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Installation Guide

WBS210 / WBS510
Outdoor Wireless Base Station

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Overview

TP-LINK's Outdoor Wireless Base Stations of the Pharos series products are designed for outdoor wireless network solutions, aiming at long-distance transmission and large coverage of wireless network.

• Package Contents



Base Station



Passive PoE Adapter



Waterproof Rubber Insert



Power Cord



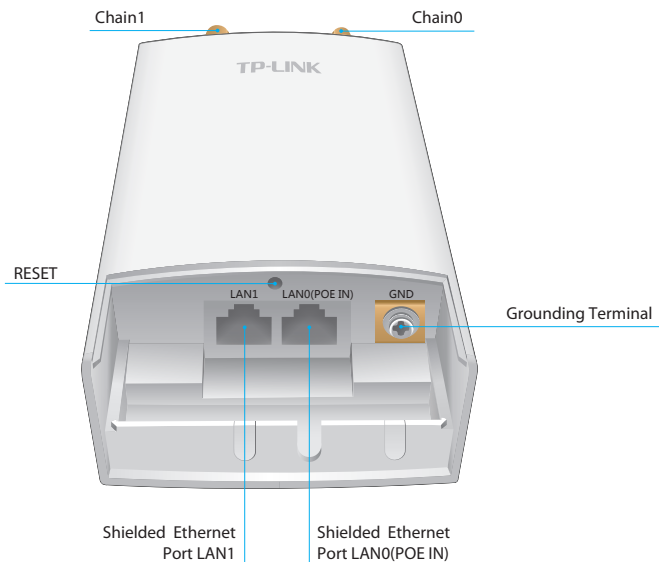
Metal Strap



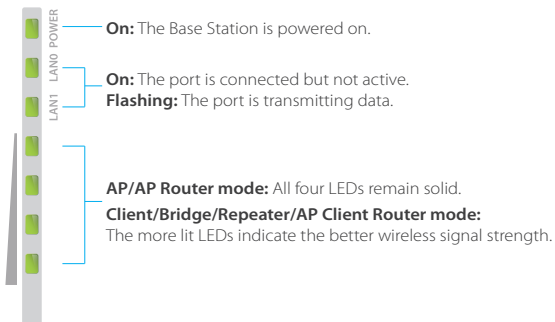
Installation Guide

• Panel Layout

The panel of Base Station



LED Explanation

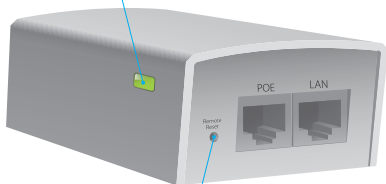


Passive PoE Adapter

Power LED:

The Power LED indicates the status of the electric current:

Green: 0-0.8A , Red: 0.8-1A



Remote Reset:

Press and hold for 8 seconds to reset the Base Station to its factory defaults.

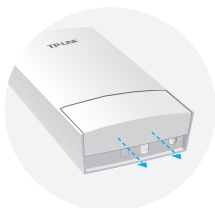
Hardware Installation

The Outdoor Wireless Base Stations require external antenna that corresponds to your network environment. It is recommended to buy and use TP-LINK's matching antennas.

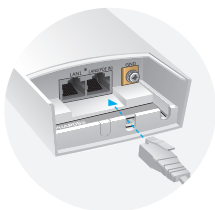
Recommended Antenna Type	TP-LINK's Matching Antenna
Dish Antenna	TL-ANT2424MD (2.4GHz) TL-ANT5830MD (5GHz)
Sector Antenna	TL-ANT2415MS (2.4GHz) TL-ANT5819MS (5GHz)

Connect Cables

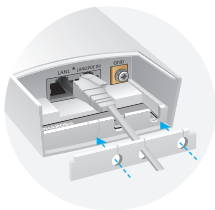
- 1 Firmly grasp the rear of the interface cover and pull it downward.



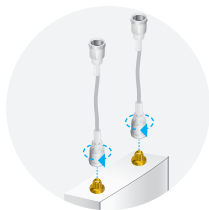
- 2 Use an adequate Ethernet cable to connect the LAN0 (POE IN) port. The length of cable is up to 60m for steady power supply. Shielded CAT5e (or above) cable with an integrated ground wire is recommended.



- 3 Affix the waterproof rubber insert to the underside of the device for waterproofing and replace the cover until it firmly locks into place.



- 4 Connect the RF Cables to the Base Station.



