User's Guide

TRENDnet®

N300 Wireless Controller Kit
AC1200 Dual Band Wireless Controller Kit

TEW-755AP2KAC / TEW-821DAP2KAC

Contents

Product Overview

TEW-755AP2KAC / TEW-821DAP2KAC

Package Contents

The package includes:

- 1 x TEW-WLC100 wireless LAN controller
- 2 x TEW-755AP N300 PoE access points or TEW-821DAP AC1200 dual band PoE access points
- 2 x TPE-113GI 802.3af Gigabit PoE injectors
- 2 x Network cables (1.5 m / 5 ft.)
- TEW-WLC100 power adapter (12V DC, 1A)
- Quick Installation Guide
- CD-ROM (User's Guide)
- Controller rack mount kit
- Access point mounting plates

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

TRENDnet's N300 / AC1200 Dual Band Wireless Controller Kit, TEW-755AP2KAC / TEW-821DAP2KAC, is designed to simplify management and setup processes for your access points. This new controller kit features seamless WiFi roaming, helping your devices stay connected when transitioning from one access point to another within the network. Fast BSS Transition, or fast roaming (802.11r), and OKC (opportunistic key caching) ensures optimal roaming conditions for your mobile WiFi clients.

TRENDnet's controller kit includes two wireless N300 / AC1200 access points with PoE injectors, and a wireless controller. This kit allows you to easily setup and manage access points across your network from a centralized interface. Simultaneously manage up to 128 access points, perform batch firmware upgrades, and monitor network connection status.

Complete Wireless Controller Kit

This complete controller kit includes two wireless N300 / AC1200 access points with PoE injectors and our wireless hardware controller.

Seamless WiFi Roaming

802.11k provides a more efficient WiFi roaming environment by intelligently managing neighboring APs and passing mobile clients off to the next best access point; 802.11r and Opportunistic Key Caching (OKC) preauthenticates those WiFi clients with neighboring APs making for a fast and seamless transition.

Centralized AP Management

Easily manage up to 128 access points across your network. Reduce AP deployment time by creating group profiles to provision multiple access points simultaneously.

Simultaneously Upgrade Firmware

Select multiple access points to upgrade firmware at the same time

Captive Portal

Create a customized web portal for users to authenticate using unique user names and passwords. Ideal for hotels, cafes, and businesses that want to provide public WiFi and manage wireless usage

Product Hardware Features

Wireless LAN Controller (TEW-WLC100)

Front View

Rear View

1 LED indicators
2 USB port
3 Reset button
4 Gigabit ports
5 Power switch
6 Power port

- **Reset Button –** Press and hold this button for 15 seconds and release to reset the controller to factory defaults. The ports LEDs will turn off to indicate that the reset was initiated.
- **Gigabit Ports (1-5) –** Connect to your LAN network and connect additional network devices.
- **Power Port** – Connect the included power adapter to your controller power port and then to an available power outlet.
  Note: *Use only the adapter that came with your controller.*
- **On/Off Power Switch** – Push the controller On/Off push button to turn your controller "On" (Inner position) or "Off" (Outer position).
- ***USB Port –** Reserved for firmware upgrade, backup/restore configuration functions.
  ****Note:*** *Functionality is not available in initial shipping firmware will be added in future firmware upgrade.*
- **Security Slot –** Can be used to with third party lock to physically secure your controller to a specific location.

LED Indicators

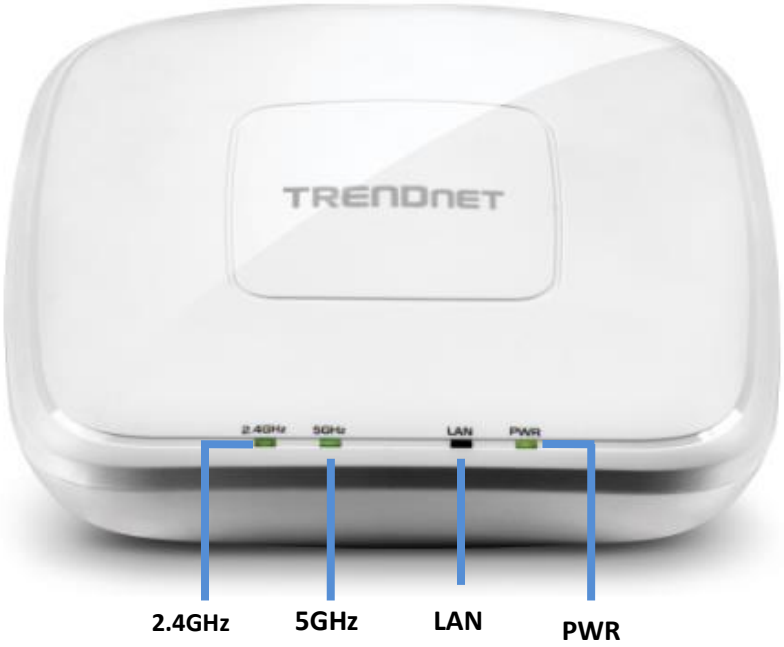
- **POWER/SYSTEM LED**

On	:	When the System LED is on, the device is receiving power.
Off	:	When the System turns off, the power adapter is not connected or the device is not receiving power.

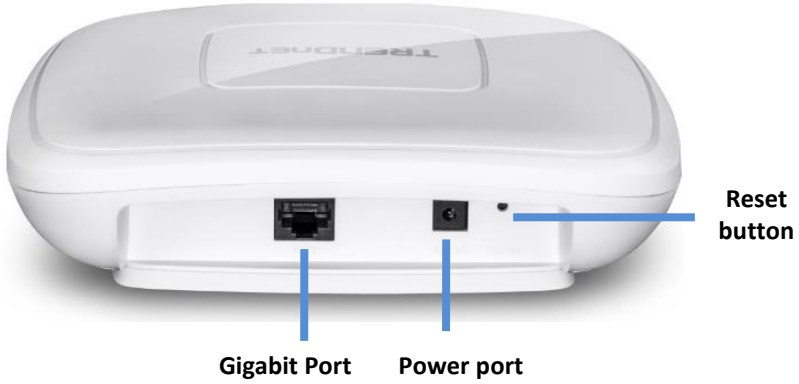
- **LAN LED**

On (Green)	:	Indicates that a network device (router, switch, access point, computer, etc.) has been physically connected to one of the five Gigabit ports (1-5).
Off	:	Indicates no physical Ethernet connection or no network devices physically connected to any of the Gigabit ports (1-5).

N300 / AC1200 PoE Wireless Access Point (TEW-755AP / TEW-821DAP)



- **2.4GHz:** This LED indicator turns green when the wireless is enabled. The LED indicator blinks during data transmission
- **5GHz:** This LED indicator turns green when the wireless is enabled. The LED indicator blinks during data transmission (***Note:*** Only available on TEW-821DAP dual band access point)
- **LAN:** This LED indicator turns green when the access point LAN port is connected. The LED indicator blinks during data transmission
- **PWR:** This indicator turns green when the device is powered.



- **Gigabit port:** Plug an Ethernet cable (also called network cables) from your access point to your router and wired network devices.
- **Power port:** Connect the power adapter from your access point power port to an available power outlet.
- **Reset button:** Use a sharp tool to press and hold this button for 10 seconds to reset the access point.

Gigabit 802.3af PoE Injector (TPE-113GI)

- **PWR+DATA OUT –** Connects to your PoE access point supplying both power and data 1000BASE-T via Ethernet cable, standard 802.3af PoE compliant.
- **DATA IN –** Connects your PoE access point to your network (switch or router) 1000BASE-T via Ethernet cable.
- **DC IN –** Connects the 48V DC, 0.5 power adapter to power on the PoE injector and deliver power to the PoE access point.

Basic Installation & Setup

Important Note: *Make sure your existing network is using a DHCP server to distribute IP addresses to the access points. By default, TRENDnet access points listed below will obtain an IP address automatically through DHCP or otherwise default back to 192.168.10.100 / 255.255.255.0 if a DHCP server is not available on your network. Each access point must be assigned a unique IP address on the same network. The wireless controller and access points must be connected to the same IP subnet on your network. (e.g. 192.168.10.x / 255.255.255.0)*

Access Point Compatibility

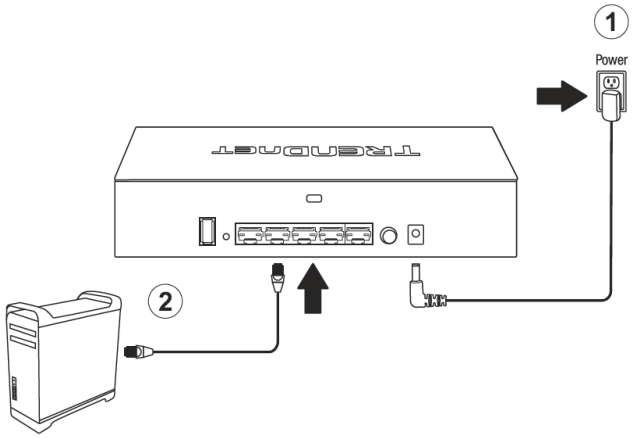
By default, the access points included in this kit are controller ready. For any additional access points, please refer to the access point model compatibility list below and controller compatible firmware version. You can download the access point's firmware from http://www.trendnet.com/support which include instructions on how to upgrade the firmware.

Before any additional access points are added to the wireless controller, make sure to reset the access points to factory default.

Access Point Model	Description	Controller Compatible Firmware Version
TEW-755AP	N300 PoE Access Point	1.03 or above
TEW-821DAP	AC1200 Dual Band PoE Access Point	1.05 or above
TEW-825DAP	AC1750 Dual Band PoE Access Point	1.01 or above

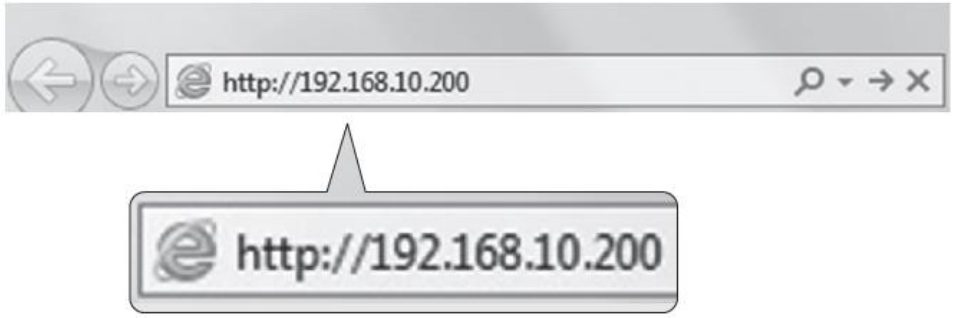
A. Initial Controller Setup

Note: *Before connecting the wirele4ss controller to the network and connecting other devices such as PoE injectors or access points, follow the steps to set up your controller IP address settings and administrator password first.*



3. Assign a static IP address to your computer's network adapter in the subnet of **192.168.10.x** (e.g. 192.168.10.25) and a subnet mask of **255.255.255.0**.

4. Open your web browser, and type in the default IP address of the controller in the address bar, and then press **Enter**. The default IP address is **192.168.10.200**.

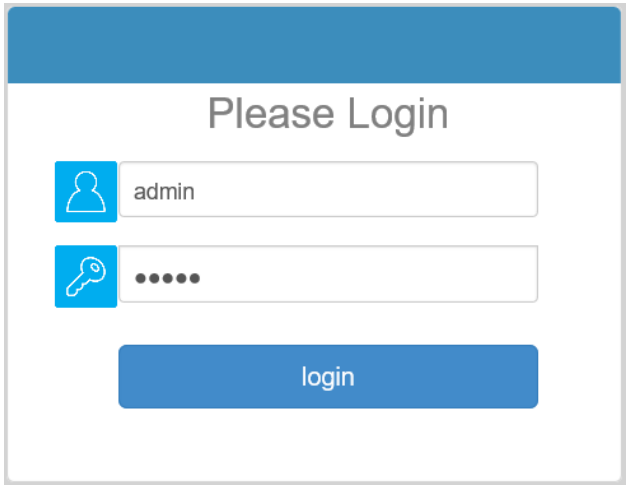


5. Enter the User Name and Password, and then click **Login.** By default:

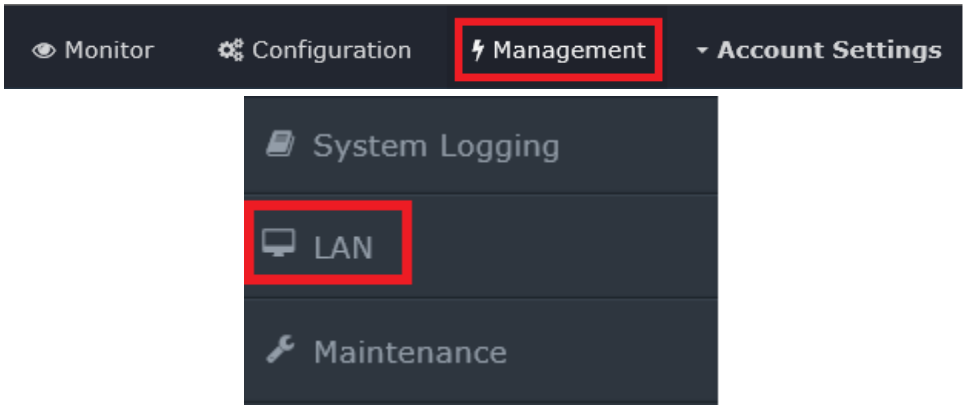
User Name: **admin**

Password: **admin**

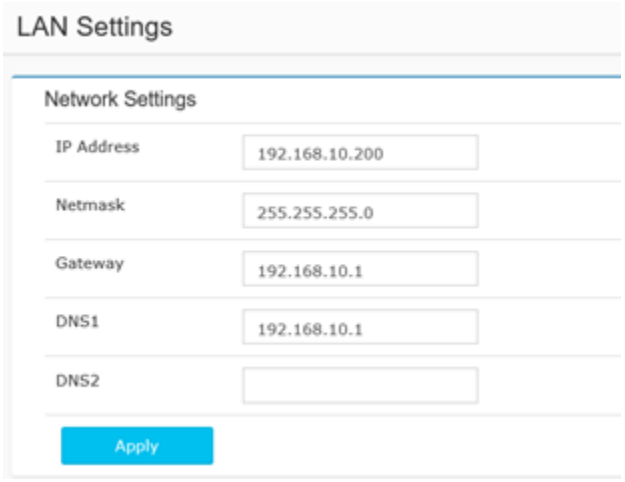
Note: *User name and password are case sensitive.*



