Broadband Network Bridge

Model No.: **HPES03**

User Guide

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LIMITED WARRANTY

FCC STATEMENT

The HomeLink Broadband Network Bridge has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to 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 is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna
• Increase the separation between the equipment or device
• Connect the equipment to an outlet other than the receiver's
• Consult a dealer or an experienced radio/TV technician for assistance

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Introduction

The Linksys HomeLink Broadband Network Bridge

Congratulations on the purchase of a Linksys HomeLink Broadband Network Bridge, the complete Internet connection solution for your Home Phoneline network. This unique new device features two HomeLink RJ-11 standard telephone ports (configured as one pass-through port), and two 10BaseT Ethernet ports with one shared uplink port. Plug in your cable modem or DSL modem's 10BaseT connection, then attach the bridge to the nearest telephone jack using standard phone cables, and any computer on your Home Phoneline network can access the Internet.*

Do you want to share your cable or DSL modem on your 10BaseT network? You can add a PC at any time by connecting it to the open Ethernet port—or you can uplink a 10BaseT or 10/100 hub or switch for instant networking. The groundbreaking technology inside every HomeLink Broadband Network Bridge delivers intercommunication between home networks of 10Mbps and 1Mbps speeds. With your HomeLink Broadband Network Bridge, that means instant Internet sharing across both networks at blazing broadband speeds. High-speed Internet sharing for your home or small office network has never been easier.*

Features

- Connects Your 10Mbps Ethernet Connection to Your 1Mbps Home Phoneline Network for Seamless Integration
- Share a Cable or DSL Modem Without Interrupting Normal Telephone Service*
- Share Internet Access Across Your Entire HomeLink Network—Up to 25 PCs and Even More on an Ethernet Network*
- Stand-alone Unit with Two 10BaseT RJ-45 Ports, one Shared RJ-45 Uplink Port, and One RJ-11 Modular Telephone Port With Pass-through.
- Fully HomePNA Compliant
- Easy Installation—No Software Required
- Free 24-Hour Technical Support and Limited 1-Year Warranty

*Contact your Internet Service Provider for details.

Package Contents

• One HomeLink Broadband Network Bridge (Model No.: HPES03)
• One AC Adapter & Power Cord
• One User Guide and Registration Card

Getting to Know the Broadband Network Bridge

Rear Panel Ports

Uplink　　　Share your Internet access over your entire phoneline network by connecting to your DSL or Cable modem through the Broadband Bridge's uplink port. The uplink port can also connect to Ethernet devices such as hubs, routers, and switches. If the uplink port is occupied, the port to its direct right (Port 3) will be inoperable. Any connections made through Port 3 will be lost.

10BaseT　　Connect an Ethernet PC (or any other Ethernet device) to your HomeLink phoneline network through one of the 10BaseT ports. If you plan on using Port 3, the Uplink port will become unavailable.

HomeLink　Use the HomeLink port to daisy-chain your Broadband Bridge to your HomeLink network. This port is configured as a pass-through port, meaning that the network data travels into the Bridge through one side of the HomeLink port, then continues out the other. Connect one HomeLink telephone cable into one side of Port 1, then continue (with another cable) to your next HomeLink device through the port's other side. See page 7 of this User Guide for further information.

Power　　　Connect your power adapter to your Broadband Bridge through the Power port.

Front Panel LEDs
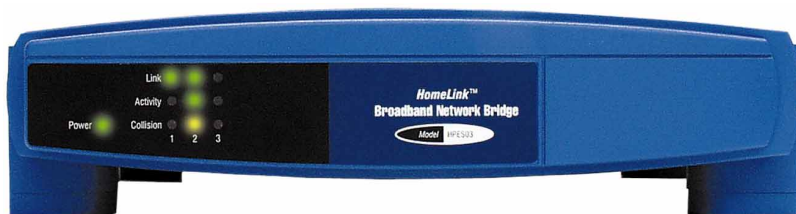
Power   The Power LED is illuminated when the Broadband Bridge is powered on.

Link   A Link LED will illuminate above a specific port number (1, 2 or 3) if the corresponding port is successfully connected to a network device.

Activity   An Activity LED will illuminate above a specific port number if the corresponding port is currently sending or receiving data over the network.

Collision A Collision LED will illuminate above a specific port number if the corresponding port is currently experiencing network collisions. Small amounts of collisions are normal. If you are experiencing excessive collisions, verify that your cabling is undamaged and properly connected.

