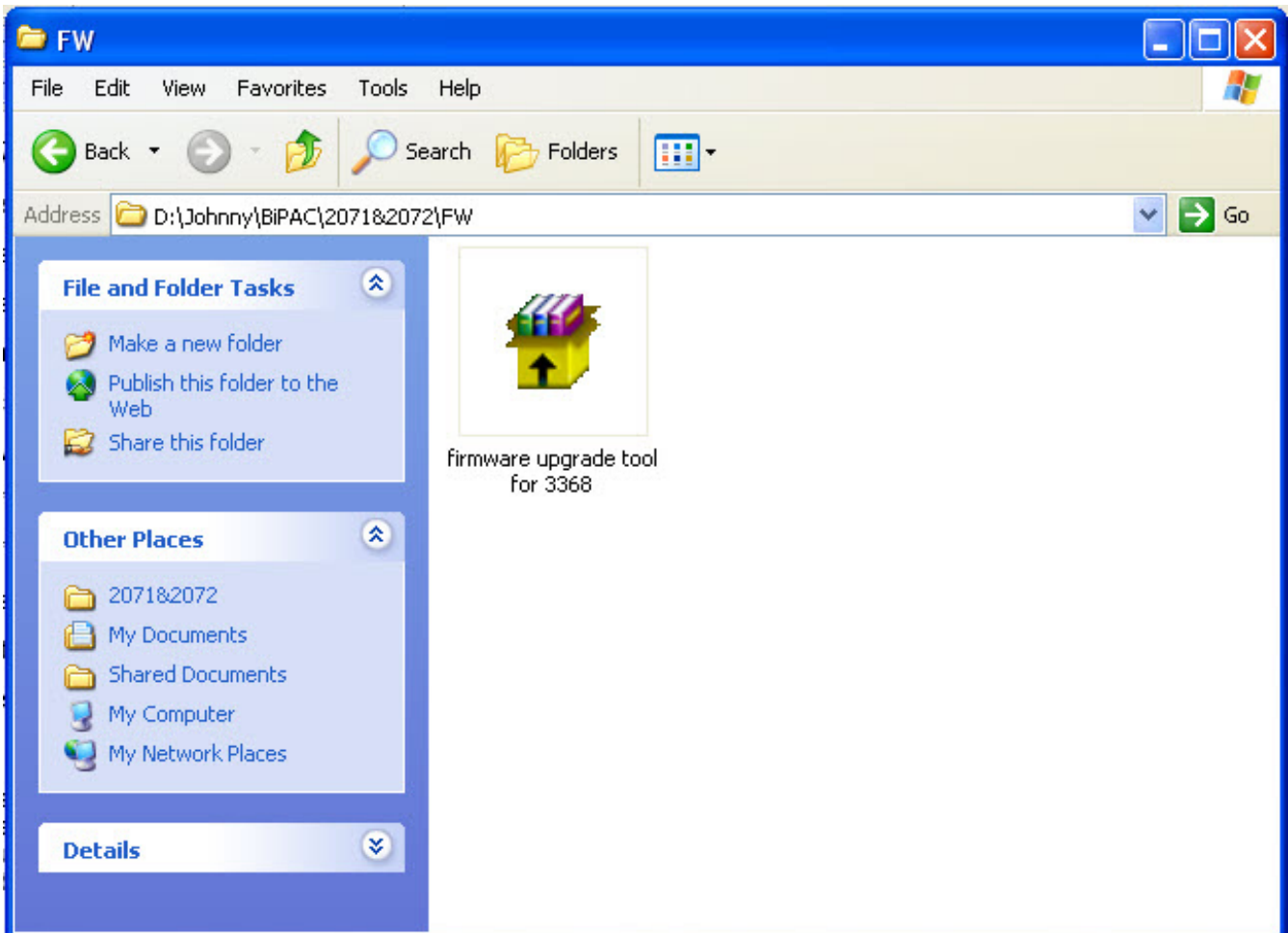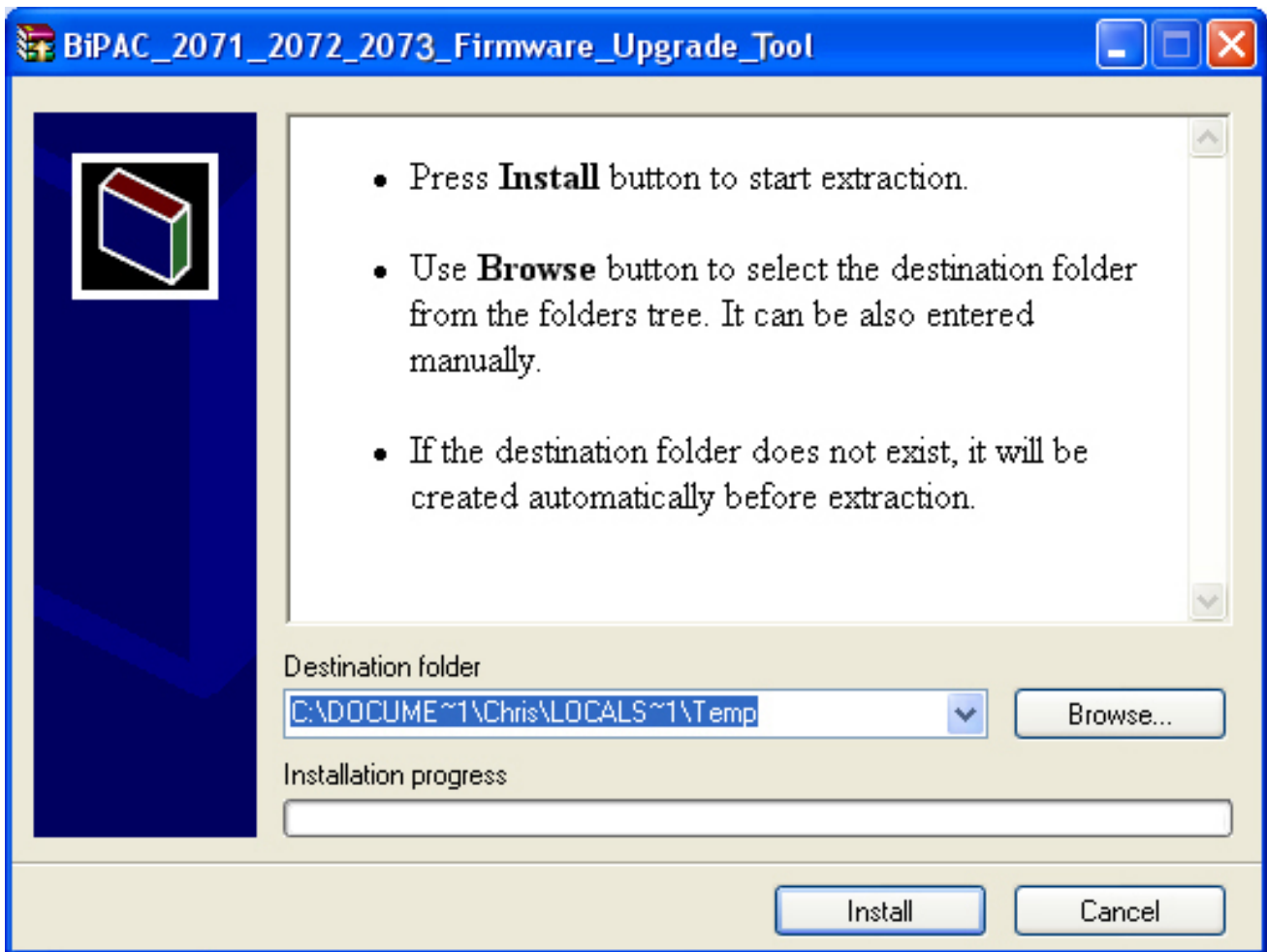
2. When the upgrade application initiates, it will prompt you to install Framework 2.0 if you have not had one installed to your computer.

3. But if you already have Framework 2.0 in your computer. You can directly click on the YES, I Already Have the Framework 2.0 buttton.
