

# TP-LINK®

## User Guide

**TL-PA7020**

**AV1000 2-port Gigabit Powerline Adapter**



# CONTENTS

|   |          |
|---|----------|
| <b>Chapter 1 Introduction</b> .....                                 | <b>1</b> |
| 1.1 System Requirement.....   | 1        |
| 1.2 Important Safety Instructions.....                              | 1        |
| 1.3 Conventions.....  | 2        |
| 1.4 LED Indicator.....  | 2        |
| 1.5 Physical Interface.....   | 3        |
| <b>Chapter 2 Connecting Mechanism</b> .....                         | <b>5</b> |
| 2.1 Introduction.....   | 5        |
| 2.2 Connection Instruction.....                                     | 5        |
| 2.3 Hardware Connection – Computer.....                             | 5        |
| 2.4 Hardware Connection – Internet.....                             | 6        |
| <b>Chapter 3 Advanced Feature: How to Use the Pair Button</b> ..... | <b>8</b> |
| 3.1 Set Up a Secure Powerline Network.....                          | 8        |
| 3.2 Reset.....  | 8        |
| <b>Appendix: Troubleshooting</b> .....                              | <b>9</b> |

## Chapter 1 Introduction

This device is an AV1000 2-port Gigabit Powerline Adapter which transforms your house's existing electrical wiring into a ubiquitous networking infrastructure. Simply plug this AV1000 2-port Gigabit Powerline Adapter into an ordinary AC power outlet which will easily extend your Cable/xDSL broadband connection or existing Ethernet (LAN) network to any other electrical outlet in any room of a house without the need of any new cabling.

This powerline adapter supports up to 1000Mbps data rate over the existing household power circuit. With data rates of 1000Mbps, full multimedia application can easily be supported throughout the whole house in addition to Internet access. This powerline adapter uses the existing power lines installed in a home as a path to transmit digital data, voice, audio and video between devices.

To ensure data communication's security and multimedia applications, this powerline adapter supports built-in 128-bit AES encryption and Quality of Service (QoS) features. With minimum setup, you can install and use this powerline adapter within minutes. The adapter adds two useful functions.

1. Existing connection with a new unassociated device added via the **Pair Button**.
2. Reset to default setting via the **tpPLC** or the **Pair Button**.

### Note:

TP-LINK tpPLC Utility is provided to manage powerline devices. For detailed instructions, please refer to the tpPLC Utility's User Guide.

### 1.1 System Requirement

- a) At least two AC power outlets (100–240V~, 50/60Hz) with standard home power wiring
- b) A computer with the following:
  - Operating System with TCP/IP installed
  - Pentium III compatible processor and above
  - Ethernet LAN card installed with TCP/IP protocol
  - 64 MB RAM or more
  - 50 MB of free disk space (Minimum)

### 1.2 Important Safety Instructions

1. Do not open this product or attempt to service it; it may expose you to dangerous high voltage or other risks.
2. Do not operate this product near water.
3. Do not place or operate this product near a radiator or a heat register.
4. Do not expose this product to dampness, dust or corrosive liquids.
5. Do not connect this product or disconnect it from a wall socket during a lightning or a thunderstorm.
6. Do not block the ventilation slots of this product, for insufficient airflow may harm it.
7. Do not put anything on this product.
8. Plug this product directly into a wall socket (100–240V~, 50/60Hz). Do not use an extension cord between this product and the AC power source.

9. When plugging this product into a wall socket, make sure that the electrical socket is not damaged, and that there is no gas leakage.
10. Place the connecting cables properly so that people won't stumble or walk on it.
11. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult the qualified technician.
12. Unplug this product from the mains and refer the product to qualified service personnel for the following conditions:
  - If liquid has been spilled on the product
  - If the product has been exposed to rain or water
13. Unplug this product from the wall socket before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleaners.
14. The specification of the fuse is **T2.5AL250V**. To avoid damage, please do not change the fuse.
15. The Operating temperature is 0°C~40°C (32°F~104°F).
16. The Storage temperature is -20°C~70°C (-4°F~158°F).


