

HomeLink™ Series

HomeLink Phonenumber Network Card



Use this guide to install these Linksys Products:

- HomeLink Phonenumber Network Card (HPN100)
- HomeLink Phonenumber Network In a Box (HPN100SK)

User Guide



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FCC STATEMENT

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 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

Your Linksys HomeLink Phoneline Network Card

Congratulations on purchasing your new Linksys HomeLink Phoneline Network Card(s). This exciting new technology is being offered in compliance with the standards of the Home Phoneline Networking Alliance (HomePNA). The Linksys HomeLink Phoneline Network Card now offers instant connectivity to multiple PCs over existing telephone lines in your home. You can network any computer by connecting it to any standard phone line. There's no need for a switch, hub, or even any additional cables - the network runs on standard, home-grade telephone wires just like the ones you use every day.

The Linksys HomeLink Phoneline Network Card utilizes Advanced Micro Devices' (AMD®) PCnet™-Home technology. This new technology lets your phone line carry computer data as well as regular telephone voice service. You can also use broadband connections like cable modems or Digital Subscriber Lines (DSL). You can talk on the telephone or download files from the Internet, and share resources over a network at the same time. Every standard telephone jack in the home is capable of hosting a PC - you can connect up to 25 computers, transforming your home's telephone wiring into an easily expandable network. Want to add more PCs? Just put a HomeLink Card in your computer and plug it into your phone jack. It's that simple!

How Does HomeLink Networking Work?

The Linksys HomeLink Phonenumber Network Card utilizes a technology known as Frequency Division Multiplexing (FDM) which divides the data travelling over the phone lines into separate frequencies - one for voice, one for high-bandwidth net access such as DSL, and one for the network data. These frequencies can coexist on the same telephone line without impacting one another, although you will not be able to use your telephone if you are connected through an analog modem.

HomeLink's 1Mbps data transfer rate over phone lines more than accommodates home PC applications such as file and printer sharing, gaming, and Internet and email exchanges. You can share a modem or a high-speed Internet connection over the entire network using the Internet LanBridge software package. The HomeLink Phonenumber Network Card's data transfer rate is 18 times faster than the fastest analog modems available, which run at 56Kbps. Even high-speed modem, DSL, and ISDN connections will perform at full speed on a HomeLink network. The HomeLink Phonenumber Network Card gives you the perfect tool to bring the benefits of networking into your home or office.

Note: Due to standard telephone cable limitations, HomeLink HomePNA devices require that your cabling does not exceed a total length of 500 feet for your entire network.

Features

- Build A Network Using Your Existing Telephone Line - No Additional Hubs or Cabling Needed
- Internal PCI Network Card with 2 RJ-11 Modular Telephone Ports
- 1Mbps Data Transfer Rate - Perfect for File and Printer Sharing, Email, Web Surfing, Multi-User Gaming, and More
- Migrate to 10Mbps Ethernet at Any Time with the Optional RJ-45 Port
- Share Your Internet Access and ISP Connection Over a Network With LanBridge Internet Sharing Software
- Each HomeLink Card Comes Packaged with Its Standard Telephone Cable
- Connect Up To 25 PCs on One Network with Up to 500 Feet of Cabling
- Data Transfer Rate is 18 Times Faster Than 56K Modems
- Works With Windows 95, Windows 98, Windows NT 4.0, and Windows 2000 (Linksys will offer technical support for Windows 2000 after its official release by Microsoft.)
- Frequency Division Multiplexing (FDM) for Uninterrupted Simultaneous Voice Service, High-Bandwidth xDSL Internet Access and Network Data Transmissions
- HomePNA, UADSL, IEEE 802.3, CSMA/CD, and FCC Compliant
- Free Technical Support on the Phone and on the Internet
- Free Software Driver Upgrades
- 5-Year Limited Warranty

Package Contents

- One HomeLink Phonenumber Network Card
(Network in a Box contains 2 HomeLink Cards)
- One Standard Modular Telephone Cable
(Network in a Box contains 2 Telephone Cables)
- Installation CD-ROM with HomeLink drivers and
Internet LanBridge Internet Sharing Software
- User Guide and Registration Card

If any of the above items are missing, contact your Linksys dealer.

Sharing Your Resources

The HomeLink Phonenumber Network Card brings the advantages of inexpensive networking to your home or office. Any networked device, including CD-ROM drives, hard drives, and printers, can be shared by any networked PC on a HomeLink network.



To share a networked device among your PCs on the network, you must configure each of your PCs to handle that networked device. You can also choose not to configure certain PCs to prevent them from using that device.

Sharing Your Internet Connection with Your Network

The Linksys HomeLink Phonenumber Network Card comes with an Internet sharing software (also called proxy server software) package called **Internet LanBridge**. The LanBridge Internet sharing software package allows you to share your Internet connection by setting up a **proxy server PC**, a computer that establishes the Internet connection and routes all Internet communications to the other networked PCs. Only one PC on your network will be the proxy server PC. You should pick the PC that has the modem (analog, DSL or cable) that you usually use to connect to the Internet already installed to be the proxy server PC.



Your HomeLink network will let you talk on the phone and access the Internet at the same time ONLY if you are using a DSL or cable modem connection. If you are using an analog modem or other device that requires you to dial out to your Internet Service Provider (ISP), then, obviously, your telephone line is already in use, and you can not talk on the phone. Your internal network data travels on a separate frequency, so your network communications will not be interrupted no matter what type of Internet connection you have or whether or not you are using the telephone.

Note: America Online, Compuserve, Prodigy, and similar services are not supported since you must go through their specific service and software to access the Internet. Consult your ISP provider for more details.

Installing Your HomeLink Card

Before You Begin

The HomeLink Phoneline Network Card is equipped with two phoneline ports, called **RJ-11** ports, to use in a phoneline network utilizing your existing telephone line. The HomeLink Card also has an optional **RJ-45** 10Mbps Ethernet port for use with 10BaseT Ethernet networks.

Using Your HomeLink Card in a Ethernet Network

If you intend to use the HomeLink Card on a 10Mbps Ethernet network, only use RJ-45 twisted-pair cabling. 10BaseT cabling is available in various grades. For best results, we recommend using 8-wire, Category 5 UTP cabling for an Ethernet network. Although Category 3 can be used successfully, Category 5 is much more reliable, and it is compatible with faster 100Mbps networks- a useful feature if you upgrade to Fast Ethernet speeds in the future.

Both Category 3 and Category 5 twisted-pair cabling can be purchased from computer retail stores, or if you prefer, you can crimp your own cables. See page 54 for details on wiring.

Note: Keep in mind that RJ-11 and RJ-45 capabilities cannot be used at the same time. If one is in use, the other is automatically disabled.

Regardless of what speed your Ethernet network runs, you must always use Category 5 UTP twisted-pair cabling with a switch or a hub. Each PC plugs into the switch or hub with its own twisted pair cable. Because all the PCs' cables converge at the hub's central location, a twisted-pair network is often referred to as having a star topology.



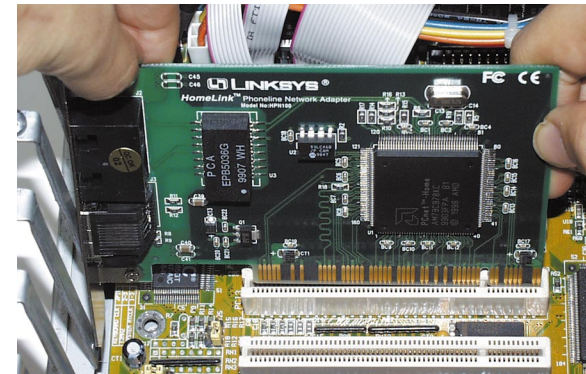
Do not connect PCs with crossover cables or without using a hub. Your network might work, but the connection will be very unstable. Only use crossover cables as a last resort when there are no uplink ports available.

Note: The RJ-45 cable connecting your PC's HomeLink Card to your hub must not exceed 100 meters (328 feet) in length.

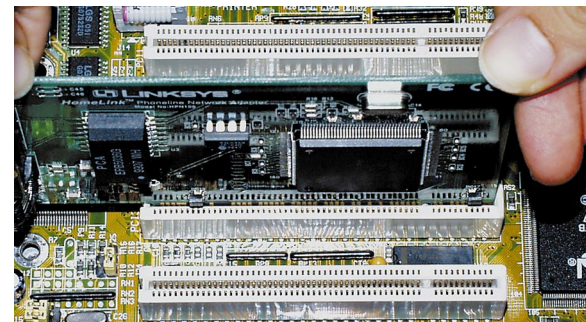
Installing the HomeLink Card

Note: Most newer PCs (Pentium 166 or higher) usually come equipped with all PCI bus mastering slots. If your slots are not labeled, check your motherboard's documentation to determine which slot is a PCI Master slot.

1. Power off your PC and disconnect any peripheral equipment including the power cable.
2. Remove your computer's outside cover.
3. Locate an open PCI expansion slot on the motherboard, and determine which PCI slot is a **Master slot**. If you have difficulties locating a PCI Master slot, consult your PC's motherboard documentation.



4. Slide the HomeLink Card into your PCI slot. Make sure that all its pins are touching the slot's contacts. Applying a bit of force may be required to push the Card completely in. After the card is firmly in place, secure its fastening tab to your PC's chassis with a mounting screw.



5. Replace your PC's cover and reconnect your PC's power source. The card installation is complete, and you are now ready to proceed to the next section to install your telephone or Ethernet network cabling.

Installing Your Cabling

If you are installing telephone cabling for phonenumber networking, follow the instructions in the section below. If you are installing Ethernet cabling to be used with a hub or a switch, follow the instructions on page 10 .



