

User's Guide

TRENDNET[®]



Powerline 1300 AV2 Adapter with Built-in Outlet
Powerline 1300 AV2 Adapter Kit with Built-in Outlet

TPL-423E / TPL-423E2K

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Product Overview



TPL-423E



TPL-423E2K

Package Contents

TPL-423E package includes:

- TPL-423E
- Quick Installation Guide
- CD-ROM (Utility & User's Guide)
- Network cable (1.5 m / 5 ft.)

TPL-423E2K package includes:

- 2 x TPL-423E
- Quick Installation Guide
- CD-ROM (Utility & User's Guide)
- 2 x network cables (1.5 m / 5 ft.)

If any package contents are missing or damaged, please contact the retail store, online retailer, or reseller/distributor from which the product was purchased.

Features

Powerline 1300 AV2 Adapter with Built-in Outlet (**TPL-423E**)

TRENDnet's Powerline 1300 AV2 Adapter with Built-in Outlet, model TPL-423E, creates a high-speed Powerline 1300 network using your home's existing electrical system. Two adapters are needed to start a network. TRENDnet adapters are protected with 128-bit AES encryption. Plug in the first adapter and network it to your existing router. Plug in other adapters on the same electrical system and they will auto-connect to the first adapter for instant internet access. Avoid losing a power outlet by using the built-in electrical outlet to power other devices.

Powerline 1300 AV2 Adapter Kit with Built-in Outlet (**TPL-423E2K**)

TRENDnet's Powerline 1300 AV2 Adapter Kit with Built-in Outlet, model TPL-423E2K, comes with two Powerline adapters to create a high-speed Powerline 1300 network using your home's existing electrical system. Two adapters are needed to start a network. TRENDnet adapters are protected with 128-bit AES encryption. Plug in the first adapter and network it to your existing router. Plug in other adapters on the same electrical system and they will auto-connect to the first adapter for instant internet access. Avoid losing a power outlet by using the built-in electrical outlet to power other devices.

Sync Button

Press the Sync button to change existing Powerline encryption keys

Powerline 1300

Powerline 1300 technology delivers fast and stable networking to seamlessly connect devices and stream 4K video.

Gigabit Port

Gigabit port for computers, smart TVs, or other network enabled devices

Cross Compatibility

Cross compatible with Powerline 1200, 600, 500, and 200 adapters

MIMO with Beamforming Technology

Multiple Input Multiple Output (MIMO) Powerline with Beamforming technology uses live, neutral, and ground wires to increase performance between adapters.

Expandable

Use up to 8 adapters on a single Powerline network

Easy Installation

TRENDnet adapters auto-connect out of the box

128-bit AES Encryption

Powerline communication is protected with 128-bit AES encryption

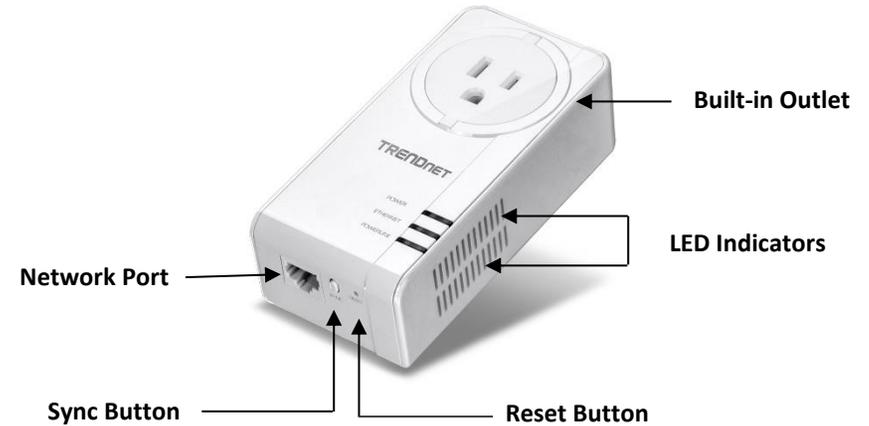
Note:

* Maximum of 8 adapters (nodes) recommended for streaming video across your network.

** 1.3Gbps is the maximum theoretical Powerline data rate when connected to another Powerline 1300 device. Data throughput may vary by circuit wire conditions.

*** Powerline communication works on a single electrical system. (Usually controlled by a single distribution panel). Power strip, GFCI outlets, and AFCI circuit breakers may degrade Powerline network signals.

Product Hardware Features



Button	Action	Function
Sync	Press for 2 seconds	Begins synchronization session. The POWER LED will begin to blink for 2 minutes. Press the Sync button on additional adapters within the time frame to synchronize to the powerline network.
	Press for 10 seconds	Generates a new random network name and encryption key (All LEDs will turn off and on again).
Reset	Press for 1 second	Resets device to factory defaults settings (All LEDs will turn off and on again). <i>Note: Will reset to the factory default private network name "HomePlug AV".</i>

Power Save Mode: The Powerline adapter will automatically going into standby mode to reduce power usage when there is no network traffic for more than 10~20 minutes. All LEDs are going off. It can be wake up automatically when the network traffic is coming again. It will take a couple of seconds to wake up and resume back to full speed of service.

LED	Color	Sequence	Definition
Power	Green	Solid	Device is powered on
	Green	Blinking	Powerline synchronization in progress
	N/A	Off	Device is powered off or in sleep mode
Powerline	Green	Solid	Powerline connected (Best)
	Green	Blinking	Data transmitting over powerline (Best)
	Amber	Solid	Powerline connected (Good)
	Amber	Blinking	Data transmitting over powerline (Good)
	Red	Solid	Powerline connected
	Red	Blinking	Data transmitting over powerline
	N/A	Off	Powerline is not connected or synchronized, or the adapter is in sleep mode
Ethernet	Green	Solid	Network connection established
		Blinking	Network transmitting over Ethernet port
	N/A	Off	No Ethernet connection or adapter is in sleep mode

Powerline Connections: Powerline LED color indicates the strength and quality of the Powerline connection through the electrical system. The following factors may affect the Powerline network's connection quality:

- **Ground Wire** - Adapters should use all 3 wire sockets to boost up the Powerline communication speed to gigabit.
- **Noise** – Generated by appliances which use your electrical system (e.g. Microwaves, ovens, hair dryer, irons, dishwashers, etc.). The quality of your household electrical wiring may also cause additional noise on your electrical system.
- **Distance** – Long lengths of electrical wiring through your electrical system between connected Powerline adapters.

Expanding a Powerline Network

What is a network?

A network is a group of computers or devices that can communicate with each other. A home network of more than one computer or device also typically includes Internet access, which requires a router.

A typical home network may include multiple computers, a media player/server, a printer, a modem, and a router. A large home network may also have a switch, additional routers, access points, and many Internet-capable media devices such as TVs, game consoles, and Internet cameras.

- **Modem** – Connects a computer or router to the Internet or ISP (Internet Service Provider).
- **Router** – Connects multiple devices to the Internet.
- **Switch** – Connect several wired network devices to your home network. Your router has a built-in network switch (the LAN port 1-4). If you have more wired network devices than available Ethernet ports on your router, you will need an additional switch to add more wired connections.