### 1.3 Conventions



The powerline adapter or AV1000 2-port Gigabit Powerline Adapter mentioned in this guide stands for TL-PA7020 AV1000 2-port Gigabit Powerline Adapter without any explanation.

### 1.4 LED Indicator

The LED indicator displays information about the device's status.



| Item  | Status   | Indication  |
|---|----------|---|
|  Power LED | On/Off   | The powerline adapter is on or off.                 |
|   | Blinking | Blinking every second: Pairing is in process.       |
|   |          | Blinking every 3 seconds: Power-Saving Mode is on.* |

| Item  | Status       | Indication  |
|---|--------------|---|
|  Powerline LED | Yellow-green | Powerline network is in good condition.   |
|   | Red          | Powerline network is in poor condition. We recommend trying another wall socket.            |
|   | Off          | The powerline adapter is not connected to any powerline network or is in Power-Saving Mode. |
|  Ethernet LED  | On/ Off      | At least one Ethernet port is connected or no Ethernet port is connected.                   |

**Note:**

Five minutes after the device connected to the adapter is turned off, the adapter will automatically switch to Power-Saving Mode.

**1.5 Physical Interface**

There are several types of physical interfaces on this powerline adapter.



| Interface     | Description  |
|---------------|--|
| Ethernet Port | Two 10/100/1000 Mbps Ethernet ports for connecting the adapter to the PC or the broadband device with a network cable. |
| Power Plug*   | A power plug for connecting the adapter to an AC power socket (100–240V~, 50/60Hz).                                    |

| Interface   | Description  |
|-------------|--|
| Pair Button | Press and hold for 1 second to set up or join a secure powerline network.<br>Press and hold for about 8 seconds to leave an existing powerline network.<br>Press and hold for more than 15 seconds to reset the powerline adapter. |

\* The provided power plug may differ from the picture due to different regional power specifications. Here we take the EU version as an example.

 **Note:**

1. If the pair button is pressed for about 8 seconds, the powerline adapter will leave the network which it has joined and its new network name assumes a random value. The Powerline LED turns off when it disconnects from the powerline network.
2. For detailed information about the pair button, please refer to [Chapter 3 Advanced Feature: How to Use the Pair Button](#).

## Chapter 2 Connecting Mechanism

### 2.1 Introduction

The powerline adapter supports up to 1000Mbps data rate. With this high speed connection rate, this powerline adapter allows you to set up a high speed home network by using your home existing electrical wiring. Simply plug this powerline adapter into an ordinary power outlet to extend your Cable/xDSL broadband connection or existing LAN network to any other electrical outlet in any room of your house.

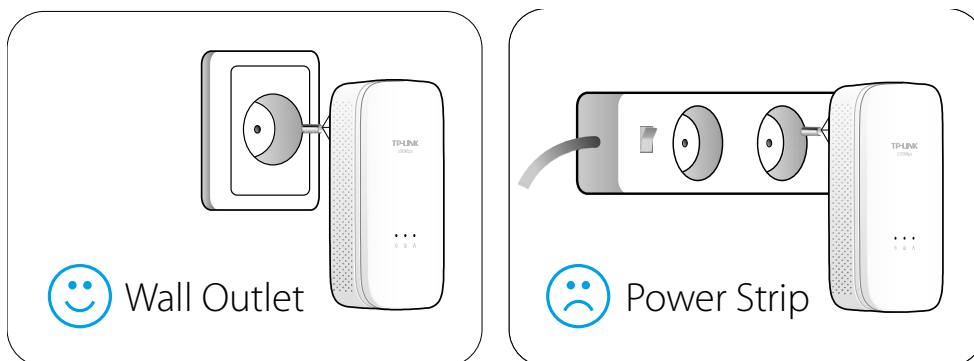
Note that powerline adapters work in pairs. One powerline adapter is connected to your Cable/xDSL broadband to extend broadband connection and Internet surfing. The other powerline adapter is connected to the computer for network access. With clean power line, the distance between two powerline adapters can reach up to 300 meters, but the actual distance may vary due to the environment.

