PLANET
Networking & Communication

85M Powerline to Ethernet Bridge with 4-Port Switch

PL-420

User Manual

Copyright

Disclaimer

FCC Compliance Statement

CE mark Warning

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

WEEE

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 and have to collect such WEEE separately.

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Revision

User's Manual for PLANET 85M Powerline to Ethernet Bridge with 4-Port Switch
Model: PL-420
Rev: 1.0 (Feb. 2006)
Part No. : 2081-AE0140-000

Table of Content

Chapter 1: Introduction

Overview

The Planet 85M Powerline to Ethernet Bridge with 4-Port Switch, PL-420, operates on the HomePlug Powerline Specification 1.0.1 standard for providing up to 85Mbps bandwidth over home AC wiring. Since the home power lines are the most pervasive medium in households with multiple outlets in every room, the PL-420 allows multiple home desktops and notebooks to be networked to share Internet connections, printers, files, and play games without any additional wiring.

The installation of the 85M Powerline Ethernet Switch only requires that a 10/100Mbps Network Adapter is installed on the computer. This makes the PL-420 compatible with any device including Mac, Windows, and Unix machines. For security reason, the HomePlug devices are equipped with 56-Bit DES encryption. The private home power grid plus encryption makes HomePlug significantly more secure than competing technologies. The PL-420 is the best solution for No-New-Wires home networking. With easy Plug and Play installation, no need for new wires.

Features

- Up to 85Mbps bandwidth over standard home power lines
- Estimates range of 300 meters in wall power line
- No problem passing through circuit breakers
- Easy to manage by connection manager software (Utility)
- IEEE 802.3 / IEEE 802.3u Computer interface compliant
- Network interface supports 10 Base-T / 100 Base-TX and HomePlug Powerline
- Utility supports Connection Manager Software
- Plug-and-Play Installation Support
- HomePlug Powerline Specification 1.0.1 compliant
- Internal Power Adapter for Power Supply
- Utility supports Win98SE / ME / 2K / XP

Specification

Model	PL-420
Standard	HomePlug Powerline Specification 1.0.1 compliant IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX
Ports	Four RJ-45 ports
Cabling Type	Power cord
Speed	Up to 85Mbps
Encryption	56-Bits DES encryption
LED	PWR, HP, LAN 1-4
Powerline Frequency Band	4.5Mhz to 21Mhz
Dimensions	157.4 x 97.9 x 29.5 mm (W x D x H)
Weight	210 g (net weight)
Operating Temperature	0~40 Degree C
Operating Humidity	10%~90% (non-condensing)
Input Voltage	100V~240V AC, 0.2A, 50~60Hz
Regulatory Compliance	FCC, CE

Package Contents

- PL-420 x 1
- CD ROM x 1 (user's manual, utility)
- RJ-45 Ethernet cable x 1
- Quick installation Guide x 1
- Power Cord x 1

System Requirements

- At least 2 Powerline devices
- Available Ethernet ports in the computers
- Available empty power outlet

- Standard home power line wiring
- CD-ROM utility

Front Panel

LED definition

LED	Description
PWR	Steady on indicates when power on
HP	Steady on indicates when find out another HomePlug Flashing indicates when auto detecting another HomePlug
LAN 1-4	Steady on indicates LAN port link Flashing indicates when TX or RX activity