How to expand a home network

Wireless Access Points add or extend wireless connectivity to an existing network. Integrated Powerline technology allows you to further extend your network using your existing electrical system in your home using multiple powerline adapters.

Where to find more help

In addition to this User's Guide, you can find help below:

- <http://www.trendnet.com/support> (documents, downloads, and FAQs are available from this Web page)

Basic Installation

Note: It is recommended to plug the adapters into nearby outlets before installing the devices to the desired locations.

Note: If you are connecting the adapters to a third-party powerline device other than TRENDnet and encounter issues, please refer to the manufacturer's documentation for the appropriate sync button procedure.

Note: The sync button procedure steps below demonstrate using TRENDnet powerline model TPL-423E, but the same procedure applies to TRENDnet powerline models TPL-406E / TPL-407E / TPL-420E / TPL-421E / TPL-422E / TPL-423E / TPL-331EP.

Connecting the adapters using Powerline

Requirements:

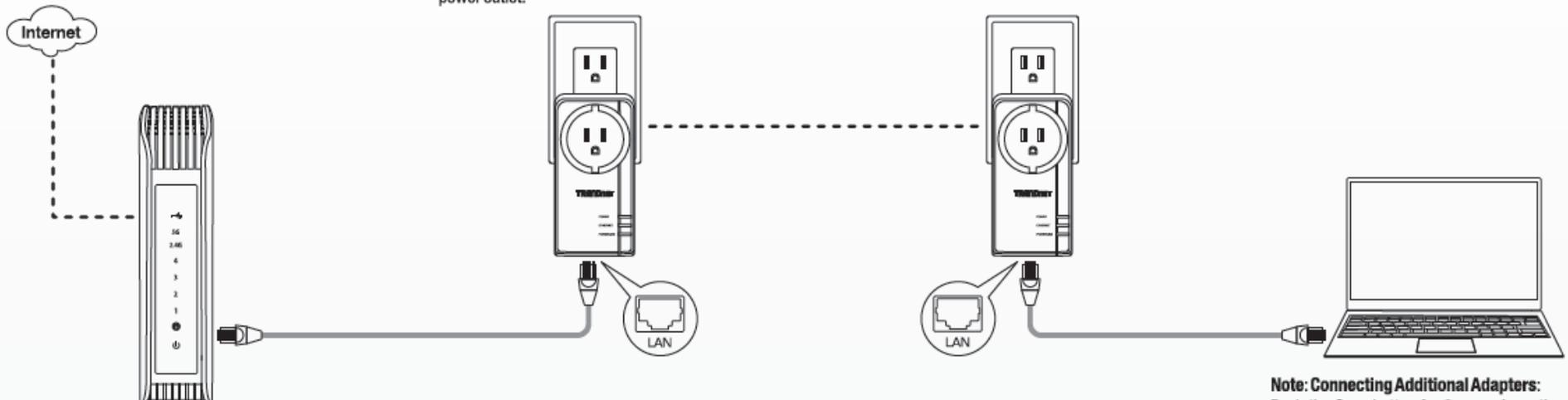
Must have existing Powerline Network.

- 1 Connect a network cable from your router to the TPL-423E's network port.

- 2 Plug the TPL-423E (included in TPL-423E2K) or other Homeplug AV powerline adapter into the power outlet.

- 3 Plug the TPL-423E into the power outlet.

- 4 Connect a network device to the TPL-423E's LAN Port.



Note: Connecting Additional Adapters:
Push the Sync button for 2 seconds on the adapter connected to the router. Then push the Sync button for 2 seconds on any new adapter to sync them to your existing Powerline network. The POWERLINE LED will turn solid when the adapters are successfully connected.

Installing your Powerline Adapters

Powerline Security

All out-of-the-box TRENDnet HomePlugAV Powerline adapters can be connected to each other without further configuration. To add additional network security to your network, you can change your Powerline network name away from the factory default. With a customized private network name, no one can connect to your Powerline network with an out-of-the-box HomePlugAV adapter.

TRENDnet HomePlugAV certified Powerline adapters have the same default network name "HomePlugAV". TRENDnet recommends that you change the Powerline network name away from the factory default to increase network security. Once configured, the Powerline network name will be saved on device. You can freely unplug the adapter and moved to the other location within its operating range. If a mistake is made in the settings, the adapter can be reset to the factory default settings by pressing the **Reset** button for 1 second.

If you want to use the default network name for easy connection, skip the synchronization steps and go directly to **Connect a Powerline adapter to your router** on page 6.

Scramble your Network Name Away from the Factory Default

There are two ways to change the default network name:

1. (Recommended) Use the physical **Sync** button on your Powerline adapter to generate a random private network name.

OR

2. Create a customized private network name for your Powerline network by using the included Powerline Utility. See The Powerline Utility on page 8.

** If the Powerline adapter settings have been changed, the adapter must be reset to the factory default settings to be recognized by Powerline Utility.*

Before you Install

1. Before you proceed with the installation, verify the following:

- You already have a router already installed.
- You already have Internet access through your existing network.
- An Ethernet port (also called LAN port) is available on your router.
- Verify that you have at least two Powerline adapters. You will need at least two Powerline adapters to create a Powerline network.
-

2. Plan the location of where you will install your Powerline adapters.

- Avoid plugging the adapters into power strips, extension cords, or surge protectors as this may prevent the adapter from functioning correctly or degrade performance.
- Avoid plugging the adapters into wall power outlets that are controlled by a light switch to prevent the Powerline adapter from being turned off accidentally.
- Avoid plugging the adapters into wall power outlets that are located near appliances that consume a lot of power (e.g. refrigerators, washers, dryers) as this may degrade performance.
- Make sure there are available wall power outlets in the room where the router is installed and the room where you want to extend network connectivity.
- For AV2 1300 Powerline adapters, make sure your electric network has 3 wires properly installed.

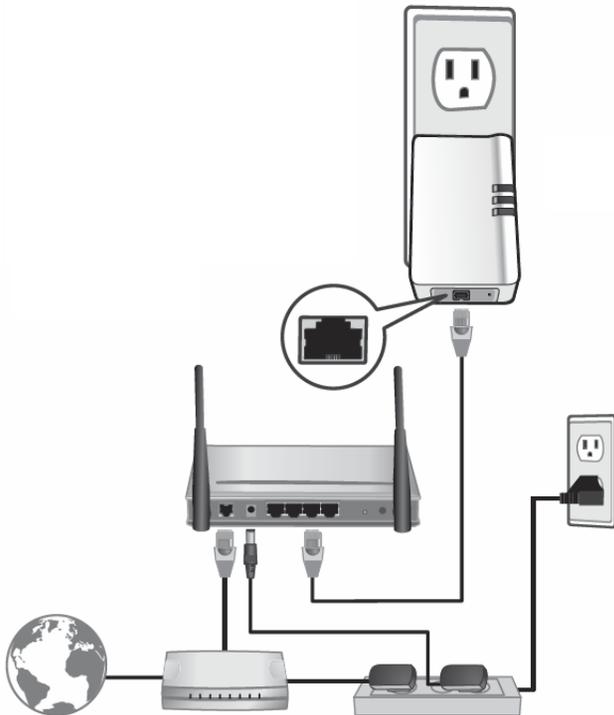
Connect a Powerline adapter to your router

1. Plug the Powerline adapter into an available wall power outlet near your router.

Note: This will allow devices connected to your Powerline network to access the Internet and other devices connected to your network.