Section below describes the connection instructions and hardware connection mechanism.

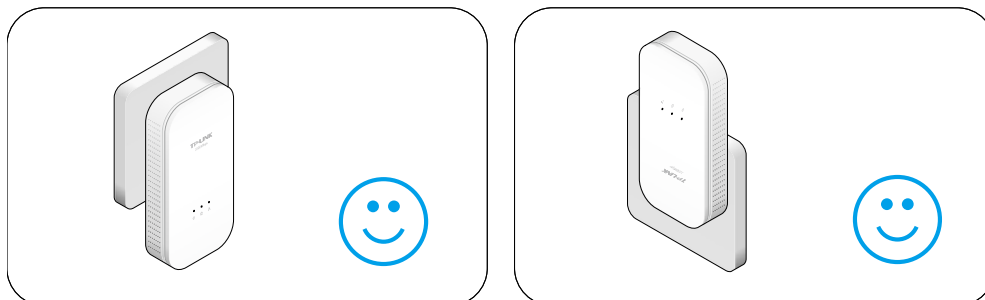
### 2.2 Connection Instruction

To ensure the optimum performance of the powerline adapter and significantly improve the transmission capacity of the network, we recommend that you comply with the following connection rule:

- Plug the powerline adapter directly into a wall socket but not the multiple sockets.



- The equipment can only be used in below directions.



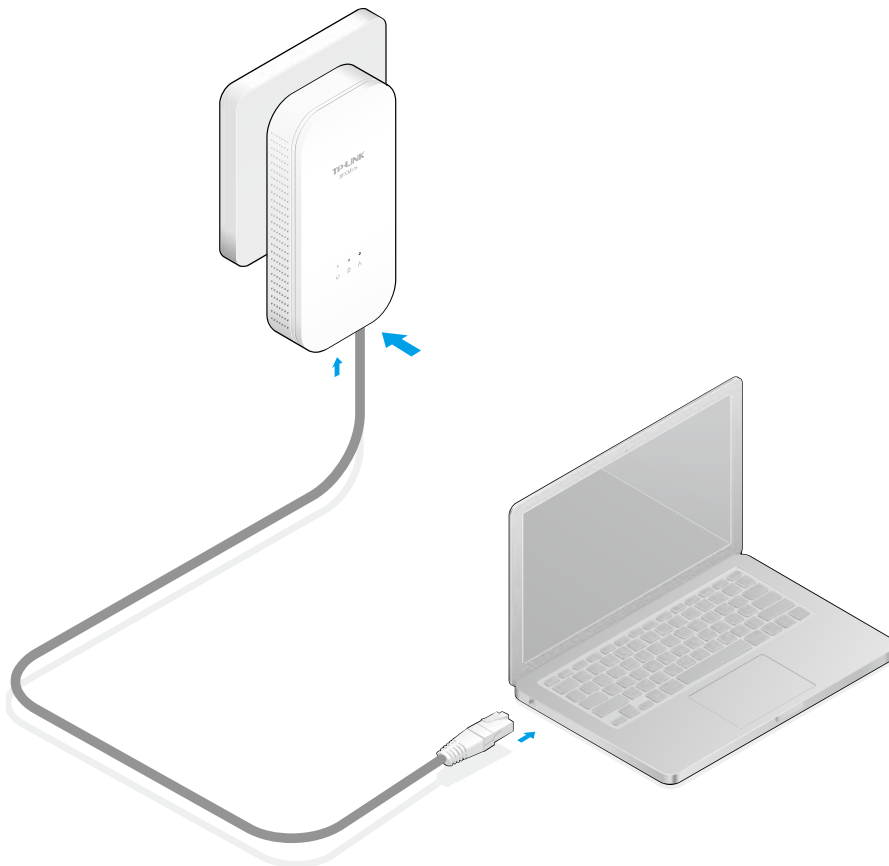
### 2.3 Hardware Connection – Computer

For those computers you wish to be networked by powerline adapter, each of the computers must be properly connected with a powerline adapter through an Ethernet (RJ45) cable.

