PLANET
Networking & Communication

User's Manual

600m AV2 Powerline Ethernet Bridge

►PL-802

www.PLANET.com.tw

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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:

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

FCC Caution

To assure continued compliance, for example, use only shielded interface cables when connecting to computer or peripheral devices. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

WEEE Regulation

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste; they should be collected separately.

Revision

User's Manual of PLANET 600m AV2 Powerline Ethernet Bridge
Model: PL-802
Rev. 1.00 (March, 2015)
Part No. EM-PL-802

Contents

Chapter 1: Product Introduction

1.1 Package Contents

- PL-802 x 1 (PL-802 x 2 for PL-802-KIT)
- RJ45 Cable x 1 (RJ45 Cable x 2 for PL-802-KIT)
- Quick Installation Guide x 1

Note	
	1. If any of the above items are missing, please contact your dealer immediately. 2. Using the power supply that is not the one included in the packet will cause damage and void the warranty for this product.

1.2 Product Description

High-speed Data Transfer Rate

With advanced HomePlug AV2 technology, PLANET PL-802 Powerline Ethernet Bridge provides users with a stable, high-speed data transfer rate of up to 600Mbps over a powerline length of up to 300 meters. Therefore, the PL-802 can transmit multiple HD streams and even Full HD movies to every room, making it a great choice for easily building a multimedia entertainment network.

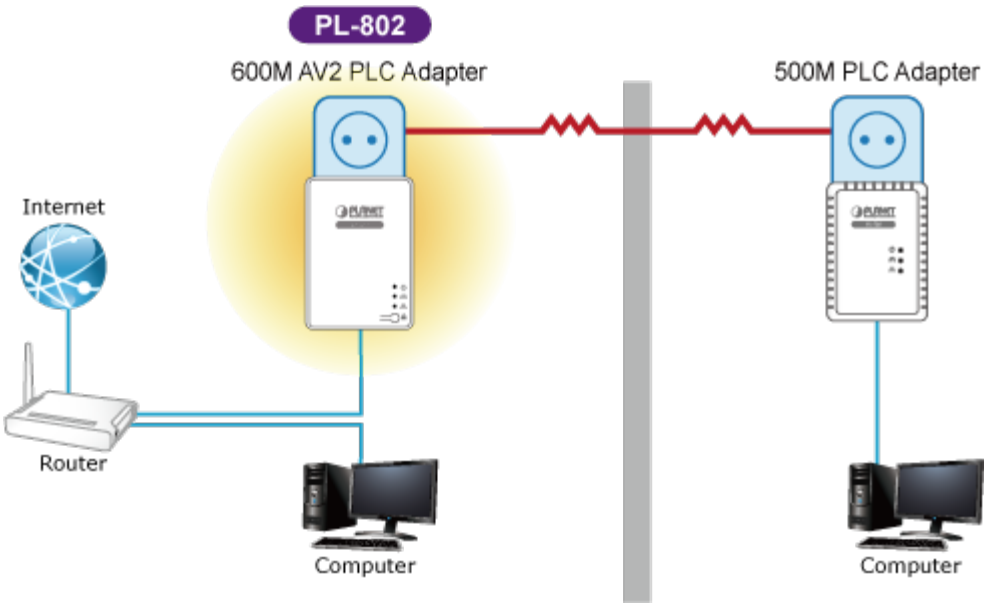
High Throughput Performance for Multi-stream Networking

PLANET continues to innovate on the success of powerline AV to deliver even better performance at higher speeds. The PL-802 compliant with Homeplug AV2 specification was released for next-generation powerline networking. It's now faster than ever to handle the most demanding online

services and applications. The convergence of voice, video and data within a variety of multi-function devices and new applications, merged with Smart Home applications or the Internet of Things (IoT), is driving the need for increased high throughput connectivity throughout the home while assuring a high level of reliability and sustained performance.

Full Interoperability with Other Powerline Ethernet Bridges

The AV2 powerline maintains full interoperability with other PLANET connected home technologies in order to facilitate a simple migration to next-generation powerline certified products. This is a key benefit, as the PL-802 enables users to connect with the HomePlug certified consumer electronics or networking products for internet access in homes without hassle.



Securing Network Connection with the Touch of a Button

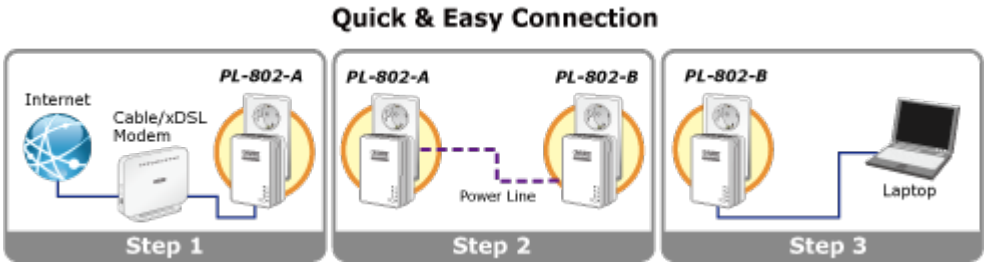
Simply by pressing the button on the PL-802, users can easily set up a hassle-free, secure Powerline network within minutes. It provides 128-bit AES encryption for network security and data protection.

***128-bit AES** Encryption for*
Network Security and Data Protection

Getting Started is as Easy as 1-2-3

1. Connect one Powerline Ethernet Bridge to your xDSL or cable modem's Ethernet port and plug it into the nearest power socket.
2. Plug in the second Powerline Ethernet Bridge in your room or office.
3. Connect the PC/Laptop to the Powerline Ethernet Bridge via the network cable.

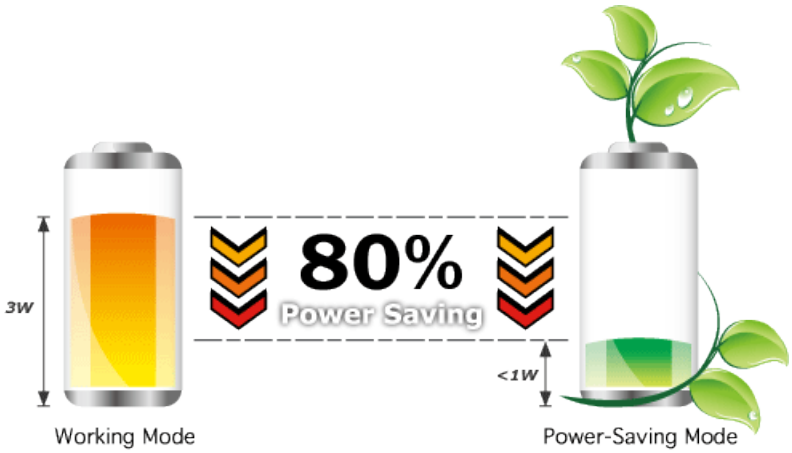
Users immediately have access to the Internet through the PC or laptop.



Reducing Power Consumption

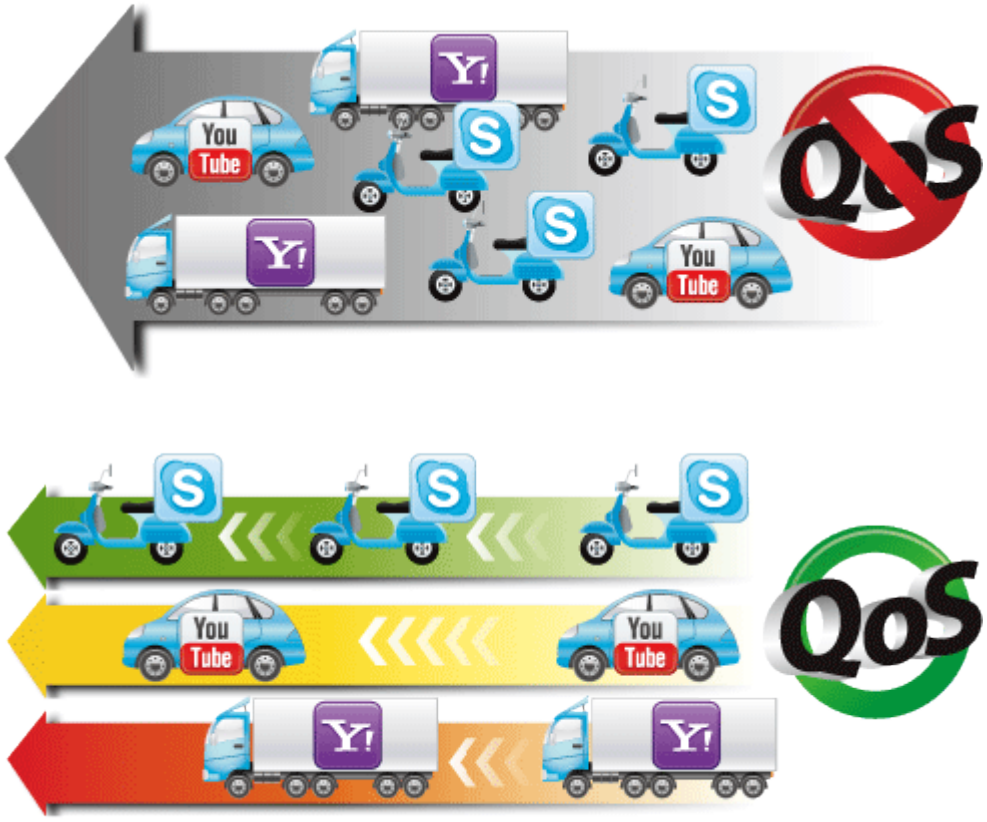
The PL-802 consumes less power when compared with the existing Powerline Ethernet Adapters. Moreover, when there is no Ethernet link, the PL-802 will automatically switch to the "Power-saving" mode that would reduce energy wasting by over 80%* when compared with the adapters without this feature.