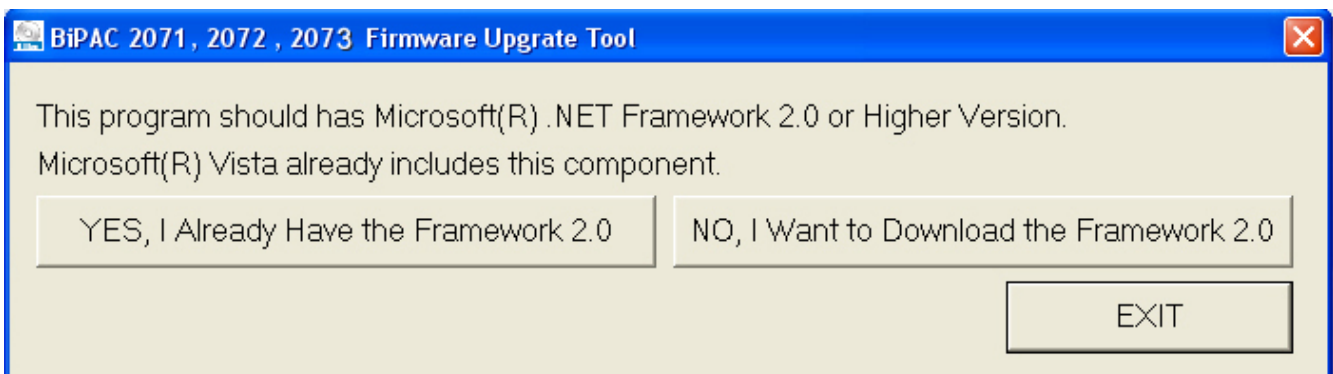

4. When the firmware upgrade application starts, it will automatically scan for available Home-Plug devices in the powerline network. Once detected, a list of both local and remote Home-Plug devices found within a powerline network will be displayed.
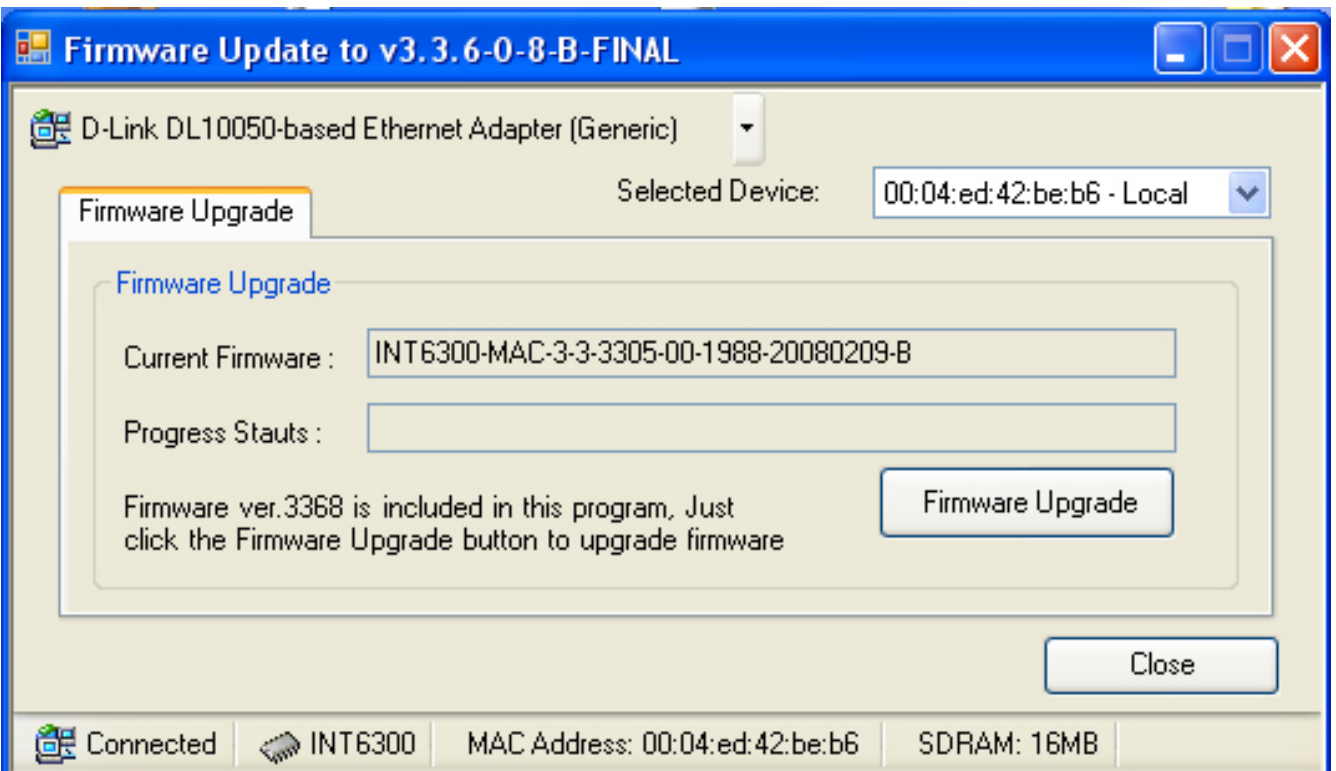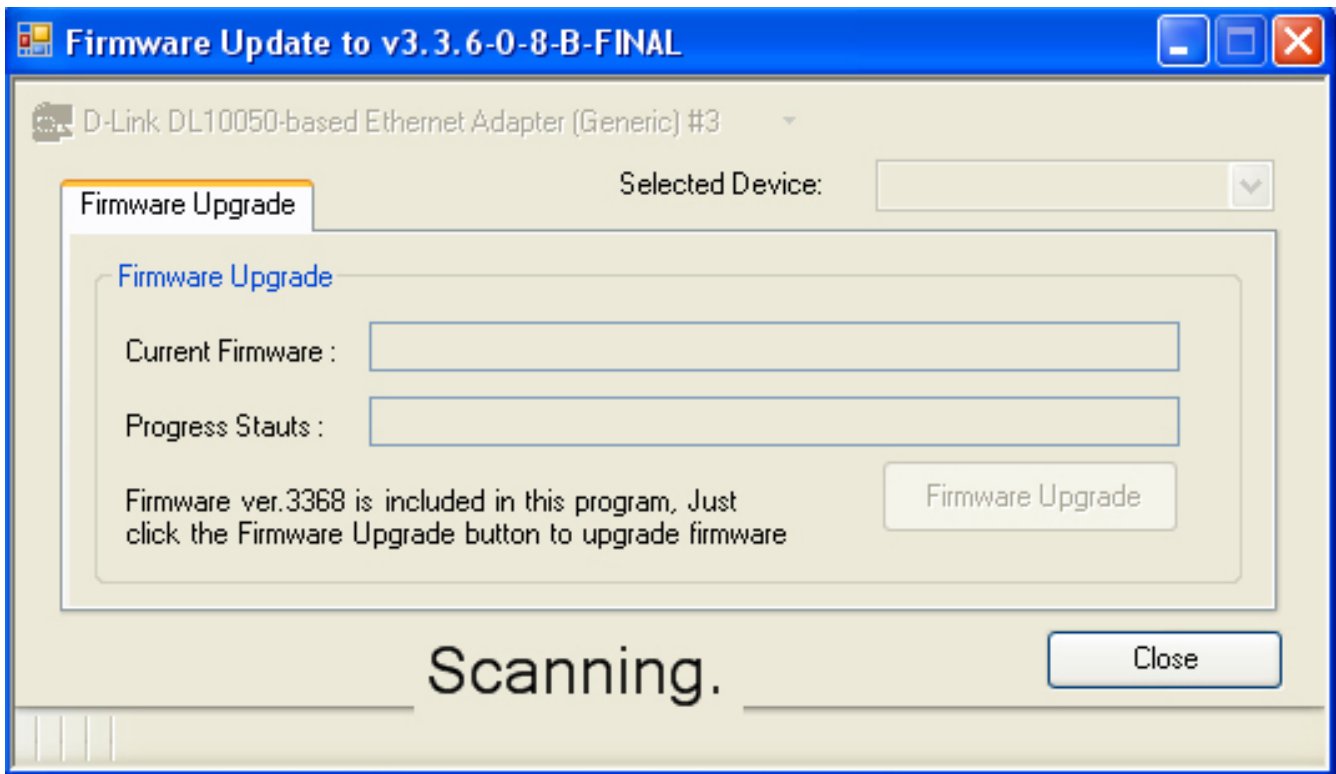
5. If there is no device detected, a warning will pop up to signify for possible disconnection of your device or its cable. Click OK and then reconnect your devices and its cables. You may choose to restart the firmware upgrade application again for auto device detect or you may choose the LAN card that is connected to your HomePlug device manually.
