# POWERLINE HD ETHERNET ADAPTER USER MANUAL MODEL 503839\*

\* This manual can also be used for the PowerLine HD Ethernet Adapter Starter Kit, Model 503808



INT-503839-UM-0608-01

## INTRODUCTION

Thank you for purchasing the INTELLINET NETWORK SOLUTIONS<sup>™</sup> PowerLine HD Ethernet Adapter, Model 503839.\*

This easy-to-install device allows you to create a high-speed network for the computers in your home or office by simply plugging the adapter(s) into any electrical outlet. You immediately create a network using the existing AC power lines and can extend your home network into areas a wireless signal cannot reach. Attach multiple computers to the network by simply plugging them into additional adapters.

The PowerLine Turbo Ethernet Adapter provides a network connection speed of up to 200 Mbps and automatically senses the speed of a router or computer device, adjusting to accommodate 10 Mbps or 100 Mbps Ethernet devices. Quality of Service (QoS) further improves performance by prioritizing your important traffic through the use of up to eight priority levels.

An effective data throughput of up to 90 Mbps streams crystal-clear, 1080p high-definition (HD) video to the media streamer connected to your home entertainment center, making it the perfect choice for the connection of network-enabled gaming consoles and digital media devices such as Slingbox, Tivo, Xbox 360, Nintento Wii or PlayStation 3. It's also Plug and Play (no drivers are required), and comes with the INTELLINET NETWORK SOLUTIONS Lifetime Warranty.

\* This manual can also be used with the PowerLine HD Ethernet Adapter Starter Kit, Model 503808.

**NOTE:** Some screen images have been modified to fit the format of this manual.

### **FCC Warning**

This device has been tested and found to comply with limits for a Class B digital device, pursuant to Parts 2 and 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates and radiates radio frequency energy and, if not installed and used in accordance with the user's manual, may cause interference, in which case the user will be required to correct such interference at his own expense.

### **CE Warning**

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



## HARDWARE INSTALLATION

LED Indicator

The PowerLine HD Ethernet Adapter is designed for quick, easy installation.

### 10/100M Fast Ethernet Port

Using the included Ethernet cable, connect the adapter to a network router, switch or other Ethernet-enabled device. **NOTE**: The Ethernet port on the adapter supports 10/100M Auto-MDI/MDIX, so you can use a straight-through or a crossover Ethernet cable when connecting to another Ethernet-enabled de

### AC Power Plug

Plug the device directly into an AC power outlet. Do not connect the PowerLine adapter to a power strip, extension cord or surge protector, as this may prevent it from working properly or degrade the network performance.

### **Quick Setup Button**

This front-panel button provides a quick option for joining an adapter to an established PowerLine network.

- Press and hold the Quick Setup button until all LEDs are off (this may take more than 10 seconds). The adapter will reset the network ID setting and generate a random network ID. *NOTE:* Always reset the network ID before pairing the adapter with other PowerLine devices.
- 2. To join a new unit to the network, press the Quick Setup button on any adapter currently in the network and within 3 seconds press the Quick Setup button on the new adapter. A blinking Power LED indicates the pairing is in progress; a lighted Power LED means the unit is paired.

### **LED Indicators**

Power, PowerLine and Ethernet (as detailed below).

<u>LED</u>	<u>Status</u>	Description
Power	Solid blue Blinking Off	Power is on. Device is paired or upgrading firmware. Power is off.
PowerLine	Solid blue Blinking blue Off	A proper PowerLine link has been made. There is activity on the link. No PowerLine link has been made.
Ethernet	Solid blue Blinking blue Off	A proper Ethernet link has been made. There is activity on the link. No Ethernet link has been made.





Ethernet Port

Quick Setup Button

## **CONFIGURATION UTILITY INSTALLATION**

The HomePlug AV Utility (for Windows 2000, XP or Vista) enables users to identify PowerLine devices on the PowerLine network. It also measures data rate performance, ensures privacy and performs diagnostics by setting user-defined, secure PowerLine networks.

To begin installation, insert the included setup CD into your CD-ROM drive to display the Autorun program. Click/select "Install Software (Utility)" on the menu screen; the install wizard will begin the software installation.

When the HomePlug AV Configuration Utility icon (right)



displays on the desktop, double-click on it to start the utility and access the various option screens.

The left-hand menu (shown on the screen image below) presents six sub-menus — Device Information, Network Information, QoS, Network ID (Security), Upgrade and About — each of which is explained in the following sections.

### **Device Information**

<sub></sub> HomePlug	<b>₹Å</b> C	onfiguratio	n Utility						X
Hot	ne	Plu	3			Н	omePlug AV Fast E	200Mbp thernet Adapte	s
Device Information	ition								
Network	k Ition		-Device In	formation					
Mm Qos				MAC Add	lress :	00:Ъ0:52:0	0:cc:80 - Local		
Networ	k ID								
Upgrad	Ð			Firmware	Version :	FW v3.0-3	052-1120-20070816-FINAL-E	3	
About									
		Device Sele	ction:	00:b0:52:00	licci80 - Local			Close	
Connected	00:Ъ0:	52:00:cc:80 -	Local	FW v3.0-3052-1120-	20070816-FINAI	,-В			

This screen presents the MAC address, firmware version and the connected PowerLine device.