Rear Panel
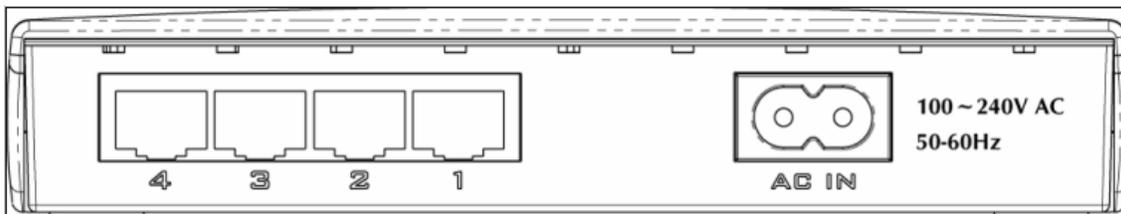
Wire Diagram
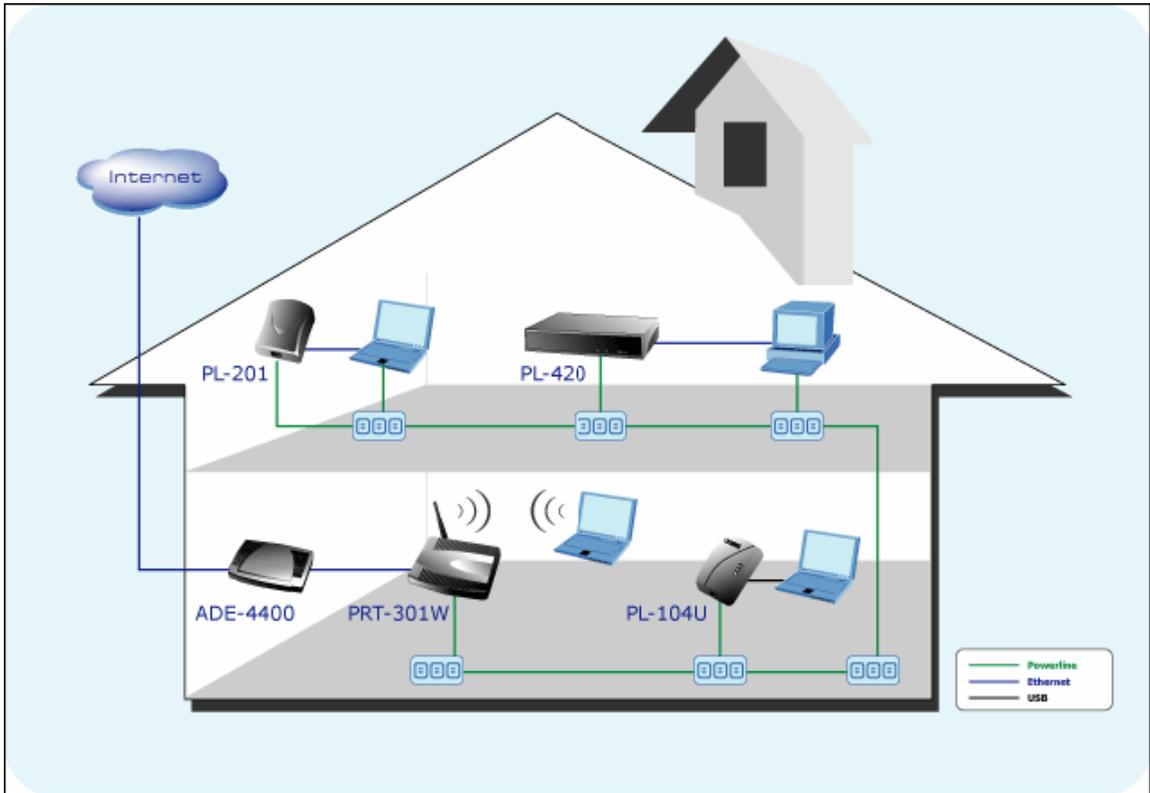
Chapter 2: Installation

Overview

The installation of 85M Powerline Ethernet Switch will only take minutes. No need to set up long wires through out the house, just simply install the utility, and physically plug the power code into the device and wall outlet, then to connect RJ-45 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.

Running the InstallShield Wizard

Please verify that no other Powerline Management Utilities are installed before installing this product. If other utilities were installed, uninstall them and restart before installing this software.
To install, insert the Windows OS Configuration Utility (Setup Utility CD) into the computer's CD-ROM drive. The main page shall pop up, then to press the link to install the software. Alternatively this can also be done manually by double clicking the setup.exe file on the CD.

Once the software is loaded it will display a dialog as following:

Please click on '**Next**' to continue the installation.
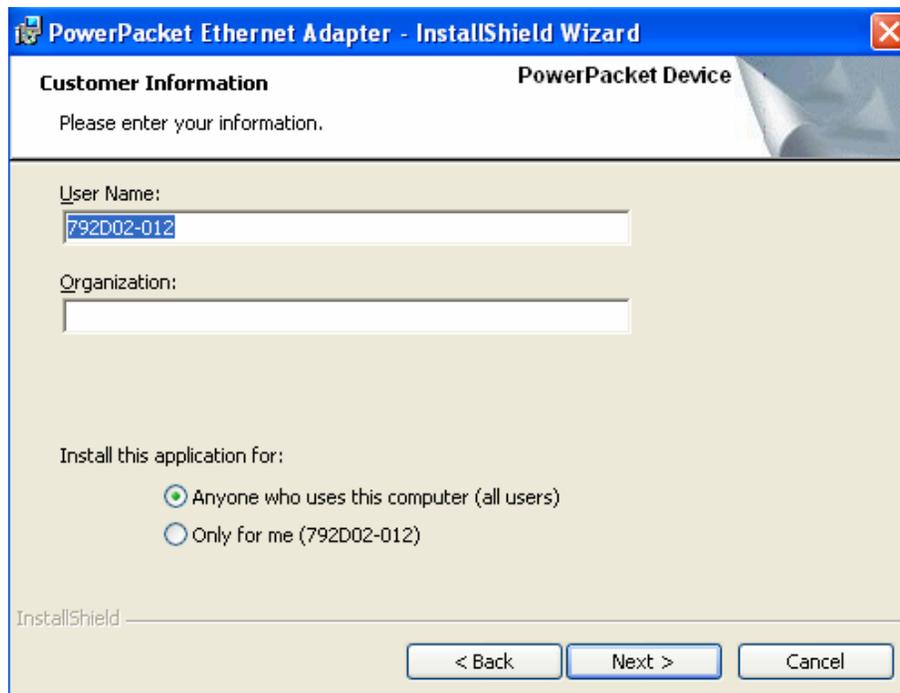
On this screen you will be asked to input the User Name and Organization. It is not crucial to the device itself, so enter it as desired. The '**Install this application for**' will work under the circumstances which multiple logins are