Remember, using the RJ-45 ports on your HomeLink Card will automatically disable your RJ-11 phonenumber networking capabilities. The two types of connections CANNOT be used at the same time. Choose only ONE type of connection to use at a time.

Installing RJ-11 Telephone Cabling

1. Plug one end of the telephone wire into either of the HomeLink Card's RJ-11 telephone ports. There are two RJ-11 ports and only one silver RJ-45 port—the RJ-11 ports are the smaller, black ones on the left side of the Card. The illustration on the right shows telephone cabling with its RJ-11 tip inserted into the black RJ-11 port.



Standard phonenumber cabling with RJ-11 tips

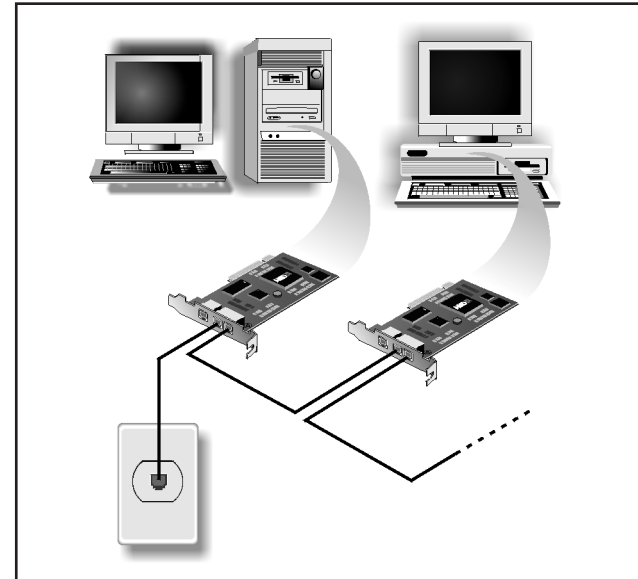
2. Connect the other end of the cable into a telephone jack in your wall, another PC, or a bridge. You may leave one of the RJ-11 ports empty if you do not want to connect your PC to anything else.

3. Your hardware is now installed. Proceed with the installation of the software on page 11.

Note: *If you are using an analog telephone, you can either connect the device to a second phone jack (recommended), or you can connect your telephone directly to the second port on your HomeLink Card.*

If you only have one phone jack and you want to use your phone, modem or fax machine, you can purchase a **two-way adapter** to split your single phone jack into two jack connections. Plug your phone, modem or fax machine into one phone jack and your HomeLink Network Card cabling into the other jack.

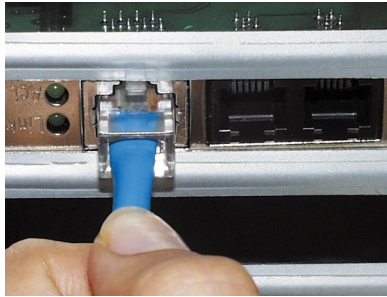
If several of your PCs can only access one phone jack, you can connect those PCs together using the **Daisy Chain** method. Just plug the cabling from your first PC with its HomeLink Card into the phone jack, then use the second RJ-11 port on the same Card to connect to your second PC's Card. One phone jack can support up to twenty-five PCs on one daisy chain. Again, you can use a two-way splitter to plug a phone or other device into your jack, or connect the device to the open telephone port on the last card in your daisy chain. See the illustration below on daisy chaining HomeLink PCs.



Daisy Chaining HomeLink PCs from One Telephone Jack

Installing RJ-45 Ethernet Cabling

1. Plug one end of a Category 5 UTP Ethernet cable into the HomeLink Card's RJ-45 port. The RJ-45 port is the silver port on the far left of the Card. The photo to the right shows a Category 5 UTP cable inserted into the RJ-45 port on the Card.



Category 5 UTP Ethernet cabling with its RJ-45 connector

2. Plug the other end of the cable into your hub, switch, router or bridge. If you plan to use both 10Mbps devices and 100Mbps devices on the same network, you'll need an **autosensing** hub or switch to allow segments of different speeds to communicate. For more information on 10/100 Autosensing Hubs and Switches, visit the Linksys website at www.linksys.com or call us at (800) 546-5797 (LINKSYS).

3. Your Ethernet cabling installation is complete. Follow the instructions in the next section to install your HomeLink driver software now.

Note: Cable modems and DSL connections to the Internet require a 10Mbps interface. To connect your 100Mbps network to your cable or DSL line, use a 10/100 autosensing device to accommodate both speeds.

Installing the Driver Software

Preparing to Install the HomeLink Software

Setting up the HomeLink Card's software involves installing a **network driver** onto your computer. The driver will allow the card to communicate with your Windows software package. Before attempting to install a network driver for the HomeLink Card, Windows 95, 98, 2000* or NT should already be installed on your computer. The HomeLink Phoneline Network Card driver setup program will not work properly under any other operating systems.



Every PC must have a CD-ROM drive to be able to install the HomeLink drivers. You must let the CD-ROM drive to begin spinning up before starting the driver installation.

Because you must answer several important questions about your PC during the installation, it is strongly recommended that you read through the installation instructions for your specific operating system before continuing with this installation.

- **Windows 98** instructions are on page 12
- **Windows 95** instructions are on page 17
- **Windows NT 4.0** instructions are on page 22

Note: The LanBridge software documentation refers to Windows 95 only, but the Windows 98 and 95 installation are almost identical. Use the instructions for the proper operating system for best results.

*** Note:** If you are using Windows 2000, also known as Windows NT 5.0, your Windows 2000 drivers are on the HomeLink CD-ROM. If the Windows 2000 drivers are not on your CD-ROM, you can download them from the Linksys website. Since Windows 2000 is still in development, Linksys will provide updated drivers and technical support for Windows 2000 upon Microsoft's official release of it.

Windows 98 Driver Setup

Now that you've installed the HomeLink hardware in your PC, follow these instructions for installing the Windows 98 network driver. The installation procedure for the network driver will vary slightly, depending on your system configuration and what version of Windows you are running.

The type of network built with HomeLink consists of two kinds of PCs - the **server PCs** and the **client PCs**. The server PC is the "mother" computer, while client PCs are the "children". Each of the client PCs must log on to the Internet through the server PC, which in turn handles all Internet connections for each client PC. Choose your server PC as the PC with an analog modem, cable or DSL connection, or other communications device. Your best server PC is your fastest, most powerful PC, but it doesn't necessarily have to be.

After you choose your server PC, make sure the Internet connection through your server PC's modem is configured and fully functional before beginning the installation of HomeLink drivers or LanBridge Internet sharing software.

Installing the HomeLink Network Driver

1. Start up your Windows 98 PC. A "New Hardware Found" window will pop up for a moment.

Note: Go to page 33 for the Troubleshooting section if you run into any problems.

2. Put the HomeLink Installation CD into your CD-ROM drive.



You must let your CD-ROM drive spin up before you begin using it, especially if your CD-ROM drive runs at high speeds.

3. Windows will display a "Add New Hardware Wizard" window. Click **Next**.



4. Select the first option, *Search for the best driver for your device (Recommended)* and click **Next**.



5. Make sure the HomeLink CD is still in the CD-ROM drive, and click **CD-ROM drive** to prompt Windows to search for the drivers there. Click **Next**.

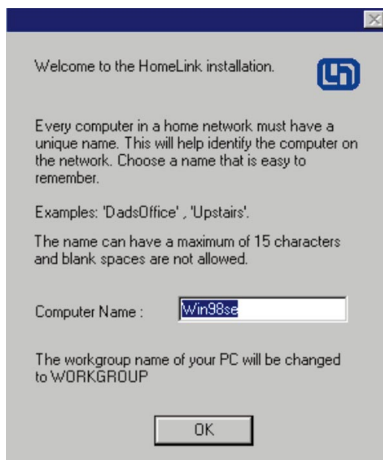


6. Windows will display, “Windows is now ready to install the best driver for this device” as it recognizes your HomeLink Card driver. Click **Next**.



Windows will copy the network files onto your PC, which may take a few minutes.

7. A “Welcome” screen will ask for your computer’s name. Enter your computer’s name and click **OK**.



Your workgroup name will be automatically changed to **Workgroup** at this time. Make note of your server's name for future reference, as you will need it later. Remember, each of your PC's names must be unique.

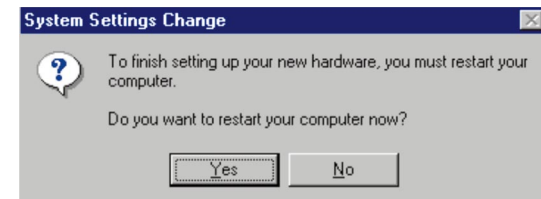
8. An “Insert Disk” window may ask for your Windows 98 installation files. If so, click **OK** and insert your Windows 98 installation CD into your CD-ROM drive. Or, enter the location of those files on your hard drive, (e.g., D:\win98, C:\Windows\options\cabs). To do so, enter the hard drive location of the Windows files in the “Copy files from” field, then click **OK**.

Note: If you see “Version Conflict” or a similar message, asking you if you want to overwrite some existing files, it is highly recommended that you keep them. You may get this message several times or not at all.



*If you are using of Windows 98 files on a CD, you may have to swap back and forth between the HomeLink CD and the Windows 98 CD. Make sure each CD is given a few seconds to spin up before use. Do NOT hit **Cancel** or **Skip File**! Doing so will disrupt the file copy.*

9. Windows will confirm successful installation with a message, “Windows has finished installing the software that your new hardware device requires.” Click **Finish**. When asked if you want to restart your PC, make sure the HomeLink CD is still in your CD-ROM drive and click **Yes**.



