Tenda

Quick Installation Guide

Outdoor CPE
O1/O1-5G/O3/O4/O6/OS3

Package contents

Item	O1	O1-5G	O3	O4	O6	OS3
CPE				1		
PoE injector	1	1	1	1	1	1
Power adapter	1	1	1	1	×	1
Power cord	×	×	×	×	1	×
Plastic strap	2	1	2	2	2	2
Ethernet cable	×	×	1	×	×	×
Screw for fixing the PoE injector	2	2	2	2	×	2
Expansion bolt	2	2	2	2	×	2
Grounding screw	×	×	1	×	1	×
Quick installation guide				√		

Get to know the PoE injector

The included PoE injector may vary with CPE models.

Port	Description
DC, ⏻	Power jack.
PoE	PoE power output port. Use an Ethernet cable to connect this port to the passive PoE port of the CPE.
LAN	LAN port. Used to connect to an upstream network device, computer, switch, camera, or other device.

Get to know your device
The CPE appearance varies with models. Please refer to the CPE you purchased.
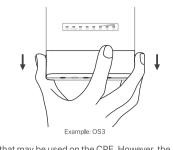
LED indicators/slots
The following table lists all LED indicators that may be used on the CPE. However, the LED indicators and slots may vary with CPE models.

LED indicator/Slot	Status	Description
Power	Solid on	CPE powered on
	Off	CPE powered off
LAN/WAN, PoE/LAN	Solid on	CPE powered on without data transmission
	Blinking	CPE powered on with data transmitting
	Off	CPE powered off
PoE/LAN1, LAN2, LAN3, LAN4	Solid on	Corresponding port connected without data transmission
	Blinking	Corresponding port connected with data transmitting
	Off	Corresponding port disconnected
WiFi	Solid on	WiFi enabled without data transmission
	Blinking	WiFi enabled with data transmitting
	Off	WiFi disabled
LED1, LED2, LED3 (Received signal strength indicator)	Solid on/ blinking	CPE bridged or connected to other devices • Solid on: CPE working in AP, Repeater, P2MP or Router mode • Blinking: CPE working in Client, Universal repeater or WISP mode The more indicators are on, the better the connection quality is. Tips You can change the signal strength values for each indicator on the Wireless > Advanced page in the web UI of the CPE.
	Off	No device connected to the CPE wirelessly, or weak signal strength. Adjust your CPE's direction or location.
Wall mounting slots		Prepare 4 expansion bolts and 4 screws for wall mounting. Recommended specifications: • Expansion bolt: outer diameter: 6 mm, length: 40 mm • Screw: thread diameter: 3 mm, length: 20 mm; 5.5 mm < head diameter < 8.5 mm
Pole-mounting slots		You can thread the included plastic straps through these slots to attach the CPE to the pole.

Ports/button
For some models, you need to remove the cover to see the ports and buttons. OS3 is used for example in the following figure.

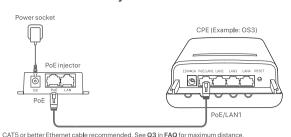Example: OS3

The following table lists all ports and buttons that may be used on the CPE. However, the ports and buttons may vary with CPE models.

| Port/Button	Description
12V ⎓ 1A, DC	DC power jack. Connect the power adapter (if any) to this port for power supply.
PoE LAN/WAN, PoE/LAN, PoE/LAN1, LAN1 12V PoE, LAN2 802.3af PoE	Mult/addressing port for power input and data transmission. • IF passive PoE is used for power supply, connect this port to the PoE port of the PoE injector. • If you power on the CPE using a power adapter, this port can be connected to a computer, switch or IP camera. • IF standard PoE is used for power supply, connect this port to the PoE port of the IEEE 802.3af/at PoE power supply device. You can check whether the CPE supports standard PoE power supply on the package box or the CPE's Specifications page on www.tendacn.com. Tips • If the CPE works in the Router mode (if supported), this port functions as a WAN port to connect to an upstream network device. • LAN1 12V PoE port only supports passive PoE. LAN2 802.3af PoE port only supports standard PoE.
LAN1, LAN2, LAN3, LAN4	Used for connecting to a computer, switch or IP camera.
RST, RESET, Reset	Reset button. Used to restore the CPE to factory settings. For details, see Q2 in FAQ.
Cable grommet	Used to fix the power cord or Ethernet cable.
GND	Grounding terminal. Use a grounding cord and included grounding screw to connect the grounding terminal to the earth or building for surge and lightning protection.
Power cord(grounding cord) / Ethernet cable inlet	Used to fix the power cord of the power adapter, grounding cord, or Ethernet cable.

