BELKIN®

Powerline Networking Adapters

User Manual

PM01141ea   F5D4073

TABLE OF CONTENTS

INTRODUCTION

Thank you for purchasing the Powerline Networking Adapter (the Adapter). Most people don't enjoy buying long and expensive Ethernet cables or pulling the cables from one place to another, but the Adapter offers one of the easiest ways to enjoy home or small-business networking. Users can now experience a total network solution with the Adapter. The Powerline Networking Adapter operates on the HomePlug® Powerline Specification 1.0 Turbo standard, 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 Adapter allows multiple home desktop and notebook computers to be networked to share an Internet connection, printers, and files, and play games without any additional wiring. Note that you need at least two Adapters to create a powerline network.

The installation of the Adapter only requires that a 10/100Mbps Ethernet port is available on your device. This makes the Powerline Networking Adapter compatible with any device, including Mac, Windows, and UNIX machines.

For security, all 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 Powerline Networking Adapter provides the best solution for no-new-wires home networking. With easy plug-and-play installation, and the reliability of HomePlug Ethernet's products, the Powerline Networking Adapter is the best solution for high-speed networking.

Features

- Up to 85Mbps* bandwidth over standard home power lines
- Estimated range of 300m in wall power lines
- HomePlug signal easily passes through circuit breaker
- 56-bit DES encryption ensures data security
- Encryption completed by hardware, without sacrifice to bandwidth
- Uses IEEE 802.3 computer interface
- Plug-and-play installation
- HomePlug Powerline Specification 1.0 Turbo-compliant
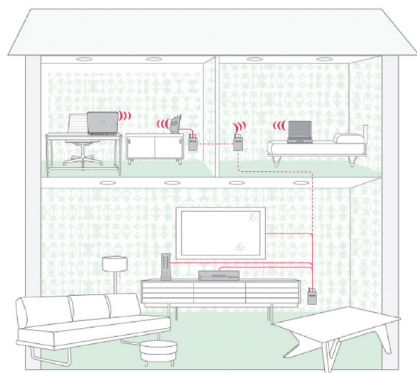
Product Specifications

Computer Interface: IEEE 802.3/802.3u

Operating Temperature: 32–104 degrees F (0–40 degrees C)

Storage Temperature: -4–176 degrees F (-20–80 degrees C)

Humidity: Max. 5%–90% (non-condensing)

Typical Operating Range: Up to 300m in wall power lines

The standard transmission rate—85Mbps—is the physical data rate. Actual data throughput will be lower.

Powerline Link LED ⬗
On   Another HomePlug unit detected
Blinking   Powerline network activity

Ethernet Link LED ⬗
On   Connected to Ethernet
Blinking   Ethernet network activity

System Requirements

•   At least 2 HomePlug devices

•   Available Ethernet port on each computer or network device

•   Available power outlet

•   Standard home powerline wiring

•   CD-ROM drive

Package Contents

•   One/Two Powerline Networking Adapters

•   HomePlug Quick Installation Guide

•   HomePlug User Manual (on CD)

•   Installation CD

•   One/Two Power Cables

•   One/Two CAT5/RJ45 Ethernet Cables

•   One/Two Wall Plug Adapters

INSTALLING AND SETTING UP THE ADAPTERS

Overview

Installation of the Powerline Networking Adapters takes only minutes and does not require setting up long wires throughout the house. Simply plug the Adapters into the wall and connect the Ethernet cable into your device. You may optionally install the included utility to monitor your powerline network. This utility is not required for operation.