10. The HomeLink driver installation is now complete. Choose a user name and password if you have not already done so, and enter them in those fields to log on to your network. Click **OK** to finish your log-on and access your network.



*From this point on, to access the network, you must enter the same user name and password whenever Windows requests it, and click **OK**. Clicking **Cancel** or hitting **Escape** will abort your network log-on attempt. If you do not log on, not all network functions may be available to you.*

11. Now that your HomeLink driver installation is done, a window called "Linksys HomeLink" will automatically begin the Internet LanBridge installation program. Make sure that your file and printer sharing is enabled first in order to make sure that your LanBridge installation will be successful. For more on file and printer sharing, see page 45. If you just want to use your HomeLink network functions now and do NOT want to set up Internet connection sharing on your network, you can exit the Internet LanBridge installation and come back to it at any time.

To set up your Internet connection to be shared on your network, proceed to page 27 for LanBridge installation instructions. If your HomeLink CD is not in your CD-ROM drive, a message may prompt you to insert it. If your LanBridge installation program does NOT automatically run, click My Computer on your Desktop, CD-ROM drive, and then click on the program autorun.exe on the CD-ROM. Or, you can also run autorun.exe from your hard drive.



*You must use only **ONE** Internet sharing software on **ALL** your networked PCs. Internet LanBridge software is not compatible with other Internet sharing (proxy server) software packages. If you would like to switch to Internet LanBridge software instead of using WinGate or any other previously installed Internet sharing software, each PC on your network must have WinGate removed and Lanbridge installed.*

Note: The Internet LanBridge documentation has detailed information on LanBridge software set-up and dial-up networking. The file is called *what_is_.html*, and you can find it on your HomeLink CD under the directory named *D:\lib\userguides\lib*.

Windows 95 Driver Setup

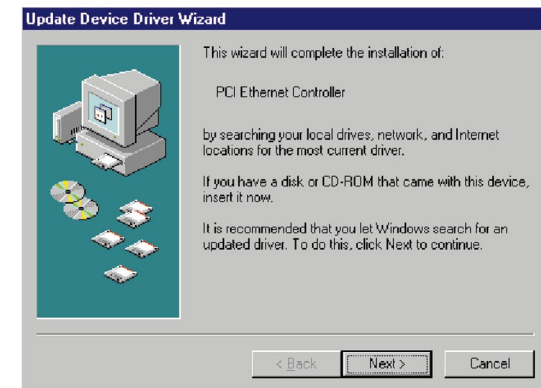
Now that you've installed the HomeLink hardware in your PC, follow these instructions to install the Windows 95 network driver. The installation procedure for your network driver will vary slightly depending on your system configuration and what version of Windows you are running.

The type of network built with HomeLink consists of two kinds of PCs - the **server PC** and **client PCs**. Server PCs are the "mother" computers, while client PCs are the "children." Each client PC must log on to the Internet through the server PC, which in turn handles all Internet connections for each client PC. Choose your server PC as the PC with an analog modem, cable or DSL connection, or other communications device. Your best server PC is your fastest, most powerful PC, but it doesn't necessarily have to be. Also, attach networked devices like printers to the server PC for best results.

After you choose your server PC, make sure that the Internet connection through your server PC's modem is configured and fully functional before beginning the installation of the HomeLink or Internet LanBridge software.

Installing the Network Driver

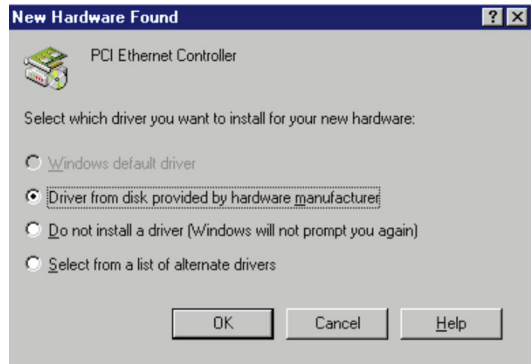
1. Start your PC in Windows 95, and the "Update Device Driver Wizard" window will confirm that it detects a "PCI Ethernet Controller" in your system.



Note: See page 33 for the Troubleshooting section if you have any problems.



If a "New Hardware Found" window shown below asks for the "Driver from disk provided by hardware manufacturer," you are using Version A of Windows 95. Go to page 43 for Version A driver installation.



2. Insert the HomeLink Installation CD into your PC's CD-ROM drive and click **Next**.



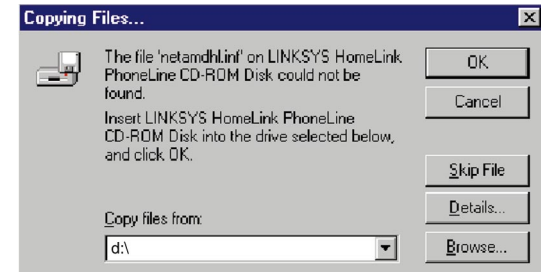
Remember, you must let your CD-ROM drive start spinning up before you begin using your HomeLink driver installation CD.

Note: If Windows fails to find the driver, reinsert your HomeLink driver CD and click **Other Locations**. Direct the search to your CD-ROM drive, e.g., D:\.

3. Windows will search for the HomeLink Card software driver. When the window below appears to confirm that the driver is found, click **Finish**.

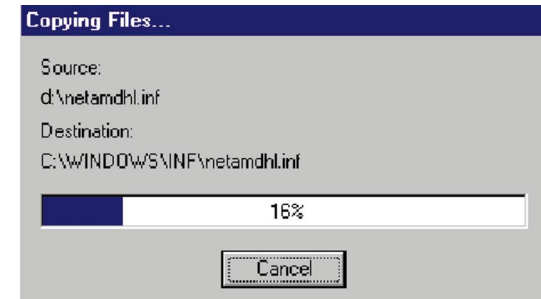


4. In the "Copying Files" window, enter the drive letter of your CD-ROM drive. In most cases, the CD-ROM drive is either **D:** or **E:**. Enter the appropriate drive letter and click **OK**.



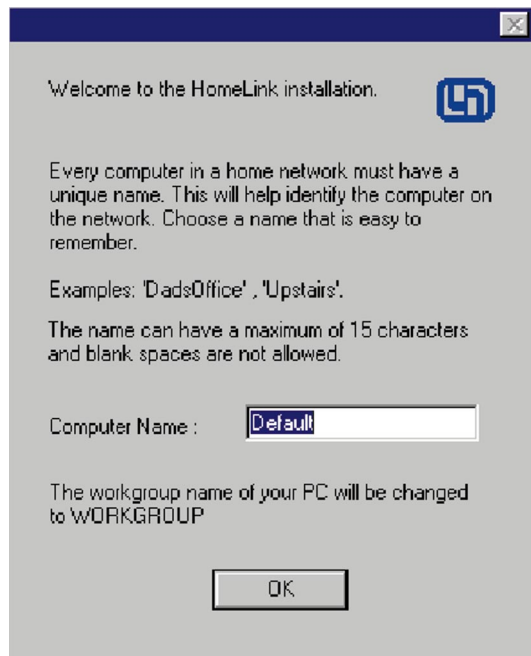
DO NOT hit **Cancel** or **Skip File!** Doing so will disrupt the file copy.

Network files will be copied onto your PC, which may take a few minutes.



6. Windows may ask you to supply your original installation files. If so, click **OK** and insert your original Windows 95 installation CD in your CD-ROM drive. Enter the location of the installation files in the **Copy files from** window (i.e., D:\Win95). You may have to swap between the HomeLink CD and the Windows CD a few times. In many cases, the Windows installation files may be stored on your hard drive in the c:\windows\options\cabs. Click **OK**.

Note: If you get "Version Conflict" or a similar message, asking you if you want to overwrite some of your existing files, it is recommended that you keep the existing files. You may receive these messages many times, or you may not receive them at all, depending on your system configuration and software.



7. Next, click **Yes** to restart your PC.



If you do not restart your PC now, your installation will not be completed. **Note:** Your workgroup name will be automatically changed to **Workgroup** at this time. Make note of your server PC's name for future reference, as you will need this information later. Remember, each of your PC's names must be unique.

8. After the setup is complete, choose a user name and password if you have not already done so and enter them in their field and click **OK** to access the network.

9. The Internet LanBridge installation program will run automatically, but you can use your network first and come back to the LanBridge installation at any time in the future if you do not choose to install it now. Before you begin the LanBridge installation, make sure that your protocols and file and printer sharing have been enabled before you begin to ensure that it installs successfully.

You can run the LanBridge program manually by clicking **My Computer** on your Desktop. Then click **CD-ROM drive** to run the program from your HomeLink CD, or run **autorun.exe** from your hard drive. See page 27 for details on the LanBridge installation.

Note: If you are using HomeLink Cards with WinGate Home software in your other PCs, and this is the next PC you are adding to your network, you can exit the Internet LanBridge installation and install the WinGate software on the CD you obtained prior to the LanBridge CD. If you would like to use Internet LanBridge software instead, all of your PCs must have WinGate removed and LanBridge installed. Internet LanBridge is not compatible with other proxy software like Wingate.

Note: The Internet LanBridge documentation has detailed information on LanBridge software set-up and dial-up networking. The file is called **what_is_.html**, and you can find it on your HomeLink CD under the directory named **D:\lib\userguides\lib**.

Windows NT 4.0 Driver Setup

Now that you've installed the HomeLink hardware in your PC, follow these instructions for installing the Windows NT 4.0 network driver. The installation procedure for the network driver may vary slightly in your configuration, depending on what version of NT 4.0 you are using and your current system configuration.