Power on the CPE
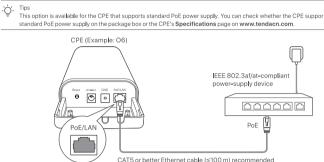
Option 1: Use the PoE injector

CAT5 or better Ethernet cable recommended. See Q3 in FAQ for maximum distance.

Option 2: Use the power adapter
If your CPE has a DC power jack, use the included power adapter to power on the CPE.

Tips
Use the included power adapter to avoid damage to the CPE.

Option 3: Use other PoE power-supply device
Tips
This option is available for the CPE that supports standard PoE power supply. You can check whether the CPE supports standard PoE power supply on the package box or the CPE's Specifications page on www.tendacn.com.

CAT5 or better Ethernet cable (≤100 m) recommended

Scenario 1: CCTV surveillance or point to point data transmission

1.Set up the CPEs (AP mode + Client mode)
Tips: At least two CPEs are required for bridging.

Option 1: Automatic bridging (recommended)

Peer-to-peer bridging
Tips
– Automatic bridging only works for CPEs in factory settings.
– Peer-to-peer automatic bridging could fail if three or more powered CPEs in factory settings are placed nearby.

Place two CPEs in factory settings next to each other, open their covers and power them on.

After the CPEs complete startup, they start automatic bridging and their LED1, LED2 and LED3 indicators blink quickly. About 1 minute later, when the LED1, LED2 and LED3 indicators of one CPE light solid on and those of the other CPE blinks slowly, the automatic bridging succeeds.

After the bridging succeeds, the DHCP server of the CPEs will be disabled automatically. The IP address of the CPE working in AP mode remains 192.168.2.1, and the IP address of the CPE working in Client mode is changed into 192.168.2.2.
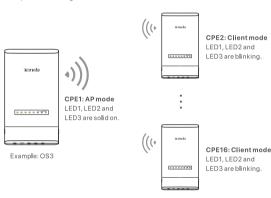

CPE1: AP Mode
LED1, LED2 and LED3 are solid on.

CPE2: Client mode
LED1, LED2 and LED3 are blinking.

Example: OS3

Tips
If the automatic bridging fails, restore the two CPEs to factory settings by referring to Q2 in FAQ and try again.

Peer-to-multiple peers bridging
Tips
– For peer-to-multiple peers bridging, perform peer-to-peer bridging first, and then power on the rest CPEs within 30 minutes. Otherwise, the bridging may fail.
– One CPE can bridge with 15 CPEs at most.

Step1: Choose any two CPEs, then perform Peer-to-peer bridging.
Step2: Within 30 minutes after peer-to-peer bridging succeeds, put other CPEs in factory settings near the CPE working in AP mode (LED1, LED2 and LED3 are solid on), and power them on.

After the other CPEs complete startup, they start automatic bridging and their LED1, LED2 and LED3 indicators blink quickly. About 1 minute later, when their LED1, LED2, and LED3 indicators blink slowly, the bridging succeeds.

After the bridging succeeds, the DHCP servers of the CPEs are disabled, and the IP addresses of CPEs working in Client mode are all changed into 192.168.2.2. You can visit www.tendacn.com to download the CPE management software and install it on your computer to change the CPEs' IP addresses in batches.
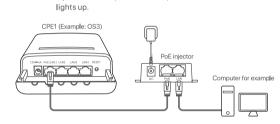

CPE2: Client mode
LED1, LED2 and LED3 are blinking.

CPE16: Client mode
LED1, LED2 and LED3 are blinking.

Example: OS3

Option 2: Manual bridging

Step1: Place two CPEs next to each other.
Step2: Log in to the web UI of CPE1.
❶ Open the CPE1 cover and power it on (PoE injector used in this example).
❷ Connect client to CPE1.
Method 1: Connect your wireless client (such as a smartphone) to the WiFi network of CPE1. By default, the WiFi name of CPE1 is Tenda_XXXXXX (XXXXXX indicates the last six characters of the MAC address). If a WiFi QR code is provided on the CPE1 nameplate, you can scan it to connect to the WiFi network directly.
Method 2: Use an Ethernet cable to connect the LAN port of the PoE injector to a computer. The PoE/LAN1 indicator of CPE1 lights up.