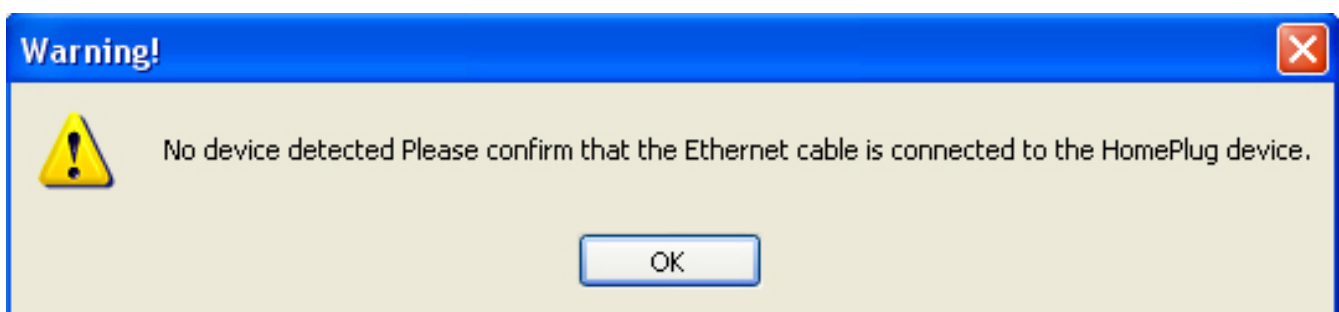
6. To manually select the device to be upgraded, select the LAN card of the powerline network first. Then, select your device from the Selected Device drop down menu.