2. Connect the included Ethernet cable (also called network cable) from the Ethernet port (also called network port) of your Powerline adapter to an available Ethernet port (also called LAN port) on your router.

3. Once the Powerline adapter is installed and connected to your router, verify that the **Power LED** is on or blinking and the **Ethernet LED** is on or blinking.



Add adapters to your network

Once you have installed and connected the first Powerline adapter to your router, you can easily extend your network to other rooms by adding additional Powerline adapters.

To extend your network using an additional Powerline adapter:

1. First, make sure the first Powerline adapter is installed and connected to your router.

Note: This will allow devices connected to your Powerline network to access the Internet and other devices connected to your network.

2. Plug the additional Powerline adapter into an available wall power outlet in another room near a computer or network device (e.g. game consoles, network-enabled TVs, network attached storage, network media server/players, etc.) that you would like to connect to your network.

3. Connect the included Ethernet cable from the Ethernet port on your Powerline adapter to the Ethernet port of your computers or network devices.

4. After the additional Powerline adapter is connected and installed to your computer or network device, wait for the **POWERLINE LED** to turn on. After the **POWERLINE LED** turns on, verify that the **Power LED** is on, the **POWERLINE LED** is on or blinking, and the **Ethernet LED** is on or blinking.

Note: To verify that your Powerline adapters are connected successfully to your network, you can check if the computer(s) or network device(s) can access the Internet through your Powerline network.

To install additional Powerline adapters in other rooms, repeat the steps above for each adapter.

Securing your Powerline Network

Powerline networks consist of two or more Powerline devices connected together using the same encryption key. TRENDnet Powerline adapters automatically connect to each other over a secure encrypted signal and share the same encryption key (Default encryption key: HomePlugAV).

In order for your Powerline devices to connect to the same Powerline network, the same encryption key must be assigned to all Powerline devices in that network. Powerline devices that are not assigned the same encryption key will not be able to connect to the Powerline network.

For additional security, TRENDnet recommends changing adapter default encryption key to prevent a neighbor with a Powerline adapter and the same default encryption key from gaining access to your network.

Note: *After the default encryption key has been changed and the Powerline adapters have been connected using a new encryption key, the Powerline adapters will retain their security settings when they are unplugged and moved to a new location. No additional reconfiguration of the Powerline adapters is needed after the default encryption has been changed.*

To change the default encryption key:

- Use the physical **Sync/Link** button on your Powerline adapter to generate a random encryption key.
****Recommended method****

Scramble your Network Name and Encryption

TRENDnet adapters auto-connect out of the box over a pre-encrypted Powerline signal. The following optional steps are recommended to secure your powerline network.

1. Make sure your TPL-423E is powered on and not in sleep mode.
2. The physical **Sync** button on the Powerline adapter provides an easy way to change the network name. Push and hold the **Sync** button for 10 seconds. All LEDs will turned off and then turned on again. This will generate a new random network name for your Powerline adapter.
3. Push the Sync button on each adapter within the powerline network for 2 seconds to re-sync to the new network name and encryption. The POWERLINE LEDs will turn solid when devices have successfully reconnected.

Note: Powerline networks can also be secured by creating a customized private network name for your Powerline network using the included Powerline Utility. See The Powerline Utility on page 8.

The Powerline Utility

The Powerline Utility allows you doing following jobs:

1. Create a customized network name for your powerline network and apply it to multiple Powerline adapters at the same time.
2. View Powerline adapters connected to your network (using the MAC address) and the approximate connection quality and speed of each Powerline adapter.
3. View and upgrade Powerline adapter firmware.

Note: Link speed displayed in the utility of your Powerline adapters to another through your electrical system is estimated. Actual link speed may vary.

Powerline Utility System Requirements

- Windows® 10, 8.1, 8, 7, Vista, XP
- Microsoft® .NET Framework 3.5 installed

Software Installation

1. Insert the included CD-ROM into your computer's CD-ROM drive.
2. At the CD Autorun Prompt window, click Run Autorun.exe

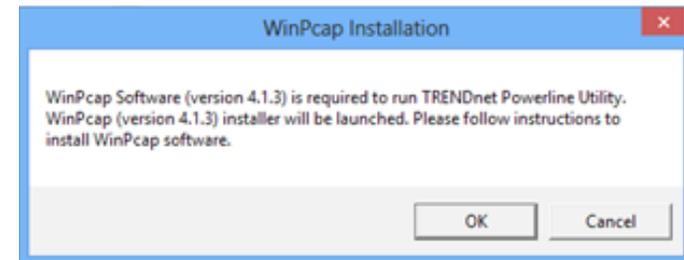
Note: If the Autorun prompt does not appear automatically, open the CD contents and double-click Autorun.exe.

3. At the CD-ROM main menu, click **Install Utility**.



The installer will check if you have a previous WinPcap utility.

4. Click **OK**.

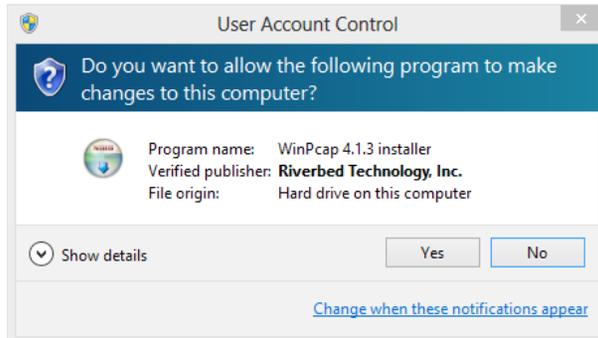


Note: The Powerline Utility requires WinPcap as a base application. If this prompt does not appear, you may already have the WinPcap application installed. Windows 8 require WinPcap 4.1.3. Windows 7 and older will work with previous versions of WinPcap. If you have installed a previous version of WinPcap, please uninstall it manually. And then, start the installation from the beginning.

5. At the WinPcap installer window, click **Next**.



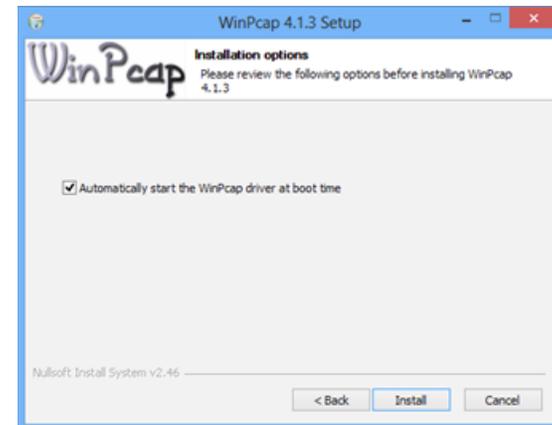
6. Click **Yes** to allow installation.