Following are the steps to properly connect the powerline adapter to your computer:

1. Connect one end of the provided Ethernet (RJ45) cable to an Ethernet port of the powerline adapter.
2. Connect the other end of the Ethernet (RJ45) cable to your computer's LAN port.
3. Plug the powerline adapter into a wall socket next to the computer.

The hardware connection mechanism is shown below:






**Note:**

Do not connect the powerline adapter to any extension lead, power strip, extension cord or surge protector, as this may degrade the network performance.

## 2.4 Hardware Connection – Internet

This section describes how to connect the powerline adapter into your existing ADSL broadband connection via ADSL Ethernet port. Follow the procedures described below to connect the powerline adapter to your ADSL broadband connection:

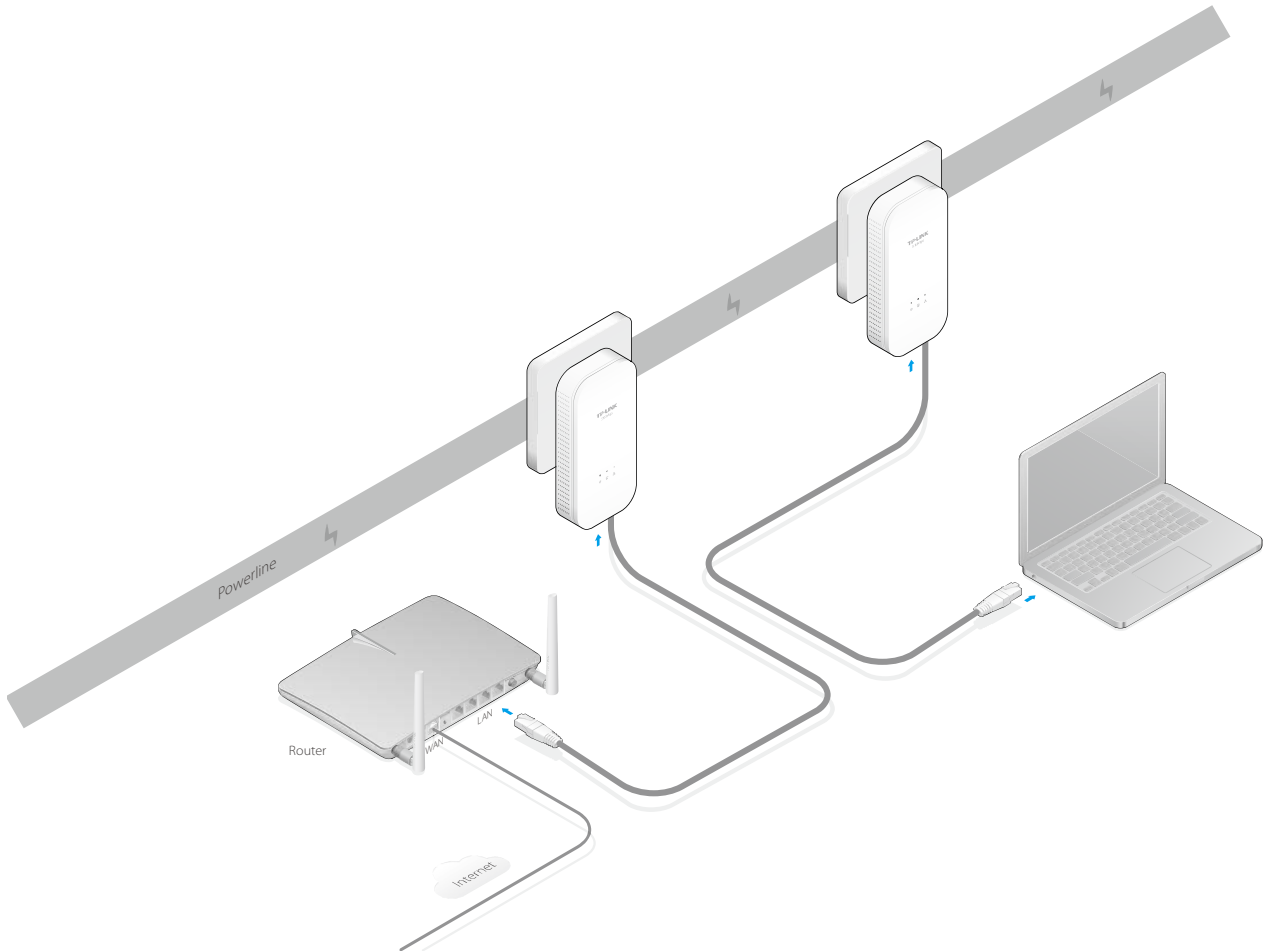
1. Connect one end of the provided Ethernet (RJ45) cable to an Ethernet port of the powerline adapter.
2. Connect the other end of the Ethernet (RJ45) cable to an available Ethernet port of your ADSL broadband Router.
3. Plug the powerline adapter into a wall socket next to the router.
4. Check and confirm that the Power LED , Ethernet LED , and Powerline LED  on the powerline adapter are **ON**.