The type of network built with HomeLink consists of two kinds of PCs - the **server PC** and **client PCs**. Server PCs are the "mother" computers, while the client PCs are the "children." Each client PC must log on to the Internet through the server PC, which in turn handles all Internet connections for each client PC. Choose your server PC as the PC with an analog modem, cable or DSL connection, or other communications device. Your best server PC is your fastest, most powerful PC, but it doesn't necessarily have to be. Also, attach networked devices like printers to the server PC for best results.

Throughout this NT installation, it is presumed that your CD-ROM drive letter is named **D**. If your CD-ROM drive is named any other letter, use the correct letter instead of D throughout these instructions.

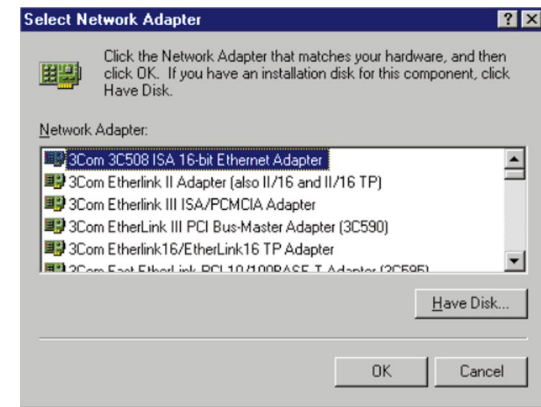
Note: This NT installation does not automatically start the Internet LanBridge installation onto your PC. Upon completing the NT installation, reboot your PC to bring up a window that will begin Internet LanBridge installation. If the window does not appear, simply run the **autorun.exe** file on your HomeLink Installation CD-ROM or from your hard drive..



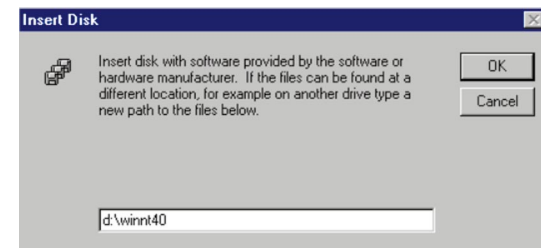
Windows NT only supports **ONE** HomeLink phoneline network card. Multiple HomeLink cards may **NOT** be installed under NT.

Installing the NT 4.0 Network Driver

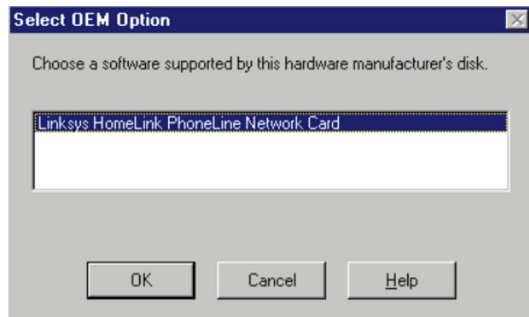
1. Log on as the network administrator. From the Windows NT Desktop, click **Start, Settings, Control Panel**. Click on the **Network** icon. If you already have NT Networking installed, click **Adapter**, then click **Add**, and skip to step 3. Otherwise, a message will ask you, "Windows NT networking is not installed. Install now?" Click **Yes**.
2. The Network Setup Wizard will appear. In the "Choices" box, check *Wired to the Network*, and click **Next**.
3. Windows NT will ask you to pick your network adapter from a long list of network adapters. Since the Linksys HomeLink Card is a newer product, it is not listed here. Click **Have Disk**.



4. A message saying "Insert Disk" appears. Make sure the HomeLink CD is in your CD-ROM drive, type **D:\winnt40**, and click **OK**.

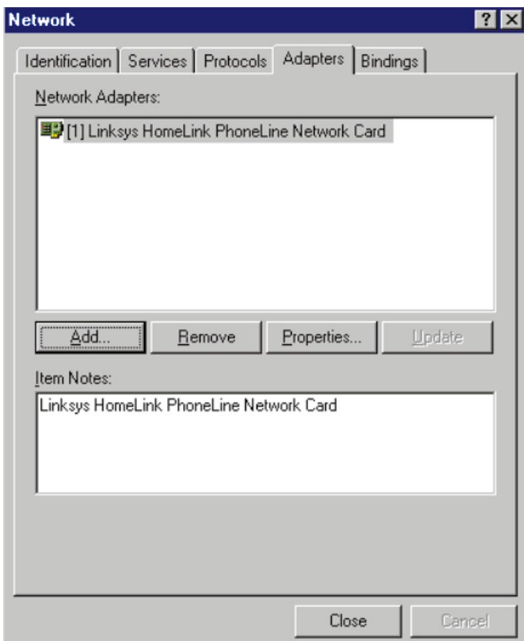


The “Select OEM Option” window, shown below, will appear.



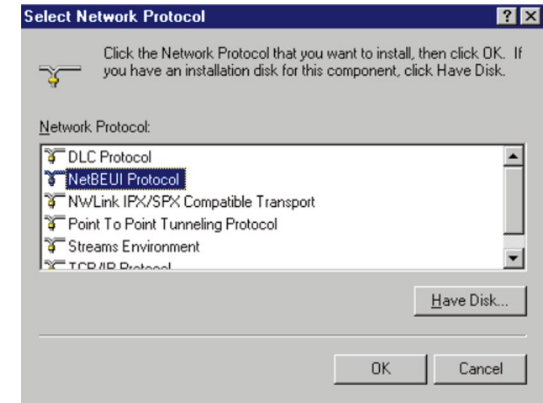
5. A window will confirm that the Linksys HomeLink Phoneline Network Adapter has been detected. Click **OK**, and NT will then copy some files to your PC.

6. The Setup Wizard window reappears with the HomeLink Card now listed in the “Network” window under the “Adapters” tab, as shown below.



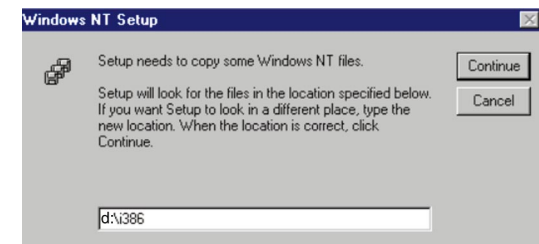
In the following steps (8, 9, 11, and 13), if you are not sure how to set up your protocols, services, DHCP, or bindings, please consult your network administrator or your NT 4.0 documentation.

7. Click the “Protocols” tab under the “Network” window and check for all protocols you need for the HomeLink Card. Click **Add** and **OK** to add protocols.



8. Click the “Services” tab under the “Network” window and check that you have all necessary services for the HomeLink Card. Click **Add** and **OK** to add items, and click **Close** when you are finished.

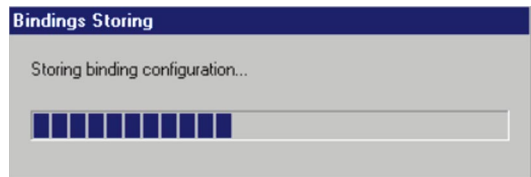
9. Windows NT may tell you that it needs to copy some NT system files onto your hard drive. If so, remove the Linksys HomeLink CD from your CD-ROM drive and insert your NT installation CD-ROM. Type **D:\i386** in the field and click **Continue**.



10. If you use TCP/IP, a “Microsoft Windows NT Setup” window will ask you if you would like to use DHCP. Select the DHCP option, or enter an IP address. Click **OK**.

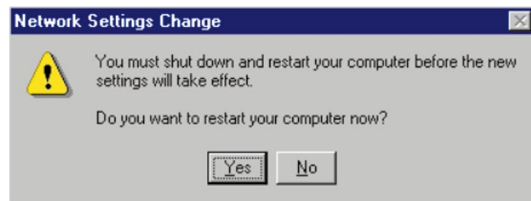
11. NT will copy files onto your PC, which may take a few minutes. If an error message says, “Unable to open the file D:\winnt40\pcentn4hl.SYS,” put the HomeLink CD back in the CD-ROM drive. Wait a moment, and click **Retry**.

12. When the “Bindings” window appears, check to see that your bindings are set up correctly. When you are done, click **OK**, then **OK** again.



13. NT will ask you to enter a *Workgroup* or *Domain* name. If you are not sure what your Workgroup or Domain name is, consult your network administrator or your NT documentation. Enter the correct name and click **OK**.

14. Click **Finish**. You will be asked to restart your computer. Click **Yes**.



15. Your PC will reboot. Login to NT when the Login window appears. The HomeLink driver installation is complete.

Make Sure Your Network is Functioning

Once you have installed your server PC and at least one client PC, go to any PC on the network and click on the **Network Neighborhood** icon on the Windows Desktop. You should see the names of all the PCs on the network. If any names are missing, see the Troubleshooting section on page 33.

You are now ready to proceed to the next section for the LanBridge Internet sharing software installation.

Internet LanBridge

Internet LanBridge Overview

Acotec’s **Internet LanBridge** Internet sharing software allows you to share your dial-up or ISP connection across your entire network using only one modem and one ISP account.

Do not install LanBridge before making sure that your HomeLink Card has been successfully installed. You must also make sure that your file and printer sharing is fully enabled as well as your networking capabilities; otherwise, your LanBridge installation will not be successful.

Note: If you have a DSL or cable modem connection, you can check your installation by connecting your card directly to the Internet, then accessing the Internet through your web browser.

When you install LanBridge onto a PC, you will be given the choice of configuring it as a server PC or a client PC. There should only be one server PC on your network. Your fastest, most powerful PC on the network works best as the server, but the server does not necessarily have to be that PC. To share your Internet access over your entire network, you must choose the server to be the PC directly connected to the Internet with a modem. Servers route all of the Internet connections throughout the network to each of its clients.