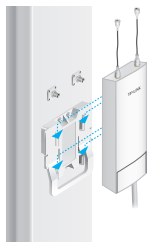
Mount Antenna

Mount the Base Station on an antenna with a suitable mounting bracket or on a pole for the antenna without the mounting bracket.

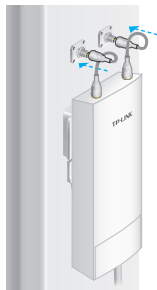
• Option 1: Mounting the Base Station on an Antenna

 *Sector antenna is used as a demonstration below.*

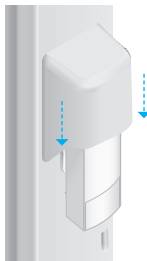
- 1 Align the mounting tabs on the back of the Base Station with the four slots of the mounting bracket. Push and slide the Base Station downward until it locks into place.



- 2 Connect the RF cables from the Base Station to the corresponding connectors on the antenna.

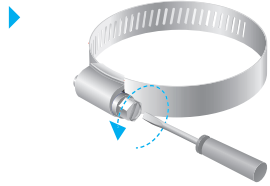


- 3 Attach the protective cap. Push and slide the protective cap down over the Base Station until it firmly locks into place.

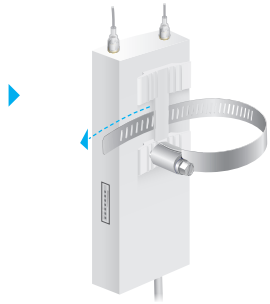


• Option 2: Mounting the Base Station on a Pole

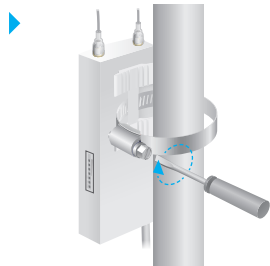
- 1 Loosen and completely remove the end of the metal strap by turning the captive screw counterclockwise with a flathead screwdriver.



- 2 Lead the end of the metal strap through the back of the Base Station.

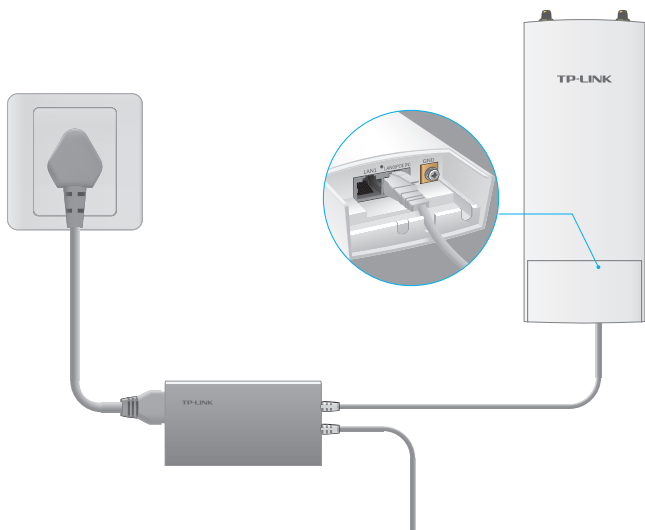


- 3 Position the Base Station and wrap the metal strap around the pole. Feed the end back through the screw-block and turn the screw clockwise to tighten the metal strap using a flathead screwdriver until the Base Station is secure.



- 4 Connect the RF cables from the Base Station to the corresponding connectors on the antenna.

Power On



Connect the Base Station to a Power over Ethernet (PoE) adapter as follows:

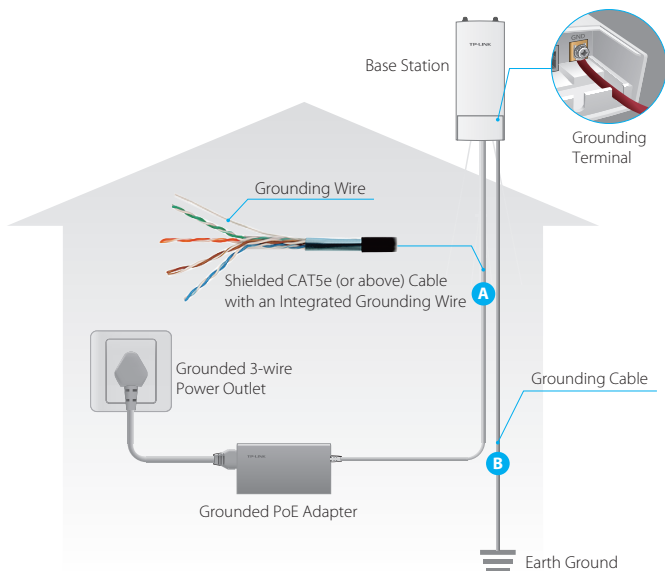
- 1 Connect the Ethernet cable from the Base Station to the **POE** port of the PoE adapter.
- 2 Connect an Ethernet cable from your LAN device (a computer, router or switch) to the LAN port on the PoE adapter.
- 3 Connect the power cord to the power port on the PoE adapter and plug it into an electrical outlet.