applied. For example: If the user wishes only he/she can use the utility with that particular account, then bubble in '**Only for me**'. For those without multiple accounts or wishes to allow all users to access the utility choose '**Anyone who uses this computer (all users)**'. When finished, click the '**Next**' button to continue.
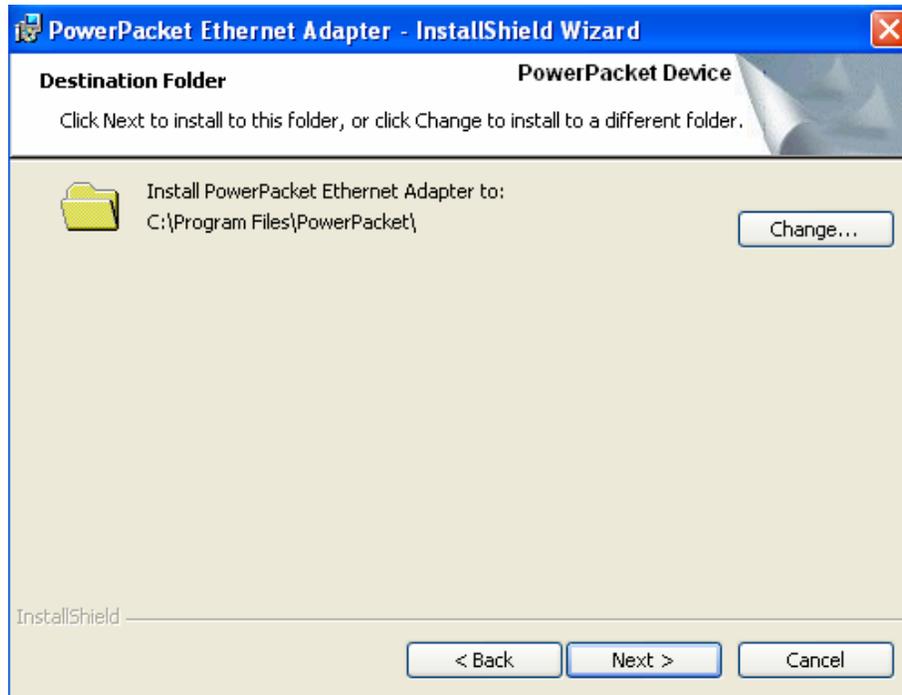
This section allows you to change the default directory where the program is installed. If you don't want to change it, click on **Next** to continue the installation.
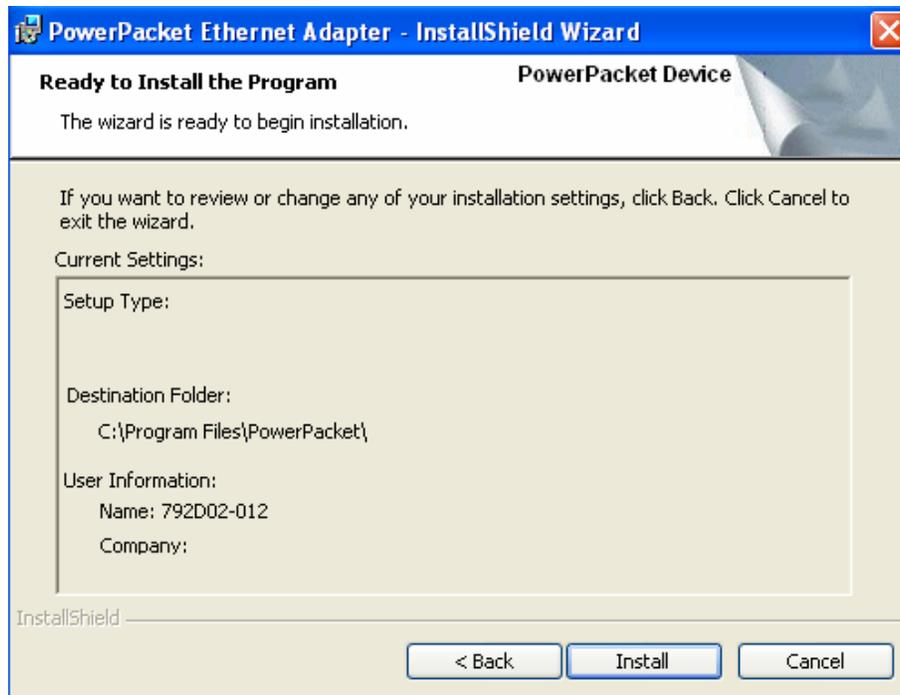
This section allows a user to go '**Back**' or '**Install**' the utility. In case if the user wishes to change the previous options then go ahead, click on '**Back**' to change the settings. If not, continue and click the '**Install**' button.
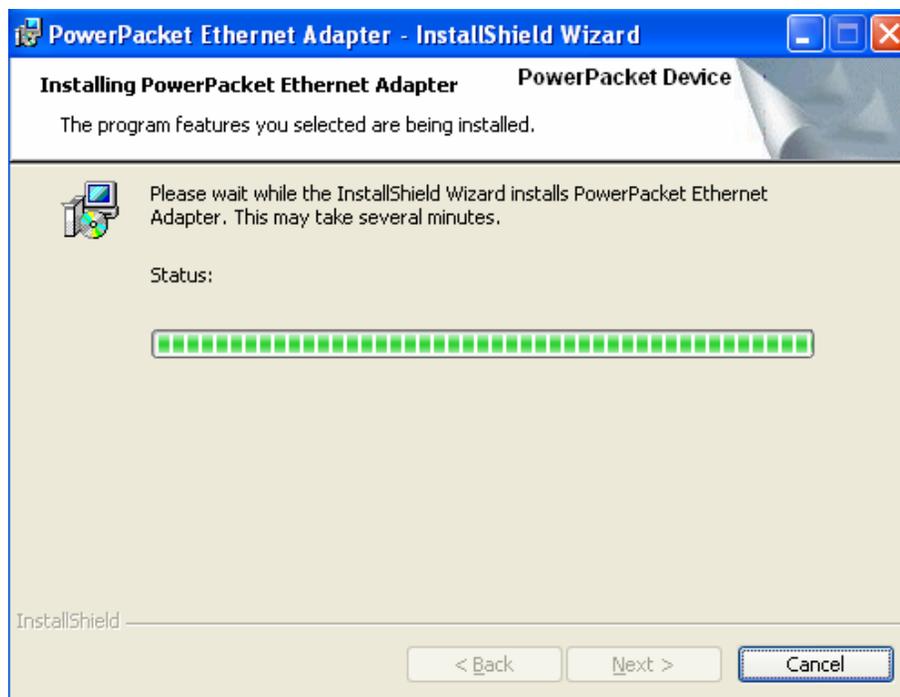
This screen shows the progress of the installation.
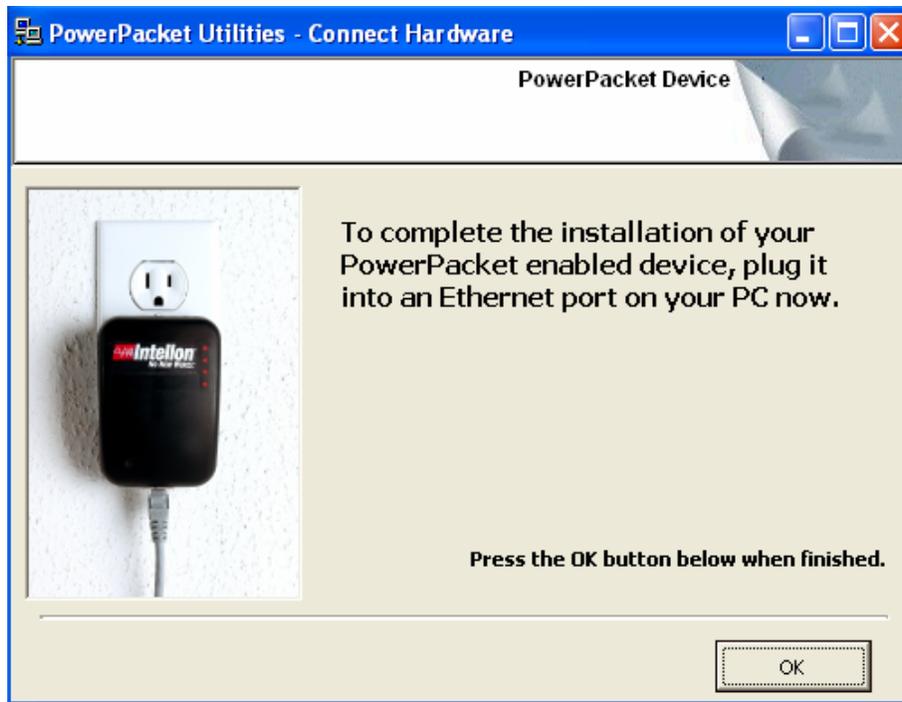
This screen shows that the installation was completed successfully. Click on **Finish** to exit the wizard.