**Note:**

If any LED does not turn on, refer to [Appendix: Troubleshooting](#).



The hardware connection mechanism is shown below:



**Note:**

Where the MAINS plug or an appliance coupler is used as the disconnected device, the disconnected device shall remain readily operable. The idle wall sockets or electrical outlets in your household electrical circuit can be used normally without interference from the network.

## Chapter 3 Advanced Feature: How to Use the Pair Button

### 3.1 Set Up a Secure Powerline Network

The Homeplug AV standard uses 128-bit AES (Advanced Encryption Standard) to safely transmit data between powerline adapters. For the powerline adapters to communicate with each other they all need to use the same Network Membership Key (NMK). Otherwise, they cannot unscramble the encrypted data sent in the powerline network.

The **Pair** button allows you to set up a secure powerline connection with another HomePlugAV compliant powerline devices which also support the **Pair** feature.

You can connect a number of devices on a powerline network, but you can only use the Pair button on two devices at a time.

#### Create a secure powerline network using the Pair button:

- Step 1.** Press the Pair button of powerline adapter A for one second. The Power LED will start flashing.
- Step 2.** Within 2 minutes, press the Pair button of powerline adapter B for one second. The Power LED will start flashing.
- Step 3.** Wait for about 60 seconds while your powerline adapters A and B are connecting. The Power LEDs on both adapters will stop flashing and become solid light when the connection is made.

#### Join an existing secure powerline network:

Powerline adapter A and powerline adapter B form a HomeplugAV network. Powerline adapter C wants to join this network.

- Step 1.** Press and hold the Pair button on powerline adapter C for one second.
- Step 2.** Within 2 minutes, press and hold the Pair button on powerline adapter A/B for one second.
- Step 3.** Wait for about 60 seconds while your powerline adapters are connecting. The Power LEDs on powerline adapters A/B and C will stop flashing and become solid light when the connection is made.



#### Note:

The sequence of Step 1 and Step 2 can be exchanged.

#### Leave an existing secure powerline network:

Powerline adapters A, B and C have formed a HomeplugAV network. The user wants to remove one device (powerline adapter A) from this network.

- Step 1.** Press and hold the Pair button on powerline adapter A for about 8 seconds, and then release the button. (All LEDs of powerline adapter A will momentarily go off.)
- Step 2.** Wait until the Power LED of powerline adapter A lights up steadily, indicating that it has already left the powerline network.