Lightning and ESD Protection

Proper grounding is extremely important for outdoor devices. There are two effective techniques for grounding the Base Station.

Option A Use a shielded CAT5e (or above) cable with an integrated grounding wire for connection.

Option B If you have the standard CAT5e cable for the connection, use a separate grounding cable to connect the grounding Terminal (GND) to earth ground.

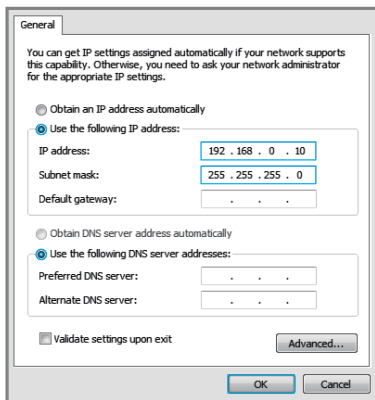


Configuration with PharOS

Based on your network needs, this section will guide you through the Base Station configuration using PharOS, a web-based management system that allows you to do more specific configurations.

Log in to the PharOS

- 1 Before accessing the PharOS Web Interface, you need to assign a static IP address 192.168.0.X (X ranges between 2 and 253, e.g. 192.168.0.10) to your computer.



The screenshot shows a 'General' configuration window for network settings. It contains the following elements:

- A title bar with the word 'General' on the left.
- Introductory text: "You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings."
- Two radio button options for IP address assignment:
 - Obtain an IP address automatically
 - Use the following IP address:
- Input fields for the static IP configuration:
 - IP address: 192 . 168 . 0 . 10
 - Subnet mask: 255 . 255 . 255 . 0
 - Default gateway: . . .
- Two radio button options for DNS server address assignment:
 - Obtain DNS server address automatically
 - Use the following DNS server addresses:
- Input fields for DNS server configuration:
 - Preferred DNS server: . . .
 - Alternate DNS server: . . .
- A checkbox labeled 'Validate settings upon exit' which is currently unchecked.
- An 'Advanced...' button.
- 'OK' and 'Cancel' buttons at the bottom.

- 2 Open a web browser, type <http://192.168.0.254> into the address field and press **Enter** (Windows) or **return** (Mac). It is recommended to use the latest version of Google Chrome, Firefox or Safari.



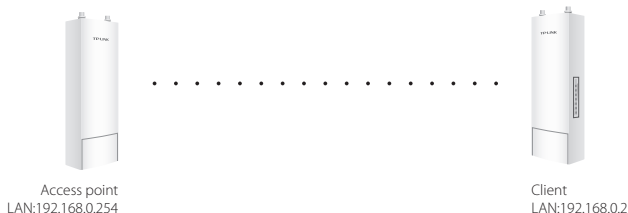
3 Enter **admin** for both **User Name** and **Password**, then select the **Language** from the drop-down list. Read and agree the terms of use, then click **Login**.

4 Change the default User Name and Password to protect your Base Station. Let's start configuring the Base Station.

 For subsequent logins, use the new username and password.

Configure the Base Station

The typical topology is as follows. A wireless bridge is built between two locations that are far from each other. Follow the instructions below to configure the Access Point and the Client.



Configure the Access Point (AP)

1. Log in to PharOS and go to the Quick Setup page.
2. Operation Mode: Select **Access Point** and click **Next**.
3. LAN Settings: Click **Next**.
4. Wireless AP Settings:
 - a. Create a new SSID (Network name) for your wireless network.
 - b. Select **WPA-PSK/WPA2-PSK** for the Security method and create a PSK Password to protect your AP.
 - c. Enter the distance between the Access Point and the Client into the Distance Setting field.
 - d. Select the **MAXtream** checkbox (Refer to Q2 in FAQ for details about MAXtream), and click **Next**.
5. Finish: Verify your settings and click **Finish** to complete the configuration.