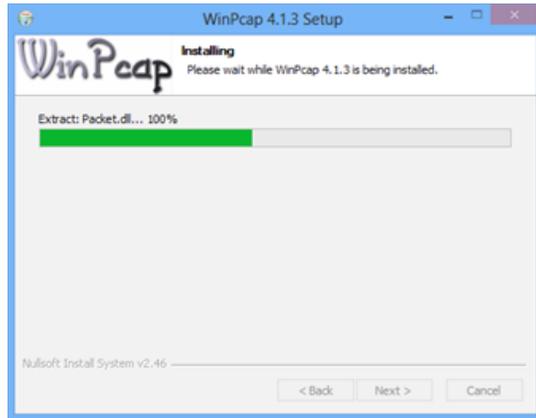
7. Review the license agreement and click **I Agree**.



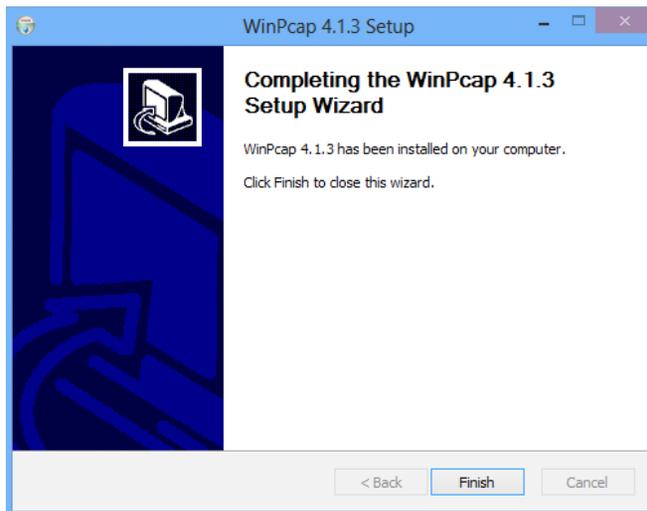
8. In the Installation Options window, leave the **Automatically start the WinPcap driver at boot time** checked and click **Install**.



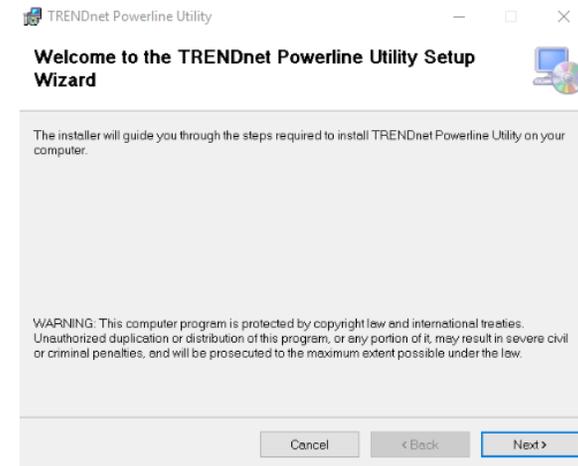
9. Wait for the WinPcap installation to complete.



10. After the process has been completed, click **Finish**.



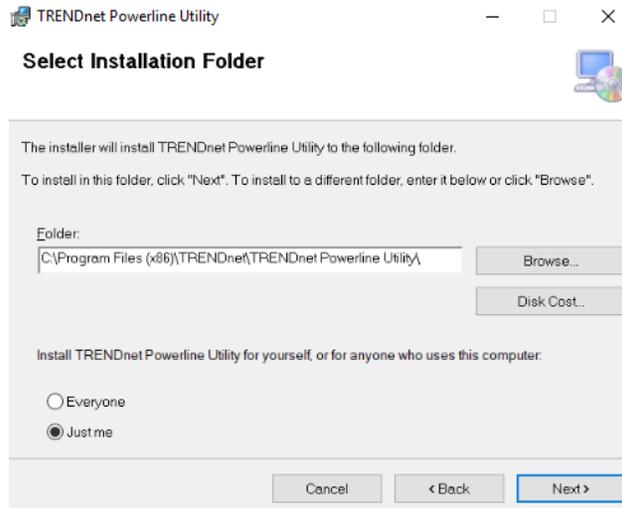
11. At the the TRENDnet Powerline Utility Setup Wizard, click **Next**.



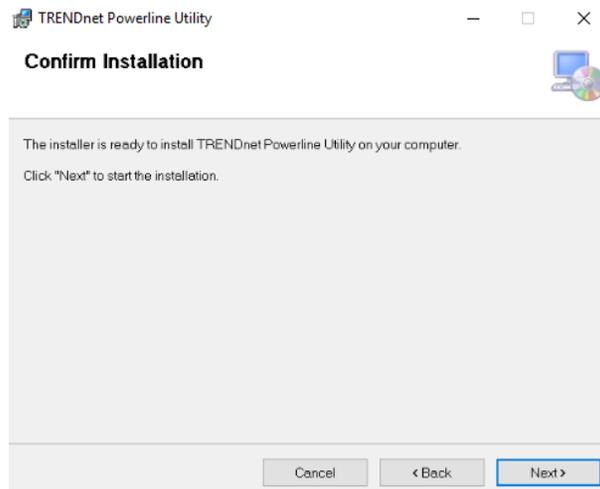
12. In the License Agreement window, click **I Agree**, and then click **Next**.



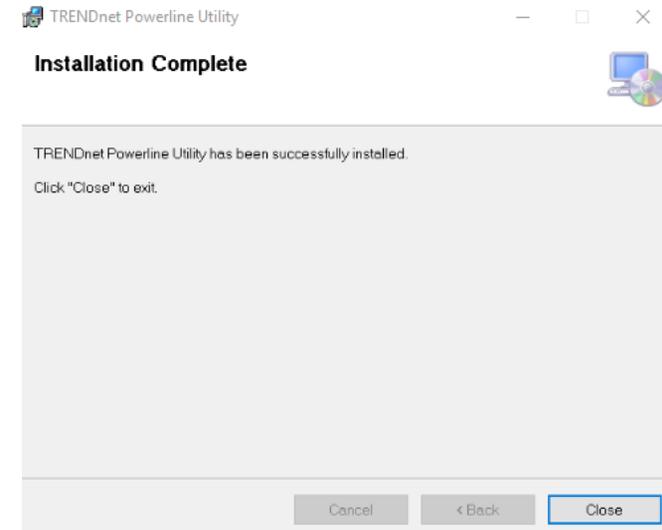
13. In the Select Installation Folder window, click **Next**.



14. In the Confirm Installation window, click **Next**.



15. Wait for the Powerline Utility installation to complete. At the Installation Complete window, click **Close**.



Using the Utility

Before using the utility, please do the following:

1. Write down the **Device Password (DPW)** (16-digit characters A-Z only) and **MAC Address** (12-digit characters a-f, A-F, 0-9) of each Powerline adapter as this will be required to change the network name for multiple Powerline adapters. Both the **DPW** and **MAC Address** can be found on the device label on the back of each powerline device.
2. Make sure the computer in which you are installing the utility is connected to your network and your Powerline adapters are also connected to your network.
3. If you have changed your network name using the Sync button and you are creating a customized network name, it is required to reset all powerline devices to defaults using the physical **Reset** button on your Powerline adapter first before using the utility. See **Product Outlook** on page 2.
4. Please ensure that your Powerline adapters are already installed and connected and the Ethernet port on each adapter is connected to a device powered on.