Using the Broadband Network Bridge

Installation Overview

Because the Broadband Network Bridge is a stand-alone device that requires no software or system configuration, setup involves nothing but plugging everything in and turning everything on. There are, however, a few limitations to the amount of physical space your network will be able to cover without running the risk of data corruption. These restrictions are due to HomePNA and Ethernet standard limits on the recommended length of your networking cables. (See below.)

Note: Power everything off before connecting a PC to the Broadband Network Bridge. If both the computer and bridge are powered on when the initial connection is made, the network will act erratically and you will have to reset the bridge.

Ethernet Cabling

Although there are different grades of Ethernet network cabling, you should use Category 5 unshielded twisted-pair (UTP) for each Ethernet connection you make, and no Ethernet cable should exceed 100 meters (328 feet) in length. Category 5 cabling can be obtained at most computer stores, or you can crimp your own. (See page 10 for more details.)

Phoneline Cabling

Because of the limitations of standard telephone cables, HomeLink HomePNA devices require that no network of HomeLink cabling exceeds a total length of 150 meters (500 feet). In other words, if you have more than 500 feet of telephone wires connecting your network, you will likely experience data loss.

Beside that, any standard telephone cable will do.

Connecting Your Devices to the Bridge

The following steps will have your Broadband Network Bridge up and running in minutes.

Basic Installation

1. **Ensure that every component of your network** (including your Broadband Network Bridge) is powered off.

2. **If you are uplinking to a DSL modem**, cable modem, Ethernet hub, or Ethernet switch, connect it to the bridge through the bridge's uplink port with a network cable. Keep in mind that using the uplink port deactivates 10BaseT Port 3.

3. **Connect your Ethernet-equipped devices to the bridge** through the Bridge's 10BaseT ports. If you are not uplinking the Broadband Bridge to an Ethernet device, both 10BaseT ports 2 and 3 will be available. If you are using the bridge's uplink port, only port 2 will be active. Ethernet devices should be connected to the Bridge with a network cable. Each cable should be less than 100 meters (328 feet) in length.

4. **Daisy-chain the Broadband Bridge into the HomeLink network** by running HomeLinked telephone lines through the Bridge's HomeLink port. The entire length of telephone cable used in a HomeLink network should never exceed 150 meters (500 feet). For more detailed information on daisy chaining, see the next page.

5. **Power everything on**. Connect the supplied power cord to the Power port on the rear of the bridge, then plug the power cord into an electrical outlet.

The Broadband Bridge installation is complete.

Daisy-chaining to a HomeLink Network

By daisy-chaining your HomeLinked PC's and peripherals, you can create a simple network that will act in the same way an Ethernet network acts on your PC's desktop.

While Ethernet networks usually revolve in a star topology around a hub or switch, phoneline networks link together like a string of Christmas lights. In a HomeLink network, data passes into on one side of a port, and a new telephone cable continues out from the port's other side. You can string up to 25 PCs on a single HomeLink network, provided that the entire length of cable doesn't exceed 150 meters (500 feet).

HomeLink networks are able to send data through existing telephone lines without interrupting your telephone service, connecting over your existing telephone jacks. If you have computers on two different floors of your house, plug one of the downstairs PCs into the phone jack in the wall, and you're able to network your upstairs computers without running excessive amounts of extra cable.
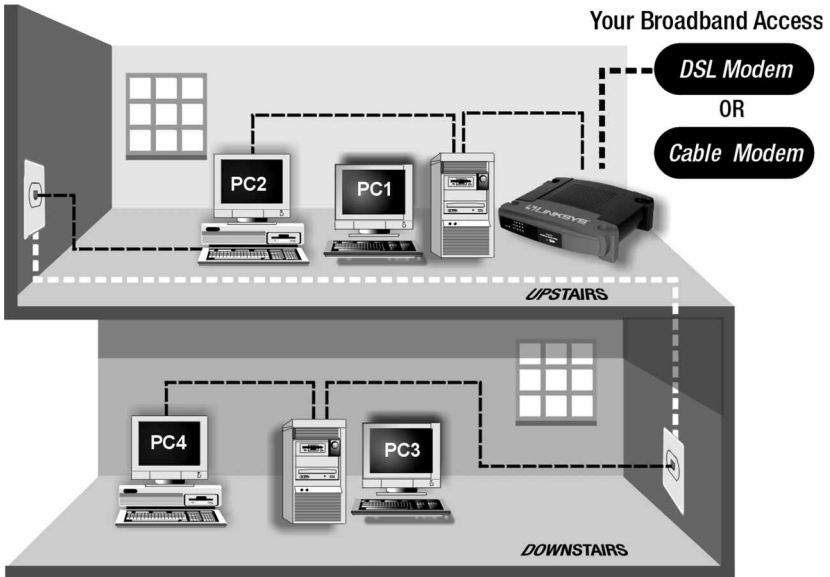
Resetting the Broadband Network Bridge

If your network connection begins acting erratically, you may want to reset the bridge. To reset, shut down all of your network components, disconnect the bridge's power supply, wait five seconds, and then plug it back in.

