HomePlug USB Adapter

User Manual (GHPU21)

IOGEAR

Welcome

Thank you for purchasing one of the most user-friendly networking devices on the market. IOGEAR's HomePlug to USB adapters are first-class networking devices designed to network your computers at home (or in your small office). This device allows you to set up your home network via the most pervasive medium in your house – the home power lines. It is easy to set up, and it doesn't require any additional wiring in the house.

To better serve you, IOGEAR offers an array of additional USB 2.0, USB 1.1, FireWire, KVM, and other peripheral products. For more information or to purchase additional IOGEAR products, visit us at www.IOGEAR.com

We hope you enjoy using your IOGEAR HomePlug to USB adapter, another first-rate connectivity solution from IOGEAR.

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Overview

IOGEAR's HomePlug Powerline Network USB Adapter allows you to network your home computers through the electric power lines in the house. Setting up a home network has never been so simple, just install the driver, plug the USB end to your computer and plug the power end to your AC power outlet. That's it, you are connected!

This unit is compliant to HomePlug Powerline Specification 1.0 and USB 1.1 Specification, and offers up to 12 Mbps bandwidth while being less prone to interference. By offering 56-bit DES encryption, it is also much more secure than other home networking technologies such as wireless Ethernet.

Features

- No extra wires, using the most pervasive medium in your home – power lines
- Allows multiple computers to share Internet access, printers, and other resources through the power lines
- Very easy and intuitive to set up and install
- HomePlug Powerline Specification 1.0 compliant
- USB 1.1 Specification compliant
- Up to 12 Mbps bandwidth
- Up to 990' distance through the power lines, far enough for most households
- Worldwide compatibility
- Low risk of interference by other RF sources
- 56-bit DES encryption assures data security
- Signal will not pass power meter, thus keeping the data safe in the house
- Encryption done by hardware, with no sacrifice on bandwidth
- Most reliable home networking technology

System Requirements

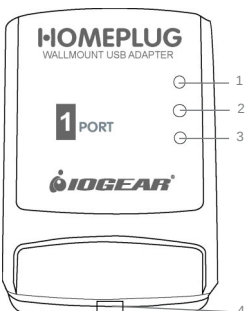
- Available USB port and CD-ROM drive for the Windows based computer that you plan to install this device to
- Windows 98, 98SE, ME, 2000, and XP
- Available power outlets in room
- Standard home power line wiring

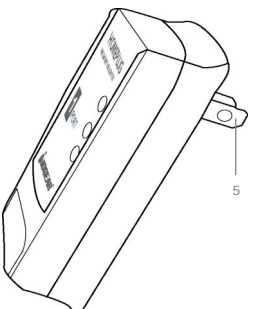
Introduction

IOGEAR's HomePlug to USB adapter allows you to network your computers via your current existing home power line. It offers a data transmission speed of up to 12 Mbps, and to reach up to 990 feet through standard power lines.

Package contents:
1. HomePlug to USB adapter
2. USB Cable
3. User Manual
4. Warranty/Registration card
5. Driver CD

1. Collision LED – lights in green whenever there is collision
2. ACT LED – blinks in green when there are network activities
3. Link LED – lights up in green when plugged into a power outlet
4. USB port – connecting to the computer
5. Power Prongs – plug directly on the wall





Installation

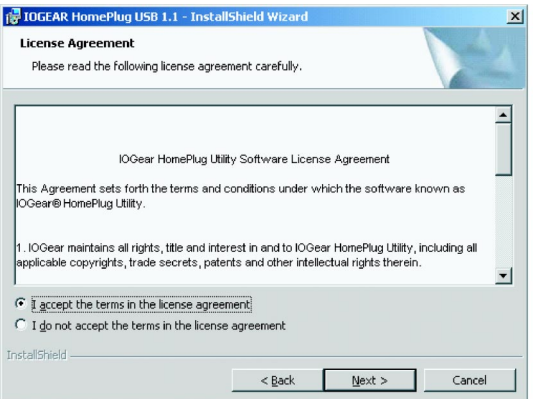
Note:
Do not place HomePlug devices under direct sunlight or near high-heat-emitting devices;
Do not place HomePlug devices near water or wet surfaces to avoid electric hazards;
Do not place HomePlug devices on any moving or unstable surfaces;
It is recommended that you plug the HomePlug devices directly into the wall outlets, not to any power adapters, surge protectors or any device that filters signals.

1. Remove the HomePlug to USB adapter, the USB cable and the installation CD from the package.
2. Allocate a space for the adapter's placement. Make sure you avoid the places mentioned above.
3. Make sure that your HomePlug USB Adapter USB cable is **NOT** plugged in the computer before you install the driver first.
4. If you currently have a 10/100 Base-T network interface card installed in your computer, please disable the card first.

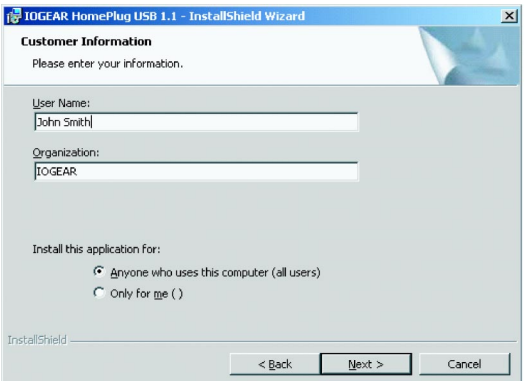
(Note: The following driver installation steps are under Windows XP. Other operating systems will have the similar steps but the screen may appear different. For Windows 98SE, ME and 2000, you may be prompted to use the Windows CD under 98SE and ME.)

5. Insert the installation CD. If CD does not automatically load, run (CD Drive Letter):\setup.exe
6. Click Next.

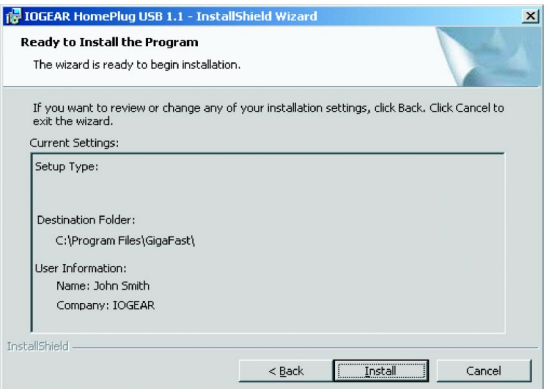
7. Read, understand and accept the agreement and continue by clicking Next.