*Actual data will vary depending on the network conditions and environmental factors.



Efficient Bandwidth Management by QoS (Quality of Service)

Quality of Service (QoS) is provided by the PL-802 enabling a network to provide better service to selected network traffic over various technologies.



Quality of Service(QoS)

Ensure the quality of bandwidth sensitive applications

1.3 Product Features

➢ **Complying with IEEE LAN Standards & HomePlug AV2**
- Equipped with 10/100Mbps RJ45 ports for LAN / WAN, and auto MDI / MDI-X
  Designed for high-definition multimedia streaming
- Data rate up to 600Mbps and distance up to 300 meters over existing electrical wiring
- IEEE 802.3, IEEE 802.3u, IEEE 1901 and HomePlug AV2 compliant
- Backward compatible with HomePlug AV2 (300Mbps) including PLANET Powerline products
- Equipped with 10/100Mbps RJ45 ports for LAN and WAN

➢ **Secure Network Connection**
- Plug and Play can be installed in minutes; convert any power socket into a wired connection point
- Simple push-button setup with sophisticated data encryption, 128-bit AES encryption for network protection enhancement

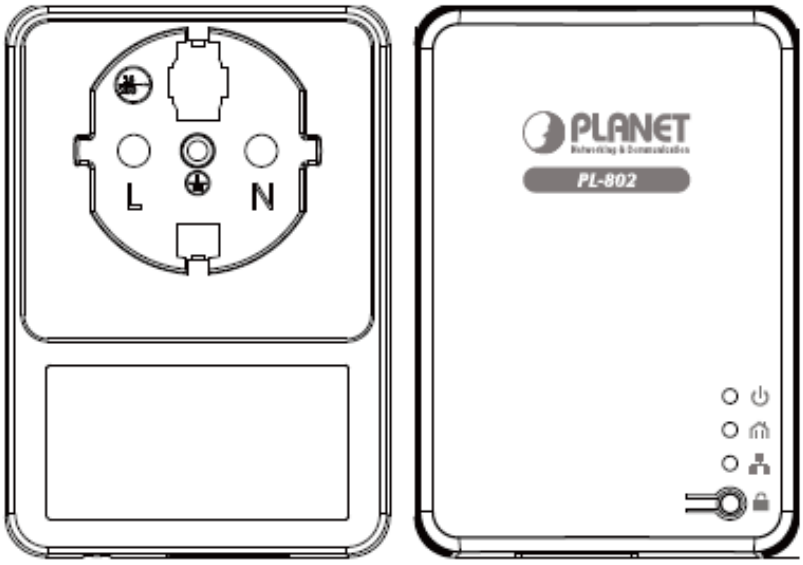
➢ **Easy Installation & Management**
- Creates a high-speed network connection throughout your home without the mess of cables
- Easy-to-use utility for powerline network management
- Up to 7 slaves with 1 master, 8 devices in total and max. 8 bridged devices per station
- Green technology applied to help conserve energy when no data link is detected
- TDMA and priority-based CSMA/CA channel access schemes maximize efficiency and throughput

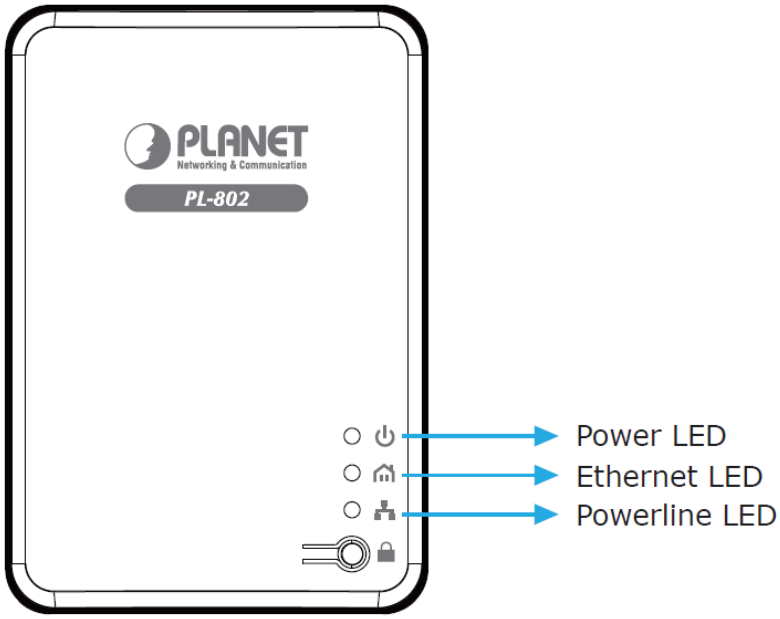
1.4 Product Specifications

Model	PL-802 600m AV2 Powerline Ethernet Bridge
Hardware Specifications	
Network Interface	One RJ45 port (10/100BASE-TX Ethernet)
Cabling	Cat. 5 UTP cable
LED	Power: On/Off Powerline Activity: Red/Orange/Green/Off Ethernet Link/Activity: Solid/Blinking/Off
Button	One Security/Reset button
Standards Conformance	
Computer Interface	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX
Standards	IEEE 1901/HomePlug AV2
Security	128-bit AES link encryption with key management
Data PHY Rate	600Mbps over powerline and 10/100Mbps over Ethernet
Distance	AC wire: 300 meters
Modulation	OFDM (QAM 8/16/64/256/1024, QPSK, BPSK, ROBO)

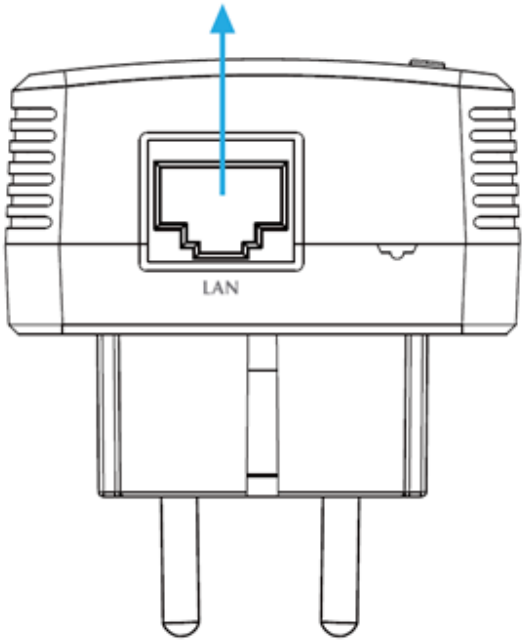
Frequency Band	2~68 MHz (With Mask)
Access Methods	TDMA and priority-based CSMA/CA channel access
Operation Range	Estimated range of 300 meters in wall powerlines
Software Utility	Device detect/diagnostic, Windows2000, XP, Vista, Windows 7, Windows 8 and Windows 10
Environment Specifications	
Operating	Temperature: 0~45 degrees C Relative Humidity:10~90% (non-condensing)
Storage	Temperature: -20~60 degrees C Relative Humidity: 5~90% (non-condensing)
Power Supply	100~240V AC, 50~60Hz
Housing Dimensions (W x D x H)	78 x 56 x 29 mm
Weight	96 g
Emission	CE

1.5 Physical Description





10/100BASE-TX
Ethernet RJ45 Port



➢ **LED Definition**

LED	Status	Description
Power	Green	Steady on to indicate the PL-802 is connected to the power outlet.
	Blinking	Standby mode.
	Off	Power off.