Chapter 3: Configuration

Overview

The PL-420 uses 56-Bit DES encryption to block outside access. The key is set by using the Configuration Utility on the CD. 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.

Diagnose Powerline network

Part 1: Diagnose a Local Powerline device

Double click the **PowerPacket Utility** icon on your desktop, and utility screen will show up as below:
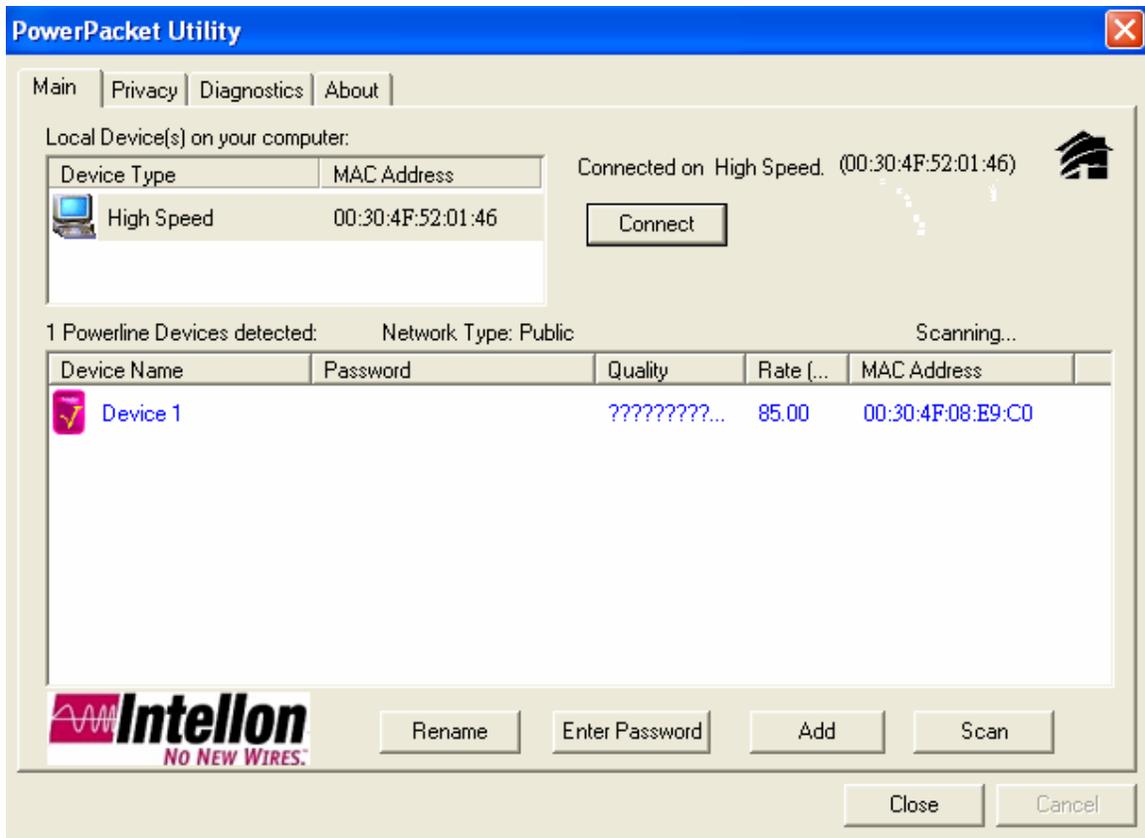
The Main tab shows the powerline units that are connected to the current computer and other powerline devices on the home network, and it will also display Mac Address of each device.