8. Enter a user name and organization name, and click Next to continue installation. (Username and Organization have no importance in device operation. Window might look slightly different on other platforms.)

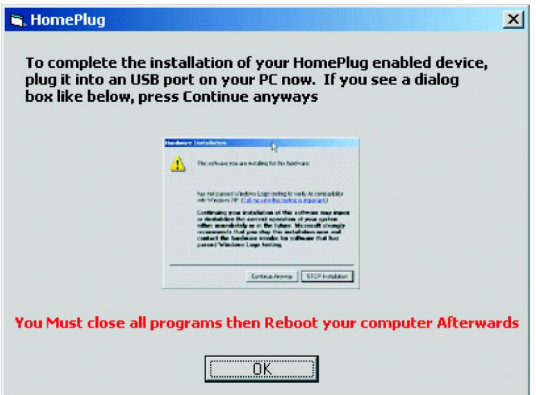


9. Press “Install” to start the Installation Wizard:

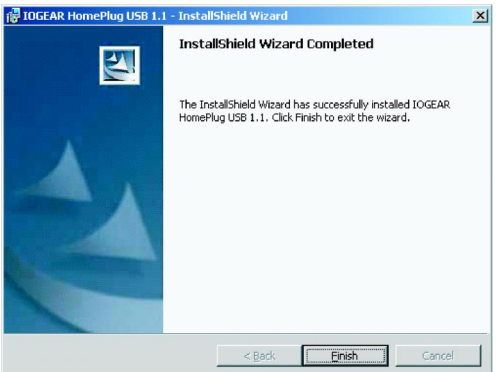


You may be prompted by this warning screen, ignore the warning and click “Continue Anyway”.

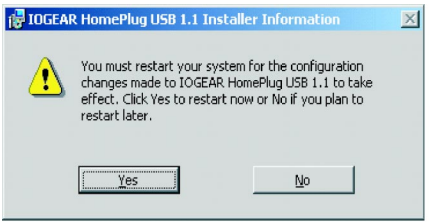
10. After the installation is successful, a window will come up prompting for the installation of the HomePlug to USB adapter. Go ahead plug the Homeplug USB adapter on the wall outlet, and then plug in the USB cable into both the HomePlug to USB adapter and the computer. Then click OK.



11. Click “Finish” to complete the installation.

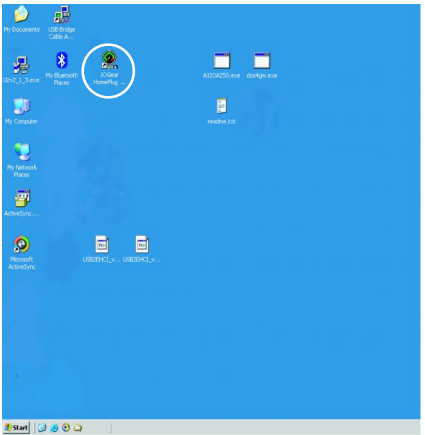


12. Click “Yes” to restart your computer.

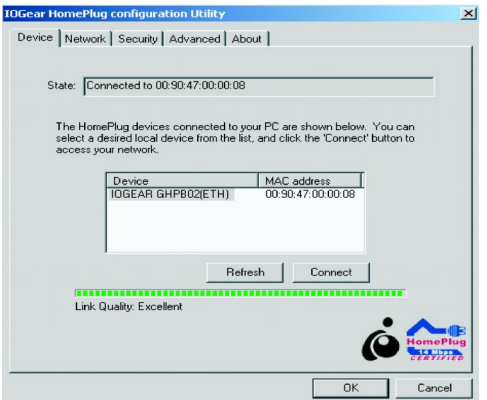


After restarting the computer, you can see the HomePlug utility icon.

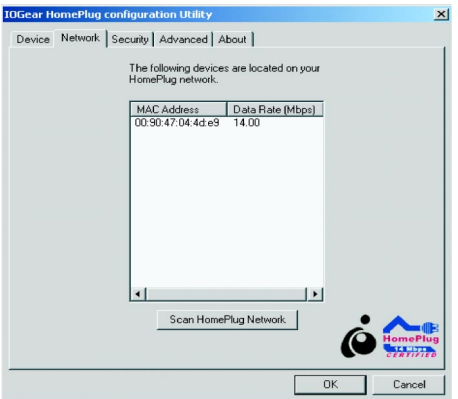
1. Double click on the icon to start the HomePlug Configuration Utility. The utility is used to configure the HomePlug device.



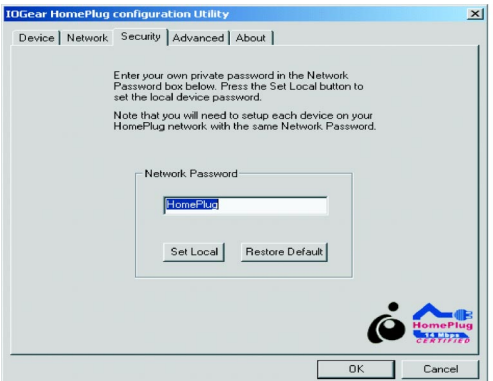
2. Once the utility starts, it will display the MAC address of the device your computer is connected to as well as the signal strength.



3. The Network tab displays the additional HomePlug devices on the network. Click on the “Scan” button to scan for additional devices on the power line network.



4. The Security tab displays the Network Password. The default Network Password is HomePlug. If you change the password, you will have to set up the same password for all the Homeplug devices on the network.



5. Advanced

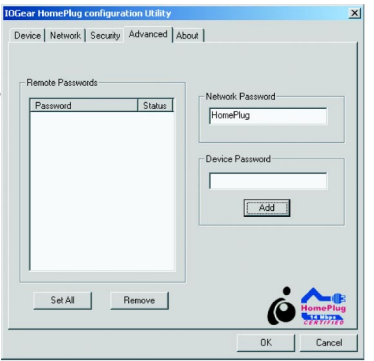
The Advanced tab is where you can set the Network Password on all of the HomePlug devices at once. This way, you don't have to connect to each device and set the password one by one.

Network Password – Displays the Network Password.