CPE1 (Example: OS3)
PoE injector
Computer for example

❸ Start a web browser on the client connected to CPE1 and visit 192.168.2.1. Enter the login user name and password and click Login.

192.168.2.1

Tips
If the login page does not appear, please refer to Q1 in FAQ.

Step3: Set CPE1 to AP mode.
❶ Access the Quick Setup page, select AP, and click Next.
❷ Customize your SSID (WiFi name) and Key (WiFi password). Select a Channel, a Security Mode (WPA2-PSK recommended), and an Encryption Algorithm. Click Next.
Record the SSID and Key for later setup.

Quick Setup >> AP

❸ Click Save, and wait until CPE1 reboots automatically to activate the settings.

Step4: Set CPE2 to Client mode.
❶ Perform Step 2 to log in to the web UI of CPE2.
❷ Access the Quick Setup page, select Client, and click Next.
❸ Select the SSID of CPE1, which is Tenda_123456 in this example, and click Next.

Quick Setup >> Client

Select	SSID	Channel	MAC Address	Security Mode	Signal Strength
●	Tenda_123456	1	C8:3A:35:00:00:01	WPA2-PSK_AES	

❹ Enter the Key of CPE1, and click Next.

Quick Setup >> Client

❺ Set the IP address to an unused one belonging to the same network segment as that of CPE1. For example, if the IP address of CPE1 is 192.168.2.1, you can set CPE2's IP address to 192.168.2.X (X ranges from 2 to 254). Then click Next.

Quick Setup >> Client

IP Address	192.168.2.100
Subnet Mask	255.255.255.0

❻ Click Save, and wait until the CPE reboots to activate the settings.

The LED1, LED2 and LED3 indicators of CPEs will blink quickly when they start bridging. When the LED1, LED2 and LED3 indicators of CPE1 light solid on, and the LED1, LED2 and LED3 indicators of CPE2 blink slowly, the bridging succeeds and the DHCP servers of the two CPEs are disabled automatically.

To perform peer-to-multiple bridging, log in to other CPEs and repeat Step 4 to set them to the Client mode and bridge them with the CPE working in AP mode.

2.Install the CPEs
The CPE is usually deployed in schools, communities, factories or streets for surveillance. Pole mounting is used for illustration here.
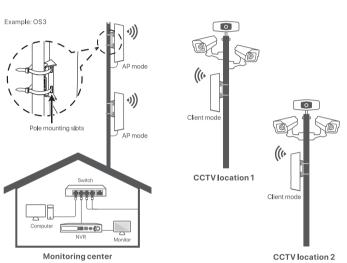❶ Choose the elevated, open location for installation.
❷ Thread the two plastic straps through the pole mounting slots on the bracket of the CPE, and attach the CPE onto the selected pole. Adjust the CPE's location and direction, and tighten the straps to fix the CPE.
❸ Power on the CPE.
❹ Connect the CPEs with the LED1, LED2 and LED3 indicators solid on (AP mode – the transmitting end) to the switch which is connected to a Network Video Recorder (NVR).
❺ Connect the CPEs with the LED1, LED2 and LED3 indicators blinking (Client mode – the receiving end) to IP cameras or a switch connected to IP cameras.
❻ Install the CPE cover.

After successful installation, the connection quality reaches the best when the LED1, LED2 and LED3 indicators of the CPEs light solid on or blink.
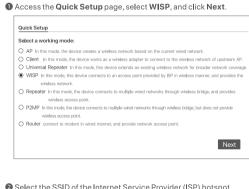

Example: OS3

Scenario 2: Wireless ISP hotspot access

1.Set up the CPE
Step1: Perform Step 2 in Option 2: Manual bridging under Scenario 1: CCTV surveillance or point to point data transmission to log in to the web UI of the CPE.
Step2: Set the CPE to WISP mode.

❶ Access the Quick Setup page, select WISP, and click Next.

Quick Setup

Select a working mode:
○ AP: In this mode, the device creates a wireless network based on the current wired network.
○ Client: In this mode, the device works as a wireless adapter to connect to the wireless network of upstream AP.
○ Universal Repeater: In this mode, the device extends an existing wireless network for broader network coverage.
● WISP: In this mode, the device connects to access point provided by ISP in wireless mode, and provides the wireless network.
○ Repeater: In this mode, the device connects to multiple wired networks through wireless bridge, and provides wireless access point.
○ P2MP: In this mode, the device connects to multiple wired networks through wireless bridge, but does not provide wireless access point.
○ Router: connect to modem or upper hetone, and provide network access point.