### **Network Information**

😫 HomePlug 🗚 🕻	configuration Utility				
Ноте	Plug		н	omePlug AV Fast E	200Mbps thernet Adapter
Device Information	- Topology				
Network	MAC Address		TX (Mbps)	R>	t (Mbps)
Market Information	00:b0:52:00:00:	)0	89/116	11	.8 / 154
Mm QOS					
Network ID					
Upgrade					
About					
					Refresh
	Device Selection:	00:b0:52:00:cc	:80 - Local 💌		Close
Connected 00:b0:	52:00:cc:80 - Local	FW v3.0-3052-1120-200	070816-FINAL-B		

This screen presents a list of all devices on the PowerLine network. Devices that are active on the current logical network will show a transfer rate and receiver rate.

### QoS

Quality of Service (QoS) requirements are different for various data types, such as streaming video or music, voice and raw data. To provide higher QoS for streaming data, priority levels can be set using tags at the beginning of data frames. Virtual Local Area Network (VLAN) 802.1p priority tags on Ethernet frames are used to specify eight levels (0 - 7) of user priority.

The PowerLine HD Ethernet Adapter allows four levels (0 - 3) of Channel Access Priority (CAP). Therefore, the eight levels of VLAN Ethernet tags must be mapped to the four levels of CAP priority, where CAP 3 is the highest priority and CAP 0 is the lowest. CAP 3 priority might be used for voice and network management frames; CAP 2 is used for streaming video and music; while CAP 1 and CAP 0 are used for data. Mapping VLAN tags or ToS bits to CAP levels is easily done using the VLAN Priority Mapping function on the QoS tab window.



S HomePlug AV Configuration Utility								
Hor	me	Plug			н	IomePlug A	V Fast Ether	200Mbps met Adapter
Device Information	ation	Destination MAC A Destination MAC A	ddress CAP Idress	Destination IP Port Destination IP Port	CAP	Priority Map Priority :	oping VLAN Tags	TOS Bits
Networ Informa	rk ation					0:	CAP 1 💌	CAP1 💌
Area Qos						1:	CAP 0 💌	CAPO 🔻
Networ	rk ID					2:	CAP 0 V	CAPO 💌
Upgrad	e					3: 4·	CAP 2	CAP 2
About						5:	CAP 2 -	CAP 2
						6:	CAP 3 💌	CAP 3 💌
	Default CAP - Lowest Priority Classification IGMP: CAP 3 - IGMP managed Multicast Stream: CAP 2 -					7:	CAP 3 💌	CAP 3 💌
Multicast/Broadcast: CAP 1 V Unicast: CAP 1 V						Reset to	default S	ave changes
		Device Selection:	00:40:	f4:ff:f1:d6 - Remote	•			Close
Connected	00:40:	f4:ff:f1:d6 - Remote	FW v3.0-3052-1	120-20070816-FINAL-	В			

### **Device Selection**

From the drop-down list, select the device you want to configure.

#### **List View**

The QoS tab includes two list views to provide simple channel access priority (CAP) classification for individual MAC addresses and IP ports. There is a collective limit of eight across both lists. *NOTE:* No delimiters, colons or dashes are allowed in the MAC address format.

### **Priority Mapping**

The Priority Mapping group contains both VLAN and ToS bit-mapping capability. When selected, packets matching the VLAN or ToS Bit priority will be assigned the PowerLine contention priority (Channel Access Priority, CAP) as set in the corresponding drop-down box. If a packet has both VLAN and ToS in it, VLAN will override ToS.

#### **Default CAP**

The Default CAP group allows for default priority mapping of packets that do not have a VLAN or ToS bit. Settings are available for Unicast (directed to a host).

- IGMP (default CAP 3): sets the channel access priority for IGMP frames (the group management frames, not the stream data).
- IGMP Managed Multicast Stream (default CAP 2): sets the default channel access priority for stream data belonging to a snooped IGMP multicast group.



- Multicast/Broadcast: sets the default CAP 1 for multicast frames not in a snooped group and for broadcast frames.
- Unicast (default CAP 1): sets the default channel access priority for unicast frames not matching any other classification or mapping.

#### **Reset to default**

Press "Reset to default" to restore the factory default QoS settings.

#### Save changes

Press "Save changes" to save and execute the modified QoS settings.

### **Network ID**

🔋 HomePlug	: <b>∆</b> ¥ C	onfiguration Utility				
Ho	me	Plug			HomePlug AV Fast	200Mbps Ethernet Adapter
Device Inform	ation	- Network Key to	he Set			
Network	'k ation	- Network Key ID	Network ID:			
Nh Qos						
Retwo	k ID	-Remote Device	Access Key			
Upgrad	е		DAK Password:			
About						
					Reset to default	Save changes
		Device Selection:	00:b0:52:00:cc:80 -	Local 💌		Close
Connected	00:Ъ0:	52:00:cc:80 - Local	FW v3.0-3052-1120-200708	16-FINAL-B		

This screen is used to set or change the network group ID.