Powerline	**Green**	The quality of signal is excellent with optimal network.
	Orange	The quality of signal is normal with standard network.
	Red	The quality of signal is weak which causes slower network.
	Blinking Green	The PL-802 is actively sending or receiving data with the other powerline.
	Off	This Powerline is not connected with the other one.
Ethernet	**Green**	Ethernet Link detected.
	Blinking	The PL-802 is actively sending or receiving data over the Ethernet port.
	Off	Ethernet Link not active.

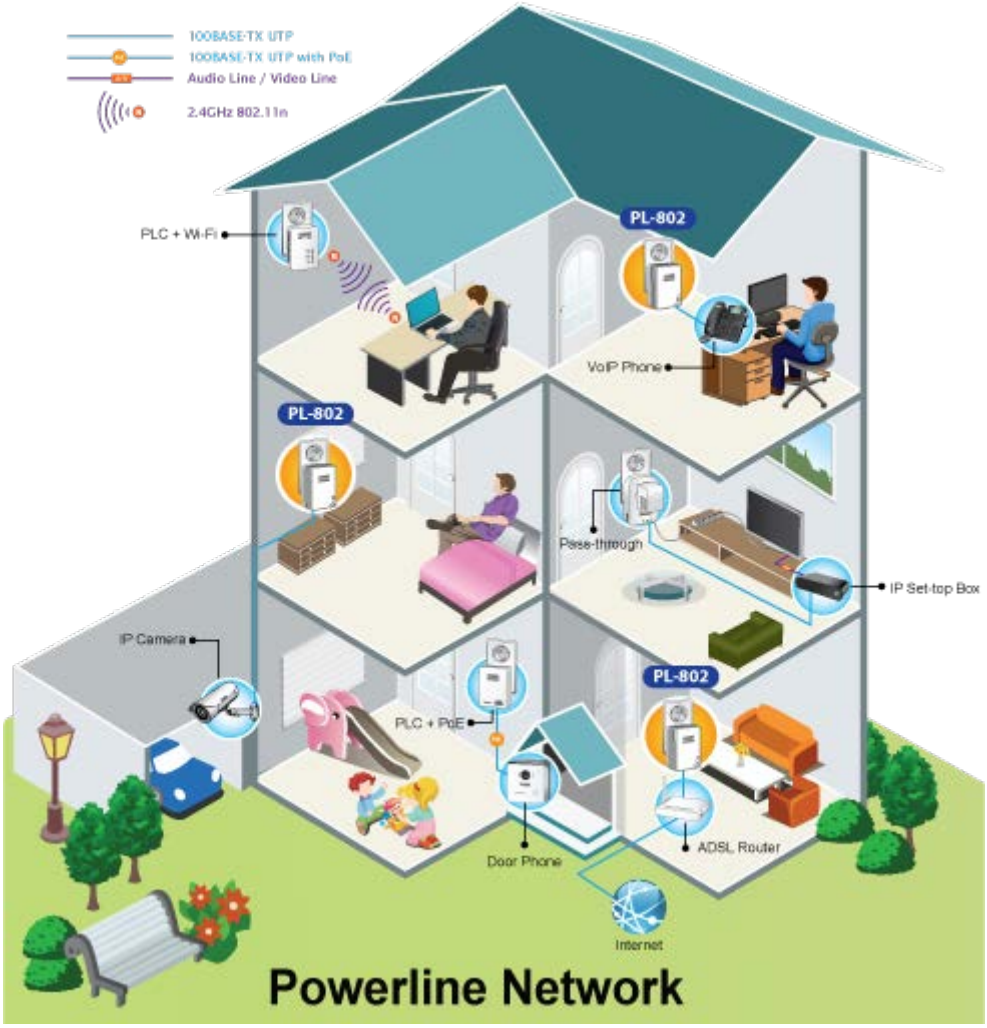
➢ **Button Definition**

Button	Description	
Security Button	**Reset**	Hold the **Security** button down for **10 seconds** to reset to default setting. All of the LED lights will go out in 1 second and then light up again.
	Pair	Press the **Security** button for **1~3 seconds** to join another powerline network. The power LED will flash to search the other powerline.

1.6 Wire Diagram

High-speed Ethernet Connection via Home's Power Supply

PLANET provides several types of powerline products to meet various demands on Internet access sharing at home. As illustrated, users may connect an IP STB to the PL-802, or connect a PC to the PL-802 in the house freely. With the PLANET powerline products applied, no messy network cables and additional switches are required at home and users can entirely enjoy home broadband network from now on.


100BASE-TX UTP
100BASE-TX UTP with PoE
Audio Line / Video Line
2.4GHz 802.11n
PLC + Wi-Fi
PL-802
VoIP Phone
PL-802
Pass-through
IP Set-top Box
IP Camera
PL-802
PLC + PoE
Door Phone
ADSL Router
Internet
Powerline Network

Chapter 2: Initial Utility Installation

2.1 Overview

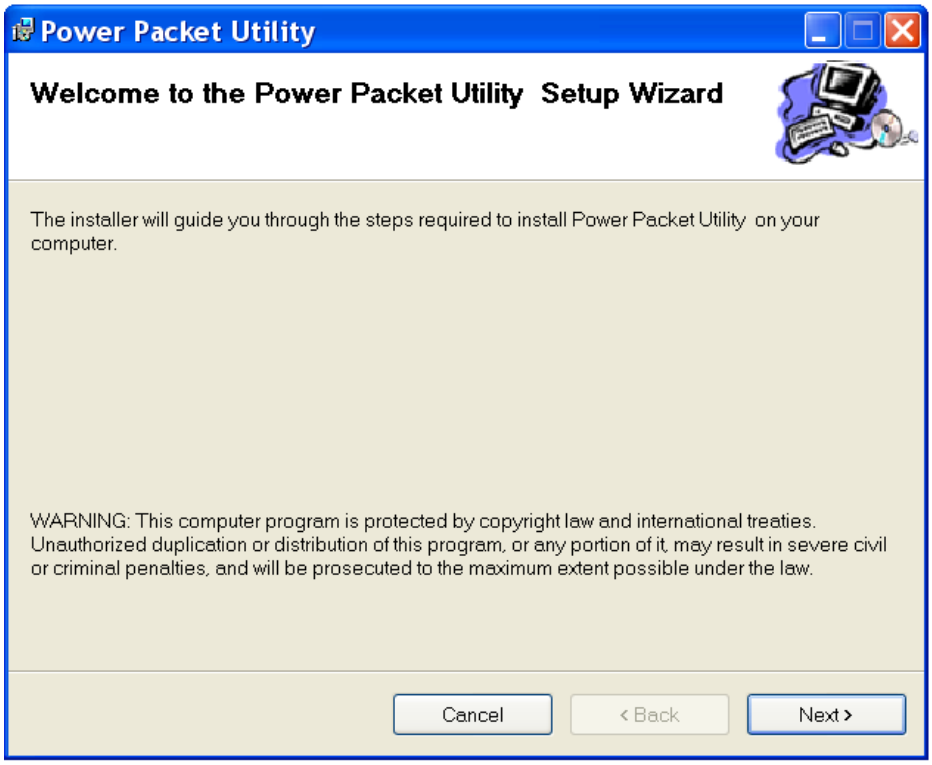
The installation of 500m Ethernet Bridge will only take minutes. No need to set up long wires throughout the house; just simply install the utility, and physically plug the unit into the wall outlet and then connect RJ45 to the computer. Users can select to adjust its security functions and the platform of the network after the installation. For further assistance, please read our Frequently Asked Questions section in our Web site.