Troubleshooting

Specific Problems

1. I can't get a link at one of my ports.
   - Ensure that your cabling is not damaged and that it is connected properly.
   - Ensure that the network card you are connecting to has been properly installed.
   - Ensure that both the Bridge and the device are powered on.
   - If you are linking to a hub or a switch, ensure that the hub or switch is functioning correctly.
   - If you are connecting to a cable modem, try plugging the cable modem into the bridge's uplink port rather than a 10BaseT port.
   - If all else fails, reset the Bridge.

Appendix

RJ-45 Color Chart

Wire 1 ➝ **White with an Orange Stripe**

Wire 2 ➝ **Orange**

Wire 3 ➝ **White with a Green Stripe**

Wire 4 ➝ **Blue**

Wire 5 ➝ **White with a Blue Stripe**

Wire 6 ➝ **Green**

Wire 7 ➝ **White with a Brown Stripe**
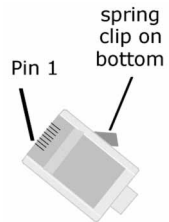
Wire 8 ➝ **Brown**

Twisted Pair Cabling

There are different grades, or categories, of twisted-pair cabling. Category 5 is the most reliable and is highly recommended. Category 3 is a good second choice. Straight-through cables are used for connecting computers to a hub. Crossover cables are used for connecting a hub to another hub (there is an exception: some hubs have a built-in uplink port that is crossed internally, which allows you to link or connect hubs together with a straight-through cable instead).

You can buy pre-made Category 5 cabling, or cut and crimp your own. Category 5 cables can be purchased or crimped as either straight-through or crossover cables. A Category 5 cable has 8 thin, color-coded wires inside that run from one end of the cable to the other. All 8 wires are used. In a straight-through cable, wires 1, 2, 3, and 6 at one end of the cable are also wires 1, 2, 3, and 6 at the other end. In a crossover cable, the order of the wires change from one end to the other: wire 1 becomes 3, and 2 becomes 6. See the diagrams on the next page for more detailed information on straight-through and crossover cabling.

straight-through cable		crossed cable	
Wire	**Becomes**	**Wire**	**Becomes**
1	1	1	3
2	2	2	6
3	3	3	1
6	6	6	2

To determine which wire is wire number 1, hold the cable so that the end of the plastic RJ-45 tip (the part that goes into a wall jack first) is facing away from you. Face the clip down so that the copper side faces up (the springy clip will now be parallel to the floor).When looking down on the copper side, wire 1 will be on the far left.

spring clip on bottom

Pin 1

Telephone Cabling

The telephone cables you use can be either crossover or straight-through cables. Standard telephone cables like the ones you use everyday in your home should do the job.

Specifications

Model Number:	HPES03
Standards:	IEEE 802.3 10BaseT, HomePNA v.1.1
Protocol:	CSMA/CD
Ports:	Two 10BaseT RJ-45, One Uplink RJ-45 (Shared), One Modular Telephone RJ-11 (with Pass-Through)
Speed:	HomePNA - 1Mbps, Ethernet - 10Mbps
Cabling Type:	Standard Telephone Cable, 10BaseT - Category 3 or 5 UTP or STP
Topology:	Star (10BaseT) or Bus (HomePNA)
LED Status Lights:	Link per Port, Activity per Port, Collision per Port, Power

Environmental

Dimensions (LxWxH):	7.5" x 6" x 2"
Unit Weight:	0.9 lbs.
Power Input:	5V DC, 3A
Certifications:	Class B, CE Mark Commercial
Operating Temperature:	32°F to 131°F (0°C to 55°C)
Storage Temperature:	-4°F to 158°F (-20°C to 70°C)
Operating Humidity:	10% to 85% Non-condensing
Storage Humidity:	5% to 90% Non-condensing

Customer Support

For help with the installation or operation of your HomeLink Broadband Network Bridge, contact Linksys Customer Support at one of the phone numbers, Internet or e-mail addresses below.

Customer Support	800-326-7114
	949-261-1288
Fax	949-261-8868
Email	support@linksys.com
Web	http://www.linksys.com
FTP Site	ftp.linksys.com

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