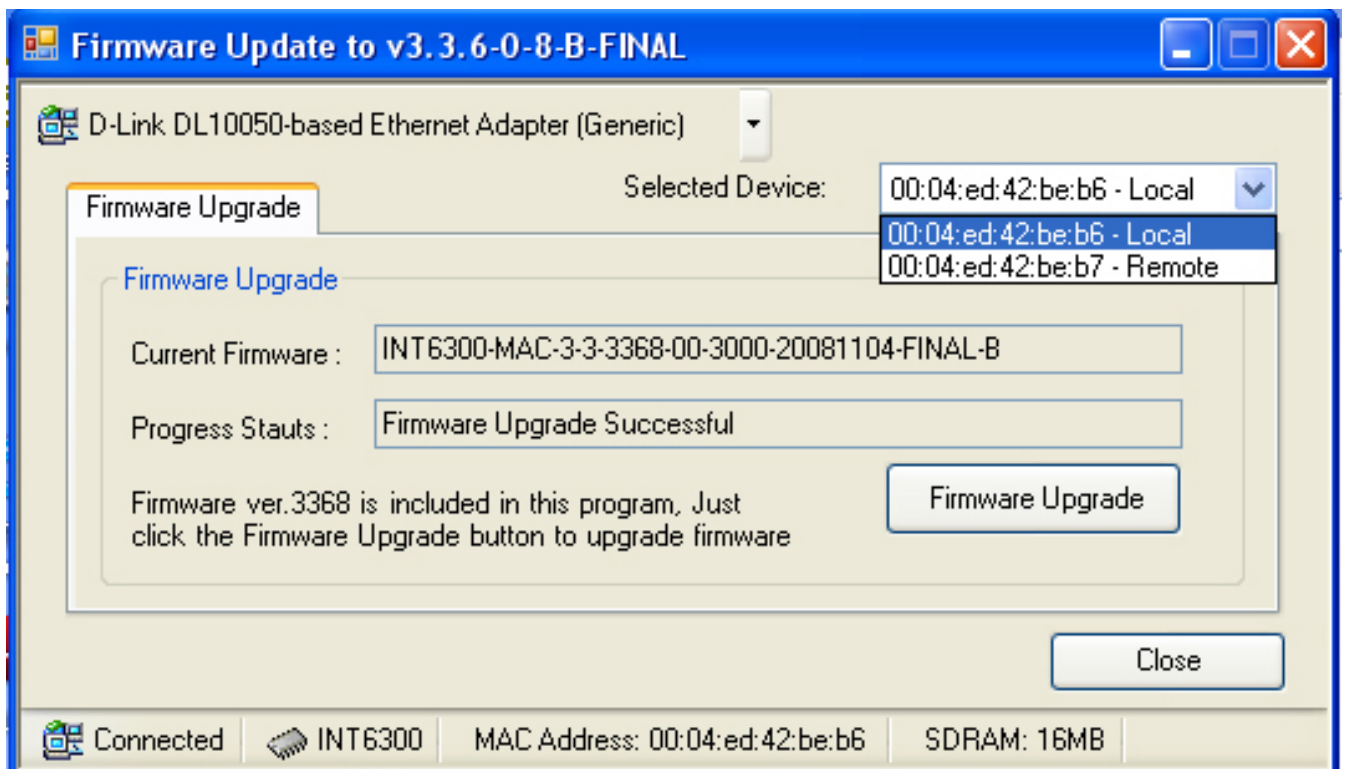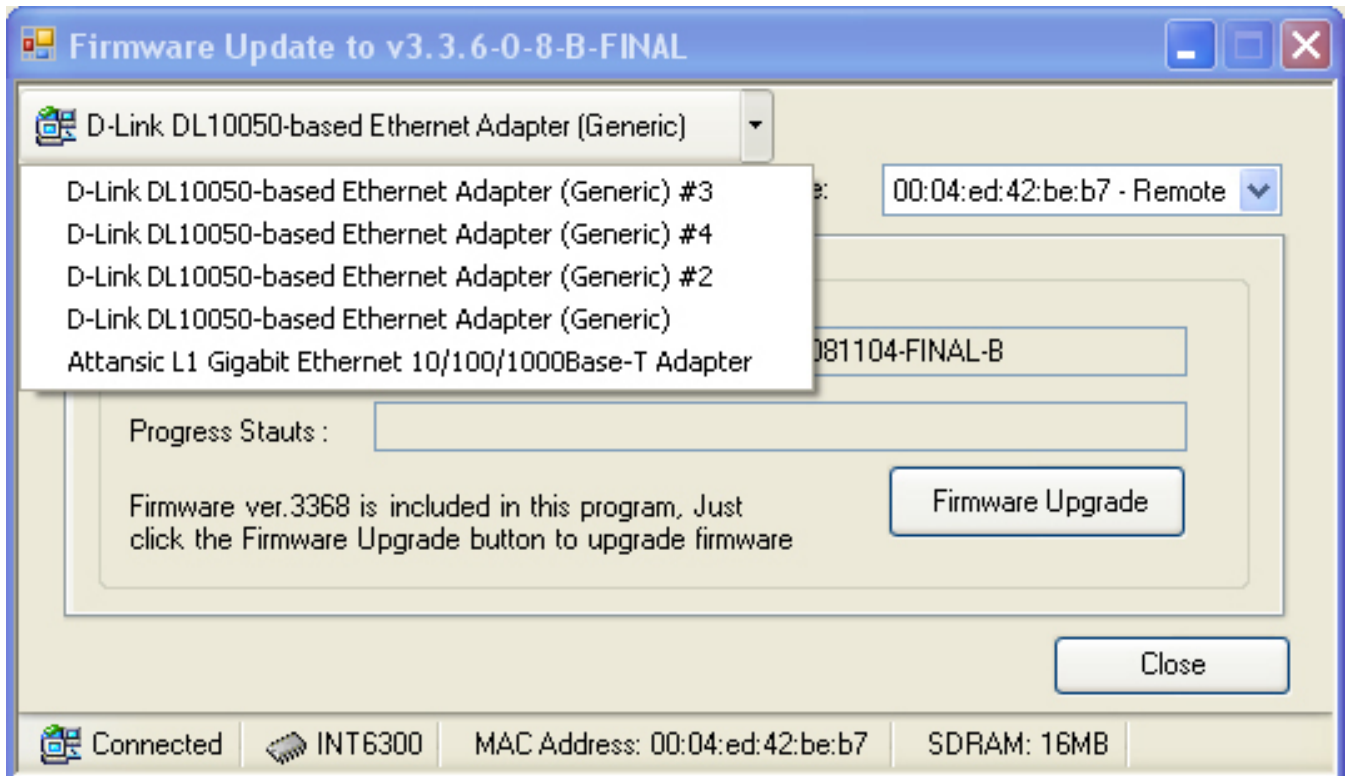
7. When the device has been selected, press the Firmware Upgrade button to start the upgrading process.

