# **HomePlug to Ethernet Bridge**

User Manual (GHPB42W6)

#### Welcome

Thank you for purchasing one of the most user-friendly networking devices on the market. IOGEAR's HomePlug to Ethernet Bridges and the Homeplug Networking Kit 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 <a href="https://www.logear.ncbear.

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

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#### Overview

IOGEAR's HomePlug Ethernet Bridge allows you to network your home computers through the most pervasive medium in your house - the electric power lines - and share Broadband Internet connections, printers, transfer files, play games, and more.

This unit can be used to HomePlug-enable one computer with a 10/100Base-T adapter, or to make a group of computers HomePlug-ready through either a network switch or router.

It can also be used to link through a powerline two network devices such as gaming devices, wireless access points and more.

This unit is compliant with HomePlug Powerline Specifications 1.0, offers up to 85 Mbps bandwidth, and is less prone to interference. Installation requires only that a 10/100Base-T network adapter is installed on the computer. By offering 56-bit DES encryption, it is also much more secure than other home networking technologies such as wireless Ethernet.



#### **Features**

- Extend your WiFi network through existing powerlines
- Network your gaming devices through powerlines to play games with a remote partner
- No extra wires required to create a network, simply use the most pervasive medium in your home

   powerlines
- · Very easy and intuitive to install and set up
- HomePlug Powerline Specifications 1.0 compliant
- Up to 85 Mbps bandwidth
- Up to 990 feet (300 meters) range through powerlines, sufficient for most households
- Worldwide compatibility
- · Low risk of interference by other RF sources
- 56-bit DES encryption assures data security
- Encryption done by hardware, with no sacrifice to bandwidth
- Most reliable home networking technology

### Requirements

#### **System Requirements**

- · Available AC power outlets in the room.
- · Standard home power line wiring.
- Computers with 10/100Base-T adapters, or 10/100Base-T switch/hub.
- When used as a node: Windows 98SE, ME, 2000, XP.
- When used as a bridge: any operating system (OS transparent).



#### Introduction

IOGEAR's HomePlug to Ethernet Bridge allows you to network your computers via your existing home power lines. It offers a data transmission speed of up to 85 Mbps, and reaches up to 990 feet through standard power lines.

#### Package contents:

For GHPB42W6 (the kit):

2 Homeplug to Ethernet bridge

2 CAT5 patch cable 6 feet

1 User manual

1 Utility Software CD

1 Warranty registration card

#### Introduction

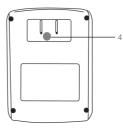
#### Front View:

- Powerline LED lights up in green when other Homeplug devices are detected on the same powerline
- Link/ACT blinks when data is sent through the Homeplug connection
- Ethernet port- connecting to the Ethernet of the computer or the devices (router, wi-fi access point, gaming box, etc.)

#### Back View:

4. Power connection - connecting the power outlet







There are several ways to network your computers using the HomePlug Bridge. Before we get started, please 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.

#### Hardware Installation

- 1. Remove the HomePlug Bridge, the CAT5 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.
- Plug one end of the CAT5 cable into the Ethernet port on the computer, and the other end into the Ethernet port of the bridge.
- 4. Plug the HomePlug bridge on the wall outlet.

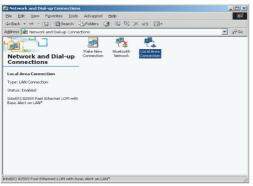


5. There are several ways to see whether the Homeplug bridge is functioning. One way is the observe the LED, the Link/ACT LED should start blinking after you plug the bridge in the wall outlet. For most of the Windows machines (as this Windows 2000 machine used to create this manual), you should see a message being prompted on the tool bar: "Local Area Connection, Speed XX Mbps". (Speed is determined by the Ethernet port speed of the computer.)





You can also go to "Control Panel", select "Network and Dial up and Connections. "Click the "Local Area Connection" icon.