Note: The Internet LanBridge documentation contains detailed information on software setup and dial-up networking. You can find the file, called **what_is_.html**, in the directory named **D:\lib\userguides\lib**, given that your CD-ROM drive is named the **D:** drive.

Installing Internet LanBridge on Your Server PC

Your server PC must have Internet access already configured and fully functional before beginning the LanBridge installation.



You should install the LanBridge software on your server PC **first**, before you install LanBridge on any client PCs.

1. Make sure the HomeLink Installation CD is into your CD-ROM drive. When the pop-up menu appears, click on the first icon, **Internet LanBridge**. If the menu doesn't automatically pop up, click the **My Computer** icon on your Desktop. Then click your **CD-ROM Drive** icon, and run the file **autorun.exe**.

2. You will be given the option of installing LanBridge server software or LanBridge client software. Since you are currently installing LanBridge onto your server PC, select **Server**.

Note: The Internet LanBridge documentation is also available on this menu, in case you run into any problems with the installation or during future use.

3. In the "Internet LanBridge Server Setup Wizard" window, select "I accept" to accept the End User Licensing Agreement. Click **Next**.



Clicking **I do not accept** will in no way prevent future access to LanBridge. If you do not choose to accept the agreement now, you can still install LanBridge from your HomeLink CD whenever you like.

4. The Installation program will ask your permission to create a new directory for storing LanBridge installation files. Click **Yes**.

5. An ISP account information page will pop up. If you have a permanent Internet connection (i.e., cable, DSL, Ethernet, etc.), choose "Permanent" and click **Next** to continue. If you have a dial-up Internet connection (analog modem), choose **Dial-up**. Enter your log-in name in the first box. Complete the remaining three boxes with the information you use to log into your ISP. When you complete all four boxes, click **Next**.

6. When you click **Finish** on the next screen, the LanBridge Installation program will install Internet LanBridge server PC to your server PC's hard drive.

7. When you are asked if you want to reboot your PC, click **OK**. Your Internet LanBridge server PC installation is now complete.

Note: It is recommended that you use the NetBEUI or IPX/SPX protocol on your client and server PCs. For security reasons, it is also recommended that you remove the TCP/IP protocol from all client PCs. See page 51 for instructions on how to manually install and remove protocols.

Installing Internet LanBridge on Client PC(s)



Before installing LanBridge on any client PCs, be sure that you already have one server PC running on your network. There should only be one designated server PC on the entire network.

1. Insert the LanBridge Installation CD into your CD-ROM drive. When the pop-up menu appears, click on the **Internet LanBridge** button.

2. You will be given the option of installing LanBridge server software, or LanBridge client software. Since you are currently installing LanBridge onto a client PC, select **Client**.

Note: The Internet LanBridge documentation is also available on this menu, in case you run into any problems with the installation or during future use.

3. Accept the "User Licensing Agreement" by clicking on the **I Accept** check box and click **Next**.



Clicking **I do not accept** will in no way prevent future access to LanBridge. If you do not choose to accept the agreement now, you can still install LanBridge from this CD whenever you like.

4. The Installation program will ask you for permission to create a new directory for storing LanBridge installation files. Click **Next**.

*Note: If you forgot the Host name of your server PC, choose **Start** on your server PC, then **Settings** and **Control Panel**. Click on the **Network** icon. When the Network window pops up, choose the **Identification** tab. The name listed as Computer Name is the same Host Name you are looking for. Return to your client PC and enter your server PC's Computer Name into the Host Name field now.*

5. You will be asked to enter the **Host Name** of your network server PC. Enter the computer name you gave your server PC during the initial HomeLink installation. Click **Next**.

6. When you click **Finish** on the next screen, the LanBridge Installation program will install Internet LanBridge Client on your client PC's hard drive.

7. When you are asked if you want to reboot your PC, click **OK**. The Internet LanBridge client PC installation is now complete.

Using Internet LanBridge

Internet LanBridge software is automatically configured to work with most Internet connection hardware such as cable modems, xDSL, ISDN, etc.

In a Internet LanBridge session, the server PC connects to the Internet as usual. Once the Internet connection is established, any networked client PCs can automatically access the Internet by launching their web browsers or mail programs.

The Internet LanBridge server PC must be fully booted before any other networked PCs can log on to the network. It is strongly recommended that you leave the server PC powered on at all times while you are using your network. Turn it off only when you end your networking session.

When you log on to the Internet over the phonenumber network, it may take a few minutes before your clients' Internet stream is clean and running smoothly. If you want multiple email accounts for each user on your network, you must first determine if your Internet Service Provider will allow you to have multiple mail addresses on one dial-up account. You can either call them, send them an email from an existing account, or visit the ISP's website for more information.



*You must use the **SAME** proxy software on all of your networked PCs to avoid system crashes and an unstable Internet connection. If you wish to use LanBridge on PCs previously installed with other proxy server software, you must uninstall all other software before beginning LanBridge installation.*

After establishing multiple email addresses, you can then configure each client's email program to go directly to a specific email box when checking for Internet messages.

Note: To keep up to date with new features and updates, check Acotec's website for news on LanBridge every now and then at www.virtualmotion.com.

Uninstalling Internet LanBridge

To uninstall the Internet LanBridge software, follow these instructions starting with your server PC. These instructions apply to your server PC as well as your client PCs. Make sure that all of your PCs are disconnected from the Internet before you begin.

1. Close down Internet LanBridge, your email client, web browser, and any other applications that require an Internet connection. Click **Start, Settings,** and then **Control Panel**.

2. Double click on **Add/Remove Programs**.



*Once the **Add/Remove** window appears, close the Control Panel window. If you fail to close this window, Internet LanBridge will **NOT** be completely removed from your system.*

3. Scroll through the list of applications in the "Add/Remove" window, highlight **Virtual Motion Internet LanBridge**, then click **Add/Remove**.

4. Windows will ask you to confirm the removal of the application. Click **Yes**. Windows will remove Internet LanBridge from the list of applications.

5. Click **OK** and restart your PC. Remove Internet LanBridge from all of your networked PCs by repeating these instructions on each PC.

WinGate and Other Internet Sharing Software

There are numerous Internet sharing software (also known as proxy server software) packages on the market, most of which will not work with each other. If you have previously installed WinGate or any other Internet sharing software package on your networked computers, simply exit the LanBridge installation and continue to use the WinGate CD from your original cards to install the WinGate software instead.



Only change these settings if you know what you are doing.

If you are using an Internet sharing software other than LanBridge, you may choose to either continue using that software for your entire network or switch exclusively to the LanBridge software. To use the LanBridge software, you must first uninstall the other Internet sharing software you are currently using on each of your computers per the instructions from that software's manufacturer, then install LanBridge software on all of your computers.

The copy of Internet LanBridge on your HomeLink installation CD-ROM is an unlimited users' license, which means you may use it for as many computers as you like. This software automatically registers itself the first time your server PC is connected to the Internet.

A Note to Windows NT Users

Internet LanBridge requires that Microsoft's Remote Access Server (RAS) software be installed for LanBridge to work properly. Consult your Windows NT documentation and NT installation CD-ROM to install RAS. Linksys does not provide technical support for the installation of RAS services.

Troubleshooting

Troubleshooting Hints for Windows PCs

Problem 1

Windows doesn't detect new hardware when I plug in my HomeLink Card, or it detects the card each time I restart my PC.

Solutions

- Check your HomeLink Card to see that it is inserted into the appropriate PCI slot all the way, and that all the pins are making full contact with the PCI slot.
- Your PC's motherboard may not be Plug-and-Play compatible, or it might have Plug-and-Play options not supported by Windows, or your PC's Plug-and-Play settings may not have been enabled. If you need further help, contact your PC's manufacturer.

Problem 2

Windows cannot locate the driver for the HomeLink Card device.

Solutions

- Check to see that the correct CD is inserted into your PC's CD-ROM drive.
- The CD may be defective, files may be missing, or you may be pointing Windows to the wrong directory or to the wrong drive letter for the CD-ROM drive.
- Make sure that your CD spins up before attempting to begin using it.

Problem 3

The Windows Logon screen does not appear when I restart my PC.

Solutions

- Click on **Start, Shut Down**, then **Close All Programs** and **Logon as a Different User**.
- If the problem persists, your PC's manufacturer may have disabled Windows' networking functionality.
- If you chose "Windows Logon" as your primary network logon and did not choose a password for that user name, that will also keep your Windows Logon screen from appearing. Choose **Client for Microsoft Networks**, or contact your PC's manufacturer for help.

Problem 4

In Network Neighborhood, I only see my own PC and no other PCs on the network.

Solutions

- Make sure your cable to each PC is connected correctly.
- Check your Link/Activity LEDs on your HomeLink Cards (and your hub, if you are using one) to see if they are lit.
- Switch your cable out with another cable that you know is working to find out if that cable is bad.
- Verify that the HomeLink Card's phoneline configuration is set to **Auto Configuration**. See "Changing the Card Settings" on page 39 for instructions on how to do this.
- Connect your PCs using **only** the phone wire provided with the HomeLink Card.
- Disconnect your PCs from any phone jacks and remove any telephone, modem, or other devices connected to the HomeLink Cards.
- If the PCs are far away from each other, position them closer to each other and connect them directly together. This test will determine whether your phone wiring or your HomeLink hardware is causing your network to malfunction. (If your PCs do function when you bring them closer to each other, then...
- Make sure that all your PCs use the same Workgroup name.