Device Password – This is where you enter the password located on the bottom of you HomePlug device. Once you enter the password and click "Add." This will add that device to the "Remote Passwords" field.

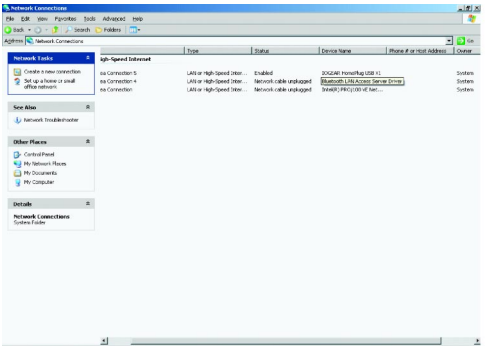
Remote Passwords – This field displays the password for devices you added. Once you've finished adding all the HomePlug devices on your network, press the "Set All" button. This will change the Network Password on all the devices listed.

(Note: "Remote" here refers to remote password setting in the same power line network. It is not referring to IP access from outside the power line network.)



6. The About screen displays the version of the utility.

After the above steps, go to Network Connections, you can see that the network connection is enabled and that the ACT LED in the unit blinks.



Network Terms

What is a node?
A node is any given device that resides or is connected onto an existing network. A computer with a network card connected to a switch is a node. The same thing applies to a Mac connected to a hub.

What is a bridge?
A bridge is used when connecting one side of the network with another network. Previously, connecting every computer together with the other network would mean having cables all over the place. Instead a bridge was brought in to have 1 connection between the networks instead of 20. The bridge in the HomePlug terms functions like a concentration device that connects many computers onto the HomePlug network using 1 HomePlug device.

How do I know if I require a node or a Bridge?
If you want to connect only one computer to the Powerline network, you need a node. If you plan to connect a group of computers currently not HomePlug ready to the Powerline network, you need a bridge. The HomePlug to USB adapter can only be used as a node. The HomePlug Ethernet bridge can be used as either a node or bridge. It is designed as a bridge by default; the only way to turn it off is to install the utility software that comes with the unit. That will turn the bridge into a node. If used as bridge,

there is a limitation of having sixteen bridges on the same Powerline network.
You will have to use bridges to connect two Macintoshes, because the utility software is not compatible with Windows based computers.

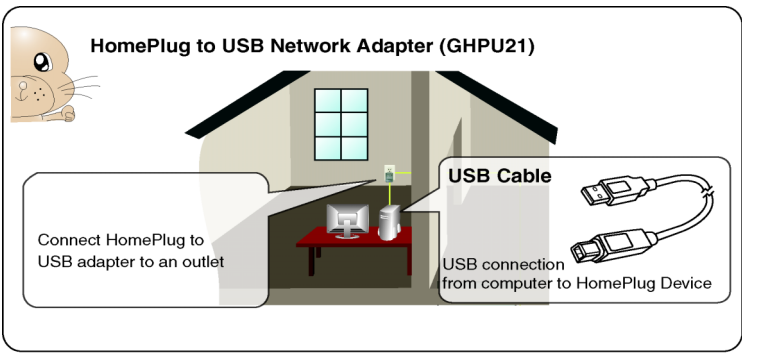
Can I use both in the same network?
Yes. It is possible to have both nodes and bridges on a network as long as there is a limitation of 16 bridges. It is also fine to have USB nodes on the same network with Ethernet nodes.

How do I decide whether I need a USB adapter or Ethernet bridge as a node?
It should be determined by the available connection on the computer that you plan to connect to HomePlug network. If the computer comes with a 10/100 NIC card, use the bridge; if the computer comes with a USB port, use the USB adapter. If the computer comes with both, you can decide based upon your unique situation.
For Macintosh and other non-Windows based computers, a bridge is the only choice.

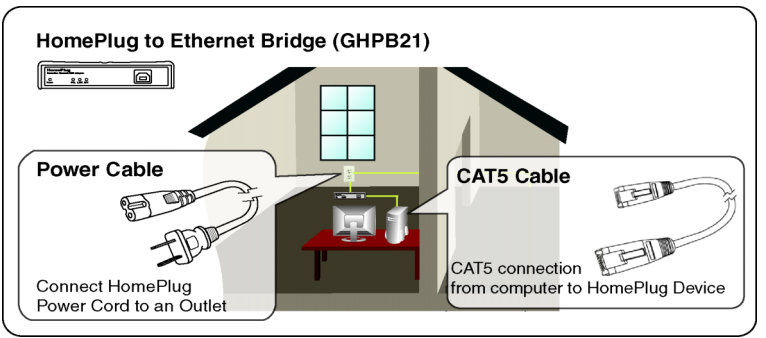
HomePlug Network Topologies:

There are various ways to connect your computers via HomePlug. If all HomePlug units are used as nodes, the topology is usually BUS. If bridges are used to connect two networks together, there maybe both BUS and STAR. Following are several examples.

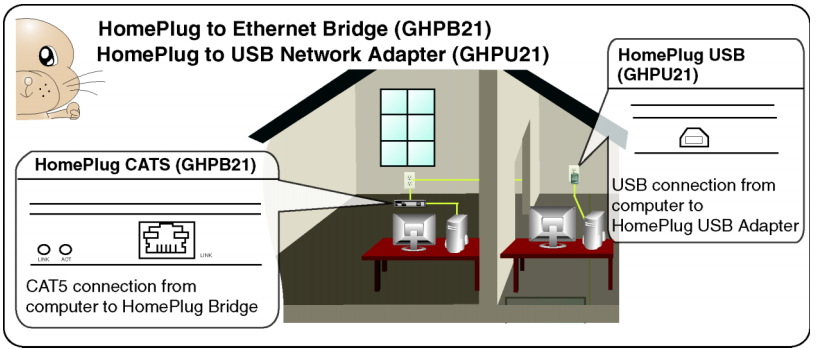
a. Using HomePlug USB Adapter ONLY



b. Using a HomePlug Ethernet Bridge (Node Mode)

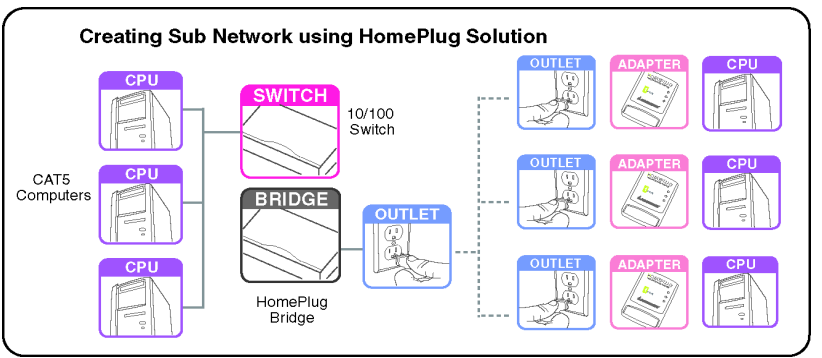


c. Using HomePlug to USB Adapter AND
Ethernet Bridge (Node Mode)



(Only 2 HomePlug Bridges can be used)

d. Using the Ethernet Bridge to make a sub network HomePlug-ready to communicate with the other HomePlug nodes. (Sixteen HomePlug Bridges can be used in the same network.)