2.2 Running the InstallShield Wizard

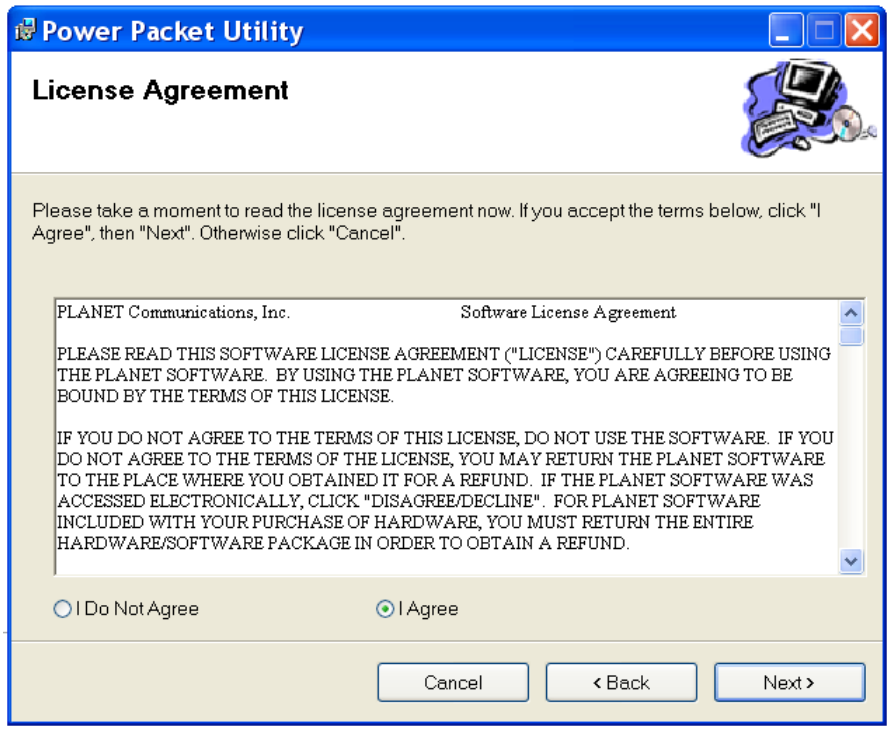
PLANET Power Packet Utility is a software utility used to search and make connecting on a powerline network quick and simple.

The installation procedure for the Power Packet Utility will vary depending on which operating system you are using on your computer. The following procedure is for installation under Windows 7. Installation of other operating systems is similar.

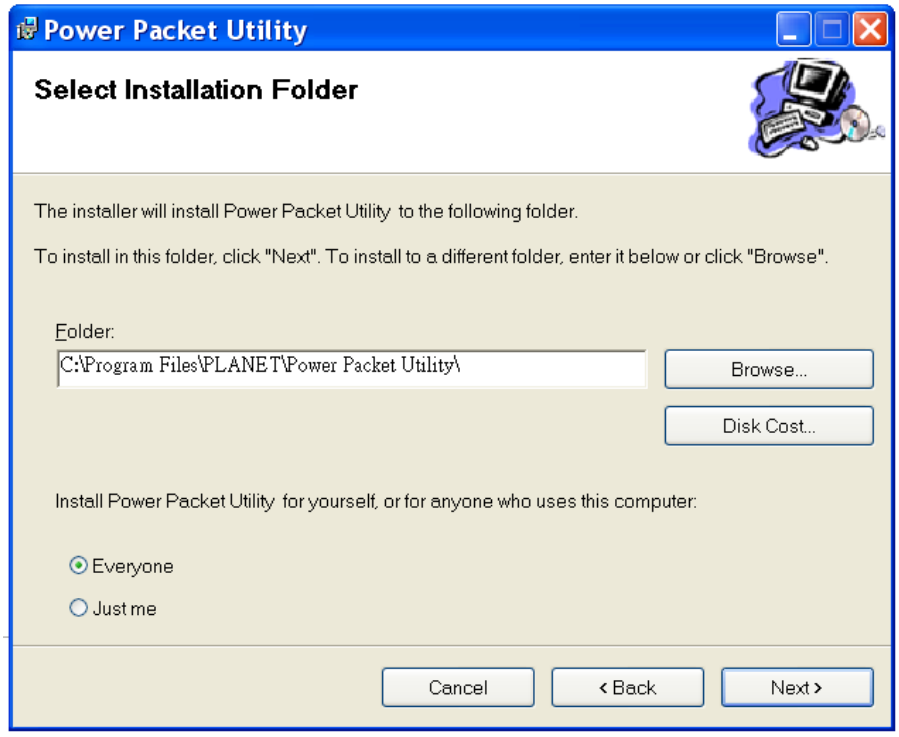
Once the software is loaded, it will display a dialog as shown below, and please click on '**Next**' to continue the installation.



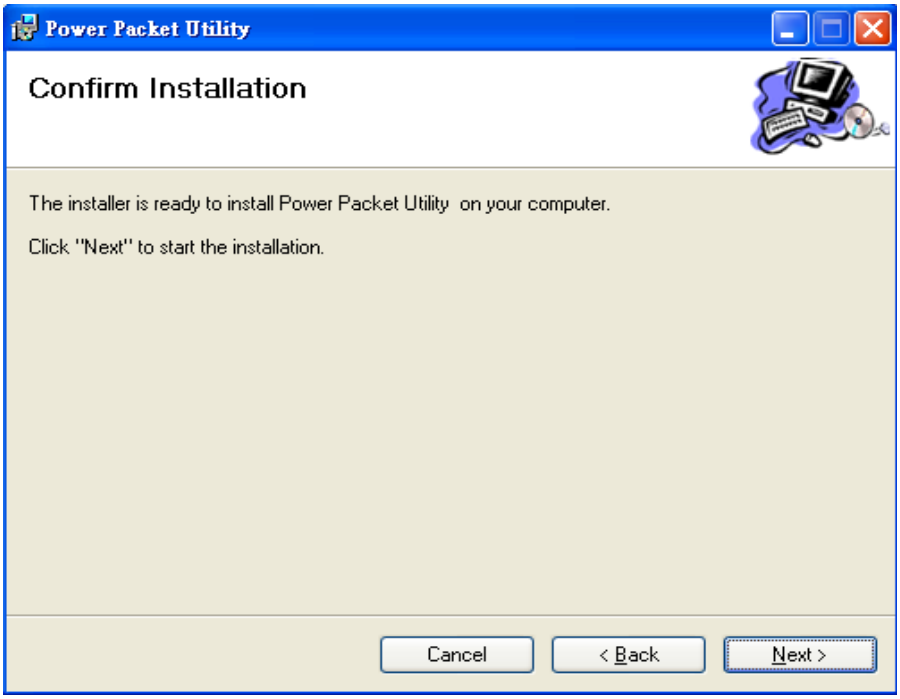
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree" and then "**Next**". Otherwise click "Cancel".



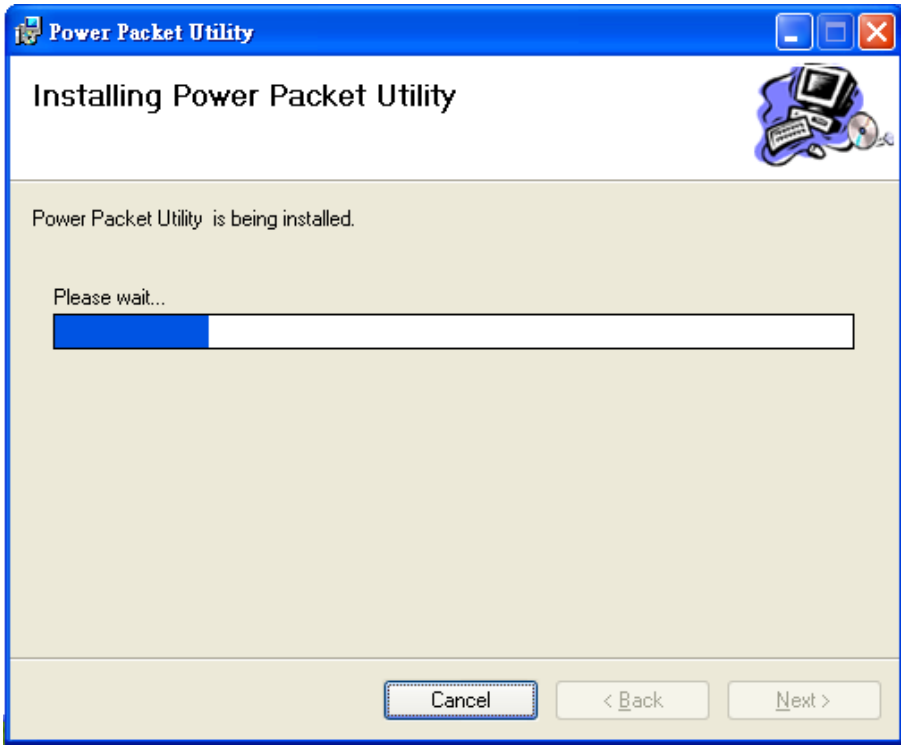
This section allows you to change the default directory where the program is installed. Or go '**Back**'. If you don't want to change it, click on **Next** to continue the installation.