Upon completing the software installation, a desktop shortcut is automatically created. Double-click the icon to start the utility or open the utility if it is already running. Closing the utility will exit the application.

You can also launch the utility from Start Menu. **Start > Programs (or All Programs) > TRENDnet > TRENDnet Powerline Utility.**



Powerline Utility – Map View

Local Device

All Powerline adapters connected to the same network as your computer will be listed here.

The default device name is main chip number, followed by the MAC address and firmware version number. You can mouse over the header and adjust column width by clicking and dragging this cursor .

Remote Devices

These are Powerline adapters in remote locations connected to a selected local Powerline adapter on the electrical system.

You can mouse over the header and adjust the column width by clicking and dragging this cursor  to see more information.

Manage your device

Highlight a device by clicking the row and click buttons below

* **DPW** (Device Password) is shown on device label

** TPL-423E has a Power Save Mod. The device setting can only be changed when the device is active. To keep remote Powerline adapter in an active state, you can power cycle the device or connect it to a network device, such as a router or a computer.

Auto Scan

Auto Scan is selected by default. The utility will scan for remote devices in specific intervals (default: 2 sec, you can change it from 2 to 60 secs). Auto scan can be disabled by deselecting it. Remote adapters can be scanned manually by clicking the Scan button below.

Network Type

The default network type is public. When the network name is customized and changed, it becomes private.

Scan

Manually scan remote Powerline devices which have the same network name

Rename

Change device name to meaningful names such as "living room"

Enter Password

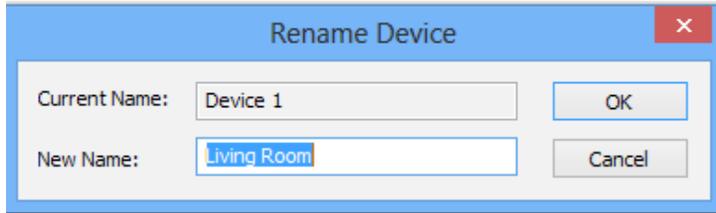
Enter device DPW here. You can manage the remote adapter if only you enter the DPW.

Add Device

Add remote Powerline adapter

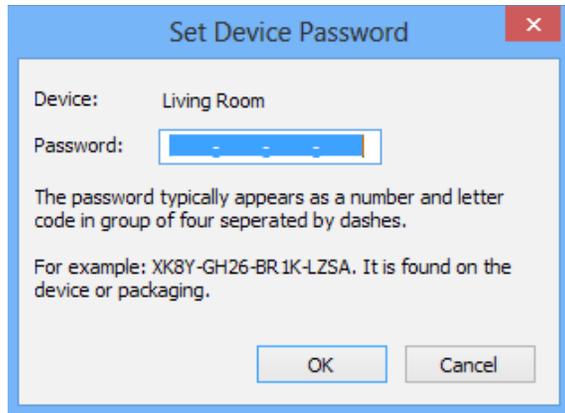
Rename remote device

(Click and select a remote device and then click **Rename** button in **Map View**)



Enter Password

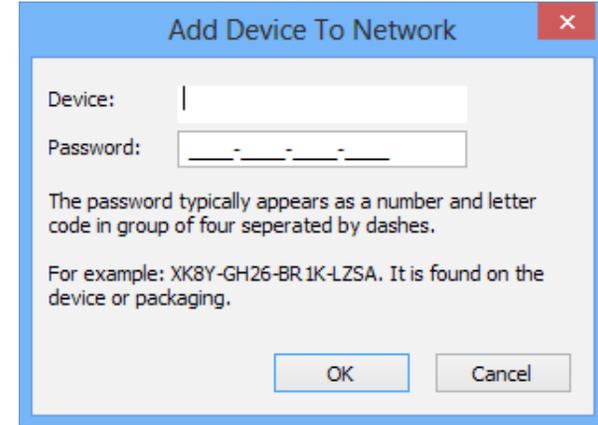
(Click and select a remote device and then click the **Enter Password** button in **Map View**)



The device password (DPW) can be found on the device label. You have to enter the DPW in order to manage the Powerline adapter remotely.

Add Device

(Click the **Add Device** button in **Map View**)



Enter the device name and DPW to add an adapter manually

Scan

Click **Scan** button in **Map View** to scan other Powerline adapters manually.

Powerline Utility – Detailed View

The screenshot shows the 'TRENDnet Powerline Utility' window. On the left is a navigation tree with 'Detailed View' selected. The main area is divided into two sections: 'System Information' and 'Remote Device History (Log)'. The 'System Information' section displays application version (v7.1, Build 0011), release date (April 26, 2013), computer name, user name, microprocessor (586), number of processors (4), and operating system (Windows 8). Below this is a 'NIC #1' section. The 'Remote Device History (Log)' section contains a table with columns for Device, MAC Address, Password, Tx Rate (Mbps), and Rx R. Two devices are listed: 'nicle' with MAC 00:14:D1:21:22:B8 and Tx Rate 245, and 'Living Ro...' with MAC 00:14:D1:21:22:B9 and Tx Rate 384. Below the table are buttons for 'Delete', 'Save Report', and 'Print Report', along with a 'Show Active Device(s) Only' checkbox which is checked.

System Information
System Information section shows this utility version, your computer information, and network adapters installed on your computer.

Remote Devices
Powerline adapters in remote locations connect to your network are shown here.

Show Active Device(s) Only
Unchecking this checkbox displays all device information on the network, even if the adapter is not in an active state.

Manage your report
Highlight the device by clicking the row and click buttons below to manage.

* DPW (Device Password) is shown on the device label

Delete
Delete the device from status report (Un-select auto scan in **About** section to prevent deleting).

Save Report
Click this button to save above information for later use.

Print Report
Click this button to print Remove device history log.