Problem 5

I installed the Internet LanBridge client PC software on all my PCs, but I cannot access the Internet.

Solution

You must install the Internet LanBridge software program on ONE server PC first. After you have installed the software's server component on your server PC, install the client PC software on the rest of your networked PCs.

Your server PC must be fully booted and connected to the Internet before you can attempt to access the Internet through a client PC. You may have to reboot your client PCs to gain access to the Internet through the server PC.

Problem 6

I no longer want to share a certain drive or printer, or I want to physically remove a drive or printer from my network.

Solutions

- Reconfigure your File and Printer Sharing settings manually by clicking on the **My Computer** icon. Click on the **Printers** folder to bring up a window of available printers. Right-click once on the printer that you want to disable on the network. Click on **Sharing**, and then the **Sharing** tab. Click on **Not Shared**. To finish, click on the **Apply** button, and then click **OK**.
- Drives are disabled in the same way. In Windows Explorer, right-click on the drive you want to stop sharing. Click on **Sharing**, then the **Sharing** tab. Click on **Not Shared**. When you're done, click on the **Apply** button, then **OK**.

Problem 7: In Network Neighborhood, I can only see the names of PCs running the same operating system as my PC.

Solution

- Click **Start, Find**, then **Computer**, and type the name of any PC not running the same operating system in the window that appears. Click **Find Now**. Make sure that each of your PCs are using the same protocols and workgroup names. To do this, click on **Start, Settings, Control Panel**, then click on the **Network** icon. Click on the **Configuration** tab and then the **Identification** tab for Workgroup settings. If any protocols are missing on any of your PCs, add those protocol(s) with the **Add** button in the Network window.
- If all PCs use the same protocol(s) and Workgroup name, and Windows 95 PCs can't see Windows 98 PCs, enable NetBIOS on all of your PCs. The IPX/SPX-compatible protocol should be installed on all your PCs. Bring up the properties of the IPX/SPX-compatible protocol. To do this, click on **Start, Settings, Control Panel**, then open **Network** and click on the **Configuration** tab. Highlight *IPX/SPX-compatible Protocol* (only one of them) and click on **Properties**. Click on **NetBIOS** tab. Select "*I want to enable NetBIOS over IPX/SPX*" and click **OK**, then **OK** again.

When Windows finishes copying the appropriate files, restart your PC. When you've returned to the Desktop on your PC, open **Network Neighborhood** to check for the other PCs on your network.

Problem 8

A PC with an AMD processor can only see itself in Network Neighborhood, but the workgroup, protocols, cabling and drivers are all working properly.

Solutions

- Some PCs with AMD processors are assigned an IRQ by the BIOS (as it gets listed on the bootup screens of most PCs) that does not match the IRQ assigned by Windows. In this case, disable the IRQ holder for "PCI Steering" in the Windows Device Manager. See your PC's documentation for instructions, or follow the suggestions below. Keep in mind that this procedure will vary depending on your PC's configuration.

1. Click on **Start, Settings, Control Panel**, and open **System**. Click on the **Device Manager** tab. Open **System Devices**, then double-click **PCI Bus**.
2. Click the **IRQ Steering** tab. Remove the check from *Use IRQ Holder for PCI Steering* and click **OK**. Windows will ask you to restart the PC. If Windows does not ask you to reboot, reboot your PC manually.
3. After the PC reboots, Windows will try to detect the PCI Steering again. Continue rebooting the PC until Windows stops detecting new hardware and settings for PCI Steering. This usually takes four reboot attempts.

General Troubleshooting Tips

1. If you do not want to install the Internet LanBridge Internet sharing software package, simply click **I Do Not Agree** when the licensing agreement appears on the screen during the software installation.
2. Use only the telephone wires in your HomeLink package.
3. If you are connected to the Internet through an ISDN router or cable modem and your PC already has a network card installed, you must use Internet LanBridge to share the connection on your HomeLink network. In some cases, you must manually configure your routing tables if you want to use the HomeLink Card, instead of the other to share the connection. Linksys does not provide support on routing table configuration. Contact your phone or cable company to seek assistance on this matter, if any is provided. It is easier to use a 10BaseT hub and RJ-45 cabling and use the hub to share the Internet connection. **Some cable modems cannot be shared.**
4. To set up an NT-based PC as the LanBridge server PC, LanBridge requires the Microsoft Remote Access Server software to be installed on that PC. Check your NT or Microsoft documentation on how to install the RAS service. Linksys does not provide technical support for installing RAS services.

Note: The following information is supplied to you for reference only.

Installing Multiple Network Cards

Linksys does not provide technical support for setting up or troubleshooting multiple network cards, or enabling or setting up routing in an operating system. See the documentation on your operating system to find out more on how to set up two network cards in a PC to communicate with each other. The HomeLink Card can use either its RJ-45 Ethernet connection or RJ-11 phone wire connection at any given time. Both connections can not be used at the same time.

Connecting to an Existing Ethernet Network

If you want to add your HomeLink PC to an already existing Ethernet network, you must use the HomeLink Card's RJ-45 port to connect your PC to that Ethernet network. It is not possible to connect the HomeLink Card via the RJ-11 port directly to an Ethernet network. This can only be done through the Instant Broadband Bridge (model number HPES03), or an operating system that can route the packets from an Ethernet adapter to the HomeLink Card. Otherwise, one Ethernet card and one HomeLink Card must coexist in one PC. The operating system must be able to route packets between network cards, otherwise the two different segments will not communicate with each other. Cable modems are often an exception. See the section below for details about cable modem sharing. For more information on the Broadband Bridge (HPES03), visit www.linksys.com, or call us at 1-800-546-5797 (LINKSYS).

Using a Cable Modem with the HomeLink Card

If you currently use a network card with a cable modem, it is recommended that you connect your cable modem to a 10BaseT hub for faster access speeds. Keep in mind that some cable modems may not be connected to a hub and require a direct connection to a network card. Contact your cable service provider if you have any questions regarding this matter.

You can also add the HomeLink Card to a PC with an existing network card. The Internet LanBridge software packaged with your HomeLink Card is capable of sharing the Internet connection on the second card. For setup of two network cards in your PC, see the operating system documentation. Linksys does not provide any technical support in setting up multiple network cards in a PC, and is not responsible for setting up or configuring routing or filtering tables.

Some cable modem providers may prevent the use of Internet sharing software to share Internet access. The best course of action would be to discuss the matter with your cable service provider, then consult your Windows documentation to find out what is required to install multiple network cards.

Appendix

Changing Card Settings

For most users, the HomeLink default settings will be perfect for either Phoneline or Ethernet networking. However, you can make any necessary changes to your system's network settings by clicking on your Taskbar's **Start** button, then **Settings**, then **Control Panel**, and then the **Network** icon.

1. To access your HomeLink driver, click on the **Configuration** tab, highlight *Linksys HomeLink Phoneline Network Card* and click on **Properties**.
2. The Linksys HomeLink Properties window will open. Click on **Advanced**.

Ethernet Configuration

This option allows you to set the duplex mode and speed performance of the RJ-45 Ethernet port on your HomeLink Card. To change port settings, the *Mode Selection* option must be set to **10BaseT Only** or **10/100BaseTX Only**, or the mode must be set at **Auto Detect** with a valid link to the 10BaseT Port.

- **10Mbps Half Duplex** sets the 10BaseT port to half duplex mode. This is the default setting.
- **10Mbps Full Duplex** sets the 10BaseT port to full duplex mode.

Note: Many hubs have a built-in uplink port that is crossed internally, which allows you to uplink hubs together with just a straight through cable instead.

Mode Selection

You can set the HomeLink Card to default to either a 10BaseT connection or a phoneline connection. Since there are three ports, the card is set to auto detect an active connection. **Auto Detect** will first search for a connection on the 10BaseT port, and if one is not found, the card will default to the phoneline connection. The Card can only be configured to use one connection type at a time.

- **10/100 Ethernet (External)** mode will force the card to use a 10/100 connection, if one exists.
- **10BaseT Ethernet (Internal)** mode will force the card to use a 10Mbps connection, if one exists.
- **Phoneline** mode will force the card to use only the 1Mbps phoneline connection.

Phoneline Configuration

The phoneline port can be set to operate in several modes. The phoneline port defaults to **Auto Config** mode, which will automatically set the port to **High Power/High Speed** mode.

These port settings will take effect only if the phoneline port is selected as the default port, or if the card is in **Auto Detect** mode and the phoneline link is active.

- **Low Power/High Speed** mode will allow full speed on the phoneline port while the card operates at a lower power consumption rate.
- **High Power/Low Speed** mode will give you a 700Kbps transfer rate over the phoneline connection, while still allowing the card to operate at full power.

About Plug-and-Play PCI Technology

Introduction

The HomeLink Network Card is designed to run in 32-bit desktop PCs that are PCI Version 2.1 compliant or higher. Most bus mastering PCs such as Pentium 166 and higher meet this standard.

PCI, or **Peripheral Component Interconnect**, is a technology that allows special Plug-and-Play expansion cards to be automatically configured by a computer's **BIOS** (Basic Input/Output System) upon installation. Refer to your computer's user guide for more information about its BIOS.

When a PCI card is used in a computer that supports Plug-and-Play, the card is automatically configured each time the computer is booted. The card's IRQ, I/O address, and other operating parameters are automatically assigned. You can only change Plug-and-Play card settings like IRQs through your computer's BIOS menu(s). If the resources assigned to your HomeLink Card seem to conflict with other devices in your PC, use your system's BIOS to resolve the conflicts.

If you have problems configuring your BIOS or resolving IRQ or other hardware conflicts, consult your computer manual or contact your PC's manufacturer for BIOS setup and configuration directions. For a list of Plug-and-Play compliant BIOS, see page 42.