Configure the Client

1. Log in to PharOS and go to the Quick Setup page.
2. Operation Mode: Select **Client** and click **Next**.
3. LAN Settings: Change the IP Address to 192.168.0.X (X ranges between 2 and 253), the same subnet with the access point, and click **Next**.
4. Wireless Client Settings:
 - a. Click **Survey** and select the SSID of the Access Point in the AP list, then click **Connect**.
 - b. Select **WPA-PSK/WPA2-PSK** from the Security option, enter the same PSK password and distance value of the Access Point, then click **Next**.
5. Finish: Verify your settings and click **Finish** to complete the configuration.

Specification

Dimensions	198*74*40mm
Interface	LAN0 (POE IN): 10/100Mbps Ethernet port LAN1: 10/100Mbps Ethernet port GND: Grounding terminal for lightning protection RESET: Button to restore the device to its factory defaults Chain0/Chain1: 2 RP-SMA antenna interfaces
Power Supply	24V passive PoE adapter included
ESD Protection ¹	15kV
Lightning Protection ¹	Up to 6kV
Operating Temperature	-30°C ~ 70°C (-22°F ~ 158°F)
Operating Humidity	10% ~ 90%
Certification	CE, FCC, RoHS, IP65
802.11 Standards	11b/g/n (WBS210) 11a/n (WBS510)

1. Estimation is based on copper grounding cable and shielded CAT5e(or above) cable with an integrated grounding wire.

FAQ

Q1. How to restore the Base Station to its factory default settings?

With the Base Station powered on, press and hold the **RESET** button on the Base Station or the **Remote Reset** button on the passive PoE adapter for about 8 seconds until the Wireless Signal Strength LEDs flash.

Q2. What is Pharos MAXtream?

Pharos MAXtream is a proprietary protocol developed on the basis of Time Division Multiple Access (TDMA) by TP-LINK.

The MAXtream technology has the following advantages:

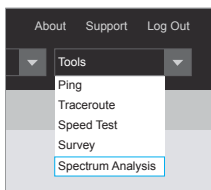
- Eliminates hidden node collisions & improves channel efficiency.
- Lower latency, higher throughput, larger network capacity & more stability.
- Improves the QoS for video, voice and sound data stream

By dividing the timing of transmission into different time slots, MAXtream allows the Pharos devices to transmit in rapid succession, one after another, each using its own time slot to transmit and receive their own frames, which greatly reduces the chance of collision.

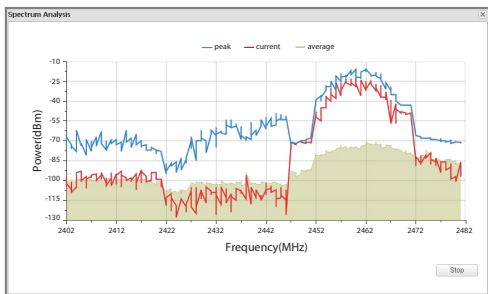
Pharos MAXtream is a non-standard Wi-Fi protocol that is only compatible with TP-LINK's Pharos series products. Please notice that you will not be able to connect other Wi-Fi devices to an AP with MAXtream enabled.

Q3. How can I use Spectrum Analysis to find the appropriate channel for the devices?

1. Log in to PharOS, click **Spectrum Analysis** in the tools drop-down list, a window will pop up to remind you that all wireless connections will be lost during spectrum analysis. Click **Yes** to continue to the Spectrum Analysis page.



2. Click **Start**, the PharOS will begin to analyze the power of frequency. Observe the curves for a period of time, and then click stop. Note that the relatively low and continuous part of the average curve indicates less radio noise. Here, we use the figure below as an example.



 *WBS510 has a select box of Frequency Range at the top-left corner. Select the required range and then click Start .*

3. When choosing channel/frequency, you should avoid the spectrum with large radio noise. In this example, the recommended channel/frequency is 1/2412MHz and 6/2437MHz.

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the 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, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

CE Mark Warning

C€1588

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

IC STATEMENT

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EAC

Safety Information

- When product has a 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.



- Use only power supplies which are provided by manufacturer and in the original packing of this product.

NCC Notice & BSMI Notice

注意！

依據 低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性或功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通行；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信規定作業之無線電信。低功率射頻電機需忍受合法通信或工業、科學以及醫療用電波輻射性電機設備之干擾。

減少電磁波影響，請妥適使用。

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。

此為甲類資訊技術設備，于居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

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