Networking Basics

Prior to installing HomePlug, you may have had some ideas about using your new network. This section will help you get started on those ideas or even give you some new ones. It will go through the process of sharing files, printing from any computer on the network, or accessing the Internet on multiple computers with one connection. Note that this section is just an outline of a few networking basics and not intended to be a comprehensive guide to networking.

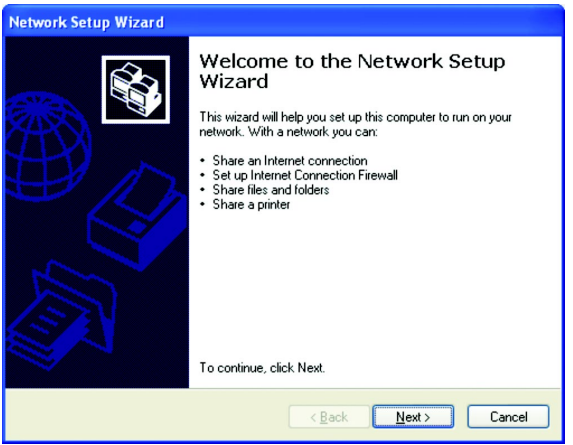
Topic 1: Using Network Setup Wizard in Windows XP/2000

In the following section, you will learn how to set up a network at home or at the office, using Microsoft Windows XP/2000.

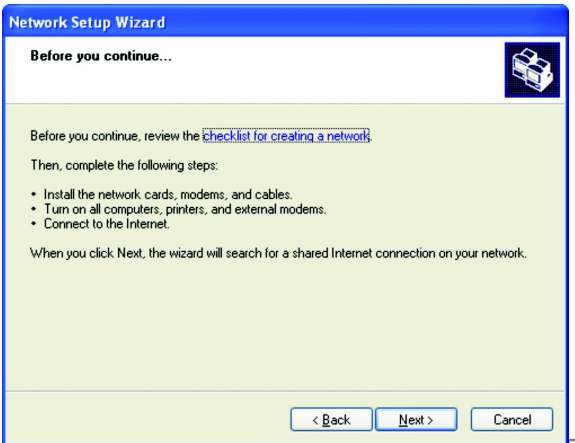
Go to My Computer>Control Panel>Network Connections.

Select “Set up a home or small office network”.

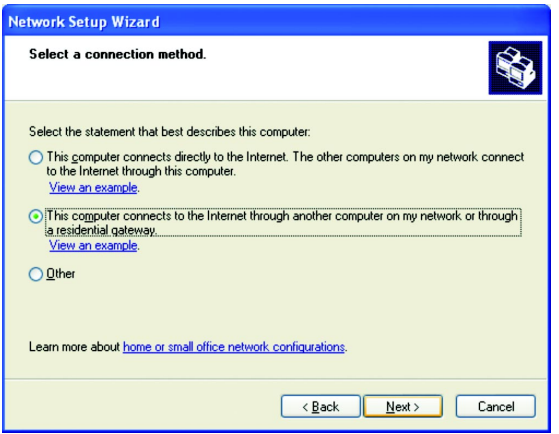
Click “Next” in the following window for the Network Setup Wizard.



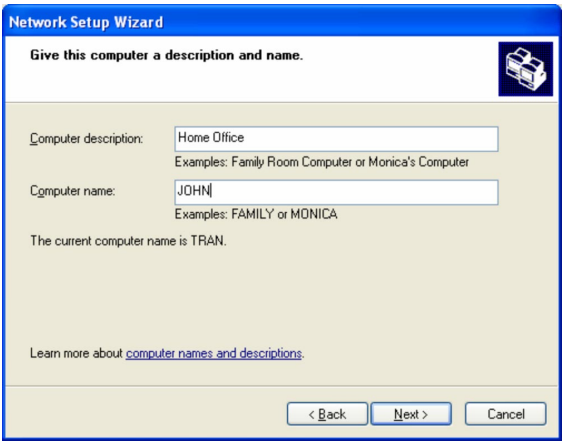
Read and follow the instructions in the window below and then click “Next”.



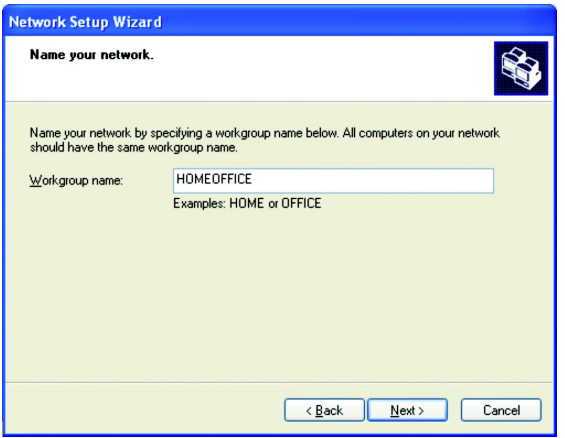
In the following window, select among the 3 options which best describe this computer and then click “Next”. If your computer connects to a broad-band router/gateway, select the second option.