❸ Select the SSID of the Internet Service Provider (ISP) hotspot, which is Tenda_123456 in this example, and click Next.

Quick Setup >> WISP

Select	SSID	Channel	MAC Address	Security Mode	Signal Strength
●	Tenda_123456				

❷ Enter the password for the ISP hotspot in the Key box, and click Next.

Quick Setup >> WISP

❹ Select the Internet Connection Type of your ISP hotspot. PPPoE is used for illustration here. Enter the PPPoE user name and password provided by your ISP, and click Next.

Quick Setup >> WISP

Internet Connection Type	
PPPoE User Name	
PPPoE Password	

❸ Customize the SSID (WiFi Name), select a Security Mode (WPA2-PSK recommended), customize a Key, and click Next.
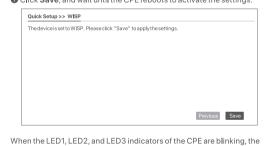

Quick Setup >> WISP

❺ Set the IP address to an unused one belonging to a different network segment as that of the ISP hotspot. For example, if the IP address for the ISP hotspot is 192.168.2.1, you can set this CPE's IP address to 192.168.X.1 (X ranges from 0 to 254 excluding 2). Then click Next.

Quick Setup >> WISP

IP Address	192.168.1.1
Subnet Mask	255.255.255.0

❹ Click Save, and wait until the CPE reboots to activate the settings.

When the LED1, LED2, and LED3 indicators of the CPE is blinking, the CPE is connected to the ISP hotspot successfully.

2. Install the CPE
Pole mounting is used for illustration here.
❶ Place the CPE over the roof.
❷ Thread the two plastic straps through the pole mounting slots on the brackets of the CPE, and attach the CPE onto the selected pole. Adjust the CPE's location and direction, and tighten the straps to fix the CPE.
❸ Power on the CPE.
❹ Connect the LAN port of the CPE to the WAN port of your wireless router.

The connection quality reaches the best when the LED1, LED2 and LED3 indicators of the CPE blink.
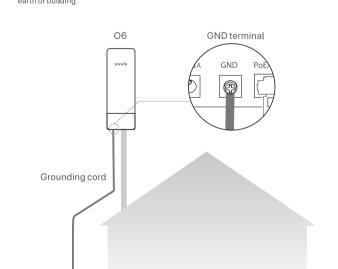

ISP Hotspot
CPE in WISP mode

Grounding

This part applies to the CPE with a GND terminal. O6 is used for example here.
Connect the GND terminal of the CPE to a grounding terminal connected to the earth or building, to protect the CPE from overvoltage and overcurrent caused by lightning.

❶ Connect one side of the grounding cord to the included grounding screw.
❷ Connect the grounding screw to the GND terminal of the CPE, and tighten it.
❸ Connect the other side of the grounding cord to the grounding terminal connected to the earth or building.

O6
GND terminal
Grounding cord
Earth

FAQ

Q1: I cannot log in to the web UI of the CPE by entering 192.168.2.1. What should I do?
A1: Try the following solutions:
• Ensure that the CPE is connected to a power source and your computer properly.
• Ensure that the IP address of the computer is set to 192.168.2.X (X ranges from 2~254 and is unused).
• Restore the CPE to factory settings by referring to Q2, and try again.

Q2: How to reset the CPE?
A2: Note: Resetting the CPE clears all settings, and you need to configure it again.
Method 1: After the CPE completes startup, hold down the reset button (RST, RESET or Reset) for about 8 seconds and release it when all LED indicators light up. The CPE is restored to factory settings.
Method 2: Log in to the web UI of the CPE, navigate to Tools > Maintenance, and click Reset.

Q3: What is the maximum distance for PoE power supply when a PoE injector is used for power supply?
A3: The following table is for your reference. You can check the PoE power supply data on the CPE housing, power adapter or PoE injector.