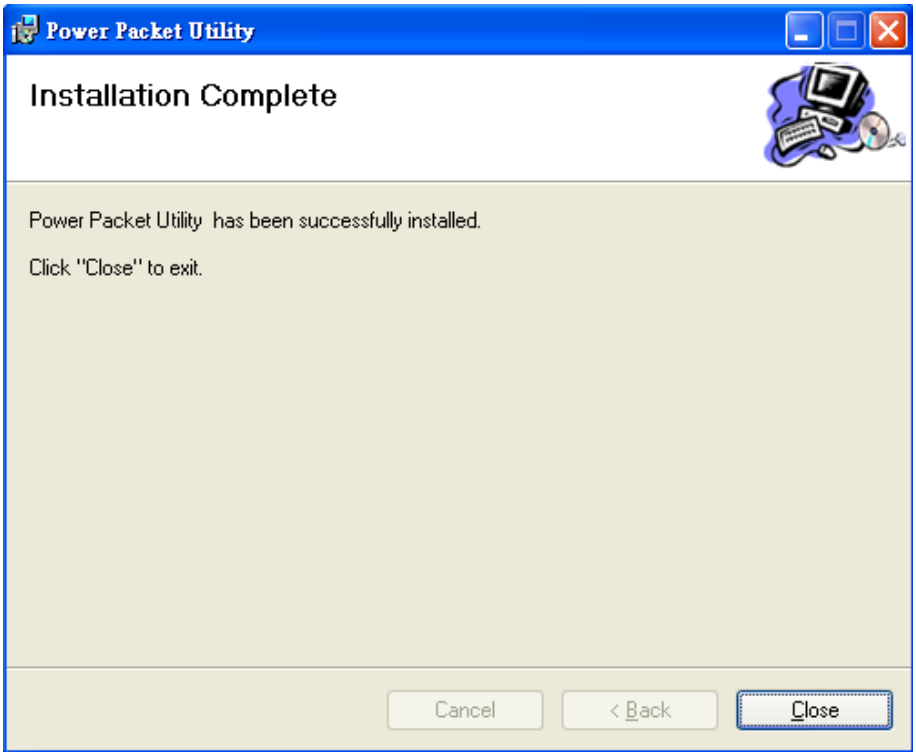
Please click on '**Next**' to confirm the installation.



Powerline Utility is being installed. Please wait for installation.



This screen shows that the installation has been completed successfully. Click on **Close** to exit the wizard.



Chapter 3: Configuration

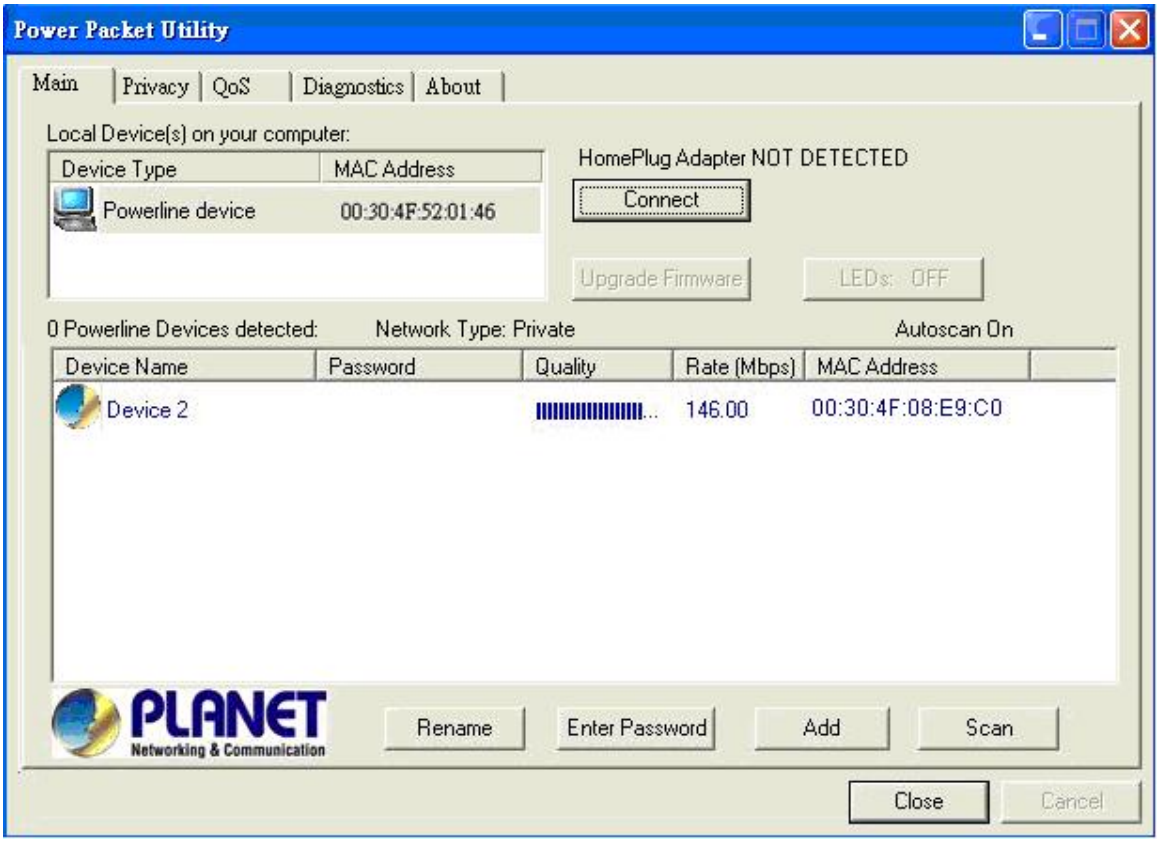
3.1 Overview

The PL-802 uses 128-bit AES encryption to block outside access. The key is set by using the Configuration Utility. By default, the protection is enabled; however, it is recommended to change the default network password. All your Powerline devices must use the same network password in order to be connected together.

3.2 Main Screen

Part 1: Scanning a Local Powerline Device

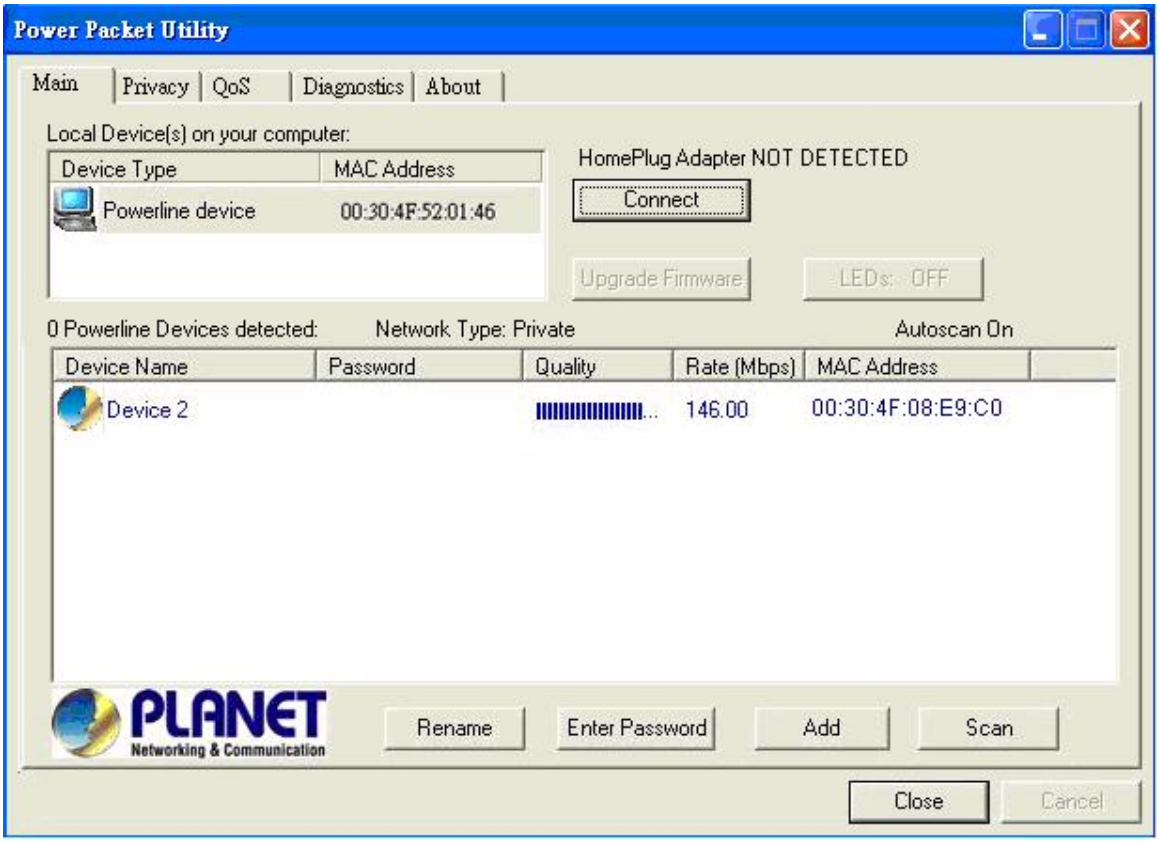
Double-click the **PowerPacket Utility** icon on your desktop and utility screen will show up below:



The main tab shows the Powerline units that are connected to the current computer and other Powerline devices on the home network, and it will also display Mac Address of each device.