Note If you do not see ANY unit in the device status but the powerline device does exist, try to press "**Scan**" button or unplug all devices and plug them back. Meanwhile, please make sure the cable is the right type and working correctly. If all seems to be correct, and you still receive nothing in the **Device** window, try rebooting your computer.

Part 2: Diagnose a Network Powerline device
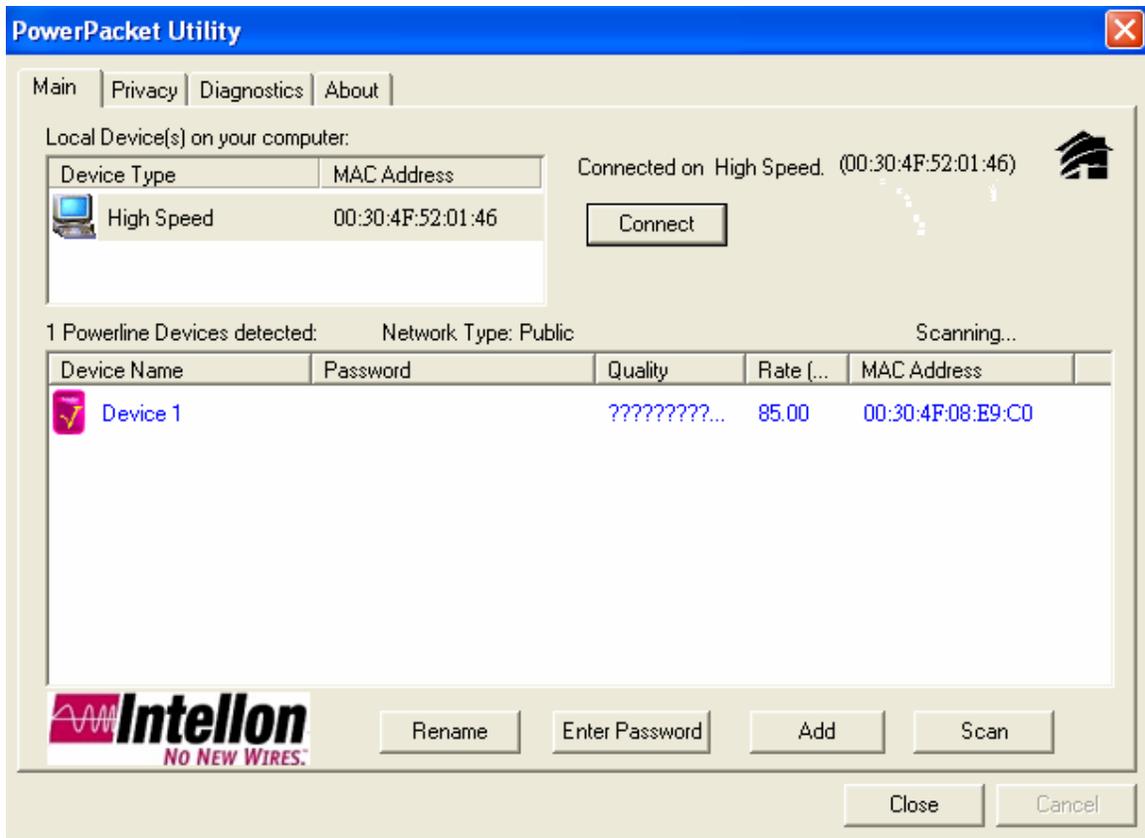
The Main tab shows all the other powerline units on your home network. It will represent them by MAC Address, and will also show the available bandwidth to each unit (Units farther away from another powerline device might have a lower Data Rate). If you add or remove units from your home network, click 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 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 (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 (adjacent plugs on the same wall socket is most preferable). If the problem still persists and that unit is still not shown on the network, then the unit might be defective. Please contact technical support. Otherwise if you view the unit working, distance might be the only issue.