8. When upgrading is finished, the new firmware version will be displayed in the Current Firmware column.
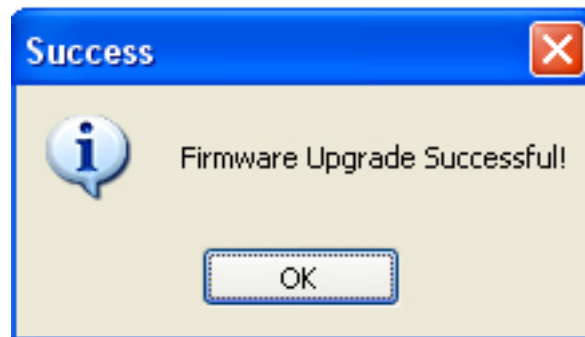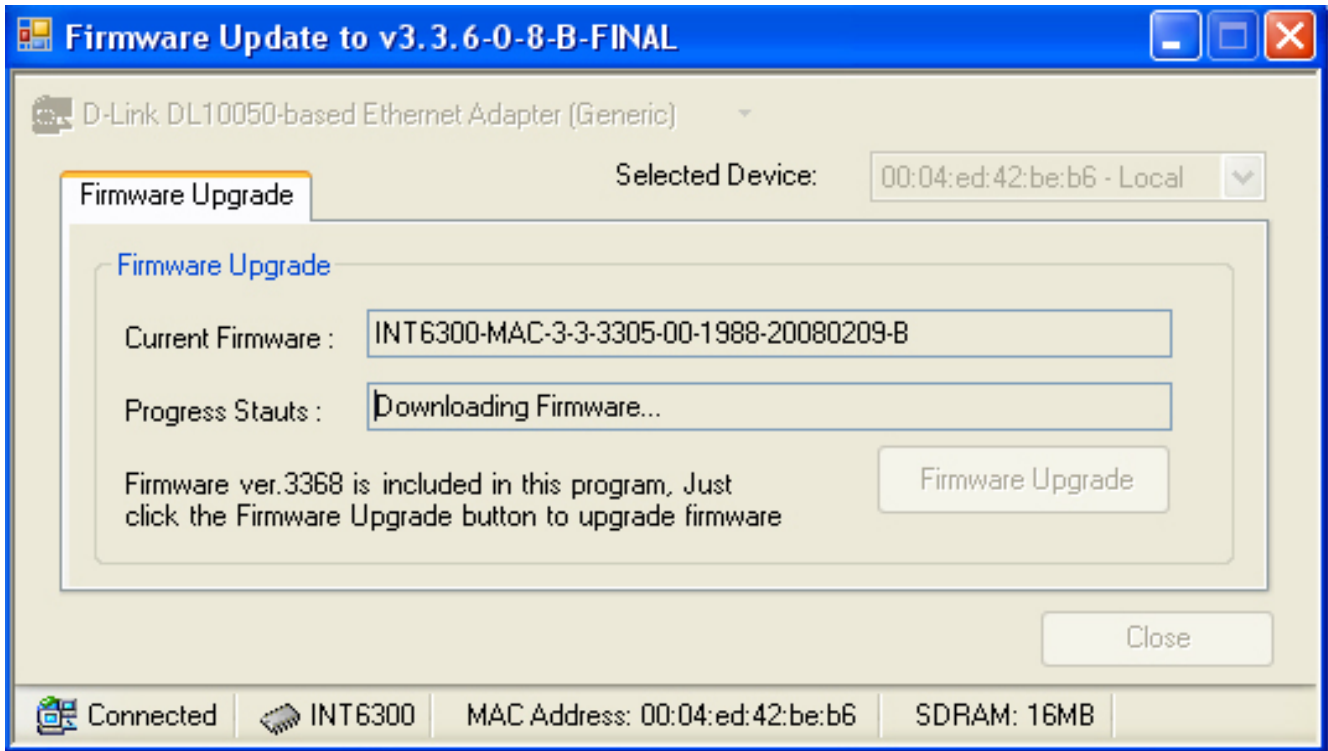
Chapter 5: Troubleshooting

If your router is not functioning properly, please refer to the suggested solutions provided in this chapter. If your problems persist or the suggested solutions do not meet your needs, please kindly contact your service provider or Billion for support.

Problems with the device

Problem	Suggested Solution
My Homeplug device is unable to detect my other HomePlug device.	This may due to the accidental change of the device password. Access the HomePlug AV Utility and select the Privacy Tab. Enter the password "Home-PlugAV" (Case Sensitive) in the blank provided. Then press the "Set to Local Device Only" button. Repeat the same procedure to the other HomePlug device.

Appendix: Product Support & Contact

If you come across any problems please contact the dealer from where you purchased your product.

Contact Billion

Worldwide:

http://www.billion.com

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