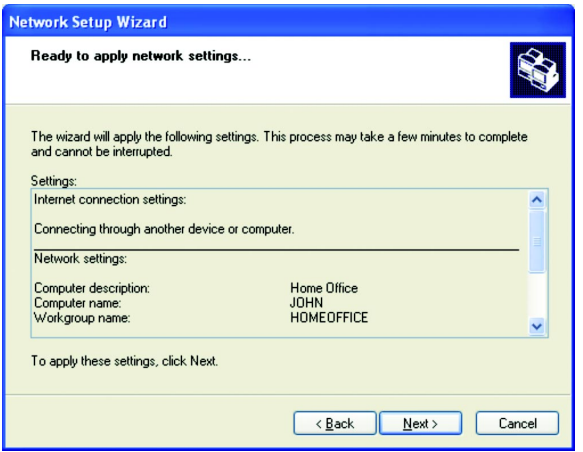
Fill in the information in the following window as you desire and then click “Next”.



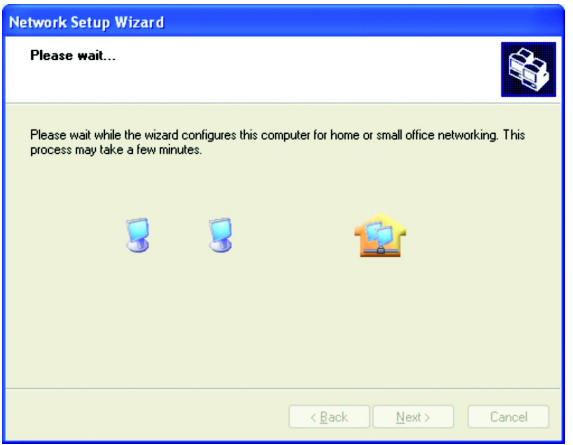
Enter the Workgroup name as you wish and then click “Next”. (Very important: All computers on your network should have the same Workgroup name.)



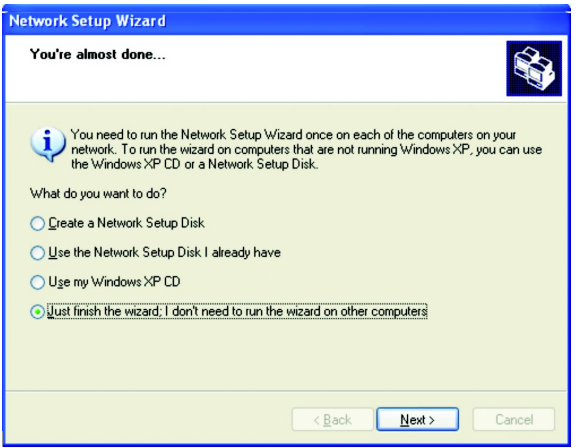
Review the setting in the following screen, and click “Next” to continue. If you want to change any settings, you need to click “Back” and start over again.



Please wait while the Network Setup Wizard applies the changes and configures the computer.

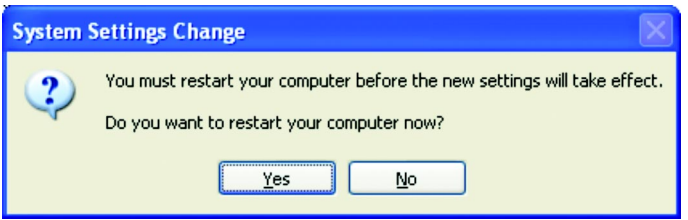


When the configuration is done, the following screen will come up. Select one of the 4 options according to your needs.



In this case, the last choice was selected, click “Next”. Then click “Finish” on the next window.

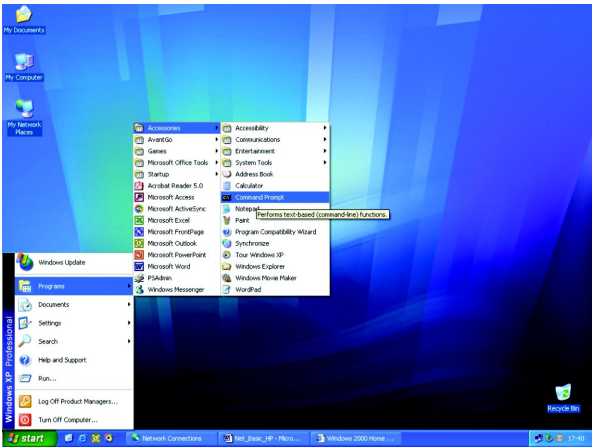
The new setting will take effect after you restart the computer. Click “Yes” to restart the computer.



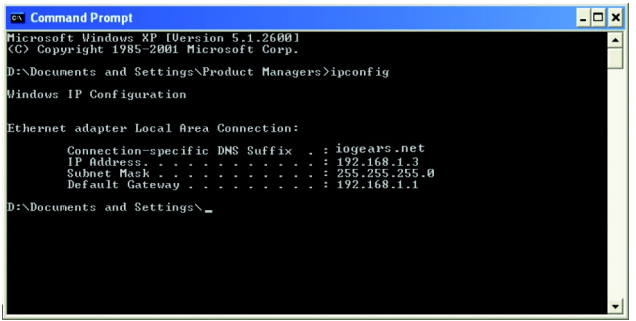
Congratulations, you have completed configuring this computer! After setting up networks on all your computers on the network, you will be able to use your HomePlug network to share files, printers, and Internet connections.

Topic 2: Checking IP addresses

Go to Start>Programs>Accessories> Command Prompt.



Type “ipconfig” at the prompt, then press Enter. You will see the IP address of this computer.



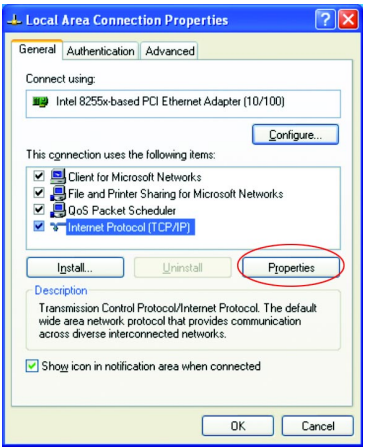
Topic 3: Assigning a Static IP Address

(Note: If you use DHCP-capable gateway/router, you don't need to assign any static IP addresses because the gateway/router will automatically assign IP addresses to the computers on the network.)

Go to Start>Settings>Control Panel>Network Connections>Local Area Connection.