CAT5/RJ45 Ethernet port

Activity light

Link light

CAT5 Ethernet cable
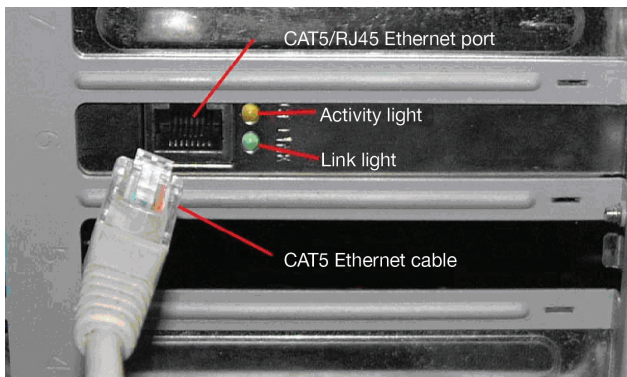
Hardware Setup

1. Plug your network cable into an RJ45 network adapter port.

2. Plug the other end of your network cable into the RJ45 port located at the bottom of the Adapter.

3. Plug the power cable into the power connector at the back of the Adapter.

4. Plug the power plug of your power cable directly into a power outlet in the wall.

   Note: Do not plug the device into a UPS or power strip with surge protection as they may filter the powerline signal.
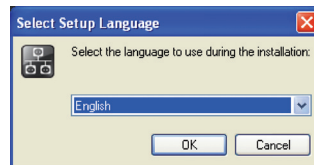
5. Repeat this process for the second Adapter
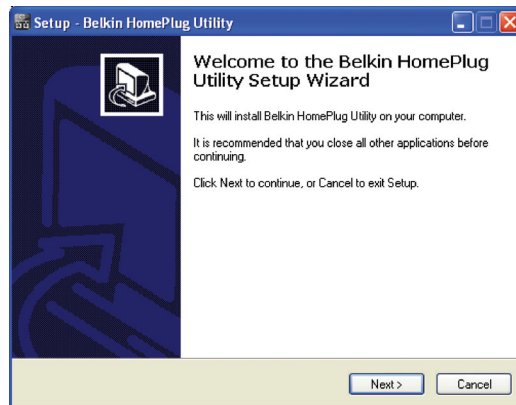
INSTALLING AND SETTING UP THE ADAPTERS

Running the InstallShield Wizard

1. Insert the CD into your CD-ROM drive and wait for the setup screen to appear. If the CD-ROM does not automatically run the CD, click on "Start" in the bottom left corner of your screen (for most Microsoft Windows operating systems) and go to "Run". Type in: "(CD Drive Letter):\setup.exe" and click "OK".

2. Click the "Powerline Utility" button. Once the software loads, click on your desired language in the following dialog box:

3. Click "Next" to continue the installation.

4. This section allows you to change the default directory where the program is installed. If you don't want to change the directory, click "Next" to continue the installation process.
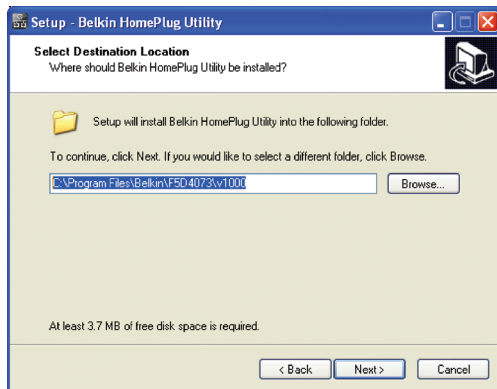
5. The following screens give you different installation options. Click "Next" through these screens or modify the settings if desired.
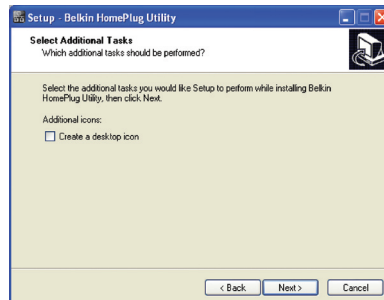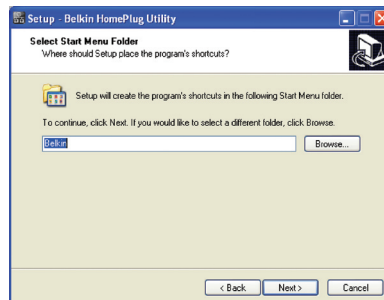
6. Click "Install" after confirming your settings in the following screen.

7. Installation is complete. Click "Finish" to exit the wizard.

Overview

The Adapter uses 56-bit DES encryption to block access from the outside. The key is set by using the HomePlug Configuration Utility on the CD. By default, the protection is enabled. However, it is recommended that you change the default network password. All your HomePlug devices must use the same network password in order for the computers to be networked. Make sure that all devices are loaded with the same network password.
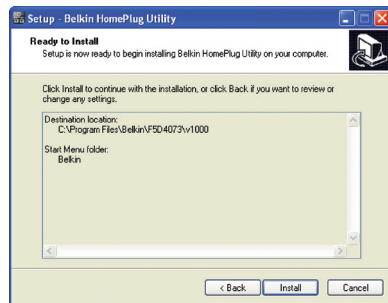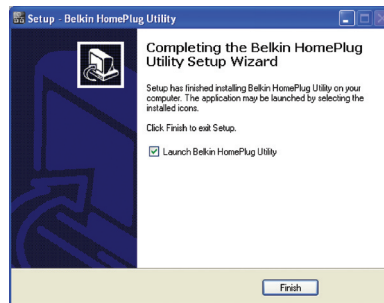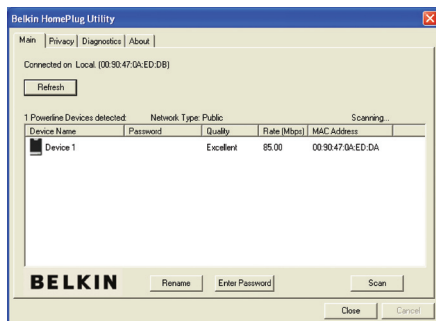
Diagnose Powerline Network