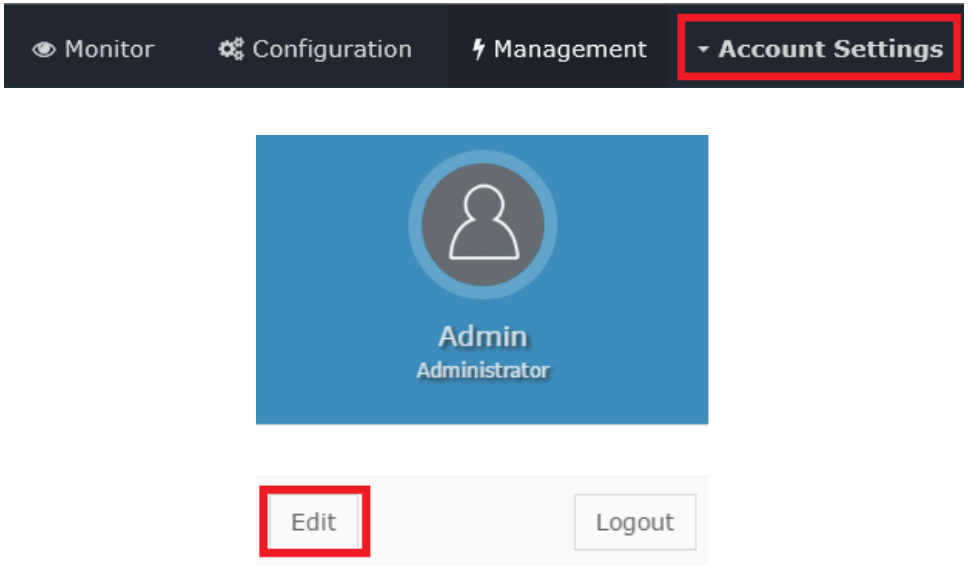
6. Click **Management** and click on **LAN.**



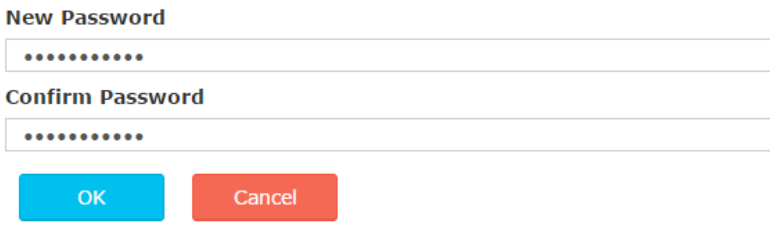
7. Configure the controller IP address settings to match the requirements of your network and click **Apply.**



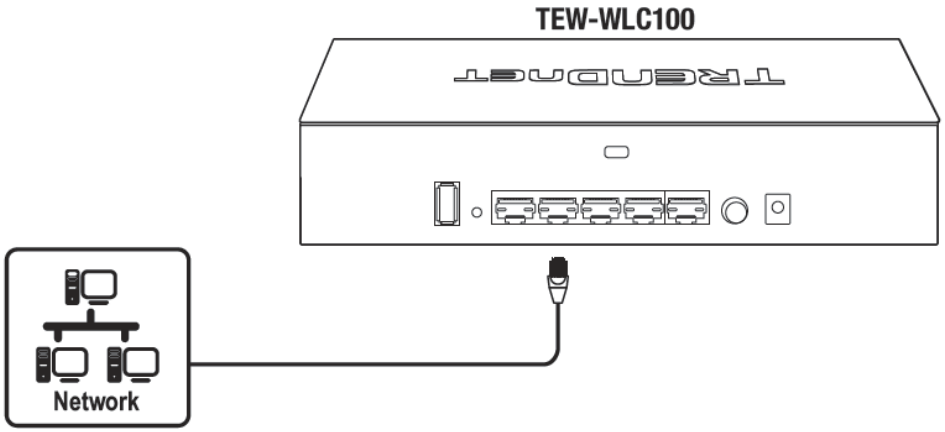
8. To change the controller administrator password, click **Account Settings** and click **Edit**.



9. In the **New Password** and **Confirm Password** fields, enter the new administrator password and click **OK** to save the new password settings. You will be prompted immediately afterwards to login to the controller management page with the password.



10. Using an Ethernet cable, connect one of the five Gigabit Ethernet ports located on the back of the wireless controller to your network (e.g. router, switch, etc.)



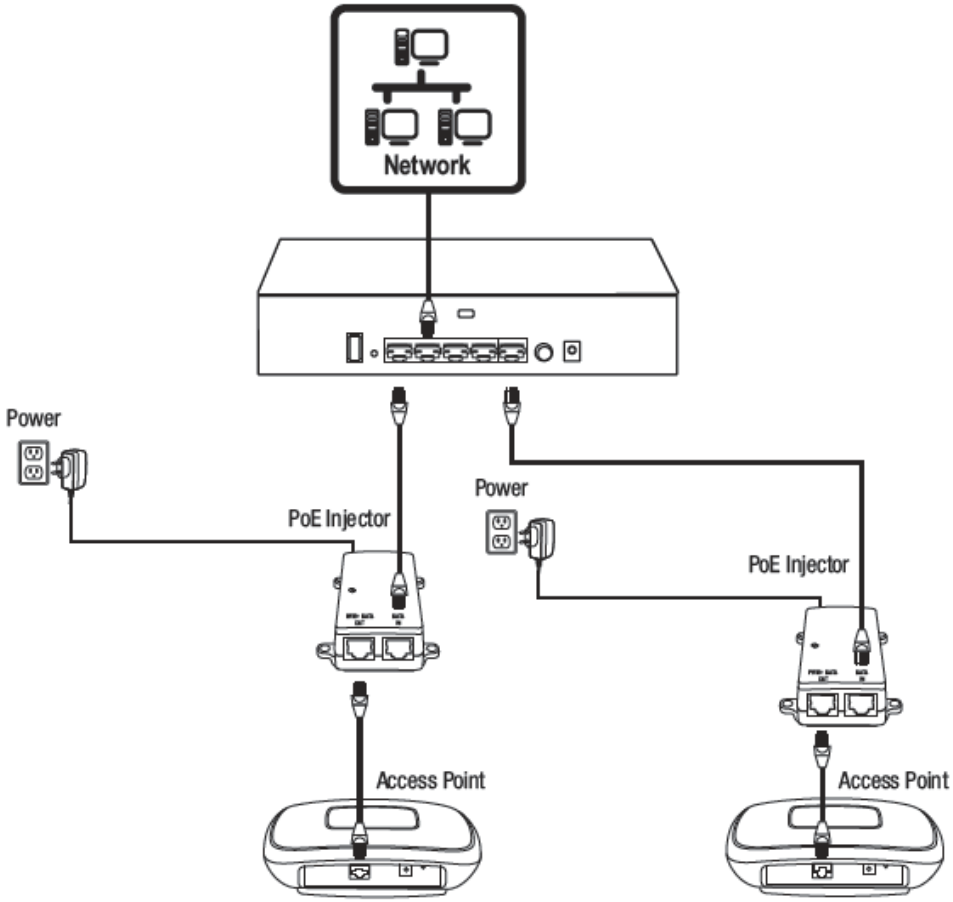
B. Connect your wireless access points

Note: *Before mounting the access points to the desired locations, connect the access points directly to the wireless controller first for initial configuration. The access points are standard IEEE 802.3af PoE compliant and may also be connect to a PoE/PoE+ switch for data and power, however, for the purposes of this installation guide we will reference installation using the supplied PoE injectors.*

1. Connect the included Pole injector power adapters (48V DC, 0.5A) to the supplied PoE injectors **DC IN** power ports. Connect the adapters to available power outlets to power on the PoE injectors.

2. Using the included Ethernet cables, connect the wireless controller to the **DATA IN** ports of the PoE injectors.

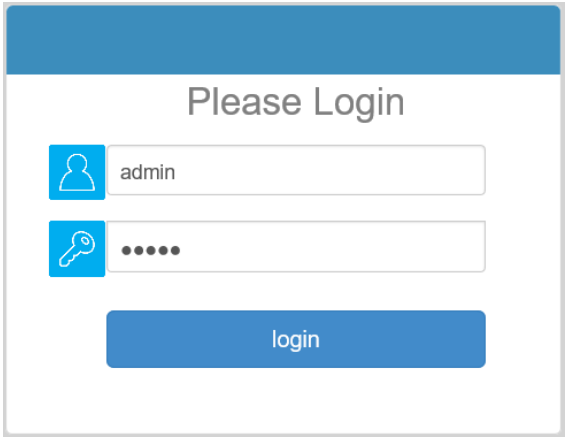
3. Using additional Ethernet cables, connect the access points to the **PWR+DATA OUT** ports of the PoE inejctors.



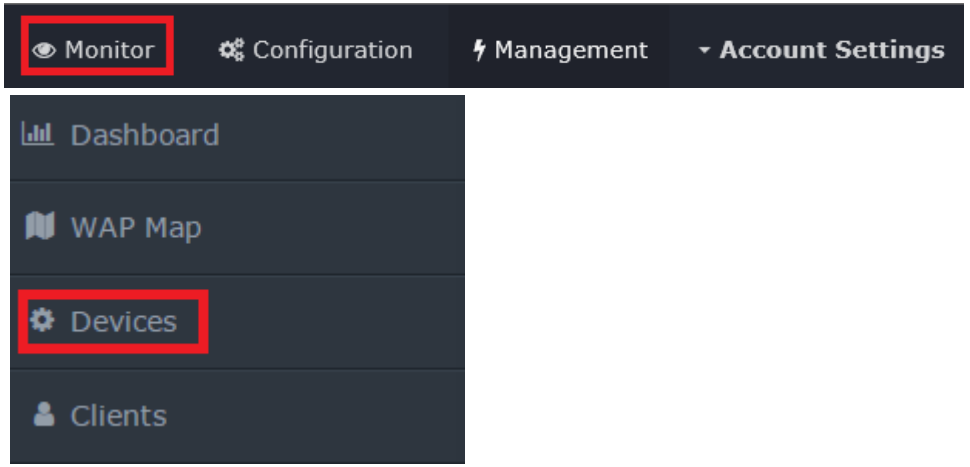
C. Initial Wireless Setup

1. Using your computer and web browser, access the wireless controller management page using the newly assigned IP address settings (configured in Section A) and login.

Note: *If the IP address settings were not changed in Section A, the IP address settings for the controller are 192.168.10.200 / 255.255.255.0.*



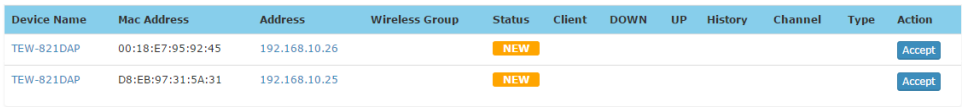
2. Click **Monitor** and click **Devices**.



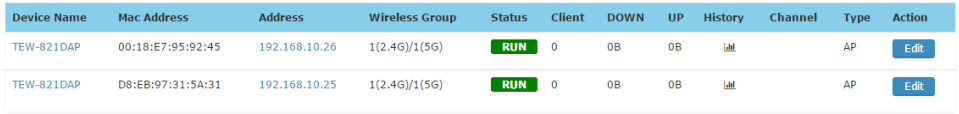
3. The access points will be discovered automatically and appear in the Device List.

Note: *If the access points do not appear, make sure access points are powered by checking the physical LEDs and physical cable connections and refresh the page.*

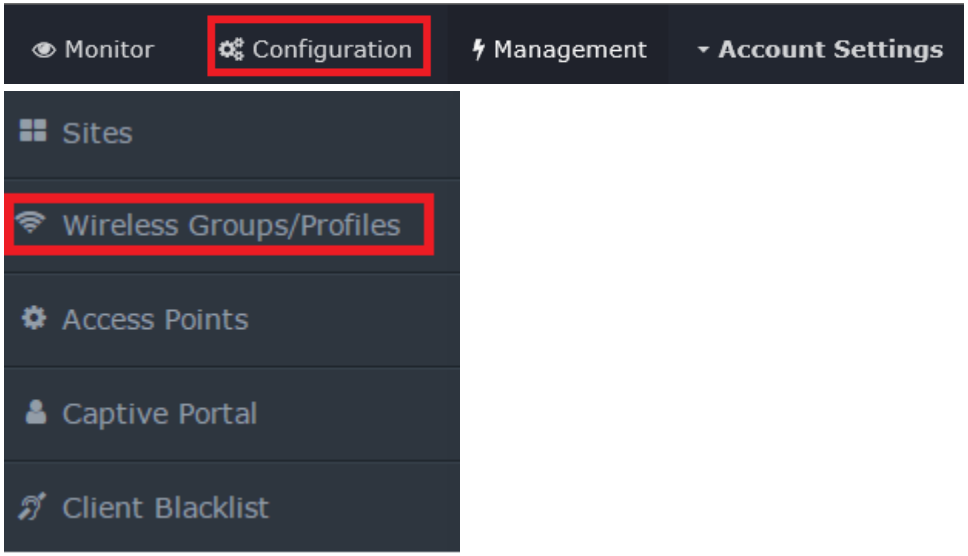
4. After the access points are discovered and appear in the Device List, under the Action column, click Accept on each access point to add them to the wireless controller.



5. Once the access points have been added to the wireless controller, the Status will change from **NEW** to **RUN**.



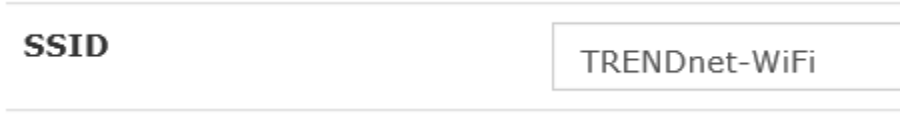
6. Click **Configuration** and click **Wireless Groups/Profiles**.



7. In the list below, click **Create** to create a new wireless profile.

8. In the Edit Wireless Group window, enter the wireless network name/SSID for the wireless network. (e.g. TRENDnet-WiFi)

Note: *The SSID is the wireless network name used to broadcast and be discovered by your wireless client devices to connect to your wireless network.*



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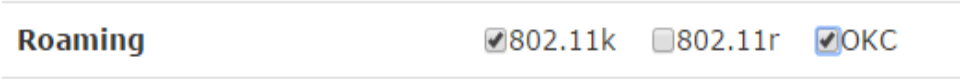
9. For Roaming options, select **802.11k** and **OKC** wireless roaming protocols to ensure fast transition wireless connectivity for client devices when roaming between multiple access points.