Right click on Local Area Connection, and then double click on Properties. You will see a window similar to this:

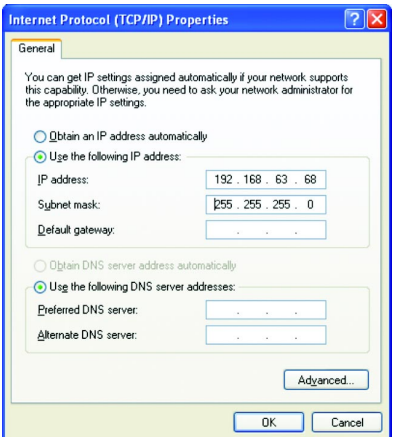
Select "Internet Protocol (TCP/IP)", then click on Properties. At the following window, select "Use the following IP address:", and fill



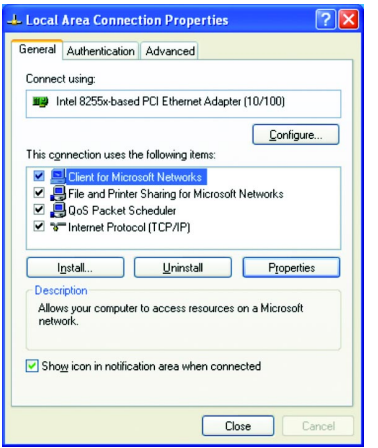
in the desired IP address and subnet mask (it is recommended to use the default subnet mask as shown in the following window. Subnet mask must be the same for all the computers on the network.)

If you need to enter DNS address, you must enter the address of the default gateway.

Click “OK”.



Click “Close” on the Local Area Connection Properties window.



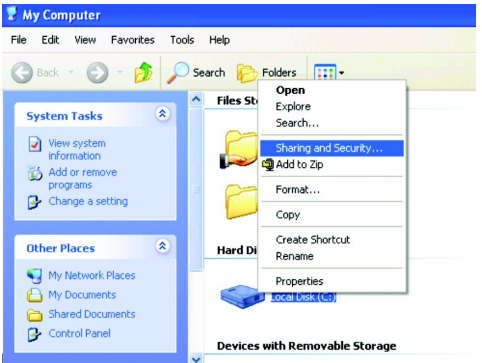
You have completed static IP address assignment.

Topic 4. Sharing Disks/Folders

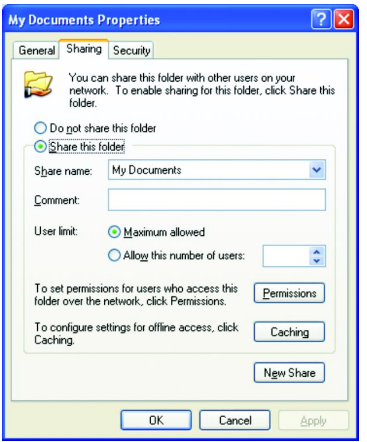
Once the network has been checked / configured, you can access other systems via "My Network Places". To allow other systems to access data on your disks / in your folders, you have to give permission to share your disks and/or folders.

1. Select the disk (or the folder) to be shared (for example in "My Computer") and right-click on the icon of the disk to get the Context / popup-menu, select "Sharing and Security".

It is recommended to share only folders instead of the disk drive to avoid any security related issues. Once you have selected the folder to be shared, right-click to select "Sharing and Security".

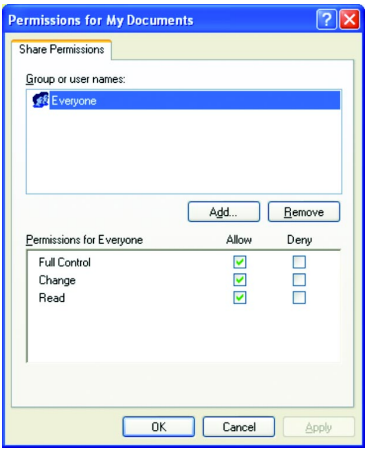


2. In the following window, click to select “Share this folder”. Then click on “Permission”.



3. Please note that by default, all users defined on your XP Professional system will have full permissions. You can reduce the permissions (for example to allow only Read-access) and/or you could add a different group of users to have access permission (but then you should delete the group "Everyone" from this list).

   In the following Permission settings, make sure you are giving the right permissions.



4. Click OK on the original Sharing and Security window to conclude the process.

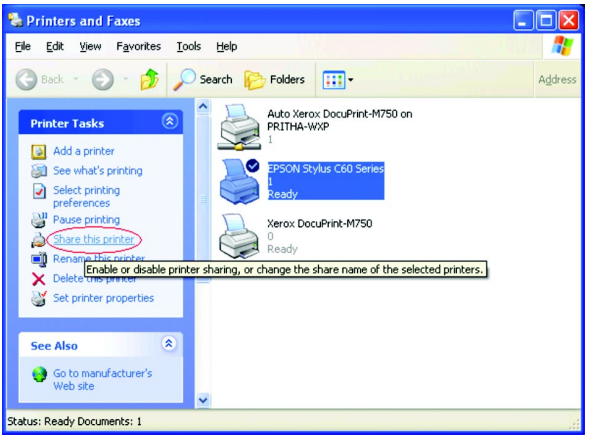
5. Once a disk or folder is shared, the icon will show it via the "holding hand".

Topic 5. Share Printers

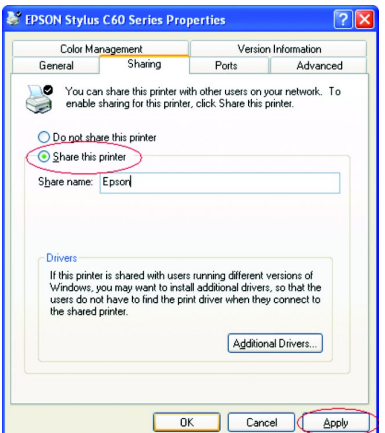
You may now share any installed printers connected to this computer with other computers on your network.

1. Go to the computer that has the printer already connected to it and go
   Start > Control Panel > Printers and Faxes.

Click on the printer you want to share with others on the network and select “Share this printer”.

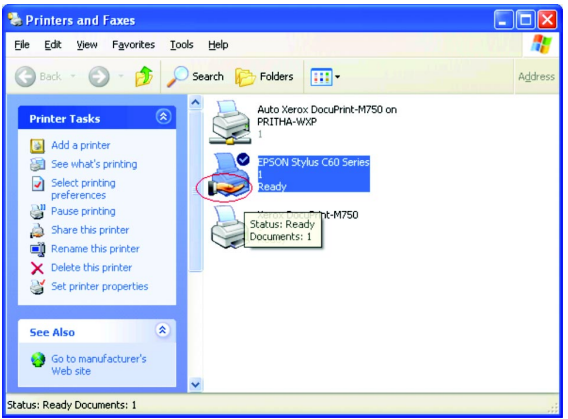


2. In the following window, click on “Share this Printer” and type in the share name you would like. After this is done, click on “Apply” and then “OK”.