Here are some **general guidelines** to follow when installing a PCI card (like the HomeLink Card) into your PC. These guidelines are not necessary under normal installation procedures, but may prove useful in troubleshooting situations.

1. The HomeLink Card must be used in a 32-bit PCI slot that supports **PCI Bus Mastering**, and will not work properly in a PCI Bus Slave slot. Most PCs with a Pentium 166 and faster (or compatible) processor generally have all PCI slots set to Master. Most newer PCs only have PCI Master slots, whereas older PCs may have both. Some systems allow you to designate slots as either Master or Slave slots, and others will already have the slots labeled on the motherboard. See your PC or motherboard documentation for more information on Master and Slave slots.

2. When using NT, make sure your BIOS settings for your operating system are not set for a Plug-and-Play operating system. Since NT is not a Plug-and-Play operating system, it will not usually recognize LAN cards if they are set to be automatically detected and configured. If you need to configure your PC's BIOS in order to resolve an IRQ or other conflict with the HomeLink Card, here are a few possibilities:

No Changes Allowed

Your PC's BIOS may not allow you to change the IRQ value(s) of the PCI slot(s). In this case, you will **ONLY** be able to use the IRQ and I/O values that have been preassigned to each slot. The popular BIOS from Phoenix, for example, may not allow you to modify BIOS-assigned IRQ settings.

Jumper Changes

You may be able to change the IRQ & I/O values for a given PCI slot by setting jumpers on your PC motherboard. Please refer to your PC's motherboard user guide for specific instructions.

Note: Moving the HomeLink Network Card to a different slot may change the settings for the Card.

Menu Changes

Your PC may allow you to change the IRQ values, and in some cases even I/O values, for a given PCI slot by accessing the PC's BIOS setup menu. See your PC's user guide for specific details.

Plug-and-Play BIOS list

Generally, all computers with Pentium, Pentium II or Pentium III (or compatible, such as AMD's) processors have a Plug-and-Play BIOS. Here's a list of BIOS that meet the Plug-and-Play requirements if you're not sure:

- **Phoenix 4.04 or higher**
- **Award 4.50 PG or higher**
- **AMI dated after September 94**

If your BIOS is not listed above, it does not necessarily mean that your BIOS is not Plug-and-Play compatible. Consult your PC's documentation or contact your PC's manufacturer to find out about your particular situation.

Windows 95 Version A Driver Setup

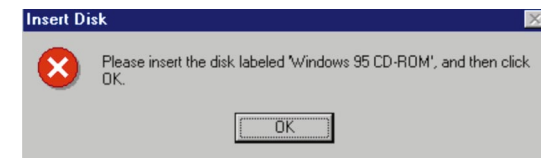
1. Start your Windows 95 PC, which will detect the HomeLink Phoneline Network Card and display a New Hardware Found window.



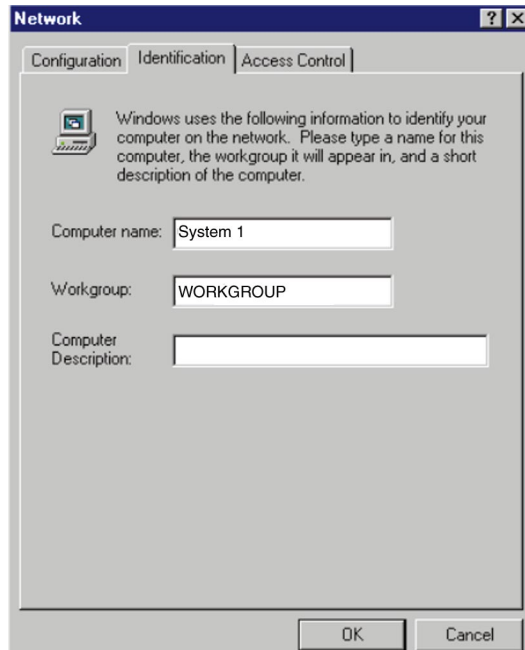
2. Make sure the HomeLink CD is in your CD-ROM drive. Select the “*Driver from disk provided by hardware manufacturer*” option on the screen, then click **OK**. When asked for the files' location, type **D:\win95a** and click **OK**.



3. Windows will copy the appropriate files onto your PC. If Windows asks you to supply your original Windows 95 installation CD or setup files, enter the path for those files on your hard drive (e.g., A:\, D:\WIN95, C:\Windows\options\cabs, etc.) Linksys only provides two files, NETAMDHL.INF and PCNTN3HL.SYS in d:\Win95a; Microsoft provides all other files.



After Windows finishes copying files onto your PC, it may ask you to restart your PC. Click **Yes**. When your PC restarts, click **Start, Settings, Control Panel**, and click on the **Network** icon. Click on the **Identification** tab. Make sure your workgroup name is “Workgroup” and that your computer name is complete.



File and Printer Sharing

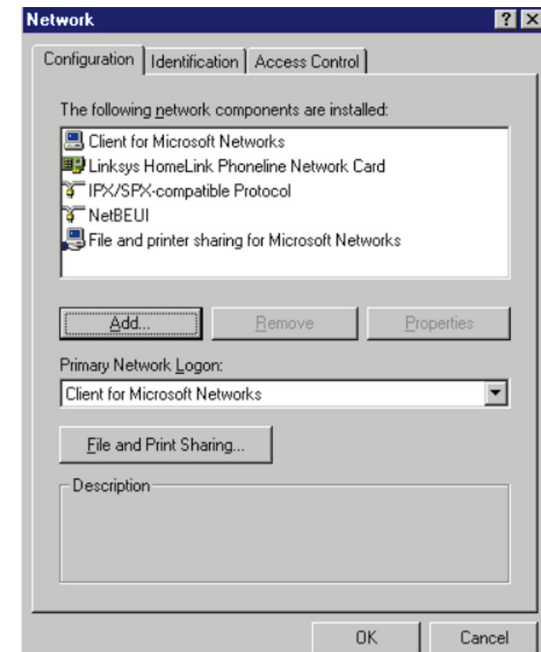
Preparing to Use File and Printer Sharing

These instructions explain how to turn on file and printer sharing in Windows 95 and Windows 98 so that your networked PCs can access each other.



When sharing drives or folders, it is strongly recommended to share them using a password. If you are using Windows 95B or Windows 98, you can proceed to “Enabling File Sharing” and “How to Share Printers”, on page 47.

Start Windows 95. When asked to log in, be sure to give your correct user name and password. To set up file sharing for the first time on a PC, click on **Start, Settings, Control Panel**, then click on **Network**. Under the **Configuration** tab, click on the **File and Printer Sharing** button to make **File and Printer Sharing** window will appear.

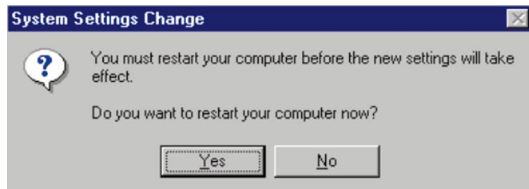


Note: Not all printers may be shared on the network, or you may require special instructions to set them up as shared printers. If you run into a problem, see your printer's documentation or contact its manufacturer.

- If you want others to have access to the files on your PC's hard drive, select *I want to be able to give others access to my files.*

- If you want to share your printer with other users on the network, select *I want to be able to allow others to print to my printer.*

Click on the **OK** button. *File and Printer Sharing for Microsoft Networks* should now appear in your list of installed components. Click **OK**. When asked to restart your PC, choose to do so.



Enabling File Sharing on Your Network

Upon completing the preparation instructions, double-click on your **My Computer** icon. A window of available disk drives will appear. Using your right mouse button, click once on the drive or folder that you want to make available to other users. Click on **Sharing**. Click on **Share As**. In the “Share Name” box, enter a name for the drive or folder you are sharing, or keep the default that Windows assigned, e.g., C Drive, CD-ROM, Leela, etc.

Next, decide what type of access you want to assign to the other users.

- **Read-Only access** lets other users view the files on your PC.
- **Full access** lets users create, change, or delete files on your PC.
- **Depends on Password** lets users have Read-Only and/or Full access, depending on the password that you decide to give them.

Select the type of file sharing access that you want other users to have. If you want to assign access password(s), type them into the Password box(es).

When you're done, click on the **Apply** button, followed by **OK**. Your drive(s) or folder(s) can now be accessed by the other users whenever they click on their **Windows** icon. If a user tries to access one of your drives or folders with password protection, the appropriate Read-Only or Full access password must be given by the user for access to be granted.

Enabling Printer Sharing on Your Network

Double-click on your **My Computer** icon. Click on the **Printers** folder. A window of available printers will appear.

Use your right mouse button to click once on the printer to be shared with other users. Click on **Sharing**. Click on **Share As**. In the “Share Name” box, enter a name to the printer you're about to share (Jack's HP4, for example). If you want to set up the printer so only certain users can access it, type a password into the Password field.

When you're done, click on the **Apply** button, followed by **OK**. Your printer(s) are now shared.

Starting Over in Windows 95 & 98

If you experience installation problems, you may need to reinstall all your Windows networking components from scratch. The instructions below explain how to give your PC a clean sweep so you can start the HomeLink Card's software installation over. If you need to remove LanBridge Internet sharing software, see page 31.

Note: The following screen shots on the next three pages should be considered guides only. The screen shots may differ on your PC.