### **Device Selection**

From the drop-down list, select the device you want to configure.

### **Network ID**

If "Device Selection" is set to the local device, enter the network ID in the "Network ID" field; then click "Save changes" to set the entered network ID.

If "Device Selection" is set to a remote device, enter the network ID in the "Network ID" field and enter the remote device access key in the "DAK Password" field; then click "Save changes" to set the entered network ID. (A DAK password is on each PowerLine device label.)

### **Reset to default**

Press "Reset to default" to restore the factory default settings of the adapter.



### Upgrade

😤 HomePlug 🗛	7 Configuration Utility	
Hom	ePlug	200Mbps HomePlug AV Fast Ethernet Adapter
Device Informatio	nSystem Setting -	
Mr. Qos	n	Firmware Upgrade
Network ID		Reboot Device
About	Device Selection:	00:40:f4:ff:f1:d6 - Remote Close
Connected 00	:40:f4:ff:f1:d6 - Remote	FW v3.0-3052-1120-20070816-FINAL-B

### **Device Selection**

From drop-down list, select the device you want to configure.

### **Reboot Device**

Press "Reboot Device" to reset the node, which will restore the initial factory configuration.

#### **Firmware Upgrade**

Click "Firmware Upgrade," then locate the two firmware files (PIB file \*.pib and firmware file \*.nvm). When the confirmation windows



display, click "Yes" to start the upgrade or "No" to abort it.

### About

<sub></sub> HomePlug	; <b>∆</b> ¥ C	onfiguration Utility					
HomePlug		Plug	HomePlug AV Fast I	200Mbps Ethernet Adapter			
Device Information	ation		HomePlug AV Configuration Utility				
Network	rk ation		Copyright(c)2007 All Rights Reserved				
Mm Qos	₩Mm Qos		Version : 3.0				
Network ID							
Upgrad	e		Release Date : November 08 2007				
About		Device Selection:	00:b0:52:00:cc:80 - Local	Close			
Connected	00:Ъ0:5	2:00:cc:80 - Local	FW v3.0-3052-1120-20070816-FINAL-B				

This screen displays important reference information.



## TROUBLESHOOTING

When you initially plug in and turn on the power to a PowerLine adapter, the Power LED should light. After approximately 10 seconds, the PowerLine LED should also light, and the Ethernet LED should blink.

### *If the Power LED fails to light:*

- If the AC power outlet is controlled by a wall switch, make sure the switch is in the On position.
- Verify that the wall socket is live. To do this, disconnect the PowerLine adapter and plug in another electrical product. If the Power LED still doesn't light and you've confirmed the power outlet is live, you have a hardware problem and should contact technical support.

### If the PowerLine LED fails to light (but the Power LED is lit):

- Make sure that power is being provided to more than one PowerLine device. Another PowerLine device must be installed for successful communication across the PowerLine.
- Verify that the network password is the same on all devices.

### If the Ethernet LED fails to light and blink:

- Make sure that the Ethernet cable is plugged in properly at both ends.
- Be sure you're using the correct cable on the router the first PowerLine adapter is connected to. When connecting the router's Internet port to a cable or DSL modem, use the cable (straight-through or crossover) supplied with the modem.
- On the attached Ethernet device or network adapter card, check that the Link LED is lit.



## **SPECIFICATIONS**

### Standards

• IEEE 802.3 10Base-T; IEEE 802.3u 100Base-TX; HomePlug AV

### General

- One 10/100 RJ-45 port
- One AC power line port
- Chipset: Intellon INT6300
- Link speed: up to 200 Mbps
- 128-bit AES Link Encryption with key management for secure power line communications
- Enhanced Quality of Service (QoS) with eight levels of prioritized random access, contention-free access, and segment and packet bursting
- Supports IGMP managed multicast IP transmissions

### LEDs

• Power; PowerLine Link/Activity; Ethernet Link/Activity

### Power

- Internal 90 260 V AC, 50 60 Hz
- Power consumption: 4.3 Watts (maximum)

### Environmental

- Dimensions: 75 (W) x 102 (L) x 34 (H) mm (2.9 x 4.0 x 1.4 in.)
- Weight: 0.35 kg (0.8 lbs.)
- Operating temperature: 0 40°C (32 104°F)
- Operating relative humidity: 10 90%, non-condensing
- Storage temperature: -25 70°C (-13 158°F)
- Storage relative humidity: 0 95%, non-condensing
- Power: AC 100 240 V / 50 60 Hz / 0.1 A

### Certifications

• FCC Part 15, Part B, Class B; CE Class B; RoHS

### Minimum System Requirements

- Existing PowerLine HD Ethernet Adapter
- TCP/IP protocol
- CD-ROM drive
- Configuration utility requires Windows 2000, XP, Vista

### **Package Contents**

- PowerLine HD Ethernet Adapter (2 devices in the Starter Kit, Model 503808)
- Setup CD-ROM with user manual
- One Ethernet network cable
- Quick start guide





# Bringing Networks To Life

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