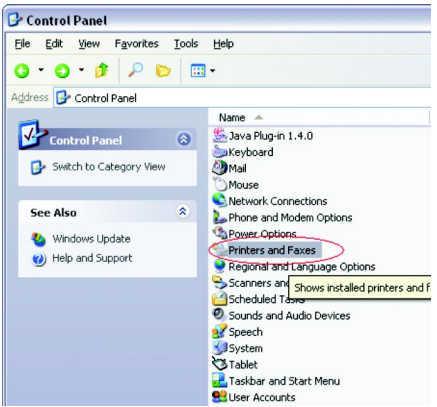


Now when you go to “Printers and Faxes” in the Control Panel, you will see the supporting hand underneath the printer, which means that the printer is being shared in the network.

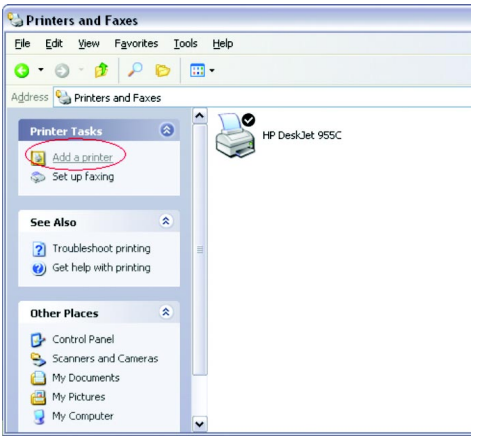
For a computer to access a Network Printer, the device driver or software for that printer must be installed and pointed to the proper location of the printer. This is done similarly to the way you installed the printer on the computer it is connected to.



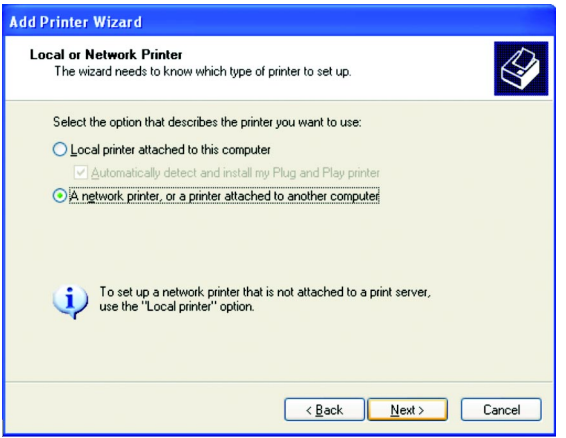
1. Go to a computer that is not connected to the printer and select “Start” from the Task Bar “Control Panel” then “Printers and other Hardware.”



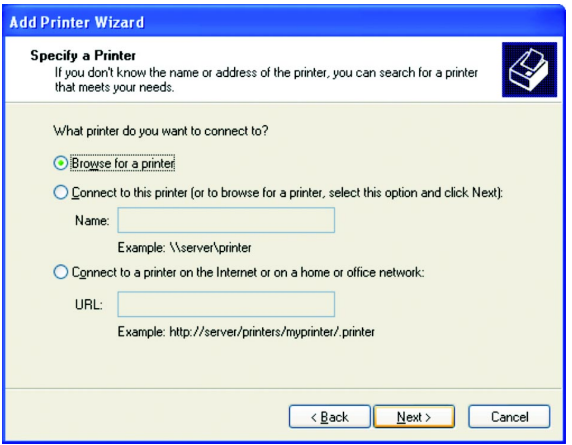
2. Click on "Add a printer."



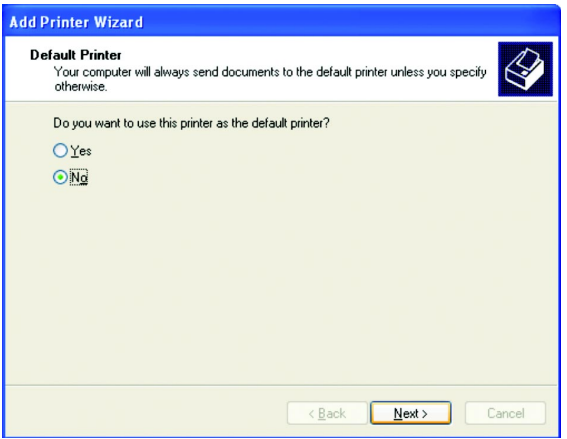
3. Select the network printer option and click Next.



4. Find the printer you would like to share and click Next.

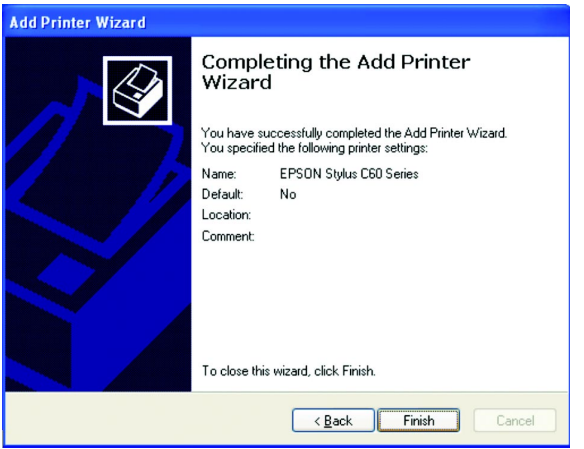


5. Decide if you would like to choose this printer as a default printer and click Next.



6. You have now added the printer to your computer, click Finish.

   Now you may use the Network Printer as if it were directly connected to the computer. Make sure that the computer which is directly connected to the printer is on.



Topic 6. Sharing Internet Access

So how can the Internet connection be shared among other computers on the HomePlug network?

Since neither the HomePlug Bridge nor USB adapter are capable of routing at this time, a router is necessary in order to share the Internet connection. Future versions of the HomePlug Bridge or USB adapter may feature built-in routing capabilities.