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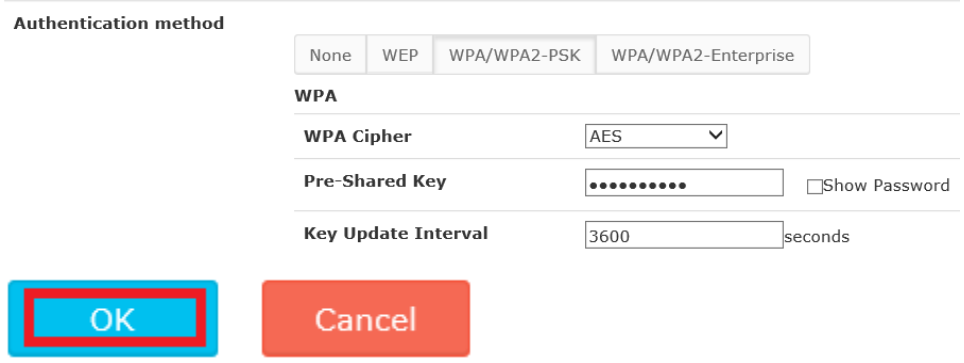
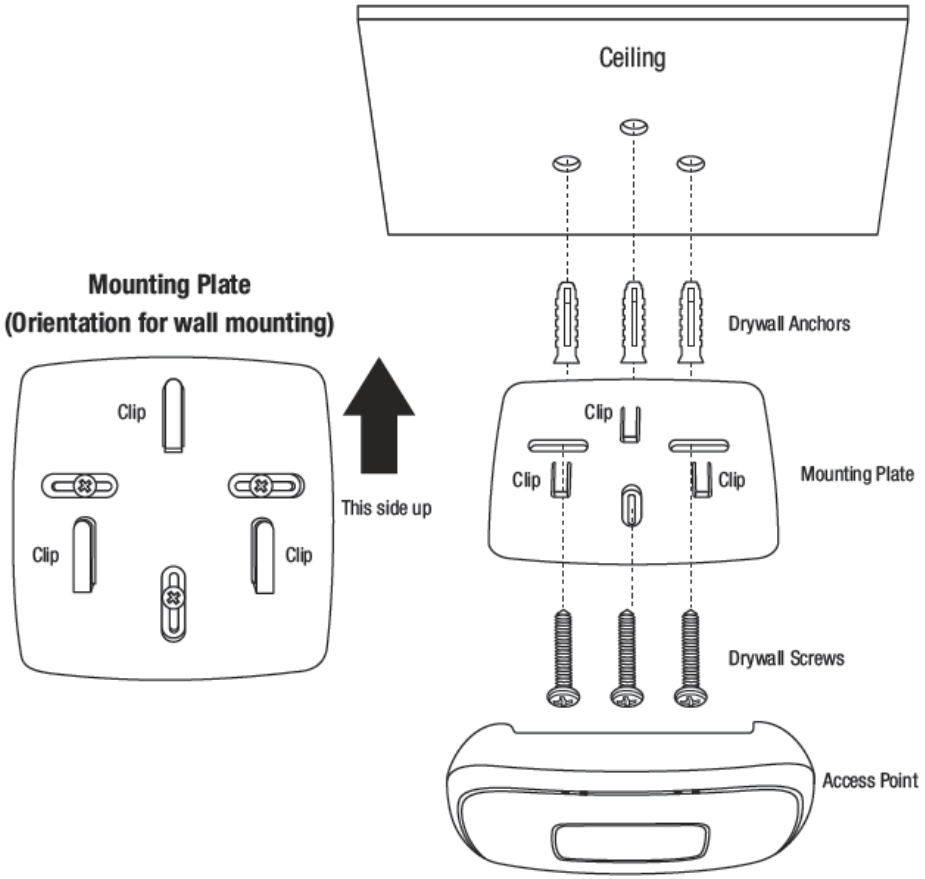
10. For Authentication method, select **WPA/WPA2-PSK**. For the WPA Cipher, select **AES**, and enter the **Pre-Shared Key** required to connect your wireless network. Click **OK**.



11. The initial wireless settings are complete. You can use the included hardware to mount the access points in the desired locations.

Note: *The access points must be connected to the same IP subnet as your wireless controller. (e.g. 192.168.10.x / 255.255.255.0)*

12. To mount the access points, install the mounting plates first to the desired wall or ceiling using the included drywall anchors and screws. Install the mounting plates with the clips facing away from the wall. If wall mounting, install the mounting plates with the correct orientation. After the mounting plates are properly installed, align the access point mounting holes with the mounting plate clips and slide in access point to lock into place.



Mounting Installation

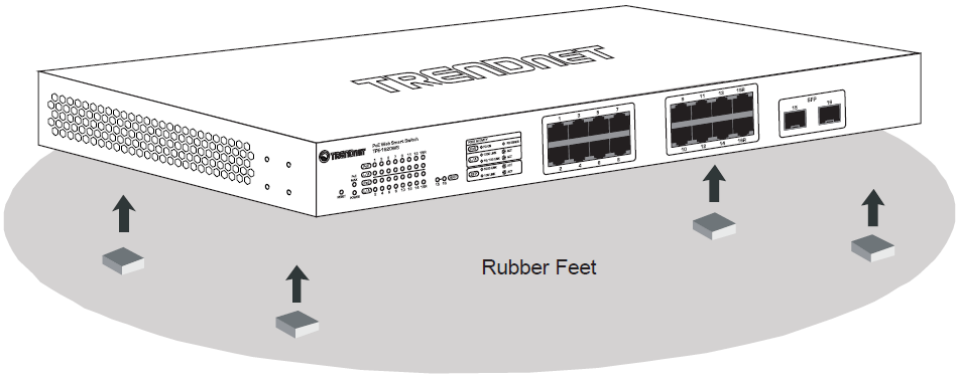
Wireless LAN Controller (TEW-WLC100)

Desktop Hardware Installation

The site where you install the hub stack may greatly affect its performance. When installing, consider the following pointers:

Note: *The controller model may be different than the one shown in the example illustrations.*

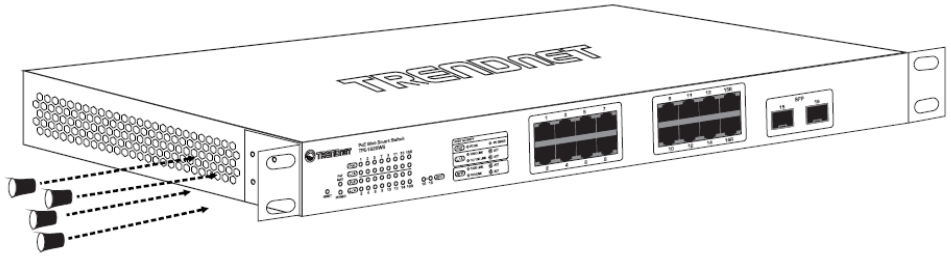
- Install the controller in a fairly cool and dry place.
- Install the Controller in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.
- Leave at least 10cm of space at the front and rear of the hub for ventilation.
- Install the controller on a sturdy, level surface that can support its weight, or in an EIA standard-size equipment rack. For information on rack installation, see the next section, Rack Mounting.
- When installing the Controller on a level surface, attach the rubber feet to the bottom of each device. The rubber feet cushion the hub and protect the hub case from scratching.



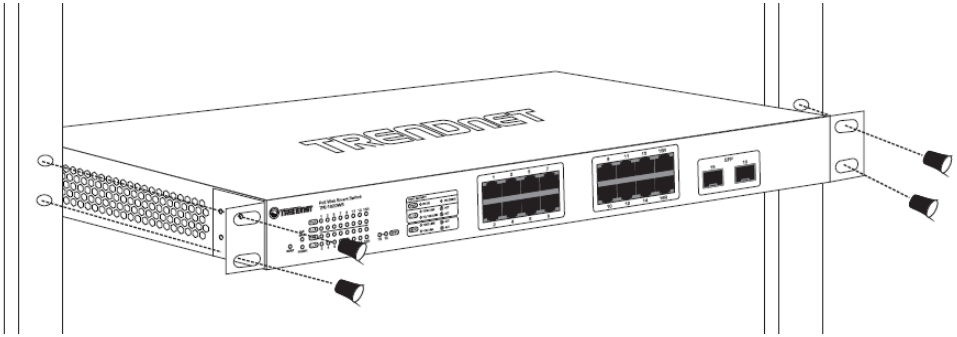
Rack Mount Hardware Installation

The controller can be mounted in an EIA standard-size, 19-inch rack, which can be placed in a wiring closet with other equipment. Attach the mounting brackets at the controller's front panel (one on each side), and secure them with the provided screws.

Note: *The controller model may be different than the one shown in the example illustrations.*



Then, use screws provided with the equipment rack to mount each controller in the rack.



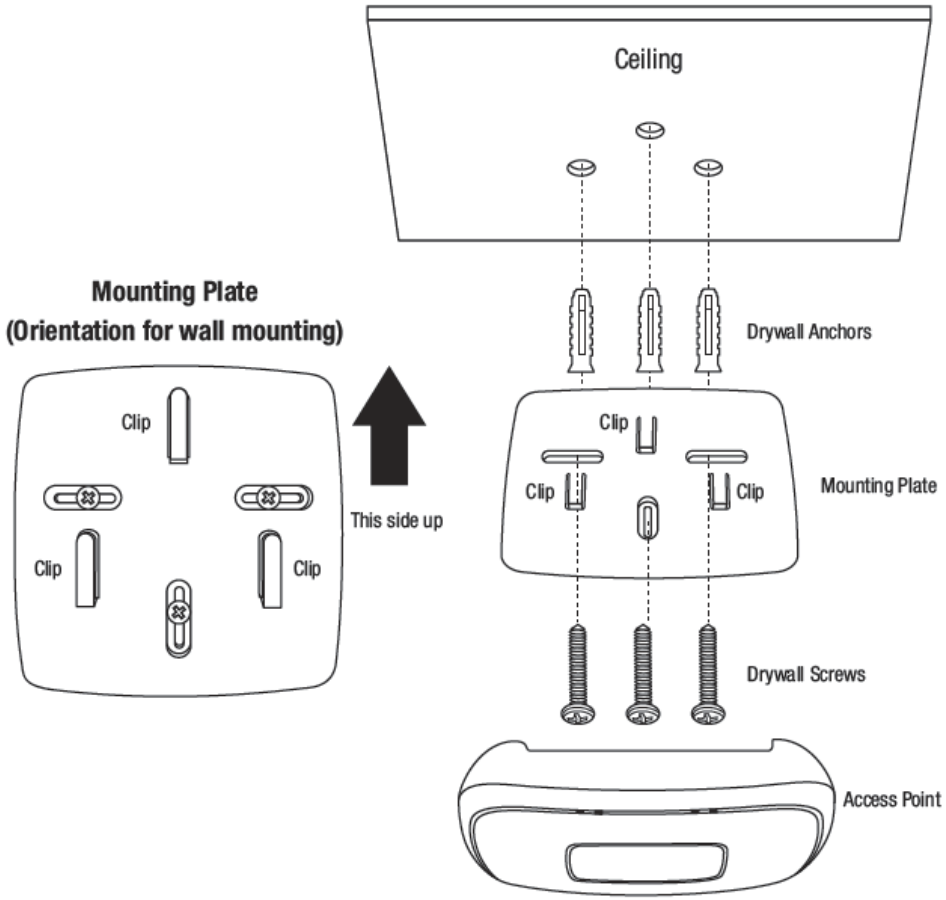
Wireless PoE Access Point (TEW-755AP / TEW-821DAP)

Ceiling Mount Installation

- Select the desired ceiling to mount the access point.
- First, install the mounting plate using the included drywall anchors (only required if in wall stud installation points are not available) and screws. **Note:** It's optional to use a stud finder to locate in wall studs and mark as installation points but not required.
- Place mounting plate on ceiling (clips facing away from ceiling) in desired mounting location and mark the points where the anchors/screws will be installed.
- Using a power drill and drill bits, create the holes were the anchors/screws will be installed.
- If anchors are required, install the anchors in the holes created first, then attached the mounting plate with the drywall screws using the power drill and Phillips bit or screwdriver.
- After mounting plates are installed, align the access point mounting holes with the mounting plate clips and slide in acces point to lock into place.

Wall Mount Installation

- Select the desired wall to mount the access point and make sure to install the mounting plates with the correct orientation.
- First, install the mounting plate using the included drywall anchors (only required if in wall stud installation points are not available) and screws. **Note:** It's optional to use a stud finder to locate in wall studs and mark as installation points but not required.
- Place mounting plate on wall (clips facing away from wall) in desired mounting location and mark the points where the anchors/screws will be installed.
- Using a power drill and drill bits, create the holes were the anchors/screws will be installed.
- If anchors are required, install the anchors in the holes created first, then attached the mounting plate with the drywall screws using the power drill and Phillips bit or screwdriver.
- After mounting plates are installed, align the access point mounting holes with the mounting plate clips and slide in acces point to lock into place.



Controller Management

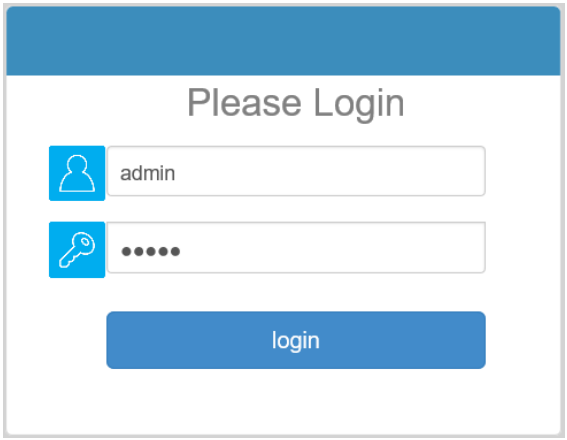
Access your wireless controller management page

Note: *Your controller default management IP address http://192.168.10.200 is accessed through the use of your Internet web browser (e.g. Internet Explorer®, Firefox®, Chrome™, Safari®, Opera™) and will be referenced frequently in this User's Guide.*

1. Open your web browser and go to the IP address http://192.168.10.200. Your controller will prompt you for a user name and password.

2. Enter the user name and password. By default:

   User Name: **admin**
   Password: **admin**
   Note: *User Name and Password are case sensitive.*

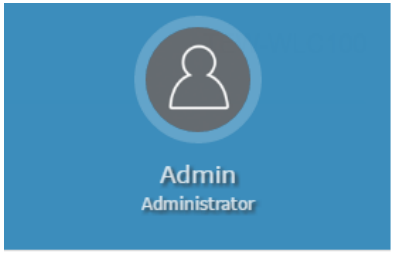


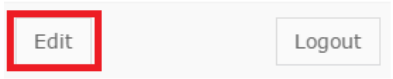
Change your controller administrative login password

Account Settings

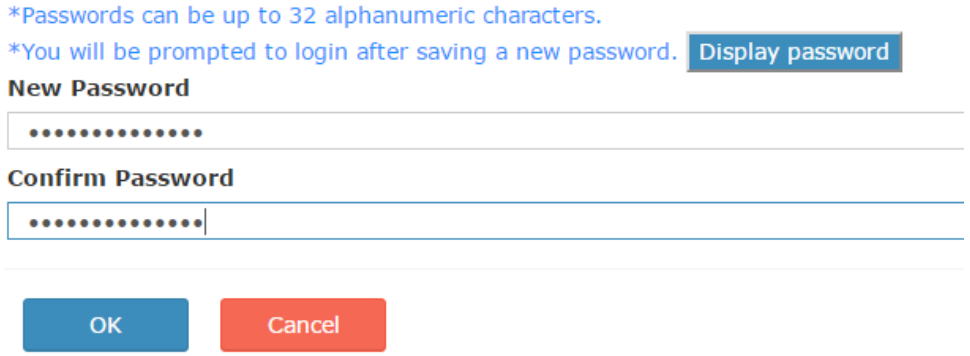
1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Account Settings** and click on **Edit**.