7. You can see the network connection is already established.

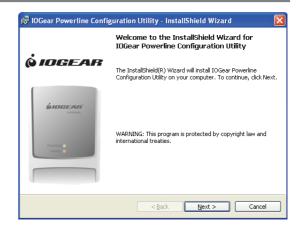
At this point, you can start communicating with the other computers or devices on the powerline. Please refer to Network Configuration section in how to set up networks for various purposes.

In order to add security and other utilities, you will need to install the utility software. Please refer to the following section for details. Please notice that Homeplug bridge supports many other operating systems, but the utility software is only designed for Windows based computers.





- Make sure that your HomePlug bridge is NOT CONNECTED TO THE COM-PUTER before you install the driver.
- Insert the installation CD. If CD does not automatically load, run (CD Drive Letter):\setup.exe.
- 3. Click Next.





 Enter a username and organization name, and continue installation. (Username and Organization have no importance in device operation. This window might look slightly different on other platforms.)



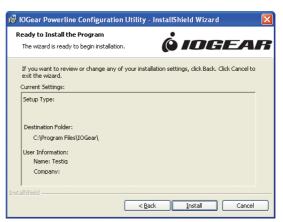


Click "Next" to continue.





Click "Install" to start the Installation Wizard





 The following window will be prompted to indicate that the installation is successful.

To uninstall the driver, simply go to your Add/Remove programs control panel and remove the IOGEAR Powerline Configuration Utilities. Then restort your computer to complete the uninstall.





 Double click the IOGear Powerline Utility icon to start the Powerline Configuration Utility. The utility is used to configure the Homeplug unit"





2. The Main tab shows the HomePlug units that are connected to the current computer and other devices on the network. It will also tell Mac Address of each device. It will refresh the window, if you change devices, and also will allow you to connect to different networks if multiple units are connected to your computer. The connection quality will show in the Quality tab. You will have to do troubleshooting if see a question mark at the Quality tab.

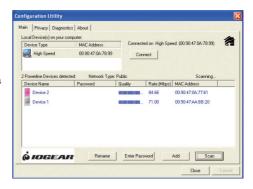
Note: If you do not see ANY unit in the device status, and there is a device connected to your computer, try to unplug all devices, and plug them back in. Also make sure that the cable connecting your computer to the HomePlug device is the right type and working correctly. If all of this seems to be correct, and you still receive nothing in the Device window, try rebooting your computer. If the problem still persists, please contact technical support





3. The Main tab shows all the other HomePlug units on your powerline network. It will represent them by MAC Address, and will also show the available bandwidth to each unit (Units farther away from the current computer might have a lower Data Rate, since the distance is farther). If you add or subtract units from your home network, you might want to re-Scan, by clicking the "Scan" button. This will rescan the network, and refresh with any changes.

Note: Only units with the same Network Password will be shown, please check that first, to make sure they all have the same network password (Case sensitive).





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

Note: If there are units in your home, that you do not see in this Network scan, try to unplug all devices, and plug them back in (Only do this with the Units that you do not view in the network screen, you don't have to do this with all units. If the problem persists, try to move the unit closer to this current unit (adjacent plugs on the same wall socket is most preferable). If the problem still persists and that unit is still not shown on the network, then the unit might be defective please contact technical support. Otherwise if you view the unit working, distance might be the only issue.



 Press Enter Password button to put in the DEK (Device Encryption Key) found on the package or device. Enter this key into the Password area. Click OK. Add all the DEK keys for each unit in your house.

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





 After putting in the password, click on Set Local Devices Only to ensure all data that is sent from this unit are encrypted using 56-bit data encryption standard and isolated from the other computer on the network.

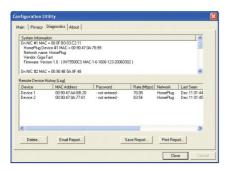
Users may also use different network name for each HomePlug device attached to a computer. After successfully changing the network name, click on Set All Devices to activate this feature. It will isolate each HomePlug unit from each other

Note: Every unit on your home network MUST have the same Network Name for connectivity to be established throughout your home





 The Diagnostics tab will allow users to see the devices that are currently available on the powerline network



 This screen displays the version number of the utility. Click Close to complete the configuration."





#### **Networking 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 Home-Plug terms functions like a concentration device that connects many computers onto the Home-Plug network using 1 Home-Plug device.