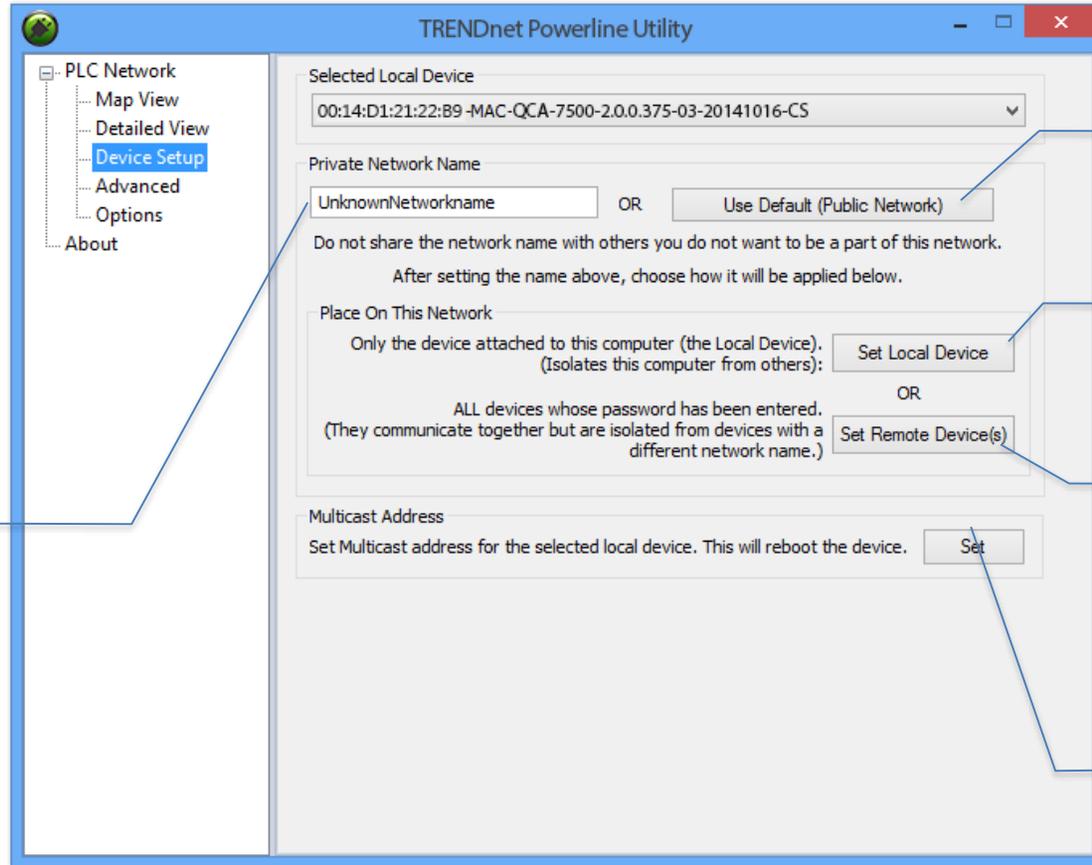
Powerline Utility – Device Setup

Private Network Name

This is the network name of your powerline network. The default network name is "HomePlugAV". When a network name is set to "HomePlugAV", it is considered a public network because most out of box Powerline adapters can join this network.

Powerline adapters can only connect to each other when the network name is the same. Change the network name to make your network private (recommended to increase network security).

You have to remember your network name (Private Network Name). It will be encrypted and saved to device. Even the TRENDnet Powerline Utility cannot read it in plain text again. When you visit this **Private Settings** again and the **Private Network Name** shows UnknownNetworkName, it means the network name is private.



Use Default

If you don't remember what network name you set previously, you can set the network public. Then set it back to private later.

Set Local Device

Change network name on device selected above.

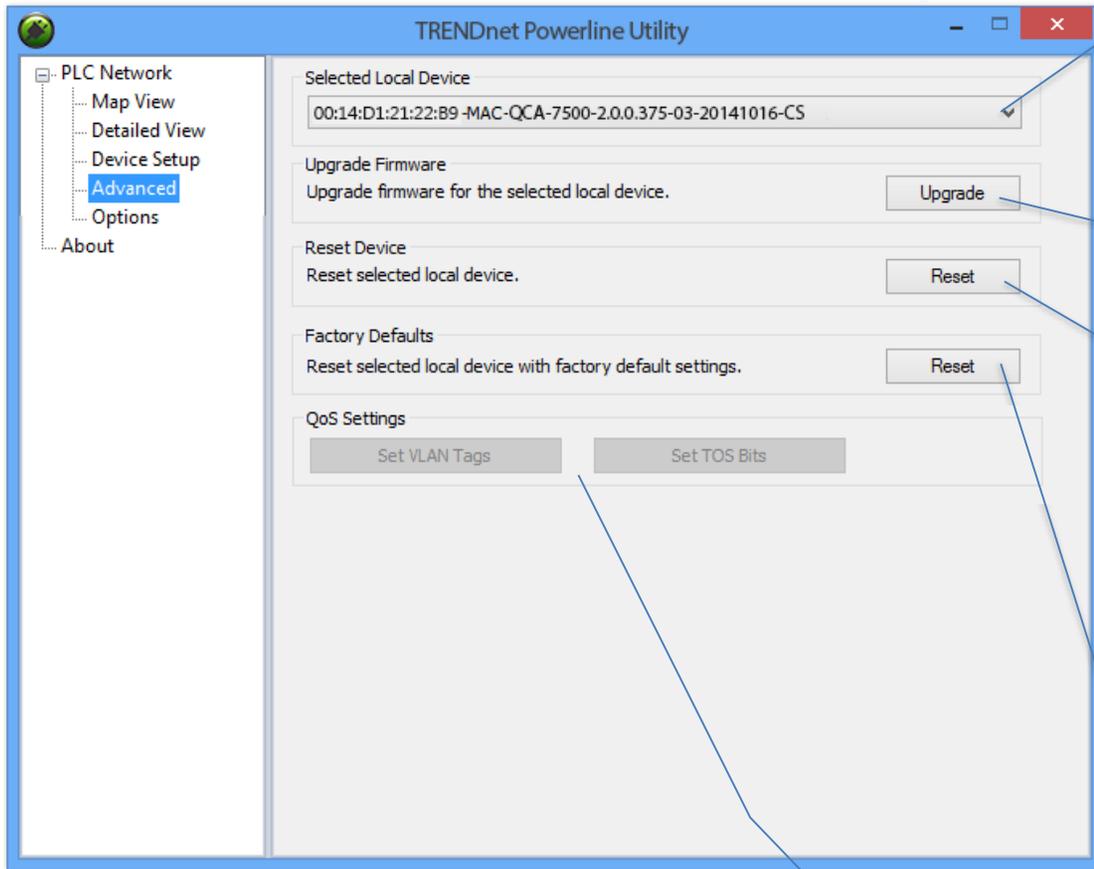
Set Remote Devices

All devices currently connected locally to your computer or connected remotely through powerline network will set to the new network name.

Multicast Address

Click this button to synchronize multicast address on all adapters on same powerline network.

Powerline Utility – Advanced



Select Local Device
This advanced feature supports local devices only. Choose one of your local device and proceed the advance setting.

Upgrade Firmware
Click this button to upgrade device firmware.

Reset Device
Reset the selected device and start fresh again.