Note	If you do not see any unit in the device status except for the Powerline device, which does exist, try to unplug all devices and plug them back again. Make sure the cable is the right type and working correctly. If all seem to be correct, and you still receive nothing in the Device window, try rebooting your computer.

■ Part 2: Detecting the Network Powerline Device



The main tab shows all the other Powerline units on your home network. It will represent them by MAC address, and will also show the available bandwidth to each unit (Units farther away from another Powerline device might have a lower Data Rate). If you add or remove units from your home network, click the "**Scan**" button to re-scan the network, and refresh with any changes.

Note	Only units with the same **Network Password** will be shown (Password is case-sensitive.).

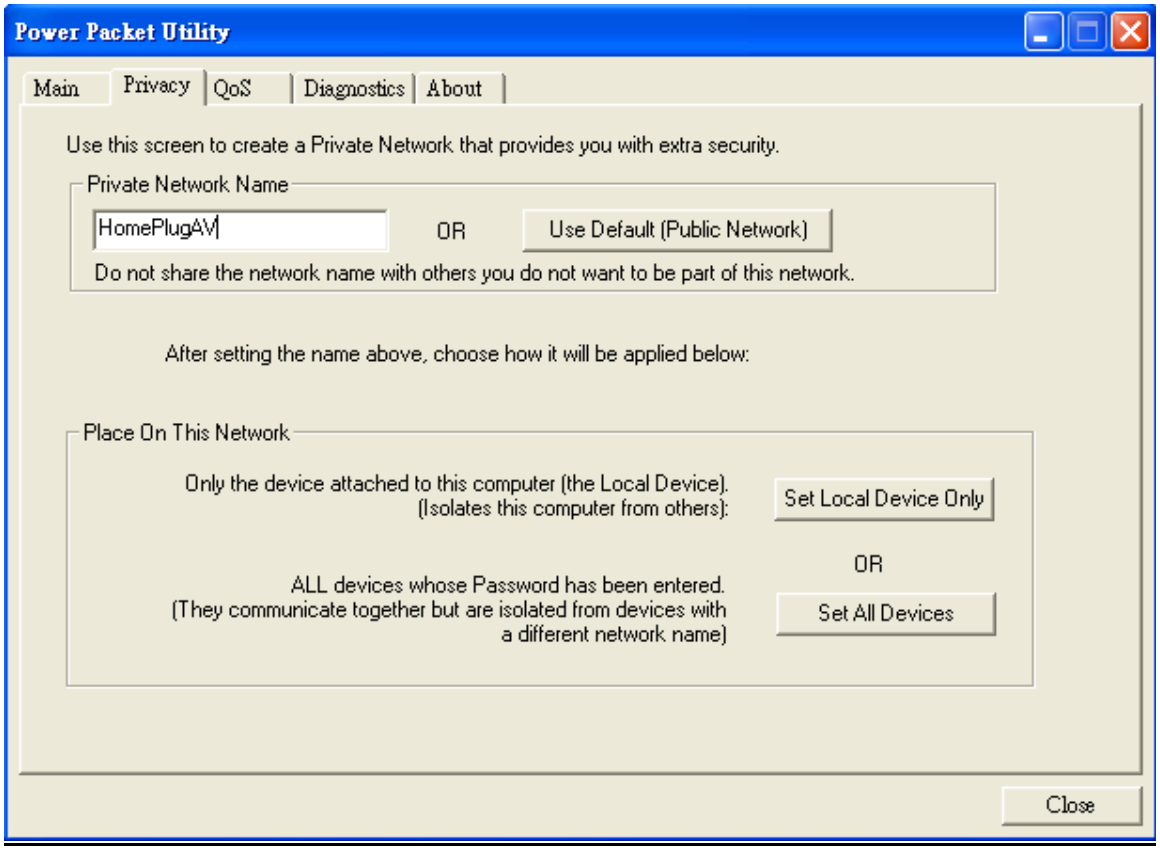
Note	If a unit shows MAC address of all 0's, this unit might not have a solid connection, or might not connect at all.

Note	If there are units in the home network, but nothing displays in this Network scan, try to unplug all devices, and plug them back again (Only do this with the units that you do not view in the network screen; you don't have to do this with all units.).

If the problem persists, try to move the unit closer to this current unit (preferably plug it in an adjacent wall socket). If the problem still persists and that unit is still not shown on the network, then the unit might be defective. Contact your technical support. Distance might be the only issue.

3.3 Privacy

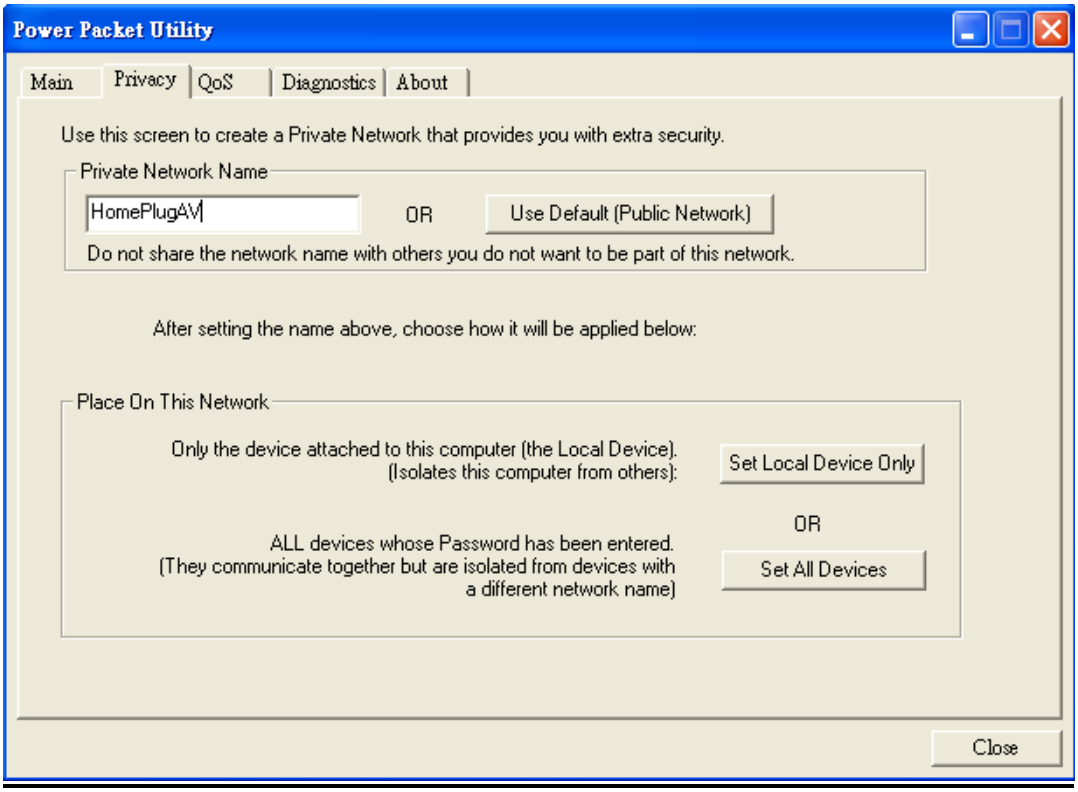
■ Setting Up Security on a Local Powerline Device



The **Privacy** tab will allow you to change the **Network Password** to the unit that is currently connected to this computer. This network password encrypts all data that is sent from this unit using 128-bit data encryption standard (AES).