#### How do I know if I require a node or a Bridge?

If you want to connect only one computer to the Power line network, you need a node. If you plan to connect a group of computers currently not HomePlug ready to the Power line network, you need a bridge. The HomePlug 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 in 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.



#### Can I use both in the same network?

Yes. It is perfectly right to have both nodes and bridges on a network as long the maximum is not exceeded. 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 the HomePlug network. If the computer comes with a 10/100 Base-T network card, use the bridge; if the computer comes with USB port, use the USB adapter. If the computer comes with both, you can decide which one to use based upon your unique situation.

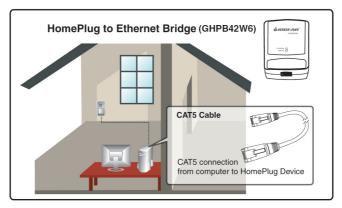
For Macintosh and other non-Windows based computers, the Ethernet Bridge is the only choice.

#### **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. The following are several examples.

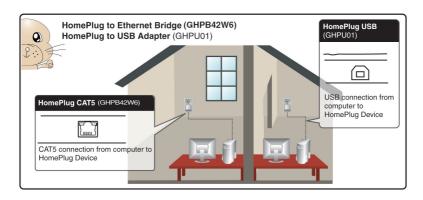


a. Using the HomePlug Ethernet Bridge (Node Mode) (Several HomePlug Bridges can be used)



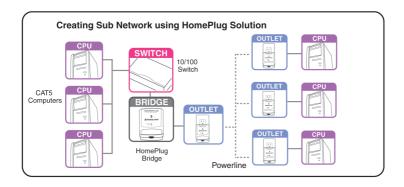


b. Using the HomePlug USB Adapter AND Ethernet Bridge (Node Mode)





 Using the HomePlug Ethernet bridge to make a sub network HomePlug ready to communicate with the other HomePlug nodes.





d. Using the HomePlug Ethernet bridge to extend the WiFi network and eliminate dead spots.



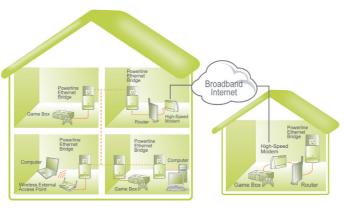


e. Using Homeplug bridge to share Broadband Internet access through the whole house.





f. Using the HomePlug Ethernet bridge to play game remotely.





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. Please 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 a home or business, 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 window(right) for the Network Setup Wizard.





Read and follow the instructions in the following window and then click "Next"





3. In the following window, select among

the 3 options which best describe this computer and then click "Next". If your computer connects to a broadband router/gateway, select the second





 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.



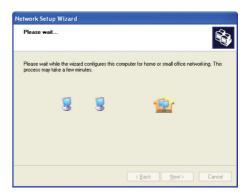


 Review the setting in the following screen, and click "Next" to continue. If you want to change any settings, you need to click "Back" and start over again.





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





8. When the configuration is done, the following screen will come up. Select one of the 4 options according to your needs. (In this example, the last choice was selected.) Click "Next."





9. Then click "Finish" on this next window.





10. The new setting will take effect after you restart the computer. Click "Yes" to restart the computer.

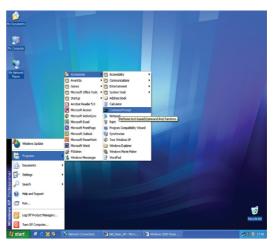


Congratulations, you have completed configuring this computer! After setting up networks on all your computers on the network, you will be able to use your HomePlug network to share files, printers, and Internet connections.



# Topic 2: Checking IP addresses in Windows XP/2000

Go to Start>Programs>Accessories> Command Prompt.





1. 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, then double click on Properties, you will see a window similar to this:

Select "Internet Protocol (TCP/IP)" and then click on Properties.

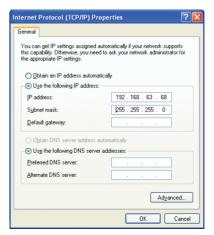




1. At the following window, select "Use the following IP address:", and fill in the desired IP address and subnet mask (it is recommended to use the default subnet mask as shown in the following window. Subnet mask must be the same for all the computers on the network.)