3. In the **New Password** and **Confirm Password** fields, enter the new password and click **OK.** You will be prompted immediately to log back into the controller management page with the new password. ***Note:*** *The password can be up to 32 alphanumeric characters.*



Note: *If you change the controller login password, you will need to access the controller management page using the User Name "admin" and the new password.*

Change your controller LAN IP address

Management > LAN

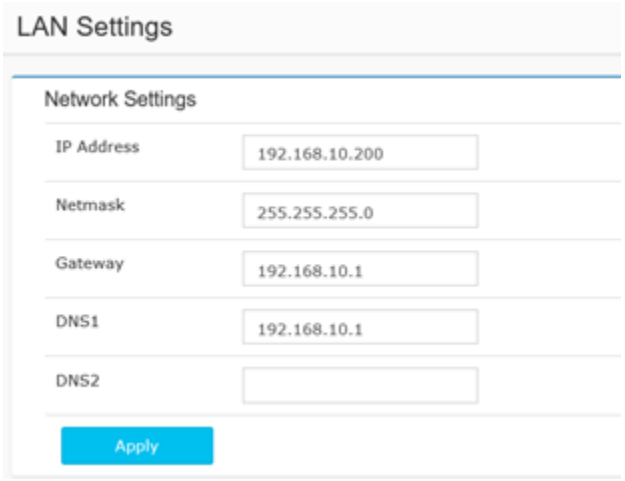
This section allows you to change your controller LAN IP address settings. Typically, the IP address settings should be changed to match your existing network subnet in order to access the switch management page on your network.

Default Controller IP Address: 192.168.10.200

Default Controller IP Subnet Mask: 255.255.255.0

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).
2. Click on **Management** and click on **LAN**.
3. Review the settings. When you have completed making changes, click **Apply** to save the settings.

- **IP Address:** Enter the new controller IP address. (e.g. *192.168.200.200*)
- **Netmask:** Enter the new controller subnet mask. (e.g. *255.255.255.0*)
- **Gateway:** Enter the default gateway IP address. (e.g. 192.168.200.1 or typically your router/gateway to the Internet).
- **DNS1/DNS2:** Enter the primary and secondary DNS servers IP address in order to resolve domain or host names. (e.g. 192.168.200.20)



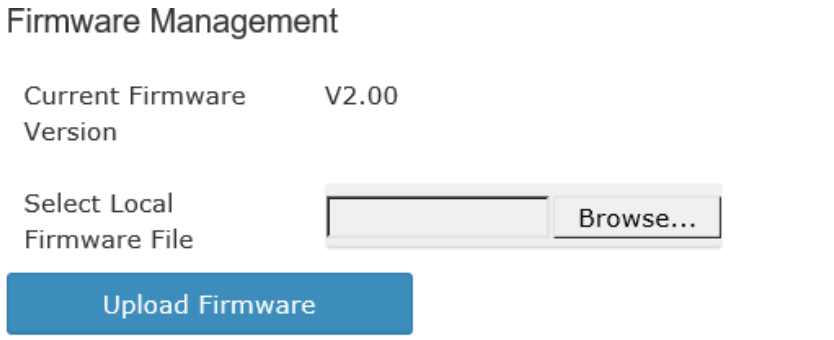
Upgrade your controller firmware

Management > Maintenance

TRENDnet may periodically release firmware upgrades that may add features or fix problems associated with your TRENDnet controller model and version. To check if there is a firmware upgrade available for your device, please check your TRENDnet model and version using the link. http://www.trendnet.com/support.

In addition, it is also important to verify if the latest firmware version is newer than the one your controller is currently running. To identify the firmware that is currently loaded on your controller, log in to the controller, click on the Administrator section and then on the Status. The firmware used by the controller is listed at the top of this page. If there is a newer version available, also review the release notes to check if there were any new features you may want or if any problems were fixed that you may have been experiencing.

1. If a firmware upgrade is available (http://www.trendnet.com/support), download the firmware to your computer.
2. Unzip the file to a folder on your computer.
3. Log into your controller management page (see "Access you wireless controller management page" on page 12).
4. Click on **Management** and click on **Maintenance.**
5. Depending on your web browser, in the **Firmware Management** section, click **Browse** or **Choose File**.



6. Navigate to the folder on your computer where the unzipped firmware file (*.img*) is located and select it.

7. Click **Upload Firmware**. If prompted, click **Yes** or **OK**.

Please note the following:

- Do not interrupt the firmware upgrade process. Do not turn off the device or press the Reset button during the upgrade.
- If you are upgrade the firmware using a laptop computer, ensure that the laptop is connected to a power source or ensure that the battery is fully charged.
- Disable sleep mode on your computer as this may interrupt the firmware upgrade process.
- Do not upgrade the firmware using a wireless connection, only using a wired network connection.
- Any interruptions during the firmware upgrade process may permanently damage your controller.

View your controller system log

Management > System Logging

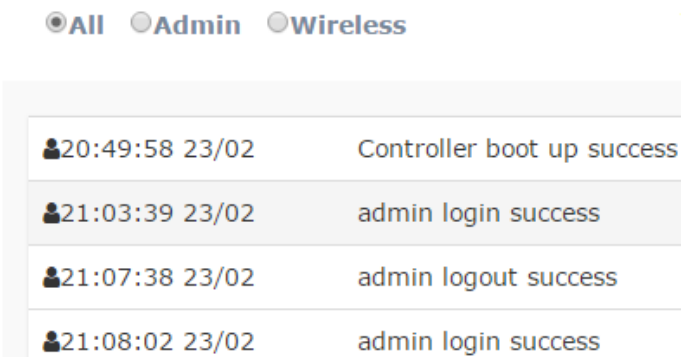
Your controller system log can be used to obtain activity information on the functionality of your controller or for troubleshooting purposes.

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Management** and click on **System Logging.**

3. To filter which logging you would like to view, you can select from one of the following options.

- **All** – Displays all logging.
- **Admin** – Displays only successful or failed controller logins or logouts to the controller management interface.
- **Wireless** – Displays only information about access point and wireless client connections.
- **Time Limit -** You can select the time interval (Time Limit of the most recent logging to display from the current time (0-30 min, 30-60 min, or 1-2 hrs prior to the current time). You can also
- **Search –** Allows you to enter a custom filter/keyword to search in system logging, for example AP or client MAC address, etc.



Backup and restore your controller configuration settings

Management > Maintenance

You may have added many customized settings to your controller and in the case that you need to reset your controller to default, all your customized settings would be lost and would require you to manually reconfigure all of your controller settings instead of simply restoring from a backed up controller configuration file.

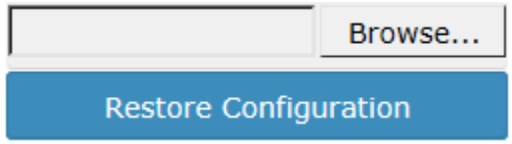
To backup your controller configuration:

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).
2. Click on **Management** and click on **Maintenance.**
3. In the **Backup/Restore System Configuration** section, click **Backup Configuration**.

4. Depending on your web browser settings, you may be prompted to save a file (specify the location) or the file may be downloaded automatically to the web browser settings default download folder. (Default Filename: *backup_cfg_WLC100.tar.gz)*

To restore your controller configuration:

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).
2. Click on **Management** and click on **Maintenance.**
3. In the **Backup/Restore System Configuration** section, click **Browse**.



4. A separate file navigation window should open.
5. Select the controller configuration file to restore and click **Restore Configuration**. (Default Filename: *backup_cfg_WLC100.tar.gz)*. If prompted, click **Yes** or **OK**.
6. Wait for the controller to restore settings.

Reboot your controller

Management > Maintenance

You may want to restart your controller if you are encountering difficulties with your controller and have attempted all other troubleshooting.

There are two methods that can be used to restart your controller.

- **Turn the controller** off for 10 seconds using the controller On/Off switch located on the rear panel of your controller or disconnecting the power port, see "Product Hardware Features" on page 2.
  Use this method if you are encountering difficulties with accessing your controller management page. This is also known as a hard reboot or power cycle.
  OR
- **Controller Management Page** – This is also known as a soft reboot or restart and steps are shown below.

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).
2. Click on **Management** and click on **Maintenance.**
3. In the **Backup/Restore System Configuration** section, click **Reboot Controller**.

4. Wait for the device to reboot.

Reset your controller to factory defaults

Management > Maintenance

You may want to reset your controller to factory defaults if you are encountering difficulties with your controller and have attempted all other troubleshooting. Before you reset your controller to defaults, if possible, you should backup your controller configuration first, see "Backup and restore your controller configuration settings" on page 15.

There are two methods that can be used to reset your controller to factory defaults.

- **Reset Button** – Located on the rear panel of your controller, see "Product Hardware Features" on page 2. Use this method if you are encountering difficulties with accessing your controller management page.

  OR

- **Controller Management Page**

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Management** and click on **Maintenance.**

3. In the **Backup/Restore System Configuration** section, click **Restore to factory default**.

Controller default settings

Administrator User Name	admin
Administrator Password	admin
Controller IP Address	192.168.10.200
Controller Subnet Mask	255.255.255.0
Controller Default Gateway	192.168.10.1
Primary DNS Server	192.168.10.1

Set your controller time zone

Configuration > Sites

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Configuration** and click on **Sites.**

3. Click the **Time Zone** drop down list and select the correct time zone. Click **OK.**

Access point management and configuration

Important Note: *Make sure your existing network is using a DHCP server to distribute IP addresses to the access points. By default, TRENDnet access points listed below will obtain an IP address automatically through DHCP or otherwise default back to 192.168.10.100 / 255.255.255.0 if a DHCP server is not available on your network. Each access point must be assigned a unique IP address on the same network. The wireless controller and access points must be connected to the same IP subnet on your network. (e.g. 192.168.10.x / 255.255.255.0)*

Access Point Compatibility

By default, the access points included in this kit are controller ready. For any additional access points, please refer to the access point model compatibility list below and controller compatible firmware version. You can download the access point's firmware from http://www.trendnet.com/support which include instructions on how to upgrade the firmware.

Before any additional access points are added to the wireless controller, make sure to reset the access points to factory default.

Access Point Model	Description	Controller Compatible Firmware Version
TEW-755AP	N300 PoE Access Point	1.03 or above
TEW-821DAP	AC1200 Dual Band PoE Access Point	1.05 or above
TEW-825DAP	AC1750 Dual Band PoE Access Point	1.01 or above

Manage and configure access points

This section describes how to discover new controller compatible APs (access points) and how to add/remove them to the wireless LAN controller.

Note: *Once APs are added to the controller, they must be managed and configured through the controller and can no longer be managed individually. APs must be removed/disconnected from the controller or reset to default in order to regain individual AP management access. Although APs individually offer multiple modes, the controller is only intended to manage the APs when used in access point mode.*

Discover and add access points

Monitor > Devices

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Monitor** and click **Devices** and newly connected APs will automatically appear in the Device List. ***Note:*** *If your AP does not appear in the list, make sure to double check all of the AP physically connections and refresh the discovery page.*

3. The Device List displays the following information about each AP.
   - **Device Name** – Displays the AP device name. Clicking the Device Name will display a summarized list of information about the AP.
     - **Locate** – If the AP has been marked on a previously uploaded WAP Map floorplan, clicking this link will open the WAP Map floorplan.
     - **Reboot** – Clicking this link will reboot the AP.
   - **Mac Address** – Displays the AP MAC address.
   - **Address** – Displays the AP IP address. Clicking the IP address will open the AP web management page in a web browser tab or window.
   - **Wireless Group** – Displays the AP wireless group assignment for each band.

     Example: *1(2.4G)/1(5G) means both 2.4G and 5G bands are assigned to wireless group 1. 2(2.4G)/1(5G) means 2.4G band is assigned to wireless group 2 and 5G band is assigned to wireless group 1.*
   - **Status** – Displays the current AP status.

- **NEW** NEW - The AP has not been added to any other wireless controllers and is available to add to the currently managed controller.
- **RUN** RUN - The AP has been successfully added to the currently managed wireless controller. When APs are added to the controller, they can no longer be managed individually, only managed through the controller. APs will need to be removed from the controller in order to be individually managed.
- **OFF** OFF - The AP has been added to the currently managed wireless controller but AP is offline.
- **LOCK** Lock - The AP has been added to another wireless controller and is not available to add to the currently managed controller. When APs are added to the controller, they can no longer be managed individually, only managed through the controller they have been added. APs will need to be removed from the controller in order to be individually managed.

- **Client** – Displays the current number of connected client devices to the AP.
- **Download** – Displays the current total of data downloaded (received) by the AP in bytes (B).
- **Upload -** Displays the current total amount of data uploaded (transmitted) by the AP in bytes (B).
- **History** – Displays a brief snapshot of the total amount of data downloaded (received) by the AP over the last 5 minutes in graph form.
  - **Locate** – If the AP has been marked on a previously uploaded WAP Map floorplan, clicking this link will open the WAP Map floorplan.
  - **Reboot** – Clicking this link will reboot the AP.
- **Channel –** Displays the current wireless channels the AP is operating on each band.

  Example: *1(ng),161(ac) means 2.4G band is operating on channel 1 and 5G band is operating on channel 161. First number = 2.4G channel, Second number = 5G channel.*
- **Type –** Displays the device type. AP means Access Point.
- **Action –** Displays an available action for the AP if it is available to add or managed by the current wireless controller.
  - Accept **–** Click this action to add the AP to the wireless LAN controller. After adding APs, the AP status will change to **RUN** when successfully added to the controller.

    Note: *When APs are added to the controller, they can no longer be managed individually, only managed through the controller. APs will need to be removed from the controller in order to be individually managed.*
  - Edit **–** If AP is already added, click this action to configure the AP settings.

Device Name	Mac Address	Address	Wireless Group	Status	Client	Download	Upload	History	Channel	Type	Action
TEW-821DAP	D8:EB:97:31:5A:31	192.168.10.25	1(2.4G)/1(5G)	RUN	0	0B	0B		1(ng),161(ac)	AP	Edit
TEW-755AP	18:17:25:34:E7:DE	192.168.10.23	1(2.4G)	RUN	0	0B	0B		1(ng)	AP	Edit
TEW-755AP	D8:EB:97:2F:B5:87	192.168.10.20	1(2.4G)	RUN	0	0B	0B		1(ng)	AP	Edit
TEW-821DAP	00:18:E7:95:92:45	192.168.10.26	1(2.4G)/1(5G)	RUN	1	85.99MB	4.51MB		1(ng),161(ac)	AP	Edit

Configuring controller managed access points

Configuration > Access Points

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Configuration** and click **Access Points** and the list will display all of the APs that have already been added to the wireless controller. The list displays the following information about each AP.
   - **MAC Address** – Displays the AP MAC address.
   - **Device Name** – Displays the AP device name.
   - **Firmware Version** – Displays the current AP firmware version.
   - **Description** – Displays the AP description
   - **Channel** – Displays the current operating 2.4G and 5G channels.