Part 1: Diagnose a Local HomePlug Device

Double-click the "Belkin HomePlug Utility" icon on your desktop to open the utility shown in the screen below.

The "Main" tab shows the HomePlug units that are connected to the current computer and other devices on the network. It also tells you the MAC address of each device. The MAC address of the Adapter that is currently connected to the PC running this utility is displayed at the top of the window next to the "Local" network name. The utility lets you refresh the window, if you change devices, and also allows you to connect to different networks if multiple units are connected to your computer.

Note: If the link quality is poor, and appears red, or if the MAC address of any of the units connected to this computer appears to be all 0s, your Adapter may be unreachable via the powerline network. Please plug it into a different outlet for better signal quality. Also, make sure the device is not plugged into a power strip.

Note: If you do not see ANY units in the device status, and there is a device connected to your computer, try unplugging and re-plugging all devices. Also make sure that the cable connecting your computer to the HomePlug device is the right type and is working correctly. If everything seems to be correct, and you do not see anything in the "Device" window, try rebooting your computer. If the problem still persists, please contact technical support.

Part 2: Diagnose a Network HomePlug Device

The "Main" tab shows all the other HomePlug units on your powerline network. It represents them by MAC address, and also shows the available bandwidth to each unit (units farther away from the current computer might have a lower data rate). If you add or subtract units from your home network, you might want to re-scan, by clicking the "Scan" button. This will re-scan the network and refresh with any changes.

Note: Only units with the same network password will appear; please verify that they all have the same network password (case-sensitive).

Note: If a unit shows a MAC address of all 0s, this unit may not have a solid connection, or may not connect at all. If this is the case, please contact technical support.

Note: If there are units in your home that do not appear in this network scan, unplug and re-plug all devices (only do this with the units that do not appear in the network screen). If the problem persists, move the unit closer to this current unit (adjacent plugs in the same wall socket is preferred). If the problem still persists and that unit still does not appear on the network, then the unit may be defective and you will need to contact technical support. Otherwise, if you view the unit working, distance might be the only issue.

The networked HomePlug devices can be renamed by selecting the device and clicking "Rename".

Setting Up Security on a Local HomePlug Device
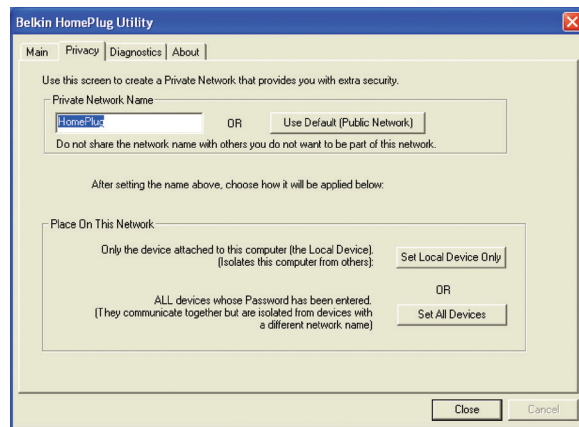
The "Privacy" tab allows you to change the network password to the unit that is currently connected to this computer. This network password encrypts all data that is sent from this unit using 56-bit data encryption standard (DES). The DES encryption is very secure and difficult to crack.

Note: Every unit on your home network MUST have the same Private Network Name (also referred to as the "network password") in order for connectivity to be established throughout your home. The default network name is "HomePlug".