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

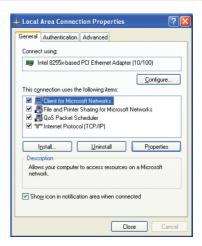
Click on "OK".





2.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.

 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, rightclick to select "sharing and security."



In the following window, click to select "Share this folder". Then click on "Permission".





 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 and then click OK to accept the settings.





 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."





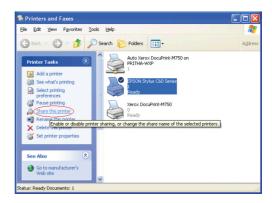


#### Topic 5. Share Printers

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

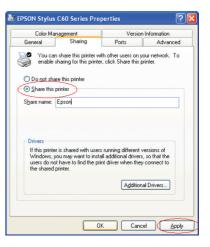
 Using the computer that has the printer already connected to it, go to: Start > Control Panel > Printers and Faxes.

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





 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".





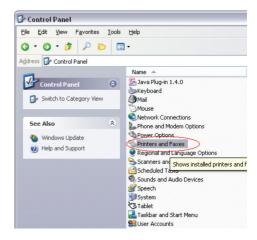
Now when you go to "Printers and Faxes" in the Control Panel, you will see the supporting hand underneath the printer, which means that the printer is being shared in the network





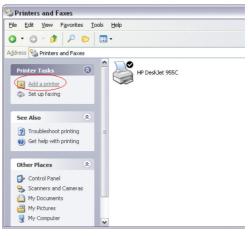
For a computer to access a Network Printer, the device driver or software for that printer must be installed and pointed to the proper location of the printer. This is done similarly to the way you installed the printer on the computer it is connected to

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.





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





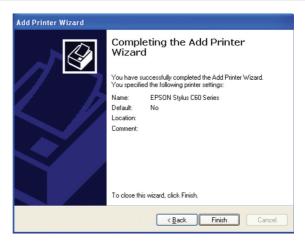
Decide if you would like to choose this printer as a default printer and click Next.





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

Now you may use the Network Printer as if it was 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 an 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

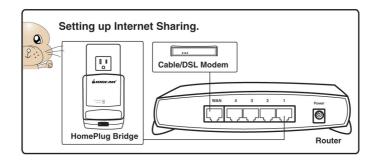
Active ISP Service for the DSL/Cable Modem

CAT5 Cables

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



Please follow these steps for setting up Internet Sharing:





- 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 make sure 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**

#### 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. What is the difference between bridge mode and node mode in the HomePlug Ethernet Bridge (GHPB42W6)?
  - Bridge mode operates without software installation and can work with any 10/100Base-T or 10Base-T Ethernet connections. By connecting the bridge to a router, switch, or Ethernet based device (XBOX, PlayStation, Web Tablet, PocketPC, Computer, etc.), you will be able to make these devices bridge onto the HomePlug

## **Frequently Asked Questions**

network.

Node mode operates by connecting the Ethernet bridge (GHPB42W6) to one computer (ONLY) and installing drivers onto the computer, allowing it to set the device into Node Mode. The advantage with Node Mode operation is there is no limitation to the number of nodes that can operate on a HomePlug network.

- 5. 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.
- 6. 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.



# **Frequently Asked Questions**

- 7. 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)
- What is the Range of HomePlug? Approximately 990 feet (300 meters) in wall power lines.
- 9. 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.

# **Technical Support**

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)

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.



# **Technical Support**

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



# **Specifications**

Function	GHPB42W6
Computer Interface	10/100 Base-T
Data Rate	85 Mbps
Dimensions	· ·
Depth	1.1"
Height	4"
Width	2.75"
Housing	
Case	Plastic
Humidity	5% ~ 90%
LEDs	
Link/Act	1
Powerline	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	0.25 Lbs



# **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, merchantability, 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.



#### **Radio & TV Interference Statement**

WARNING!!! This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.





Contact info.

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