     Example: *1 / 161 means the 2.4G band is operating on channel 1 and 5G channel is operating on channel 161. First number = 2.4G channel, Second number = 5G channel.*

Note: *When APs are added to the controller for the first time, the default 2.4G channel is set to 1 and default 5G channel is set 161 (North America) & 48 (Europe). It is recommended for APs in the same wireless group to use the same channel for seamless roaming.*

- **Tx Power –** Displays the 2.4G and 5G transmit power setting.

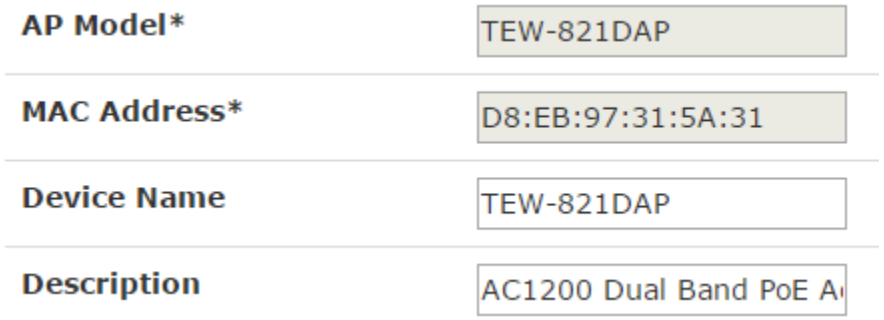
  Example: *auto / auto means 2.4G transmit power is set to auto and 5G transmit power is set to auto. (First: 2.4G setting / Second: 5G setting)*

- **Action –** Click Edit to modify the AP individual settings.

	MAC Address	Device Name	Firmware Version	Description	Channel	Tx Power	Action
	D8:EB:97:31:5A:31	TEW-821DAP	1.05b11	AC1200 Dual Band PoE Access Point	1 / 161	auto / auto	Edit
	00:18:E7:95:92:45	TEW-821DAP	1.05b11	AC1200 Dual Band PoE Access Point	1 / 161	auto / auto	Edit
	18:17:25:34:E7:DE	TEW-755AP	1.03b06	N300 PoE Access Point	1 /	auto /	Edit
	D8:EB:97:2F:B5:87	TEW-755AP	1.03b06	N300 PoE Access Point	1 /	auto /	Edit

Under Edit, you can modify the AP individual settings. Click **OK** to save the changes.

- **AP Model** – Displays the AP model. ***Note:*** *This setting cannot be modified.*
- **MAC Address** – Displays the AP MAC address. ***Note:*** *This setting cannot be modified.*
- **Device Name** - Sets the AP device name.
- **Description –** Sets the AP description.

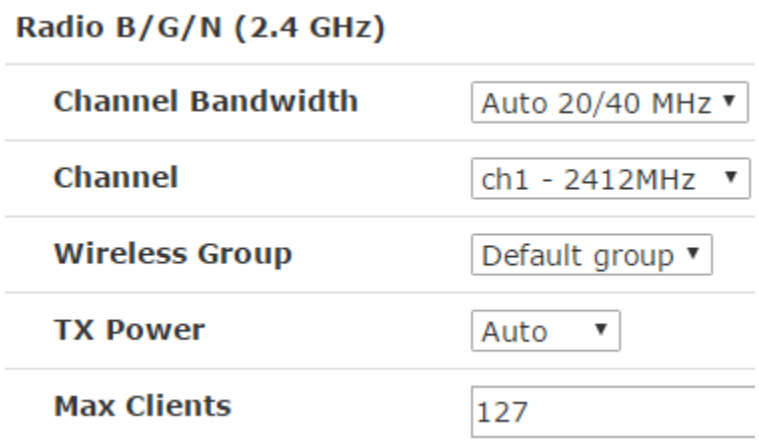


- **Radio B/G/N (2.4GHz)** (Settings for the 2.4G radio)

Note: *It is recommended that APs that are in the same wireless group are always configured with the same individual settings to produce optimum wireless connectivity and performance. By default, when APs are first added to the wireless controller, all APs are set to use the same default settings including specific 2.4G channel 1.*

  - **Channel Bandwidth –** Set the 2.4G channel bandwidth setting for the AP.
    - **20 MHz** – This mode operates using a single 20MHz channel for wireless devices connecting at 2.4G 802.11b/g/n. This setting may provide more stability than Auto 20/40 MHz for connectivity in busy wireless environments where there are several neighboring wireless networks in the area.
    - **Auto 20/40 MHz (Recommended Default)** –When this setting is active, this mode is capable of providing higher performance only if the wireless devices support the higher 40MHz channel width settings. Enabling this setting typically results in substantial performance increases when connecting 802.11n wireless clients and the AP can dynamically choose whether to operate in 20MHz or 40MHz depending on the wireless environment conditions.
    - **40 MHz –** This mode will statically set the AP to operate in the higher channel width setting (channel bonding) and may yield the highest performance but least stability if wireless conditions are not ideal.
  - **Channel** – Set the 2.4G desired operating channel. For use with the controller, it is recommended to statically assign a specific channel and set all of the APs that belong in the same wireless group to use the same channel. Ideally, it is recommended to select a channel that is least used by neighboring wireless networks. When creating different wireless groups, it is recommended to assign a different channel for different wireless groups to avoid any interference between other wireless groups.
  - **Wireless Group –** Sets the 2.4G wireless group assignment. By default, all APs are assigned to the wireless Default Group (1).

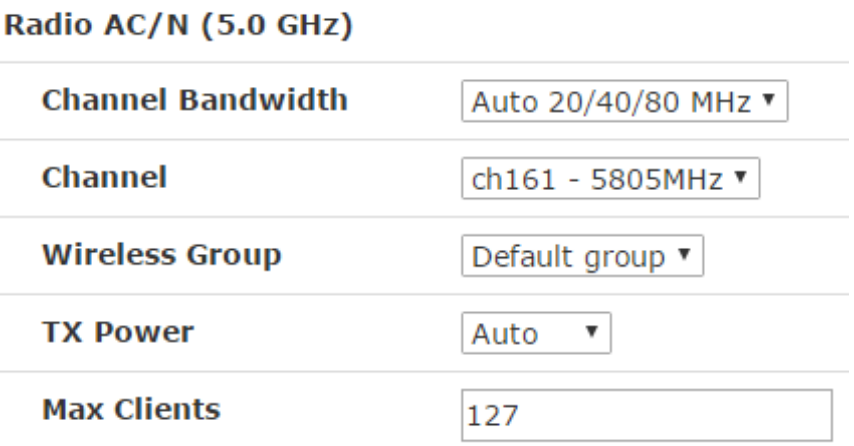
- **TX Power –** Sets the AP 2.4G transmit power. The higher the value dBm, the stronger the wireless output power. It is recommended to keep setting as Auto.
- **Max Clients -** Sets the 2.4G client device limit on the AP.



- **Radio B/G/N (5GHz)** (Settings for the 5G band)

  Note: *It is recommended that APs that are in the same wireless group are always configured with the same individual settings to produce optimum wireless connectivity and performance. By default, when APs are first added to the wireless controller, all APs are set to use the same default settings including specific 5G channel 161 (North America) / channel 48 (Europe).*

  - **Channel Bandwidth –** Set the 2.4G channel bandwidth setting for the AP.
    - **20 MHz** – This mode operates using a single 20MHz channel for wireless devices connecting at 5G 802.11a/n/ac. This setting may provide more stability than Auto 20/40 MHz or Auto 20/40/80 MHz for connectivity in busy wireless environments where there are several neighboring wireless networks in the area.
    - **Auto 20/40 MHz or Auto 20/40/80 MHz (Auto 20/40/80 MHz Recommended Default**) When this setting is active, this mode is capable of providing higher performance only if the wireless devices support the higher 40MHz or 80Mhz channel width settings. Enabling this setting typically results in substantial performance increases when connecting 802.11n wireless clients and the AP can dynamically choose whether to operate in 20MHz, 40MHz, or 80MHz depending on the wireless environment conditions.
    - **40 MHz or 80 MHz –** This mode will statically set the AP to operate in the higher channel width setting (channel bonding) and may yield the highest performance but least stability if wireless conditions are not ideal.
  - **Channel** – Set the 5G desired operating channel. For use with the controller, it is recommended to statically assign a specific channel and set all of the APs that belong in the same wireless group to use the same channel. Ideally, it is recommended to select a channel that is least used by neighboring wireless networks. When creating different wireless groups, it is recommended to assign a different channel for different wireless groups to avoid any interference between other wireless groups.
  - **Wireless Group –** Sets the 5G wireless group assignment. By default, all APs are assigned to the wireless Default Group (1).
  - **TX Power –** Sets the AP 5G transmit power. The higher the value dBm, the stronger the wireless output power. It is recommended to keep setting as Auto.
  - **Max Clients -** Sets the 5G client device limit on the AP.

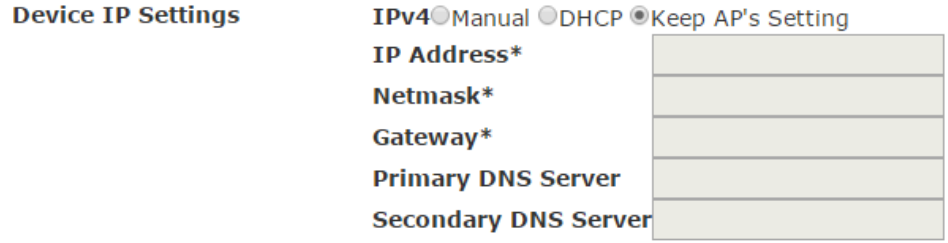


- **Band Steering** – This is an optional setting and is only available on dual band (2.4G & 5G) APs. This setting can assist with AP utilization and efficiency by automatically identifying which client devices are capable of 802.11ac link rates and automatically push those clients over from the 2.4G band to the 5G band for 802.11ac connectivity. This feature requires both 2.4G and 5G bands to use the same SSID and security settings on the same AP.

- **Device IP Settings –** Allows to set the AP individual IP address settings. You can statically/manually (Manual) assign the AP IP address settings or set the AP to automatically obtain IP address settings from an existing DHCP server on your network. The default setting is to Keep AP's Setting which leaves the AP's current IP address settings untouched by the controller. It is recommended to use the default setting.

  Note: *By default, TRENDnet indoor AP models TEW-755AP/821DAP/825DAP are set to automatically obtain IP address settings using an existing DHCP server. If the AP cannot obtain IP address settings from a DHCP server, the AP will default back to 192.168.10.100 / 255.255.255.0.*

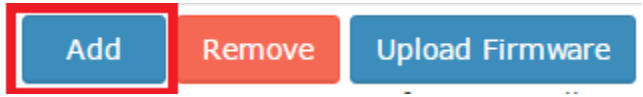
  Note: The controller can only discover access points located within the same IP subnet.



Manually add an access point

Configuration > Access Points

If an AP was not discovered automatically in the *Monitor > Devices* section, you can manually add an AP by click **Add.**



Select the **AP** model in the drop-down list.

Enter the AP Ethernet/2.4G MAC address.

Enter the Device Name and Description so you can easily identify the AP. These are optional parameters.

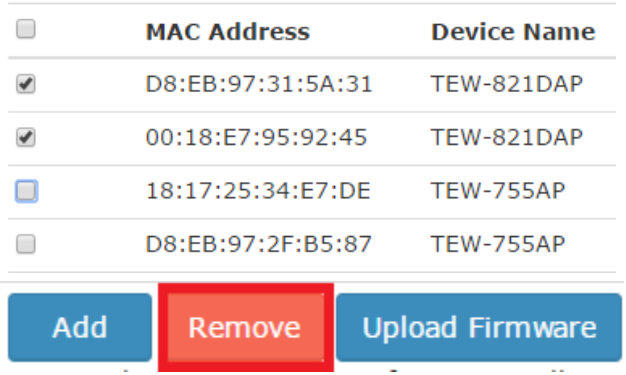
Click **OK** at the bottom to add the AP and assign the controller AP default settings, otherwise modify the desired parameters first.

Remove access points from the controller

Configuration > Access Points

Once APs are added to the controller, they must be managed and configured through the controller and can no longer be managed individually. APs must be removed/disconnected from the controller or reset to default in order to regain individual AP management access. When APs are removed from the controller, APs are automatically reset to their factory default settings.

To remove an AP or multiple APs, check the APs you would like to remove in the left column (The top check box will select all APs in the list), then click **Remove.** When prompted, click **Yes** to confirm removal of the selected APs.



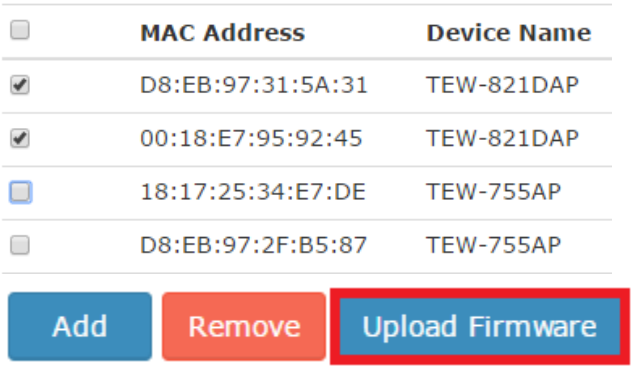
Simultaneously upgrade firmware for multiple access points

Configuration > Access Points

First, make sure you have downloaded the correct firmware for your APs and unzipped to your local drive. The firmware file for the APs will have a .bin extension.

To simultaneously upgrade firmware for multiple APs, check the APs you would like to upgrade firmware in the left column (The top check box will select all APs in the list), then click **Upload Firmware.** When prompted, click **Browse** or **Choose File** (depending your browser) and navigate to the location of the AP firmware (.bin file) and select it.

Once selected, click **Upload** to start the firmware upgrade process. Wait about 5 minutes for the process to complete.



Wireless groups and profiles

Once APs are added to the controller, wireless profiles and security settings are configured using wireless groups and no longer configured on each individual AP. A wireless group consists of multiple APs or AP bands assigned to the specified wireless group. APs should be separated and assigned by wireless group and multiple profiles can be created within the wireless group for different purposes. For example, Wireless Group 1 may be designated and located in a specific physical area (e.g. Lobby) and Wireless Group 2 may be located in another physical area (e.g. Conference Rooms), etc.

For all of the APs in a single group, multiple profiles each consisting of SSID, wireless security, roaming protocols, bandwidth control, VLAN, RSSI threshold, and guest captive portal settings can be created for different purposes. For example, one group profile can be configured for clients to connect to a specified VLAN and another for guest access (Captive Portal). You can create up to 8 wireless profiles per wireless group.