Power supply mode	Input voltage	Maximum PoE power supply distance
9V 0.6A DC power supply/PoE power supply	9–13V	30 m
12V 1A DC power supply/PoE power supply	9–13V	50 m–60 m
24V 0.5A PoE power supply	19–25V	60m

Q4: How to check that the CPE is under the best connection status?
A4: Method 1: Observe the LED indicators of the CPE. The connection quality reaches the best when the LED1, LED2 and LED3 indicators of the CPE light solid on or blink.
Method 2: Log in to the web UI of the CPE (default IP address: 192.168.2.1), and check the bridging status in Status > Wireless Status.
Stronger signal strength (>60 dBm better than ≤70 dBm), less background noise (<100 dBm better than <90 dBm), and faster transmit/receive speed lead to better bridging signal.
Example: OS3

Q5: The automatic bridging fails. What should I do?
A5: Try the following solutions:
• Peer-to-peer bridging: If the peer-to-peer bridging fails, restore the two CPEs to factory settings by referring to Q2, and try again.
• Peer-to-multiple peers bridging: After peer-to-peer bridging succeeds, ensure that the rest CPEs are powered on within 30 minutes.
– For the CPEs that fail to bridge within 30 minutes after peer-to-peer bridging succeeds, reset them and try again.
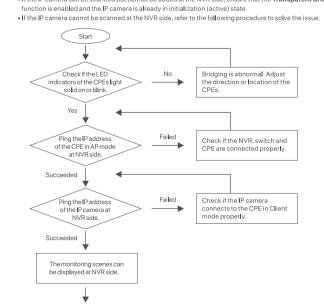– Beyond 30 minutes after peer-to-peer bridging succeeds, refer to Option 2: Manual bridging to set the rest CPEs to Client mode, and then connect them to the WiFi network of the CPE whose LED1, LED2, and LED3 are solid on.

Q6: After the bridging succeeds, the LED1, LED2 and LED3 indicators do not light up or only some of them do. What should I do?
A6: Try the following solutions:
• Ensure the bridging distance between the CPEs is within the normal range.
• Place the CPEs in an elevated location at the same height with few obstacles nearby.
• Make slight direction adjustment of the CPEs by moving it vertically and horizontally. Change the direction with an interval of 20s to 30s each time to observe the change of LED1, LED2 and LED3 indicators until the best signal is received.

Q7: After the installation succeeds, there is no display of the scenes monitored by IP cameras at the NVR side. What should I do?
A7: Try the following solutions:
• Ensure that all devices are working normally and connected properly.
• Ensure that the computer, NVR and IP camera are in the same network segment, and the NVR configuration and IP camera configuration are correct.
• If the IP camera can be scanned but cannot be added at the NVR side, ensure that the Transparent Bridge function is enabled and the IP camera is already in initialization (active) state.
• If the IP camera cannot be scanned at the NVR side, refer to the following procedure to solve the issue.

Start
Check if the LED indicators of the CPEs light solid on or blink → No → Bridging is abnormal. Adjust the direction or location of the CPEs.
Yes
Ping the IP address of the CPE in AP mode → Failed → Check if the NVR, switch and CPE are connected properly.
Succeeded
Ping the IP address of the CPE connected to NVR side → Failed → Check if the IP camera connects to the CPE in Client mode properly.
Succeeded
The monitoring scenes can be displayed at NVR side.
End

Get support and services

https://www.tendacn.com/service/default.html

For technical specifications, user guides and more information, please visit the product page or service page on www.tendacn.com. Multiple languages are available.
You can see the product name and model on the product label.

Safety Precautions

Before performing an operation, read the operation instructions and precautions to be taken, and follow them to prevent accidents. The warning and danger items in other documents do not cover all the safety precautions that must be followed. They are only supplementary information, and the installation and maintenance personnel need to understand the basic safety precautions to be taken.
• The device is suitable for mounting at heights > 2 m.
• Do not use the device in a place where wireless devices are not allowed.
• Please use the included power adapter/PoE injector (if provided).
• CPE is used outdoors. PoE injector and power adapter are used indoors.
• If you power on the CPE using a power adapter, the mains plug is used as the disconnect device, and shall remain readily operable; the power socket shall be installed near the device and easily accessible.
• CPE operating temperature: -30℃~60℃; Power adapter operating temperature: 0~40℃.
• Keep the device away from water, fire, high electric field, high magnetic field, and inflammable and explosive items.
• Do not use the power adapter/PoE injector if its plug or cord is damaged.
• If such phenomena as smoke, abnormal sound or smell appear when you use the device, immediately stop using it and disconnect its power supply, unplug all connected cables, and contact the after-sales service personnel.
• Disassembling or modifying the device or its accessories without authorization voids the warranty, and might cause safety hazards.
For latest safety precautions, see Safety and Regulatory Information on www.tendacn.com.