Setting Up Security on a Local Powerline device
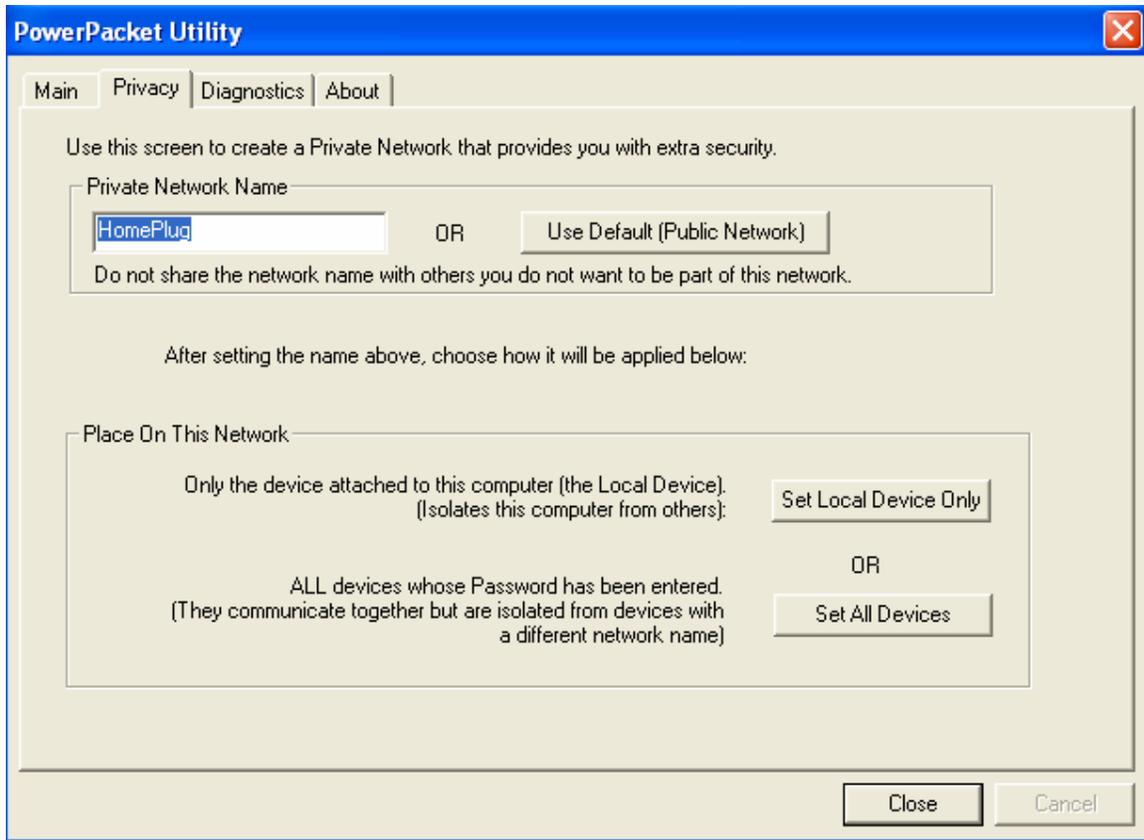
The **Privacy** tab will allow you to change the **Network Password** to the unit that is currently connected to this computer. This network password encrypts all data that is sent from this unit using 56-Bit data encryption standard (DES).

****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 "**HomePlug**".

Setting Up Security on a Network Powerline device

PowerPacket Utility

Main | Privacy | Diagnostics | About

Use this screen to create a Private Network that provides you with extra security.

Private Network Name

HomePlug   OR   Use Default (Public Network)

Do not share the network name with others you do not want to be part of this network.