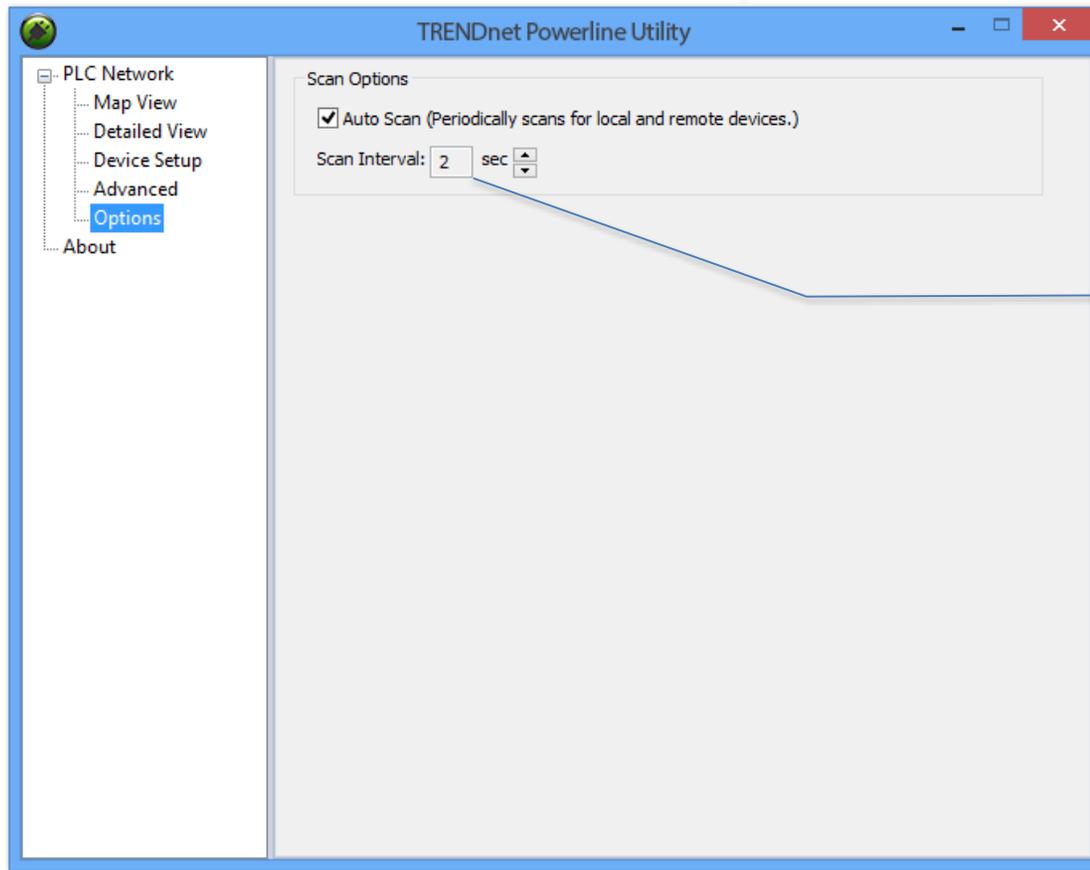


Factory Defaults
Clean up all your settings on adapter. Always click this button after you upgrade firmware.



QoS Settings
This section allows users to select between VLAN Tags or TOS Bits for Quality of Service (QoS) traffic prioritization.

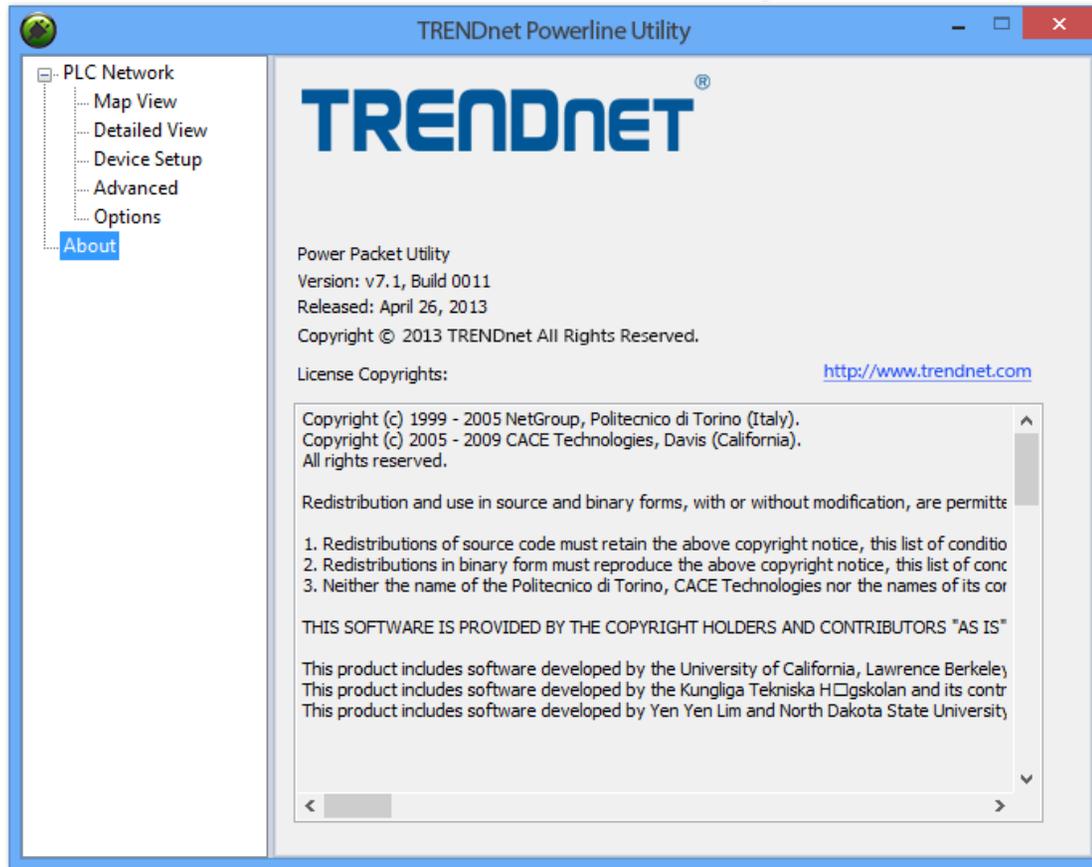
Powerline Utility – Options



Scan Options

By default, the Powerline Utility scans adapters attached to the network every 2 seconds. You can change the scanning frequency from 2 seconds up to 60 seconds or stop auto scan. You can then scan devices manually by clicking **Scan** button in **Map View**.

Powerline Utility – About



About Powerline Utility

This Powerline Utility manages TPL-423E and most legacy HomePlug certified Powerline adapters.

For more information, please visit our website www.trendnet.com

Technical Specifications

Standards

- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3x
- IEEE 802.3ab
- IEEE 1901
- IEEE 1905.1

Device Interface

- 1 x Gigabit LAN port
- Sync button
- Reset button
- LED indicators
- Built-in electrical power socket with noise filter
 - North America Type B (NEMA 5–15) (10A max. @ 120V AC)

Power Plug

- North America Type B (NEMA 5–15)

Frequency Band

- 2 – 67.5MHz

Modulation/Protocol

- OFDM, 4096/1024/256/64/16/8-QAM, QPSK, BPSK, ROBO, HS-ROBO, Mini-ROBO
- CSMA/CA

Data PHY Rate

- Up to 1300Mbps

Networking Distance

- Powerline: Up to 300m (980ft.) linear distance over electrical power lines***

Encryption

- 128-Bit AES (Advanced Encryption Standard)

Powerline Nodes

- Up to 8 (max.)