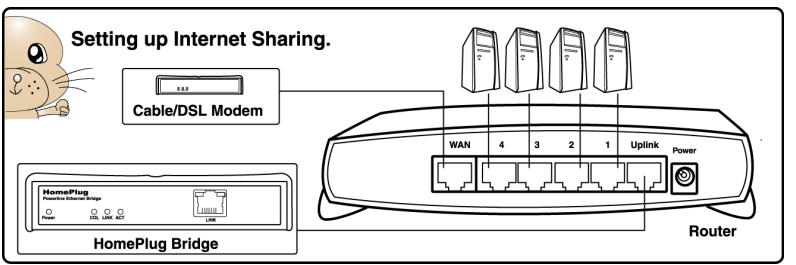
The following items are required for successfully sharing the Internet connection:

- One (1) Router
- One (1) HomePlug Bridge
- One (1) DSL/Cable Modem
- Active ISP Service for the DSL/Cable Modem
- CAT5 Cables

• Also all computers that share the Internet connection must be connected to a HomePlug USB Adapter or a HomePlug Ethernet Bridge.

Please note that sixteen HomePlug Bridges are allowed on one network if used as bridges (without installation of the software).

Please follow these steps for setting up Internet Sharing:



Sharing Internet Access

a. Make sure that the DSL/Cable modem is connected to the Router (using the WAN port on the router.)
b. Connect the HomePlug Bridge to the Router (using the Uplink port on the router.)
c. Check the link light on the HomePlug Bridge. It must light up green.
d. Make sure that the computers that need access to the Internet via the HomePlug network are each connected to a HomePlug Adapter or a HomePlug Bridge and reside on the same power grid.

Checking Router Settings:
Please assure that the following settings on your router are set:

(The setup windows will depend on the router manufacturer's software.)

A) The IP should be obtained automatically;

B) DHCP must be enabled;

C) Release DHCP and then Renew DHCP to reset the IP Addresses. It is recommended that you verify that IP Addresses are obtained.

Once all the above steps have been completed, all HomePlug connected computers will be able to access the Internet.

Frequently Asked Questions/Troubleshooting

1. Will HomePlug work in my house or apartment?
   If the house or apartment was built under U.S. building standards using copper wiring, then it will work.

2. What types of security problems will I be facing?
   If your house is on the same power grid as your neighbor, then there is a potential for a hacker to get in through your neighbor's house. However, this is easily remedied by activating the encryption key on the HomePlug device.

3. Will HomePlug work with Mac?
   There is currently no software that supports Macs. However, the HomePlug Ethernet Bridge will work with Mac when used as a bridge. Also, by installing Virtual PC software on a Mac, you will be able to install the windows based software under Virtual PC and have this Mac communicate with other PCs on HomePlug network.

4. Will HomePlug operate on different Circuit Breakers?
   Yes. Circuit breakers do not affect performance of HomePlug devices, however the signal will not pass through the power transformers outside your house.

5. Can Neighbors get my HomePlug signal?
   It is possible for your immediate (next door) neighbor to receive residual signal from your HomePlug adapter. Unlikely, but possible. To prevent your neighbors from hacking your network, the best thing you can do is type a different encryption password into your device when setting the encryption password. Note: All devices must have the same password to be on one network. If devices do not have the same encryption password, they will not be able to communicate with each other.

6. What OS does the HomePlug utility software fully support?
   Windows 98SE, ME, XP, and 2000. Windows NT and Mac are only supported by the HomePlug Ethernet Bridge (Without installing the HomePlug software with default operating mode as BRIDGE, not NODE)

7. What is the Range of HomePlug?
   Approximately 990 feet (300 meters) in wall power lines.

8. How does 56bit-DES compare with Wireless 802.11b 128bit-WEP encryption?
   56bit-DES is superior because of its DES type Encryption. Just because 802.11b uses 128bit-WEP with more bits doesn't mean the encryption is better. Also, the IOGEAR HomePlug devices use hardware 56bit-DES encryption. With hardware encryption the signal is almost impossible to crack. The hardware encryption process does not affect bandwidth, and the encryption is enabled at all times.

To help IOGEAR® customers obtain the highest level of performance from their HomePlug devices, the IOGEAR® Service Support team is available to answer your technical questions. Do not hesitate to call if you are having trouble getting your device to work correctly. IOGEAR® Service Support can be reached by phone from 9am to 5pm Pacific Standard Time, Monday through Friday or at the following address:

Toll Free: 866-9-IOGEAR (USA & Canada)
Phone: 949-453-8782

23 Hubble
Irvine, CA 92618

You may also reach us online at www.iogear.com/support 24 hours a day. Please be ready to give a brief description of the problem, and what you were doing when the problem occurred, before calling Service Support. The Service Support representative will be able to serve you much quicker if you are prepared to answer the nine questions listed below.

1) What version of the OS are you using?
2) When does the problem occur?
3) Were any messages displayed on the screen when the error occurred? If so, what was the exact wording of the message?
4) What is the purchase date and serial number of the product?
5) What have you already tried to get the problem resolved?
6) Are you on a network? If so, what type of network is it?
7) What type of Computer are you using?
8) Can the problem be reproduced? If so, what are the steps necessary to reproduce the problem?

Function	GHPU21
Computer Interface	USB 1.1
Data Rate	12 Mbps
Dimensions	
Depth	3.25"
Height	0.75"
Width	2.25"
Housing	
Case	Plastic
Humidity	5% ~ 90%
LEDs	
ACT (Activity)	1
COL (Collision)	1
Link	1
Network Interface	HomePlug Powerline
Package Dimensions	
Depth	6.75"
Height	1.5"
Width	9"
Power Consumption	2 Watts
Security	56-bit DES Encryption
Weight	0.15 Lbs

Limited Warranty

Limited Warranty

IN NO EVENT SHALL THE DIRECT VENDOR'S LIABILITY FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, DISK, OR ITS DOCUMENTATION EXCEED THE PRICE PAID FOR THE PRODUCT.

The direct vendor makes no warranty or representation, expressed, implied, or statutory with respect to the contents or use of this documentation, and especially disclaims its quality, performance, merchant-ability, or fitness for any particular purpose.

The direct vendor also reserves the right to revise or update the device or documentation without obligation to notify any individual or entity of such revisions, or updates. For further inquiries please contact your direct vendor.

Contact info.

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