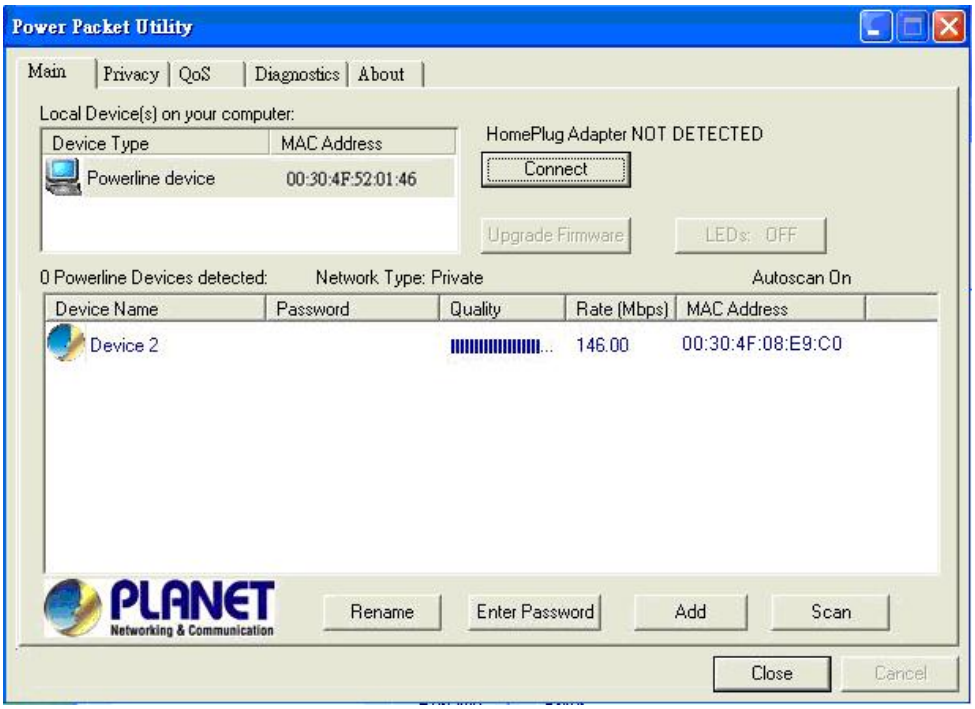
Note	Every unit on your home network MUST have the same **Network Password** for connectivity to be established throughout your home. The default network password is "**HomePlugAV**".

■ Setting Up Security on a Network Powerline Device



The **Privacy** tab will allow users to use one primary computer to control the **Network Password** of all units on the home network.

You will have to go back to the **Main Tab** first and then find the DEK (Device Encryption Key) Key located on the bottom of each device. Enter this Key into the **Device Password** area. Click **Add**. This Device Key will then appear in the bottom window. Add all the DEK Keys for each unit in your house. You can now go back to the **Main Tab** and change the password remotely from one computer. This will allow you to change the password from one computer, instead of changing the password individually.

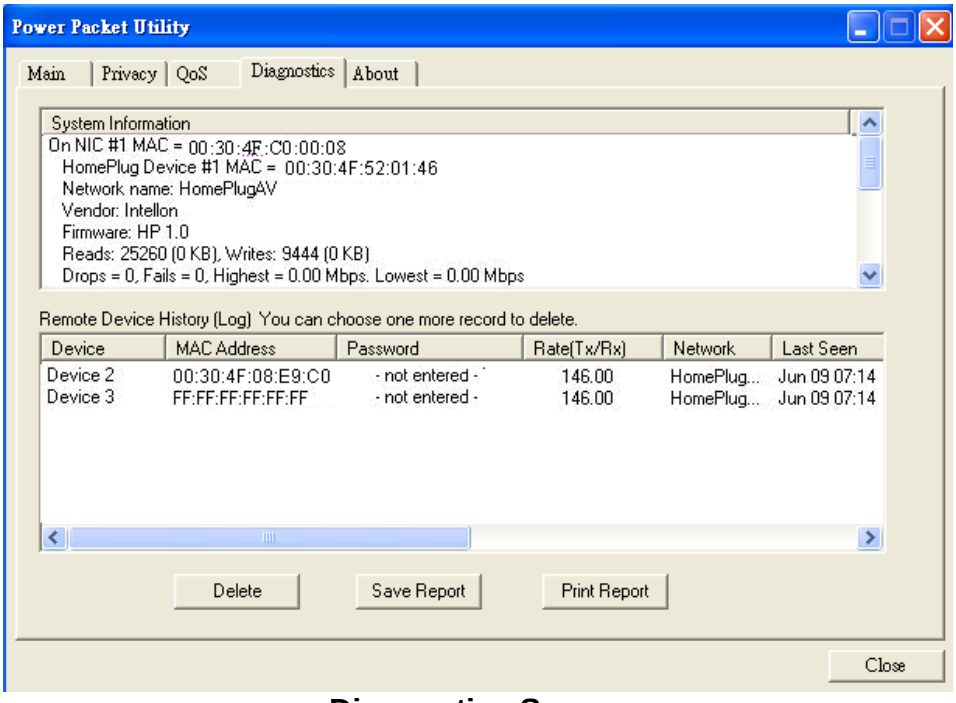


Note

The DEK is unique for EACH Powerline device. To use this, you will need to input the DEK for each unit.

3.4 Diagnostics

The Diagnostics screen shows system information and a history of all devices seen.



Diagnostics Screen

The upper panel shows technical data concerning software and hardware on the host computer used to communicate over HomePlug. It includes the following：

- Operating System Type/Version
- Host Network Name
- User Name
- MAC Address of all NICs (network interface card)
- Chipset manufacturer name (Turbo Only devices)
- Firmware Version (Turbo Only devices)

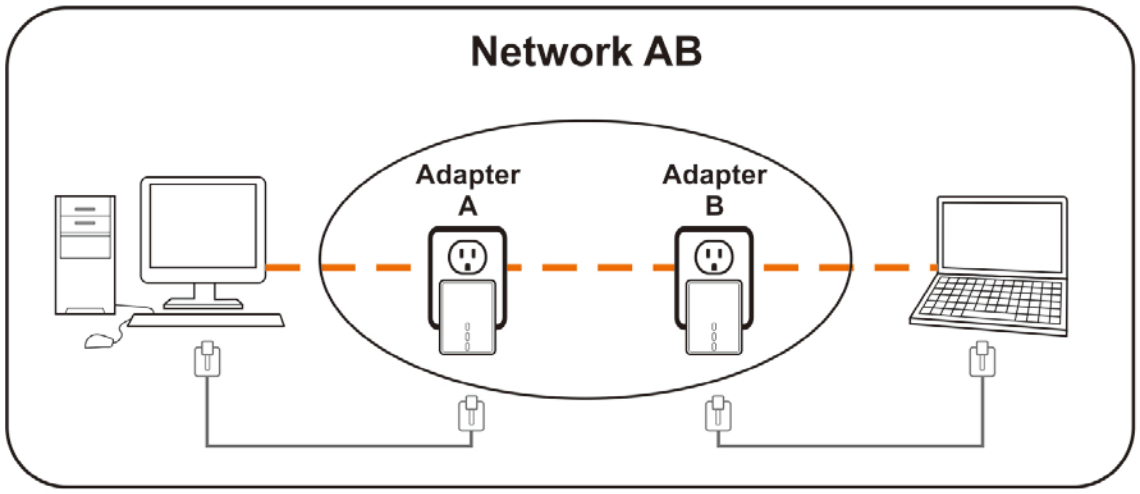
The lower panel contains a history of all remote devices.
Devices are shown here regardless of whether or not they are on the same logical network.

- Device Name
- MAC Address
- Password
- Rate(Tx/Rx)
- Network
- Last Seen
- Last Known Network
- Chipset manufacturer name (Turbo Only devices)
- Date device last scanned

3.5 Security Button

This section describes how to use the Security button for configuration in the following situations:

- **Establishing a New Security Network (Network AB)**



The procedure is as follows:

Step 1 Press and hold the Security button on Bridge A for no more than 10 seconds. It must be released after 10 seconds. Once released, the Power light will flash. The password to Bridge A has just been erased and random security key has been generated. It must now be linked to your network to adopt the new network security key.

Step 2 Press and hold the Security button on Bridge B for 10 seconds and release it when the Power light flashes. The password to Bridge B has just been erased and random security key has been generated. It must now be linked to your network to adopt the new network security key.