After setting the name above, choose how it will be applied below:

Place On This Network

Only the device attached to this computer (the Local Device).   Set Local Device Only
(Isolates this computer from others):

OR

ALL devices whose Password has been entered.   Set All Devices
(They communicate together but are isolated from devices with
a different network name)

Close   Cancel

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

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Set Device Password

Device: Device 1 (00:30:4F:08:E9:C0)

Password: TTRL-UBPR-QSUP-RJNV

The Password typically appears as a number and letter code, in groups of four, separated by dashes.

(ie XK8Y-GH26-BR1K-LZSA) It is found on the device or packaging.

OK

Cancel

PowerPacket Utility

Main | Privacy | Diagnostics | About

Local Device(s) on your computer:

Device Type	MAC Address
High Speed	00:30:4F:52:01:46

Connected on High Speed. (00:30:4F:52:01:46)

Connect

1 Powerline Devices detected: Network Type: Public   Scanning...

Device Name	Password	Quality	Rate (...	MAC Address	
Device 1	TTRL-UBPR-QSUP-RJNV	?????????...	85.00	00:30:4F:08:E9:C0	

Intellon
NO NEW WIRES.

Rename | Enter Password | Add | Scan

Close | Cancel

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

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Appendix A: Troubleshooting

Frequently Asked Questions

1. What's the speed of the PL-420 operating over a standard home power line network?

The PL-420 operates up to 85 Mbps bandwidth over a standard home power line network.

2. What's the Estimated Range of the PL-420?

Approximately 300 meters in wall power lines (one household).

3. Does PL-420 work in any home?

The PL-420 should work with copper wiring in any home. Since some of the older houses built before 1950 might have older wiring, it may not work in this instance.

4. Does PL-420 signal pass through circuit breakers?

Yes, this device signal will have no problem pass through circuit breakers but not through power transformers.

5. Does PL-420 work with AC input 100 – 240V?

Yes, this device works with AC input 100 – 240V.

6. Does PL-420 cause any interference with other home networking devices?

No, this device operates in a different frequency band than other power line control devices and can co-exist with technologies as X-10, CEBus, and LONworks.

7. Can my neighbor receive my PL-420 signal?

It is possible for your neighbor receive your PL-420 signal between two adjacent homes. To prevent this happen, please enable the 56-bit DES security encryption on your device. To do that, you must run the HomePlug Configuration Utility on each Homeplug device in your power line network. This will only allow computers with the same security password to be able to receive information.

8. How do I find out what's my current speed and my signal strength of my HomePlug device?

Run the HomePlug Configuration Utility, it will show your current speed and your signal strength.

9. One of the PL-420's LED doesn't light up after I plug the HomePlug directly into a wall outlet?

Test that wall outlet with other electric devices first, make sure that wall outlet is working properly. Then, try to plug your HomePlug device again. If the same problem happens again, plug both HomePlug units into adjacent sockets, and check if the lights light up. If you are still having problems, please contact your reseller.

10. The Ethernet LED doesn't light up on my PL-420?

In most cases, if the Ethernet LED doesn't light on your device, it is because the Ethernet port doesn't detect a LAN connection. Check your Ethernet adapter on your computer, and make sure its enable and working properly. Also, check your Ethernet cable; make sure you use the right type. It's plugged in correctly and it's worked properly.

11. I can't connect to Internet and other computers on my power line network?

(1) Check your IP address and TCP/IP protocol are set up properly for all the computers on your power line network. Also, try to check your gateway and ping the gateway.
(2) If HomePlug Configuration Utility detects other HomePlug devices on your power line network. Try to plug in both HomePlug units into adjacent sockets and see if the lights light up. If you are still having a problem, please contact your reseller.

12. How many HomePlug devices do I need to setup a powerline network?

You need two or more HomePlug devices to setup a powerline network.

13. In order to making the PL-420 working properly, do I have to install the HomePlug Configuration Utility on every single computer who has the HomePlug device plug into it?

No, the HomePlug Configuration Utility is a utility to diagnose or setup encryption for HomePlug device. Due to PL-420 is a fully plug and play device, no driver require to install. In other words, the HomePlug Configuration utility is not a requirement to install on your computer. You can install the utility, setup the encryption, and delete it from your computer. Your PL-420 will still work properly.

14. How many HomePlug devices that I can install into one Local Area Network?

It is recommended install up to **16** HomePlug devices in one same password powerline network.