Creating a wireless profile

Configuration > Wireless Groups/Profiles

Note: *By default, when APs are added to the wireless controller, all APs will be assigned to the default group "Default group". You can create up to 8 wireless profiles per wireless group.*

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

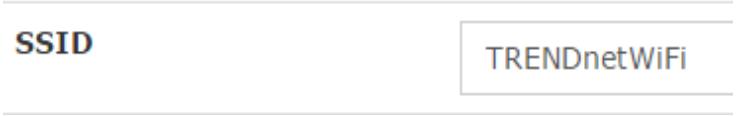
2. Click on **Configuration** and click **Wireless Groups/Profiles.**

   Note: *By default, the wireless group "Default group" has already been created. This group cannot be deleted. The number next to the name (1) indicated the internal group # assignment which is used for identification purposes under the Monitor > Devices section.*

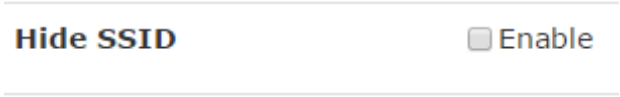
3. To create a new wireless profile for "Default group", in the list below, click **Create**.

4. Enter and select the parameters for the wireless profile. You can review the settings below and click **OK** to add the new profile.

- **SSID –** The wireless network name broadcasted for client devices to discover. (e.g. TRENDnetWiFi)



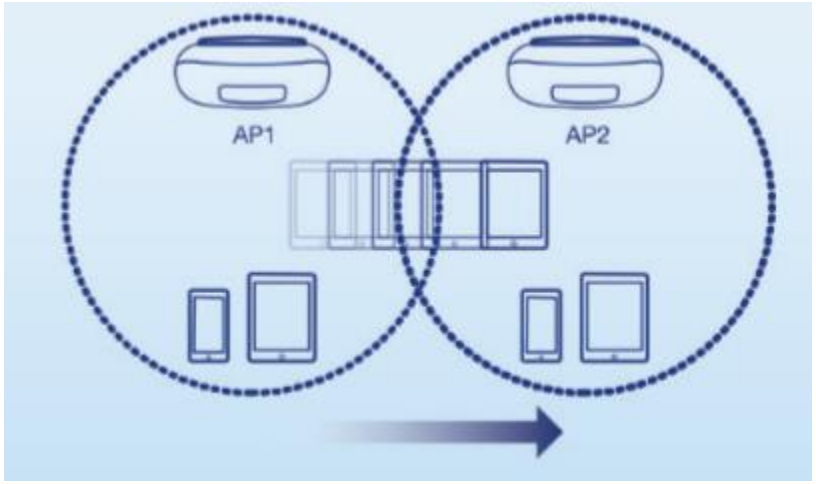
- **Hide SSID –** Enabling this setting will hide the wireless network name from being discovered by client devices. Client can still connect to the wireless network but may need to manually enter in the wireless connection details.



- **Captive Portal –** Enabling this setting will require client devices to use special captive portal authentication in order to connect to your wireless network. You must configure the captive portal type and settings first before using this feature. Please see the Captive Portal section first to configure the captive portal settings before enabling this feature on your wireless profile.
  Note: *If using Captive Portal authentication, it is recommended to set the Authentication method to None in the wireless profile settings since captive portal authentication will be used instead.*

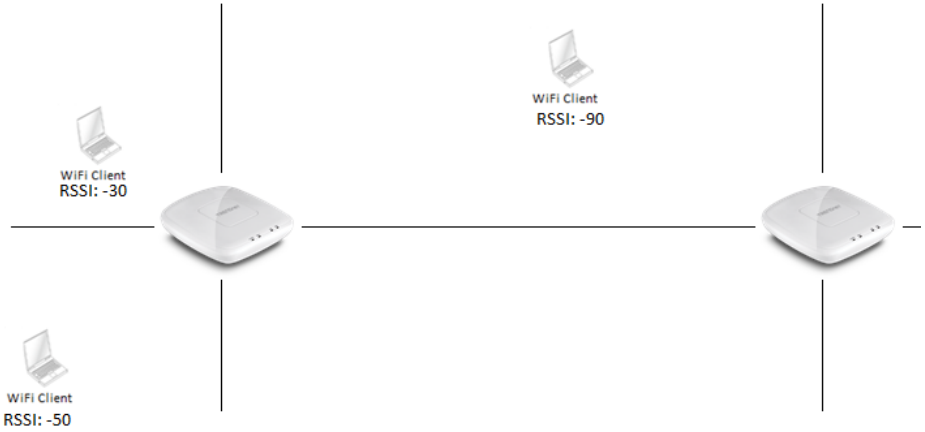
- **Bandwidth Control** – Check the option to enable bandwidth control. This option allows you to specify the maximum download bandwidth limit for either the SSID or each client device, upload can only be specified each client device. The unit is specified in bits. Lowercase "m" can be used to specify Megabits (e.g. 1m) and lowercase "k" can used to specify kilobits (e.g. 10k).

- **Roaming** – Select which roaming protocols to enable for the wireless profile.
  - **802.11k** – This protocol enables the exchange of messages between APs and client devices which includes utilization and signal strength information of neighboring APs in the same wireless network. This protocol can assist supported client devices in better roaming decisions when transitioning between multiple APs in the same wireless network. Client devices must support 802.11k in order to use this feature but it can be safely enabled and functioning whether or not client devices support this standard.
  - **802.11r –** This protocol allows client devices to pre-authenticate with neighboring APs to significantly reduce the transition time or eliminate the need for re-authentication during transition from one AP to another. Client devices must support 802.11r in order to use this feature and should not be enabled unless client devices support this standard.
  - **OKC (Opportunistic Key Caching) –** This protocol functions as a non-standard version of 802.11r in allowing client devices to pre-authenticate with neighboring APs. This protocol operates independently on the controller and APs and does require client devices to support any specific pre-authentication roaming standards. This setting is recommended for the highest compatibility in order for all client devices to benefit fast roaming transition across your wireless network.



- **VLAN** – Enable this option to assign a specific 802.1q VLAN tag or ID to the SSID or wireless profile. By assigning a specific VLAN tag or ID, client devices that connect to the profile, will be placed in the specified VLAN.
  Note: *802.1q VLAN should be configured on your switch router and network infrastructure to support use this feature.*
- **RSSI Threshold** – Enable this option set a signal strength limit on wireless client devices when the AP will force the client to disconnect.
  In a wireless roaming network with multiple access points, this feature can assist by forcing the disconnection of the wireless client device before signal strength and connectivity to the AP are too low to sustain enough bandwidth for Internet streaming applications. This will force the wireless client device to connect to another AP with a stronger signal and connection rate relative to it's new location. It is the nature of wireless client devices to maintain connectivity to the currently connected AP as long as the signal can still be discovered.

  In the example diagram, you can see that the further away the client device is from the AP, the lower signal strength. (-30 RSSI is a higher strength value relative to the AP compared to -90 RSSI). The client device at -90 RSSI is closer to the next AP but without the forced disconnection from the AP on the left, without the RSSI threshold function, the client device would remain connected to the much further AP on the left than stronger signal AP on the right. Forcing a disconnect from the originally connected AP on the right would force the client to connect to the much higher signal strength AP on the right providing better connectivity during the transition between physical locations.



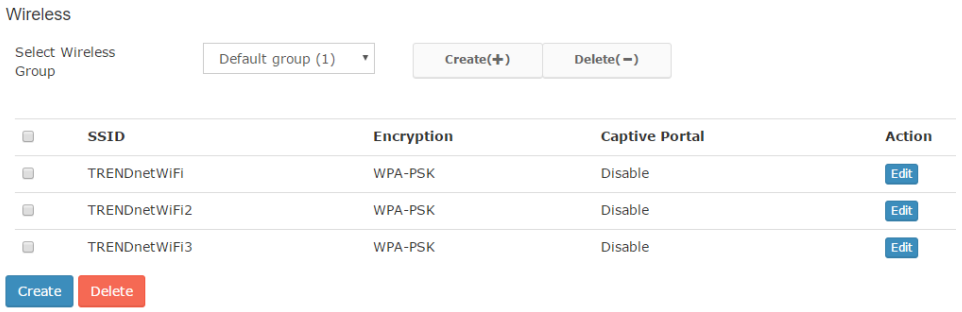
- **Authentication Method** – Select the authentication method used for the profile.
  - **None** – Does not require client devices to authentication or enter in any security parameters to connect to the wireless network. Not recommended for typical usage. Only recommended if using captive portal authentication.
  - **WEP** – Requires client devices to enter an unencrypted key to connect to the wireless network. Only Key Index 1 is supported. Not recommended since key is unencrypted and does not support 802.11n and 802.11ac link rates.

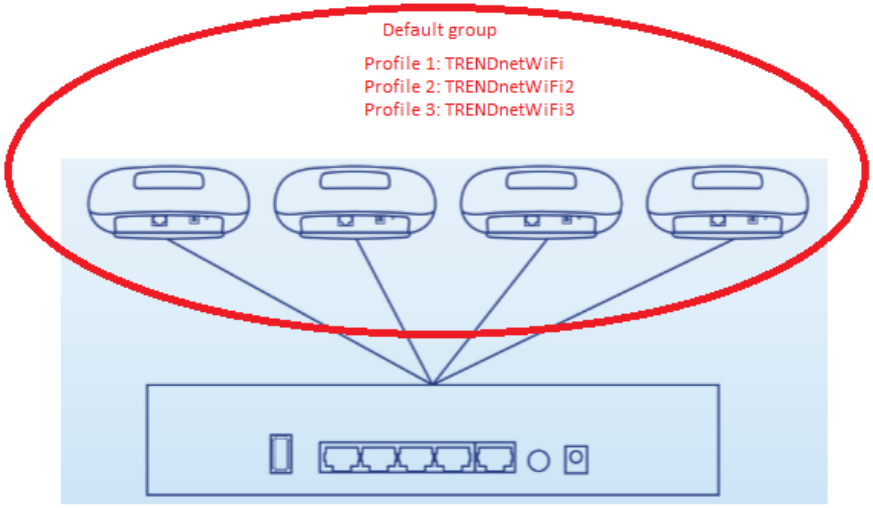
WEP Key Format	HEX	ASCII
Character set	0-9 & A-F, a-f only	Alphanumeric (a,b,C,?,*, /,1,2, etc.)
64-bit key length	10 characters	5 characters
128-bit key length	26 characters	13 characters

  - **WPA/WPA2-PSK** – Requires client devices to enter an encrypted key/passphrase to connect to the wireless network. This is the recommended setting.
    Passphrase Format:8-63 alphanumeric characters (a,b,C,?,*, /,1,2, etc.)
  - **WPA/WPA2-Enterprise –** Requires the configuration use of an external RAIDIUS server for authentication through EAP (Extensible Authentication Protocol). Depending on the EAP protocol configured on the external RADIUS server, client devices will need to be configured with the same authentication and credentials in order to connect to the wireless network.
    - **IP Address:** Enter the IP address of the RADIUS server. (e.g. *192.168.10.250)*
    - **Port:** Enter the port your RADIUS server is configured to use for RADIUS authentication.
    - ***Note:*** *It is recommended to use port 1812 which is the default RADIUS port.*
    - **Shared Secret:** Enter the shared secret used to authorize your APs with your RADIUS server.

Below is an example of a single group configured with multiple wireless profiles.

- 4 x APs assigned to wireless group "Default group"
- 3 x wireless profiles created under "Default group"
- All 4 APs will broadcast and allow connections for the 3 wireless profiles created
- 4 x APs assigned to "Default group" will host these profiles and any new APs added to the "Default group" will also host these profiles.





Creating a new wireless group

Configuration > Wireless Groups/Profiles

Creating separate wireless groups can allow you to organize and divide your access points into smaller groups and categorize by designated physical locations, departments, or other purposes to better isolate device troubleshooting and easily implement extensions of network access control within your network.

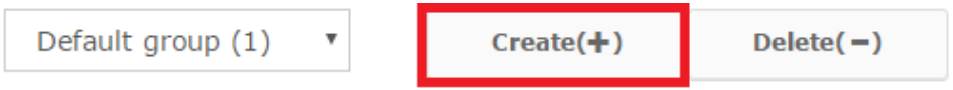
Note: *By default, when APs are added to the wireless controller, all APs will be assigned to the default group "Default group".*

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Configuration** and click **Wireless Groups/Profiles.**

   Note: *By default, the wireless group "Default group" has already been created. This group cannot be deleted. The number next to the name (1) indicated the internal group # assignment which is used for identification purposes under the Monitor > Devices section.*

3. To create a new wireless group, next to the wireless group field, click **Create (+).**



4.. In the field, enter a name for the group. (e.g. R&D) and the ✔ button to add the new group.

5. The new group will be available in the wireless group drop-down list.

   Note: *Each group will automatically be assigned the new number in the order the group was created. The number next to the name (2) indicated the internal group # assignment which is used for identification purposes under the Monitor > Devices section. (e.g. Next group created would be assigned (3), next (4), and so on.)*

Assigning access points to a wireless group

Configuration > Access Points

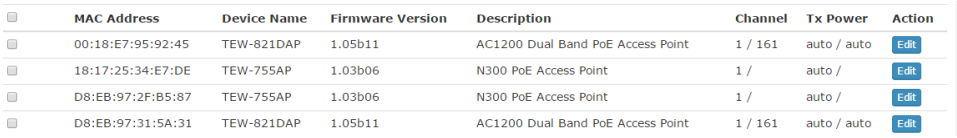
From the previous example "Creating a new wireless group", this example will explain how to assign an existing AP that has already been added to the controller into the wireless group created.

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Configuration** and click **Access Points** and the list will display all of the APs that have already been added to the wireless controller.

3. Select the AP you would like assign to the new group, and under the Action column, click 

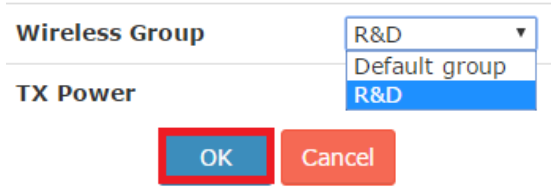
.



MAC Address	Device Name	Firmware Version	Description	Channel	Tx Power	Action
00:18:E7:95:92:45	TEW-821DAP	1.05b11	AC1200 Dual Band PoE Access Point	1 / 161	auto / auto	Edit
18:17:25:34:E7:DE	TEW-755AP	1.03b06	N300 PoE Access Point	1 /	auto /	Edit
D8:EB:97:2F:B5:87	TEW-755AP	1.03b06	N300 PoE Access Point	1 /	auto /	Edit
D8:EB:97:31:5A:31	TEW-821DAP	1.05b11	AC1200 Dual Band PoE Access Point	1 / 161	auto / auto	Edit

4. Under Radio B/G/N (2.4GHz), click the **Wireless Group** drop-down list and select the new wireless group (e.g. R&D). If you have selected a dual band AP, select the same group under Radio AC/N (5.0GHz) and click **OK** to save the changes.