Setting Up Security on a Network HomePlug Device

1. You will have to go back to the "Main" tab first to enter the DEK (Device Encryption Key) for each networked HomePlug device. Select the device and click "Enter Password".
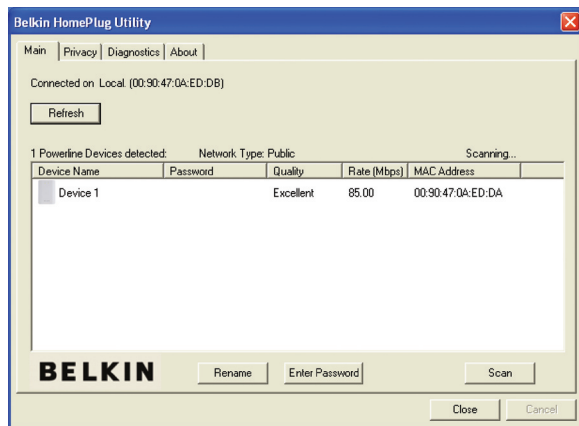
2. In the following window, enter the DEK located on the bottom of each device into the "Password" field. Note that this password is different from the network password.

3. You can change the password for all networked devices from one computer using this utility, instead of changing the password individually.

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

4. The network password can be changed on all devices on which DEKs have been entered. The "Privacy" tab allows users to use one primary computer to control the network password of all units on the home network.

5. On the "Privacy" tab, simply change the private network name (network password) and click "Set all devices". Please ensure that the DEKs of all devices have been entered before performing this step. Otherwise, you will lose connectivity to devices that do not have this new network password.

Diagnostics
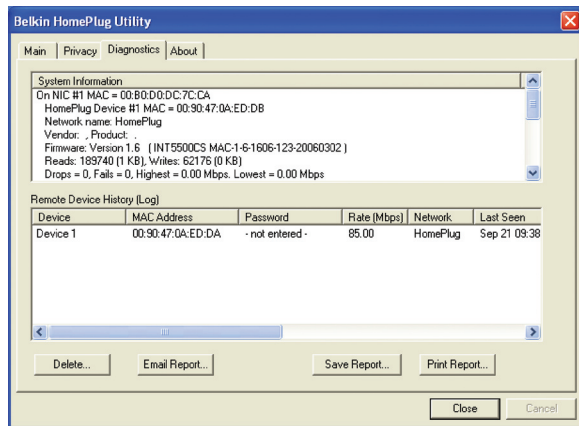
This page provides diagnostics information for your HomePlug network. It also allows you to create, email, and print a report of this information.

Technical Support

You can find technical support information at **www.belkin.com**

FCC Statement

**DECLARATION OF CONFORMITY WITH FCC RULES
FOR ELECTROMAGNETIC COMPATIBILITY**

We, Belkin International, Inc., of 501 West Walnut Street, Compton, CA 90220, declare under our sole responsibility that the product, F5D4073, to which this declaration relates, 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.

Caution: Exposure to Radio Frequency Radiation. The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized. When connecting an external antenna to the device, the antenna shall be placed in such a manner to minimize the potential for human contact during normal operation. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Federal Communications Commission Notice

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. 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 and correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the distance 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.

Modifications

The FCC requires the user to be notified that any changes or modifications to this device that are not expressly approved by Belkin International, Inc., may void the user's authority to operate the equipment.

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

-    EN60950-1:2001 A11:2004

Safety of Information Technology Equipment

$C\epsilon$

For information on product disposal please refer to
http://environmental.belkin.com

Belkin International, Inc., Limited Lifetime Product Warranty

What this warranty covers.

Belkin International, Inc. ("Belkin") warrants to the original purchaser of this Belkin product that the product shall be free of defects in design, assembly, material, or workmanship.

What the period of coverage is.

Belkin warrants the Belkin product for the lifetime of the product.

What will we do to correct problems?

Product Warranty.

Belkin will repair or replace, at its option, any defective product free of charge (except for shipping charges for the product). Belkin reserves the right to discontinue any of its products without notice, and disclaims any limited warranty to repair or replace any such discontinued products. In the event that Belkin is unable to repair or replace the product (for example, because it has been discontinued), Belkin will offer either a refund or a credit toward the purchase of another product from Belkin.com in an amount equal to the purchase price of the product as evidenced on the original purchase receipt as discounted by its natural use.

What is not covered by this warranty?

All above warranties are null and void if the Belkin product is not provided to Belkin for inspection upon Belkin's request at the sole expense of the purchaser, or if Belkin determines that the Belkin product has been improperly installed, altered in any way, or tampered with. The Belkin Product Warranty does not protect against acts of God such as flood, earthquake, lightning, war, vandalism, theft, normal-use wear and tear, erosion, depletion, obsolescence, abuse, damage due to low voltage disturbances (i.e. brownouts or sags), non-authorized program, or system equipment modification or alteration.