Step 3 Currently, Bridge A and Bridge B are not networked.

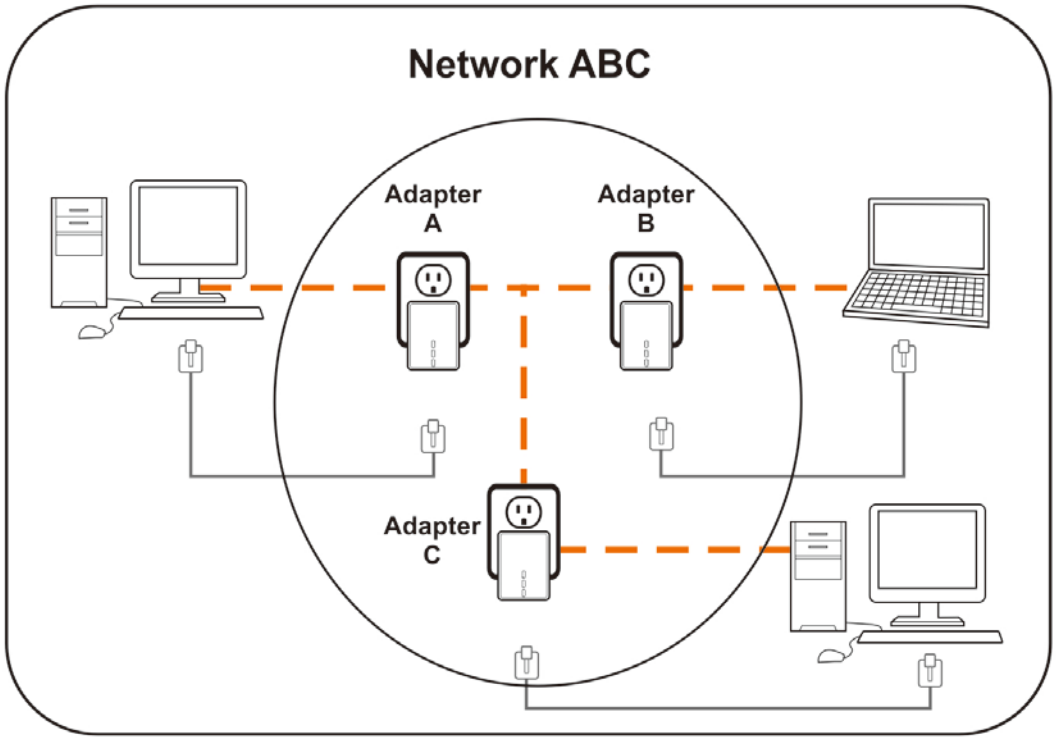
Step 4 Press and hold the Security button on Bridge A for 1~3 seconds and then release it.

Step 5 The Power lights on Bridge A and starts to flash.

Step 6 Within 120 seconds after the Power light on Bridge A starts to flash, press and hold the Security button on Bridge B for 1~3 seconds and then release.

Step 7 Both Bridge A and Bridge B are now networked together.

■ Establishing Powerline (C) to Join an Existing Network (Network AB)



The procedure is as follows:

Step 8 Press and hold the Security button on Bridge C for no more than 10 seconds. Must release after 10 seconds. Once released, the Power light will flash. The password to Bridge C has just been erased and random security key has been generated. It must now be linked to your network to adopt the new network security key.

Step 9 Press and hold the Security button on Bridge A for 1~3 seconds. The Power lights on Bridge A and starts to flash.

Step 10 Within 120 seconds after the Power lights on Bridge A and starts to flash, press and hold the Security button on Bridge C for 1~3 seconds and then release.

Step 11 Bridge A, Bridge B and Bridge C are now networked to each other.

3.6 Reset Button

This section describes how to use the Reset button, which can be used to clear ALL data and restore ALL settings to the factory default values.

The procedure is as follows:

Step 12 Hold the Reset button down while powering on for a few seconds.

Step 13 Release the Reset button.

Step 14 All the LEDs will be off, and then start again.

Step 15 The PL-802 is now using the factory default values.

Appendix A Troubleshooting

Q1. If your PL-802 has difficulty communicating with each other, check the following:

- Try power cycling the unit by unplugging it from the wall for 10 seconds and plugging it in again.
- Hold the security/reset button down for more than 15 seconds to reset to default setting. The PL-802 light will flash, and the unit will reset and attempt to link using default factory settings.
- Try plugging the PL-802 into an adjacent socket.
- HomePlug AV Ethernet Bridges work better when plugged directly into the wall outlet. Connecting these Ethernet Bridges to a power strip or surge protector may degrade network performance or completely stop network signals.
- This HomePlug AV nano Ethernet Bridge should not be used on GFI protected outlets as some outlets will filter out HomePlug Powerline signal.
- This HomePlug AV nano Ethernet Bridge should not be used in areas with excessive heat.
- Certain fluorescent or incandescent lights are noise sources on the electrical and can degrade performance.
- If your building has more than one circuit breaker box, your HomePlug AV Ethernet Bridges may not be able to connect between the different circuit breaker boxes. In this case, connect one HomePlug AV Ethernet Bridge to a power outlet located on each of the circuit boxes. Connect Ethernet cable between each of the HomePlug AV Ethernet Bridges to link the different circuits together. This will allow the HomePlug AV Ethernet Bridges from different circuit breaker boxes to connect.
- To enter standby mode for this device, simply remove the Ethernet cable and wait for about 3 minutes.

Q2. Can I use 14m or 85m HomePlug such as PL-104 or PL-420 with PL-802?

There are two different standards:
1) Homeplug 1.0 / 1.0 Turbo for 14Mbps and 85Mbps, such as PL-104 and PL-420
2) Homeplug AV for 200Mbps, 500Mbps and 1G, such as PL-802

It should work with the same HomePlug AV device which is another PL-802.
It could co-exist with HomePlug 1.0 or HomePlug 1.0 Turbo such as PL-104 or PL-420 in the same domain, but cannot connect with PL-104 and PL-420 (Homeplug 1.0).

	Homeplug1.0 / 1.0 Tubo	Homeplug AV	Homeplug AV
Standard	1.0 / 1.0Turbo	IEEE802.3; IEEE802.3u	IEEE802.3; IEEE802.3u
Max. Speed	14Mbps / 85Mbps	200Mbps	500Mbps
Co-existence	Yes	Yes	Yes
Homeplug 1.0	Yes	No	No
Homeplug AV	No	Yes	Yes

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Q3. Is it necessary for PL-802 whose power for all the rooms should be from the same phase?

The number can be connected is 8 pairs (16 units).It is necessary for the PL-802 whose power for all the rooms should be from the same phase. Different phases of the PL-802 are not able to connect to each other.

Q4. [PL-802]Can I use a PLANET Powerline adapter with another brand I already own?

Yes; Powerline technology is based on the HomePlug standard. You will need to purchase a PLANET Powerline adapter (e.g. PL-802) with the same speed and specifications as your existing adapter.

Q4. Your features have mentioned "Up to 500Mbps" on your PL-802, but only a 10/100Mbps Fast Ethernet port is included. Why?

Fast Ethernet is full-duplex, so a port can transmit and receive simultaneously. Consequently, if a Fast-Ethernet port is performing at its maximum throughput (e.g. sending and receiving) it can operate near its theoretical maximum of 500Mbps.

Q5. Why are the data transfer rates less from the stated data rates at the PL-802?

Environmental factors, operational overhead, differences between different transport standards (UDP vs. TCP vs. WFT) and the way each standard optimizes the data overhead (typically for error handling).

Q6. What is Pick a Plug at the PL-802?

Pick a Plug is a technology that allows you to determine how fast your Powerline connection is -- simply by looking at a multi-color LED on the front of the device. Green is the fastest possible connection. Orange indicates a less than optimal connection. Red indicates that you might experience poor performance and should consider moving one of the devices to a different outlet.

Q7. Can I install multiple PL-802 units in a big building?

No, we suggest not to install in a big building. Please refer to the following points for more understanding:

1. The PL-802 must build in the same power loop. If the loop is different, it can cause disconnection. Based on experience, big buildings will have many different loops.
2. The maximum distance of thePL-802 is 300m. If it is over than that, it can cause signal failure and disconnection.
3. If the powerline is old or broken, it can cause signal failure and disconnection.
4. The maximum number is 16 pieces for one PL-802 after another PL-802 is in the same power loop.