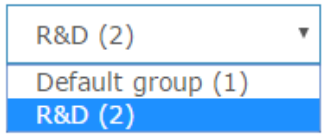
Note: *For dual band APs, each band can be assigned to a different wireless group for more flexibility however, in most cases both bands will be assigned to the same AP group since groups are typically organized by physical location.*



5. To assign additional APs to the new group, repeat steps 3 & 4 and after you have assigned all the desired APs to the new group, you can create wireless profiles under the new wireless group.

6. To create new wireless profiles under the new wireless group, click on **Configuration** and click **Wireless Groups/Profiles.**

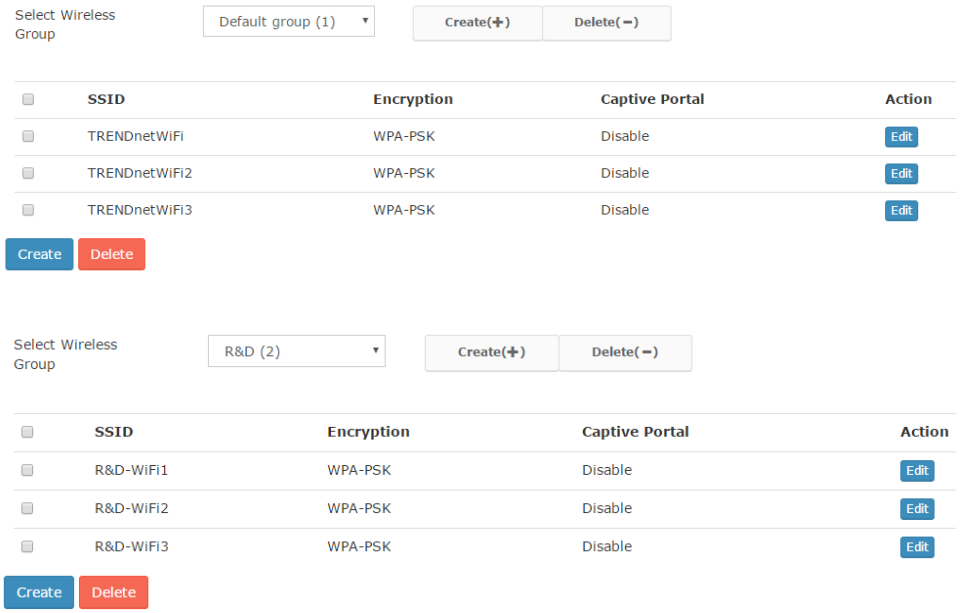
7. In the Select Wireless Group drop-down list, select the new wireless group. (e.g. R&D)

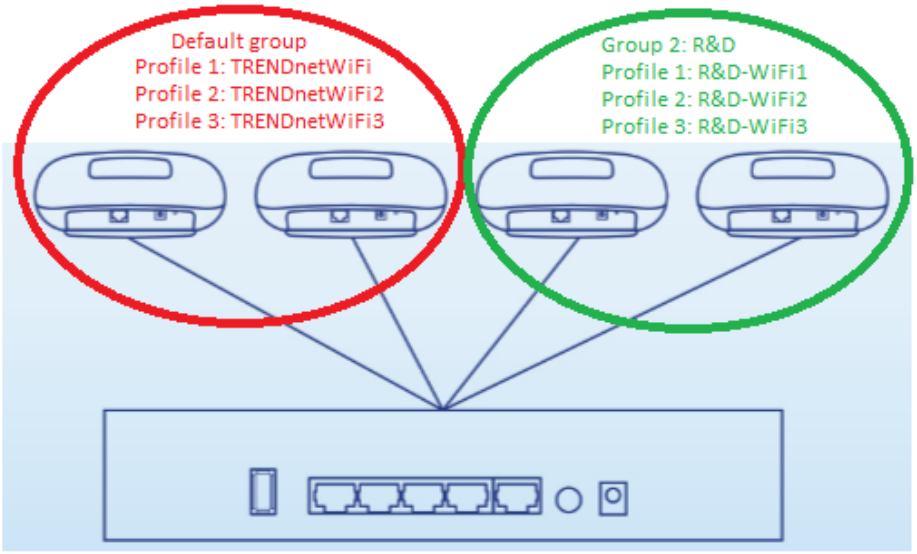


8. To create a new wireless profile for the new group (e.g. R&D), in the list below, click **Create**. For details on wireless profile settings, you can refer to the section "*Creating a wireless profile*" on page 24.

Below is an example of 2 wireless groups with multiple wireless profiles from each group.

- 2 x APs assigned to wireless group "Default group"
- 2 x APs assigned to wireless group "R&D"
- 3 x wireless profiles created under "Default group"
- 3 x wireless profiles created under "R&D"
- 2 x APs will broadcast and allow connections for the 3 wireless profiles created under "Default group"
- 2 x APs will broadcast and allow connections for the 3 wireless profiles created under "R&D"





Captive Portal

The captive portal feature allows you to provide customized authentication typically for public WiFi users and guest user authentication. Captive Portal authentication is typically used in areas such as hotel lobbies, airports, coffee shops and other WiFi hot spots. The access points support both captive portal authentication through the built-in user account database which includes basic portal customization or CoovaChlli which is an open-source implementation of captive portal (UAM) function and 802.1X RADIUS (please note CoovaChilli requires an external CoovaChilli server which must be preconfigured to work and authenticate requests through the access point). The access points also support URL/web page redirect without authentication for advertisement purposes. The captive portal functionality of the access points can be managed through the wireless controller and applied to select wireless profiles as desired. It is recommended to disable standard WiFi security methods such as WEP/WPA/WPA2 in order to use the captive portal authentication method instead on selected wireless profiles. Before applying captive portal functionality to select wireless profiles, the captive portal type must be configured first along with all required parameters.

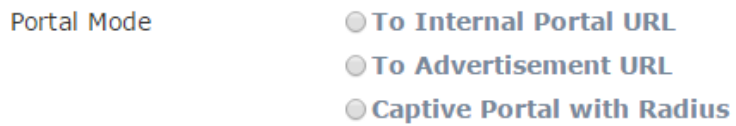
1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Configuration** and click **Captive Portal** and check **Enable Captive Portal.**

Select the **Portal Mode**:

Note: *Only one mode can be used, multiple modes cannot be used at the same time.*

- **To Internal Portal URL** – This mode allows you to authenticate requests through the built-in user account database and apply basic customization to the captive port user login page. This option is recommended and does not require an external authentication server.
- **To Advertisement URL** – This mode requires no authentication and allows redirection of users to a specific website/URL.
- **Captive Portal with RADIUS (CoovaChilli)** – This mode requires an external CoovaChilli server to be configured to provide the captive portal user login page and authenticate request through the access point.



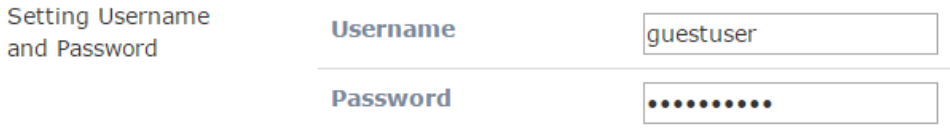
To Internal Portal URL

Configuration > Captive Portal

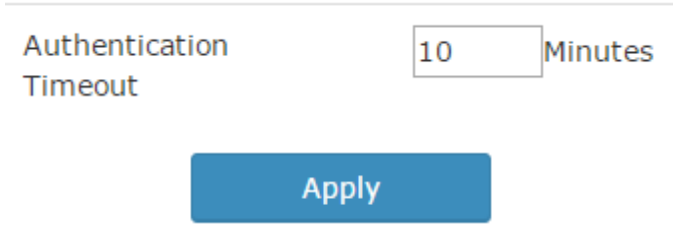
Choose the option **To Internal Portal URL**.

First, enter a user name and password account for users to authenticate and authentication timeout value and click **Apply** to save the settings.

- **Setting Username and Password** – Enter the user name and password required for users to enter when connecting to your wireless network. This will be the user name and password required for users to enter in your captive portal web page for authentication in order for users to connect to your wireless network. (e.g. User Name: guestuser / Password: 1234567890)



- **Authentication Timeout** – This is the session time period (minutes) which users are allowed to be logged in to your wireless network. Once the time expires, users will automatically logged and will need to log back in through the captive portal page again in order to reconnect to your wireless network. It is recommended to set a value to ensure authentication sessions are closed after a certain time period.



After you have defined the initial parameters, you can apply portal page customization.

Under Upload Image File, click **Browse** or **Choose File** depending on your browser, and navigate to the directory where the selected image is located and select the image. Once you have selected the image, click **Upload**.

Once you have uploaded the image, an image preview will appear and you can assign the image **Set as background** or **Set as logo**. If you would like to delete the image and upload a different image, you can also click **Delete** to delete the image.

Note: *Only 2 images can be uploaded for portal page customization (Only one image can be set for the portal page background and another image can be set for the company/organization logo). Images are automatically scaled when uploaded. The recommended image formats are JPG, PNG, GIF. Maximum file size for images is 250KB.*

After you have uploaded your images, you can add a welcome or greeting message to display to your guest users on the captive portal page. A preview of the page and text will also be displayed. After you have finished entering your message, click **Apply**.

Note: *Aside from text, you can enter HTML tags for text formatting and styles.*

Below is an example of a greeting message formatted in html.

*

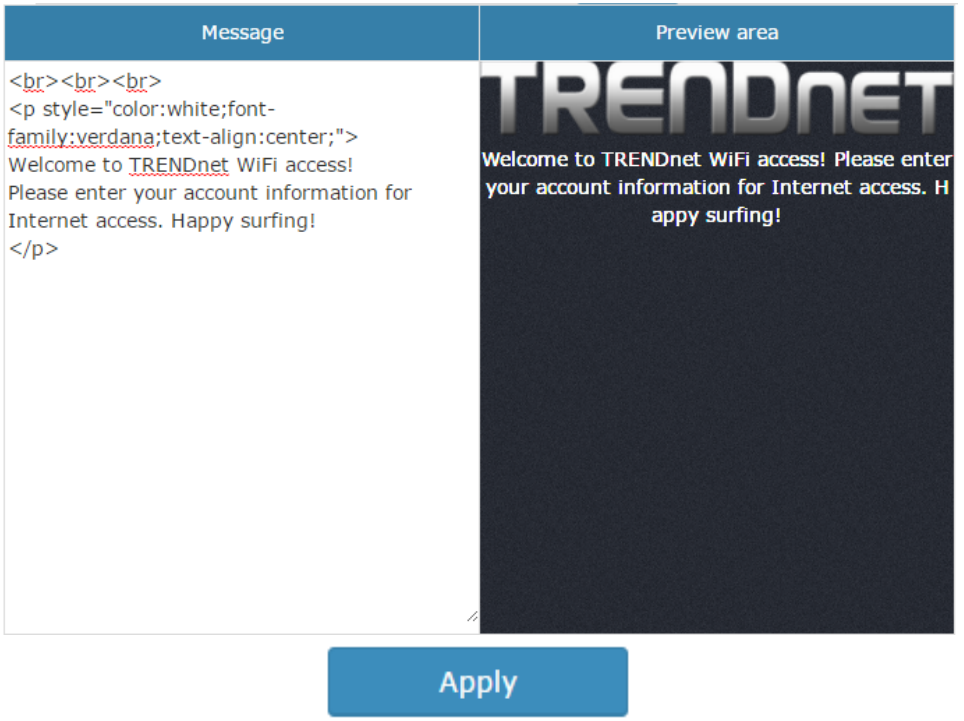
*

* *

Welcome to TRENDnet WiFi access!

Please enter your account information for Internet access. Happy surfing!

* *



To apply captive portal authentication to a wireless profile, click on **Configuration** and click on **Wireless Groups/Profiles.** Select the wireless group where the desired wireless profile is located under the Action column click 

to configure the profile. For the captive portal setting, check the **Enable** option**.** Click **OK**.

Note: *If using Captive Portal authentication, it is recommended to set the Authentication method to None in the wireless profile settings since captive portal authentication will be used instead. If the Authentication Method is left enabled, the users will need to authenticate twice, once with the authentication method defined and also captive portal authentication.*

To Advertisement URL

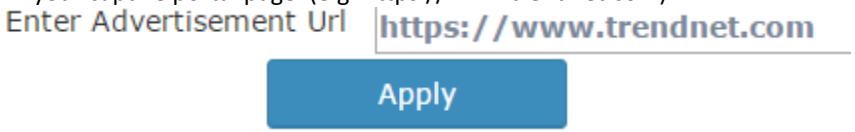
Configuration > Captive Portal

Choose the option **To Advertisement URL**.

First, enter the authentication timeout value and the advertisement URL and click **Apply** to save the settings.

- **Authentication Timeout** – This is the session time period (minutes) which users are allowed to be logged in to your wireless network. Once the time expires, users will automatically logged and will need to log back in through the captive portal page again in order to reconnect to your wireless network. It is recommended to set a value to ensure authentication sessions are closed after a certain time period.

- **Advertisement URL** – This is the website or URL guest users will be automatically redirected after connecting to your wireless network through your captive portal page. (e.g. https://www.trendnet.com)



After you have defined the initial parameters, you can apply portal page customization.

Under Upload Image File, click **Browse** or **Choose File** depending on your browser, and navigate to the directory where the selected image is located and select the image. Once you have selected the image, click **Upload**.

Once you have uploaded the image, an image preview will appear and you can assign the image **Set as background** or **Set as logo**. If you would like to delete the image and upload a different image, you can also click **Delete** to delete the image.

Note: *Only 2 images can be uploaded for portal page customization (Only one image can be set for the portal page background and another image can be set for the company/organization logo). Images are automatically scaled when uploaded. The recommended image formats are JPEG, PNG, GIF. Maximum file size for images is 250KB.*

After you have uploaded your images, you can add a welcome or greeting message to display to your guest users on the captive portal page. A preview of the page and text will also be displayed. After you have finished entering your message, click **Apply**.

Note: *Aside from text, you can enter HTML tags for text formatting and styles.*

Below is an example of a greeting message formatted in html.