1. On your Desktop, click **Start**, highlight **Settings**, and click **Control Panel**.
2. Click on the **Network** Icon.
3. If the window that says, "The following network components are installed" has a component called "Dial-Up Adapter," skip to step 5. If not, go to step 4.
4. Remove any item in the box with "Linksys" in its description. This includes *IPX/SPX...Linksys*, *NetBEUI...Linksys*, and *TCP/IP...Linksys*. Also remove *Client for Microsoft Networks*, *Client for Netware Networks*, and *File and Printer Sharing for Microsoft Networks*.



In some cases, removing one of these components may in turn automatically remove other components as well.

5. For PCs with Dial-Up Networking and/or an AOL adapter, remove any instances of the name "Linksys", all IPX/SPX and NetBEUI protocols, all Clients, and File and Printer Sharing for Microsoft Networks.



*In step 5, do **NOT** remove Dial-Up Adapter, AOL Adapter, TCP/IP-Compatible Protocol-AOL Adapter or TCP/IP-Compatible Protocol-Dial-Up Adapter.*

6. When you are done removing all the unnecessary components, click **OK**. When asked to restart your PC, click **No**.
7. Return to the Windows Control Panel. Double-click on the **System** icon.

8. The "System Properties" window will appear. Click on the **Device Manager** tab.
9. Scroll down to the item "Network Adapters" and expand it by clicking on the **plus** [+] sign next to it.
10. Remove all devices with the name Linksys in its description. (If at any point you are asked to restart the PC, click **No**).
11. Scroll down to the "Other Devices" section. Remove *PCI Ethernet Controller* or *PCI Ethernet Adapter*. (If "Other Devices" is not listed, proceed to the next step.)
12. When finished, click **Close**. Do not shut down Windows or restart your PC at this time.
13. Click **Start**, **Find**, then **Files** or **Folders**. Search your hard drive for a file called "netamdhl.inf." Delete all instances of this file by browsing each sub-directory where the file is located, e.g., c:\windows\inf, c:\windows\inf\other.
14. Shut down Windows and restart your PC.

Changing Computer Names or Workgroup Names

1. To change your PC's Computer or Workgroup name, click **Start, Settings**, then **Control Panel**.
2. Double click the **Network** icon.
3. Choose the **Identification** tab. You can change your PC's computer name and Workgroup name here. The computer name must be unique from all your other PCs. The Workgroup names on all the PCs on your network must be identical. The "Computer Description" box is simply provided for your information and does not affect your network or PC operation.
4. After entering everything you need to change, click **OK**. Windows may copy some files at this time.
5. Restart your PC to complete the process.

Manually Installing Windows Network Components

Sometimes you may need to manually install missing Windows networking components. To do so, follow the instructions below:

1. Click on **Start, Settings**, then **Control Panel**.
2. Click on the **Network** icon to bring up the Network window.
3. It is strongly recommended that you install the components below to properly set up your HomeLink network under the **Configuration** tab. Of course, every network is different, so your settings will depend on what settings are on your PCs. If you have a broadband Internet connection like a cable or DSL line, your service provider may recommend different settings. Consult your broadband service provider if you have questions about which protocols are needed.

Client for Microsoft Networks
Linksys HomeLink Phoneline Network Card
IPX/SPX-compatible protocol
NetBEUI
TCP/IP

Note: In this example, TCP/IP is shown only as an extra protocol.

If the required components are missing, add them as follows:

Adding Client for Microsoft Networks

If you plan on connecting to an NT file server or peer-to-peer network, click on the **Add** button. Highlight *Client* and click on **Add**. Select *Manufacturer* and choose *Microsoft*. In the "Network Client" box, highlight *Client for Microsoft Networks* and click **OK**.

Adding IPX/SPX-Compatible Protocol

Click on the **Add** button. Select *Protocol*, then click on **Add**. Under *Manufacturer*, highlight **Microsoft**. Under *Network Protocol*, highlight **IPX/SPX**. Click **OK**.

Adding NetBEUI

Click on the **Add** button. Select *Protocol*, then click on **Add**. Under *Manufacturer*, highlight **Microsoft**. Under *Network Protocol*, highlight **NetBEUI**. Click **OK**.

If you need to install the **TCP/IP protocol**, consult your system administrator or your Windows documentation. TCP/IP is added in the same way as the NetBEUI and the IPX/SPX protocols. DHCP users do not need to configure any TCP/IP settings. Linksys does not provide technical support for TCP/IP configuration or troubleshooting of the TCP/IP protocol.

Linux, Open Source and Beta Operating Systems

Linksys does not provide technical support for **Linux**, **FreeBSD**, or other freeware or open source operating systems. Many Linksys products have proven to perform well under Linux and other freeware operating systems, but technical support for set-up and troubleshooting Linux is not provided at this time. For information on finding drivers and setup instructions for Linux and other freeware OSes, visit the **Support** and **FAQs** pages on the Linksys website at www.linksys.com.

Beta OSes, such as Windows 2000 Beta, do not receive technical support by Linksys. Linksys will provide technical support for Windows 2000 after Microsoft officially releases it.

References

Types of Cabling

Ethernet Cabling

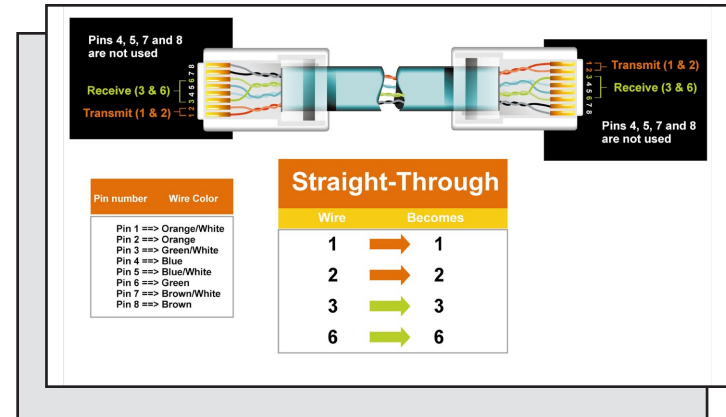
There are different grades, or categories, of twisted-pair cabling. The most highly recommended type of network cabling is Category 5 UTP Ethernet cabling, since it is the most widely used and the most reliable. Category 3 is an acceptable alternative cabling. Straight-through cables are used for connecting computers to a hub. Crossover cables are used for connecting a hub to another hub, when there are no uplink ports available.

You can buy Category 5 cabling that is precrimped, or you can crimp your own. Category 5 cables can be purchased or crimped as either straight-through or crossed over. 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 crossed cable, the order of the wires change from one end to the other: wire 1 becomes 3, and 2 becomes 6.

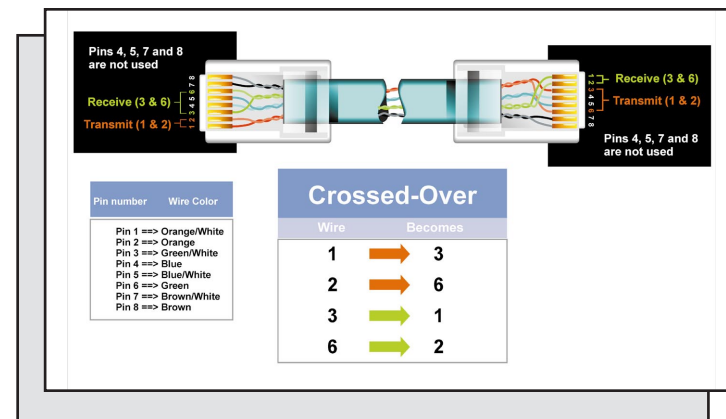
The color code for the 4 wires should be as follows: Wire 1, white with an orange stripe; Wire 2, orange; Wire 3, white with a green stripe; Wire 6, green. The other four wires have to be connected as follows: Wire 4, blue; Wire 5, white with a blue stripe; Wire7, white with a brown stripe, Wire 8, brown.

To figure out 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. Flip the spring clip so that the copper side faces up (the spring clip will now be parallel to the floor).When looking down on the coppers, wire 1 will be on the far left.

Straight Through Ethernet Cabling



Crossover Ethernet Cabling



HomeLink Telephone (RJ-11) Cabling

The telephone cables you use should be standard telephone cables like the ones you use every day in your home. The RJ-11 cabling has RJ-11 tips and four colored wires.

Note: If you are only sharing Internet access between 2 PCs, you can connect your modem directly to your HomeLink Card using a standard telephone cable. However, if you are sharing Internet access among more than two computers, it is strongly recommended that you obtain a two-way splitter for your phone jack, or that you find another wall phone jack for your modem connection.

Forcing the HomeLink Card to supply modem data from the Internet to multiple computers may result in a failed or unstable network connection.

Specifications

Model Numbers	HPN100, HPN100SK
Standards	HomePNA Version 1.0, IEEE 802.3, PC98, PC99, and NetPC
Topology	Daisy Chain (Phoneline) Star (Ethernet)
Protocol	CSMA/CD
Speed	1Mbps (Phoneline) 10Mbps (Ethernet)
Ports	2 RJ-11 Ports, 1 10BaseT RJ-45 Port (Mutually Exclusive)
Cabling Type	Standard Copper RJ-11 (Phoneline) Category 5 UTP or Better (Ethernet)
LEDs	Link, Activity
Bus Type	32-Bit PCI Version 2.1 Compliant

Environmental Specifications

Dimensions	5.2" x 4.75" x 0.75"
Weight	3 oz.
Power	5 watts maximum
Certifications	FCC Class B, CE Mark Commercial
Operating Temperature	0°C to 55°C (32°F to 130°F)
Storage Temperature	-40° to 70°C (-40°F to 158°F)
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 Phoneline Network Card or HomeLink Network In a Box, contact Linksys Customer Support at one of the phone numbers or Internet 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://ftp.linksys.com



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