How to get service.
To get service for your Belkin product you must take the following steps:

1. Contact Belkin Limited by calling the technical support department on the numbers found earlier in this manual, within 15 days of the Occurrence. Be prepared to provide the following information:

   a. The part number of the Belkin product.

   b. Where you purchased the product.

   c. When you purchased the product.

   d. Copy of original receipt.

2. Your Belkin Customer Service Representative will then instruct you on how to forward your receipt and Belkin product and how to proceed with your claim.

Belkin reserves the right to review the damaged Belkin product. All costs of shipping the Belkin product to Belkin for inspection shall be borne solely by the purchaser. If Belkin determines, in its sole discretion, that it is impractical to ship the damaged equipment to Belkin, Belkin may designate, in its sole discretion, an equipment repair facility to inspect and estimate the cost to repair such equipment. The cost, if any, of shipping the equipment to and from such repair facility and of such estimate shall be borne solely by the purchaser. Damaged equipment must remain available for inspection until the claim is finalized. Whenever claims are settled, Belkin reserves the right to be subrogated under any existing insurance policies the purchaser may have.

How state law relates to the warranty.
THIS WARRANTY CONTAINS THE SOLE WARRANTY OF BELKIN. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR, EXCEPT AS REQUIRED BY LAW, IMPLIED, INCLUDING THE IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SUCH IMPLIED WARRANTIES, IF ANY, ARE LIMITED IN DURATION TO THE TERM OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

IN NO EVENT SHALL BELKIN BE LIABLE FOR INCIDENTAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR MULTIPLE DAMAGES SUCH AS, BUT NOT LIMITED TO, LOST BUSINESS OR PROFITS ARISING OUT OF THE SALE OR USE OF ANY BELKIN PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state. Some states do not allow the exclusion or limitation of incidental, consequential, or other damages, so the above limitations may not apply to you.

Free Tech Support* *National call rates may apply*   **www.belkin.com**

You can find additional support information on our website www.belkin.com through the tech-support area. If you want to contact technical support by phone, please call the number you need from this list*.

COUNTRY	NUMBER	INTERNET ADRESS
AUSTRIA	0820 200766	www.belkin.com/uk/networking/
BELGIUM	07 07 00 073	www.belkin.com/nl/networking/
CZECH REPUBLIC	239 000 406	www.belkin.com/uk/networking/
DENMARK	701 22 403	www.belkin.com/uk/networking/
FINLAND	00800 - 22 35 54 60	www.belkin.com/uk/networking/
FRANCE	08 - 25 54 00 26	www.belkin.com/fr/networking/
GERMANY	0180 - 500 57 09	www.belkin.com/de/networking/
GREECE	00800 - 44 14 23 90	www.belkin.com/uk/networking/
HUNGARY	06 - 17 77 49 06	www.belkin.com/uk/networking/
ICELAND	800 8534	www.belkin.com/uk/networking/
IRELAND	0818 55 50 06	www.belkin.com/uk/networking/
ITALY	02 - 69 43 02 51	www.belkin.com/it/networking/
LUXEMBOURG	34 20 80 85 60	www.belkin.com/uk/networking/
NETHERLANDS	0900 - 040 07 90 €0.10 per minute	www.belkin.com/nl/networking/
NORWAY	81 50 0287	www.belkin.com/uk/networking/
POLAND	00800 - 441 17 37	www.belkin.com/uk/networking/
PORTUGAL	707 200 676	www.belkin.com/uk/networking/
RUSSIA	495 580 9541	www.belkin.com/networking/
SOUTH AFRICA	0800 - 99 15 21	www.belkin.com/uk/networking/
SPAIN	902 - 02 43 66	www.belkin.com/es/networking/
SWEDEN	07 - 71 40 04 53	www.belkin.com/uk/networking/
SWITZERLAND	08 - 48 00 02 19	www.belkin.com/uk/networking/
UNITED KINGDOM	0845 - 607 77 87	www.belkin.com/uk/networking/
OTHER COUNTRIES	+44 - 1933 35 20 00	

belkin.com

Belkin Ltd·
Express Business Park
Shipton Way, Rushden
NN10 6GL, United Kingdom

Belkin SAS
130 rue de Silly
92100 Boulogne–Billancourt,
France

Belkin GmbH
Hanebergstrasse 2
80637 Munich
Germany

Belkin Iberia
C/ Anabel Segura, 10 planta baja, Of· 2
28108, Alcobendas, Madrid
Spain

Belkin Italy & Greece
Via Carducci, 7
Milano 20123
Italy

Belkin B·V·
Boeing Avenue 333
1119 PH Schiphol–Rijk,
Netherlands

PM01141ea   F5D4073