Overlapping Powerline Networks

- Up to 4 (per electrical system)

Special Features

- Auto-connects to other TRENDnet Powerline adapters
- IPv6 support
- IGMP / MLDv2 Streams

Optional Utility: OS Compatibility

- Windows 10, 8.1, 8, 7, Vista, XP

Power

- Input: 100 - 240V AC, 50-60Hz
- Consumption: Active mode: 4W (max.); Standby mode: 0.5W (max.)

Operating Temperature

- 0 – 50°C (32 – 122°F)

Operating Humidity

- Max. 90 % non-condensing

Certifications

- CE
- IC
- ETL

Dimensions

- 120 x 60 x 65mm (4.73 x 2.4 x 2.6 in.)

Weight

- 176g (6.2 oz.)

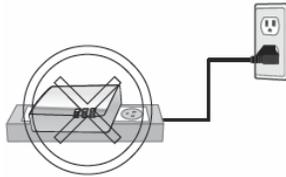
Warranty

- 3 year limited

Troubleshooting

Please reference the items below if you continue to experience difficulty with installing and using your Powerline adapters.

- Do not plug the Powerline adapters into a power strip. Make sure to plug the adapters directly into a power outlet and not through power strip. Using adapters through a power strip may negatively affect Powerline connectivity and performance.



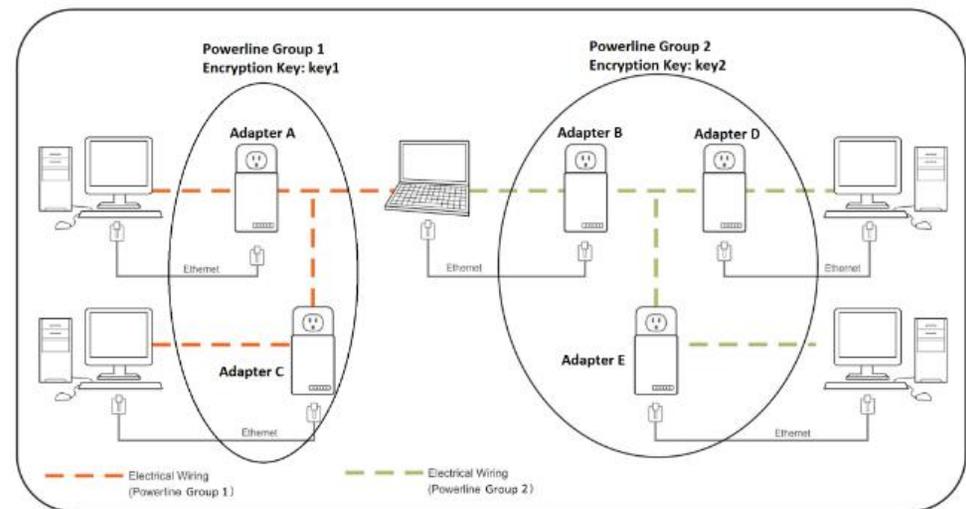
- Do not use the Sync button for more than 2 Powerline adapters to connect simultaneously. Wait for each Powerline adapter to connect to your Powerline network one at a time before connecting the next adapter. Using more than one adapter to Sync simultaneously may cause some of your adapters not to Sync and establish connection to your Powerline network.
- Power-cycle the Powerline adapters by disconnecting them from their power outlets for 15 seconds and then reconnect them.
- If the Powerline (PL) LED is red, try plugging the Powerline adapter into another available power outlet. The quality of the connection may be better in a different power outlet.
- If you are having issues connecting the Powerline adapters after changing the encryption key using the Sync button or Powerline utility, reset the Powerline adapters to defaults using the physical Reset button.
- Using a pin or paperclip; press and hold the Reset button for 1 second on each Powerline adapter. All LEDs will turn off then turn back on. This will reset the Powerline adapters to their default settings. The default encryption key is HomePlugAV.
- The Powerline adapters can provide better connectivity and performance when plugged directly into a power outlet. Connecting the Powerline adapters to a power strip or surge protector may degrade or block Powerline signals.
- Avoid using the Powerline adapters on GFI protected outlets and electrical systems with AFCI circuit breakers. They may degrade or block Powerline signals.
- The Powerline adapters should not be used in areas with excessive heat.

- Florescent and incandescent lighting can generate significant Powerline interference.
- If your building has more than one circuit breaker box, the Powerline adapter may not be able to establish connectivity between them. In this case, connect a Powerline adapter into a power outlet located on each of the circuit breaker boxes. Then connect an Ethernet cable between the Powerline adapters to bridge the two circuits together.

Overlapping Powerline Networks

It is possible to create multiple Powerline networks on the same electrical system separated and grouped by different network encryption keys. The Powerline networks will work and communicate independently of each other which can provide security between different groups of Powerline adapters. For example, if you have five powerline adapters (Adapter A, Adapter B, Adapter C, Adapter D, Adapter E), you can group Adapters A, B, and C together on one powerline network and group Adapters D and E on a different Powerline network. Each group will use a different encryption key.

Note: It is recommended that only a maximum of up to 4 Powerline networks can be created per electrical system. Any additional Powerline networks above the recommended may result in significant degradation in Powerline performance.



Appendix

Federal Communication Commission Interference 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 in accordance with 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 can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For product, available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device and its antennas(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.



IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

RoHS

This product is RoHS compliant.



Industry Canada (IC)

CAN ICES-3 (B)/NMB-3(B)

IC: ICES/NMB – 006

complies with IC: ICES - 006; en conformité avec IC: NMB – 006

Limited Warranty

TRENDnet warrants its products against defects in material and workmanship, under normal use and service, for the following lengths of time from the date of purchase.

TPL-423E / TPL-423E2K – 3 Years Warranty

AC/DC Power Adapter, Cooling Fan, and Power Supply carry 1 year warranty.

If a product does not operate as warranted during the applicable warranty period, TRENDnet shall reserve the right, at its expense, to repair or replace the defective product or part and deliver an equivalent product or part to the customer. The repair/replacement unit's warranty continues from the original date of purchase. All products that are replaced become the property of TRENDnet. Replacement products may be new or reconditioned. TRENDnet does not issue refunds or credit. Please contact the point-of-purchase for their return policies.

TRENDnet shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to TRENDnet pursuant to any warranty.

There are no user serviceable parts inside the product. Do not remove or attempt to service the product by any unauthorized service center. This warranty is voided if (i) the product has been modified or repaired by any unauthorized service center, (ii) the product was subject to accident, abuse, or improper use (iii) the product was subject to conditions more severe than those specified in the manual.

Warranty service may be obtained by contacting TRENDnet within the applicable warranty period and providing a copy of the dated proof of the purchase. Upon proper submission of required documentation, a Return Material Authorization (RMA) number will be issued. An RMA number is required in order to initiate warranty service support for all TRENDnet products. Products that are sent to TRENDnet for RMA service must have the RMA number marked on the outside of return packages and sent to TRENDnet prepaid, insured and packaged appropriately for safe shipment. Customers shipping from outside of the USA and Canada are responsible for return shipping fees. Customers shipping from outside of the USA are responsible for custom charges, including but not limited to, duty, tax, and other fees.

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2018/12/1



Product Warranty Registration

Please take a moment to register your product online.
Go to TRENDnet's website at <http://www.trendnet.com/register>

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