### 3.2 Reset

To reset the powerline adapter:

Press and hold the Pair button for more than 15 seconds, and then release the button. You will see all LEDs go off momentarily, and then begin to flash. When the Power LED turn solid, the reset process is completed.

Be careful, don't power off the powerline adapter when it is in reset process.

## Appendix: Troubleshooting

The Troubleshooting provides answers to common problems regarding the powerline adapter.

### 1. The Power LED does not light up.

**Ans.** Check the following:

1. Make sure that the powerline adapter is properly plugged into a power outlet.
2. Make sure the power outlet is active (working) by plugging another electric device into it.
3. Re-plug the powerline adapter to the power outlet. If the Power LED still fails to light up, contact your local dealer for technical support.

### 2. The Ethernet LED does not light up.

**Ans.** Check the following:

1. Make sure that the Ethernet cable (RJ45) is properly connected to an Ethernet port of the powerline adapter.
2. Make sure that the other end of the Ethernet cable (RJ45) is properly connected to the computer LAN card or to your Cable/xDSL Ethernet port.
3. Make sure your computer LAN card is properly installed and configured.
4. Make sure your Cable/xDSL broadband access is working and configured correctly.
5. Contact your local dealer for technical support if the Ethernet LED still fails to light up after the above procedures.

### 3. The Powerline LED does not light up.

**Ans.** Check the following:

1. Install and open the tpPLC Utility. The utility will automatically detect all other powerline adapters on your powerline network.
2. Try to plug a second powerline adapter into a nearby power outlet and check whether the Powerline LED lights up or not.
3. Contact your local dealer for technical support if the Powerline LED still fails to light up after the above procedures.

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## FCC STATEMENT



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used 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 or more 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.

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.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

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

## CE Mark 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.

## Industry Canada Statement

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

## BSMI Notice

安全諮詢及注意事項

- 請使用原裝電源供應器或只能按照本產品注明的電源類型使用本產品。
- 清潔本產品之前請先拔掉電源線。請勿使用液體、噴霧清潔劑或濕布進行清潔。
- 注意防潮，請勿將水或其他液體潑灑到本產品上。
- 插槽與開口供通風使用，以確保本產品的操作可靠並防止過熱，請勿堵塞或覆蓋開口。

- 請勿將本產品置放於靠近熱源的地方。除非有正常的通風，否則不可放在密閉位置中。
- 請不要私自打開機殼，不要嘗試自行維修本產品，請由授權的專業人士進行此項工作。



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## Safety Information

- When product has power button, the power button is one of the way to shut off the product; when there is no power button, the only way to completely shut off power is to disconnect the product or the power adapter from the power source.
- Don't disassemble the product, or make repairs yourself. You run the risk of electric shock and voiding the limited warranty. If you need service, please contact us.
- Avoid water and wet locations.

This product can be used in the following countries:

|    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|
| AT | BG | BY | CA | CZ | DE | DK | EE |
| ES | FI | FR | GB | GR | HU | IE | IT |
| LT | LV | MT | NL | NO | PL | PT | RO |
| RU | SE | SG | SK | TR | UA | US |    |

## DECLARATION OF CONFORMITY

For the following equipment:

Product Description: **AV1000 2-port Gigabit Powerline Adapter**

Model No.: **TL-PA7020**

Trademark: **TP-LINK**

We declare under our own responsibility that the above products satisfy all the technical regulations applicable to the product within the scope of Council Directives:

Directives 2004/108/EC, Directives 2006/95/EC, Directives 2011/65/EU

The above product is in conformity with the following standards or other normative documents:

**EN 55022: 2010 + AC: 2011**

**EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 +A2: 2013**

**EN 50412-2-1: 2005**

*The product carries the CE Mark*



Person responsible for making this declaration:

A handwritten signature in black ink, appearing to read 'Yang Hongliang', is written over a light gray rectangular background.

**Yang Hongliang**

**Product Manager of International Business**

Date of issue: **2015-11-06**

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