*

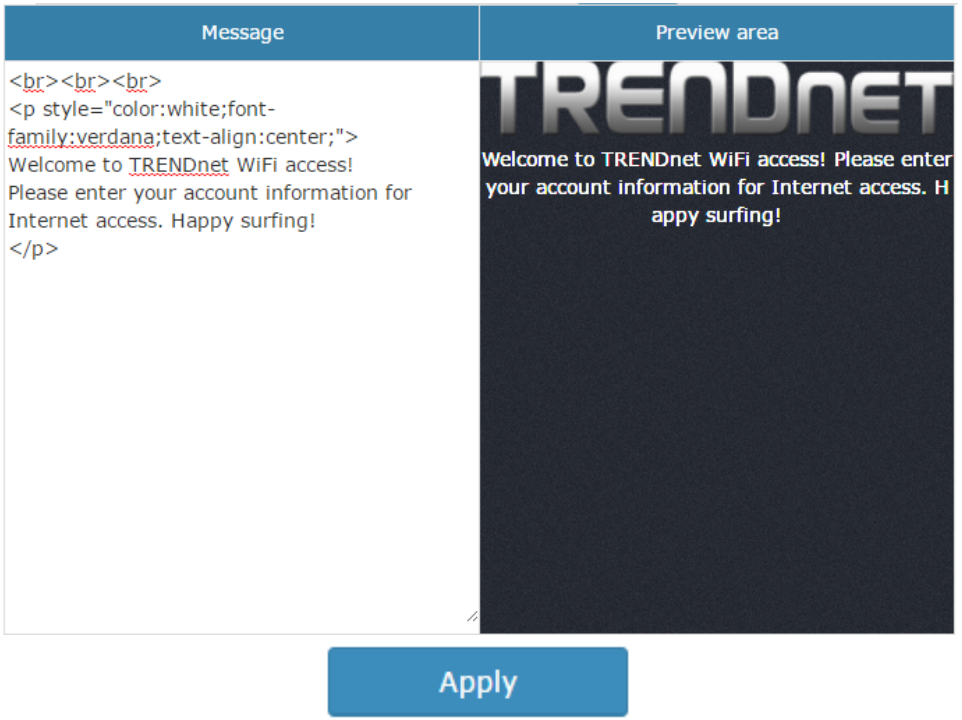
*

* *

Welcome to TRENDnet WiFi access!

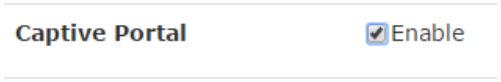
Please enter your account information for Internet access. Happy surfing!

* *



To apply captive portal authentication to a wireless profile, click on **Configuration** and click on **Wireless Groups/Profiles.** Select the wireless group where the desired wireless profile is located under the Action column click Edit to configure the profile. For the captive portal setting, check the **Enable** option**.** Click **OK**.

Note: *If using Captive Portal authentication, it is recommended to set the Authentication method to None in the wireless profile settings since captive portal authentication will be used instead. If the Authentication Method is left enabled, the users will need to authenticate twice, once with the authentication method defined and also captive portal authentication.*



Captive Portal with RADIUS (CoovaChilli)

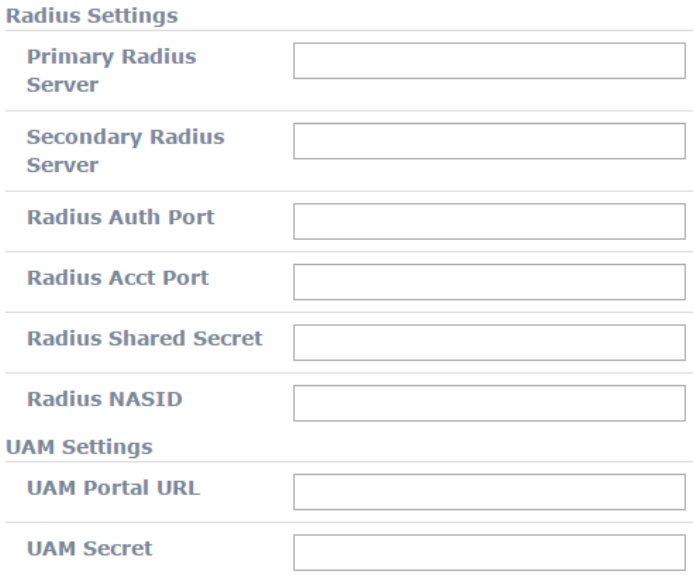
Configuration > Captive Portal

Choose the option **Captive Portal with RADIUS**.

Note: *Since the option requires the use of an external RADIUS/CoovaChilli server for authentication, please make sure it is set up, configured and available on your network accessible by your controller and APs.*

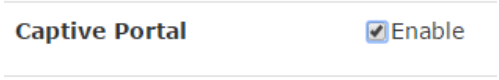
Enter the CoovaChilli server settings. Click **OK.**

- **Primary RADIUS Server** – Enter the IP address of the external CoovaChilli authentication server.
- **Secondary RADIUS Server** – If you have secondary or backup CoovaChilli authentication server, enter the IP address.
- **RADIUS Auth Port** – Enter the port number used by the Coovachilli server for authenticating RADIUS requests. The default port number used for RADIUS authentication is 1812.
- **RADIUS Acct Port** – Enter the port number used by the Coovachilli server for accounting on the server. The default port number for RAIDUS accounting is 1813.
- **RADIUS Shared Secret** – Enter the shared secret used to allow the CoovaChilli server to allow the access point to authentication RADIUS authentication requests.
- **RADIUS NAS ID**: Enter the NAS ID required by the CoovaChilli server to allow the access point to authentication RADIUS authentication requests.
- **UAM Portal URL** – Enter the UAM portal web URL address of the login authentication page provided by the CoovaChilli server.
- **UAM Secret** – Enter the UAM secret required to allow access to this portal page.



To apply captive portal authentication to a wireless profile, click on **Configuration** and click on **Wireless Groups/Profiles.** Select the wireless group where the desired wireless profile is located under the Action column click Edit to configure the profile. For the captive portal setting, check the **Enable** option**.** Click **OK**.

Note: *If using Captive Portal authentication, it is recommended to set the Authentication method to None in the wireless profile settings since captive portal authentication will be used instead. If the Authentication Method is left enabled, the users will need to authenticate twice, once with the authentication method defined and also captive portal authentication.*

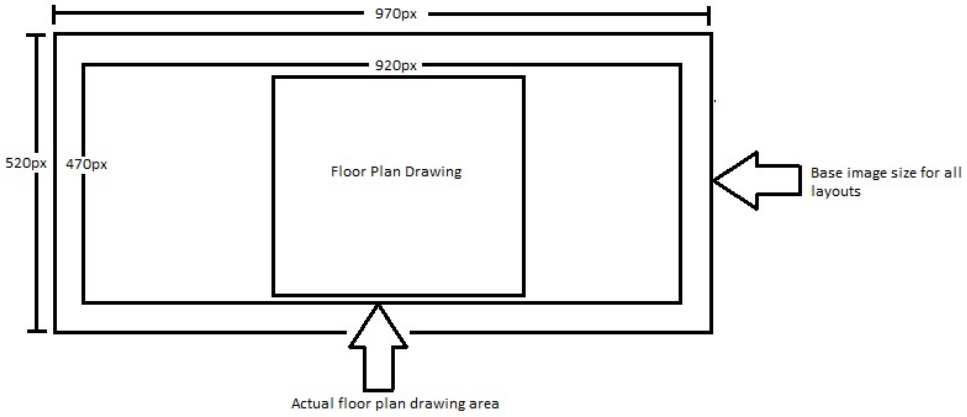


WAP Maps™

The WAP (wireless access point) maps feature allows you to upload a floor plan (JPEG, PNG, or GIF) to the wireless controller and place your APs on your floor plan for AP location planning and reference.

Note: *For optimal viewing, it is recommended to use a base image size of 970px x 520px (max.) for all uploaded floor plans and the actual layout drawings within 920 x 470px (max.).*

Floor plan image size reference



Upload floor plans

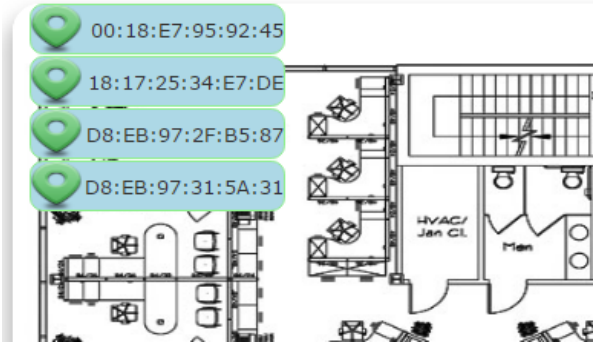
Monitor > WAP Map

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Monitor** and click **WAP Map.**

3. Click **Browse** or **Choose File** depending on your browser and navigate to the directory where the floor plan image you would like to upload. Once the desired floor plan image is selected, click **Upload**.

4. Once the floor plan is uploaded, you can drag and drop the available APs located on the left side to the area where the APs will be located on your floor plan.



The APs are listed by MAC address. When hovering over an AP with your cursor, the MAC address and Device Name will be displayed. The color of the AP icon indicates the current AP status as below which can also be seen on the Monitor > Devices page.

- **Status** – Displays the current AP status.
  - **NEW** NEW - The AP has not been added to any other wireless controllers and is available to add to the currently managed controller.
  - **RUN** RUN - The AP has been successfully added to the currently managed wireless controller. When APs are added to the controller, they can no longer be managed individually, only managed through the controller. APs will need to be removed from the controller in order to be individually managed.
  - **OFF** OFF - The AP has been added to the currently managed wireless controller but AP is offline.
  - **LOCK** Lock - The AP has been added to another wireless controller and is not available to add to the currently managed controller. When APs are added to the controller, they can no longer be managed individually, only managed through the controller they have been added. APs will need to be removed from the controller in order to be individually managed.

When double clicking the AP icon, additional options will appear.

-  – Clicking this option will display a summarized list of information about the AP.
    - **Locate** – If the AP has been marked on a previously uploaded WAP Map floorplan, clicking this link will reopen the floorplan.
    - **Reboot** – Clicking this link will reboot the AP.
- – Clicking this option displays a brief snapshot of the total amount of data downloaded (received) by the AP over the last 5 minutes in graph form.
    - **Locate** – If the AP has been marked on a previously uploaded WAP Map floorplan, clicking this link will reopen the floorplan.
    - **Reboot** – Clicking this link will reboot the AP.
-  - Click this option will remove the AP from the location on the floorplan and the AP will be moved back to the list of available APs on the left side.

Monitoring access points and clients

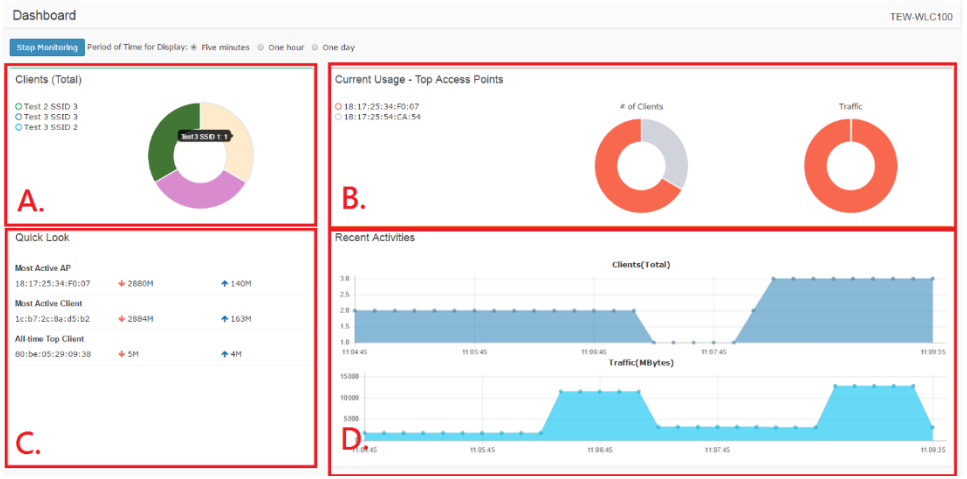
Viewing the controller dashboard

Monitor > Dashboard

The dashboard displays an overview of the most recent activity for APs, clients, and data usage over time.

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Monitor** and click **Dashboard.**



- **Period of Time for Display** – You can select the most recent time interval time interval of data to display on the entire dashboard: most recent 5 minutes, 1 hour, or 1 day for monitoring. You can also click Stop Monitoring to stop the controller from collecting or monitoring any new data.

    A. Clients (Total) – This section will display a list top 5 wireless profile SSIDs with highest amount of data usage/activity. When hovering over with your cursor, the SSID name and total number of data transmitted/received will be displayed.
    B. Current Usage (Top Access Points) – This section will display the top 5 access points with the highest amount of data usage/activity. When hovering over with your cursor, the AP MAC address and total number of packets transmitted/received will be displayed.
    C. Quick Look – This section will display the AP with the most recent activity, client with the most recent activity, and client with the highest amount of data usage.
    D. Recent Activities – This section displays a chart of the most recent activity. The Clients (Total) chart displays the total number of clients over the most recent time interval. The Traffic (Mbytes) chart displays the total number of packets transmitted on all APs over the most recent time interval.

View client connections

Monitor > Clients

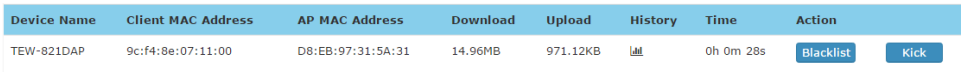
The controller allows you to monitor all of the currently connected client devices. Additionally, the client blacklist feature allows you to permanently block specific client devices that are currently connected to your wireless network. The client blacklist prevents/restricts any specified client devices from accessing your wireless network in the future unless they are removed from the blacklist.

1. Log into your controller management page (see "Access you wireless controller management page" on page 12).

2. Click on **Monitor** and click **Clients.**

3. In the Client List, the currently connected client devices will be listed along with some additional information.

- **Device Name** – Displays the device name of the AP the client is currently connected.
- **Client MAC Address** – Displays the MAC address of the client device.
- **AP MAC Address** – Displays the MAC address of the AP the client is currently connected.
- **Download** – Displays the current total of data downloaded (received) by the client device in bytes (B).
- **Upload** – Displays the current total of data downloaded (transmitted) by the client device in bytes (B).
- **History** – Clicking this option displays a brief snapshot of the total amount of data downloaded (received) by the client device over the last 5 minutes in graph form.
    - **Blacklist** – Clicking this option will add the client device to the client blacklist. To view the client blacklist, click on Configuration > Client Blacklist. Clients that are added to the client blacklist will be permanently blocked from any APs managed by the wireless controller until they are removed the client blacklist.
    - **Kick** – Clicking this option will force the AP to immediately disconnect the client device from the wireless network.
- **Time** – Displays the total amount of time the client device has been connected to the wireless network.
- **Action**
    - **Blacklist** – Clicking this option will add the client device to the client blacklist. To view the client blacklist, click on Configuration > Client Blacklist. Clients that are added to the client blacklist will be permanently blocked from any APs managed by the wireless controller until they are removed the client blacklist.
    - **Kick** – Clicking this option will force the AP to immediately disconnect the client device from the wireless network.



Technical Specifications

Wireless Controller (TEW-WLC100)

Standards

- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3x
- IEEE 802.3ab

Device Interface

- 5 x Gigabit ports
- 1 x USB port
- On/Off Power button
- LED indicators
- Reset button

Management

- HTTP Web based GUI
- Local or online Firmware upgrade
- Internal log
- Configuration Backup/Restore
- NTP

Access Point Management

- Manage up to 128 access points
- IP address, gateway, and DNS settings
- SSID/Network name
- Wireless channel
- Wireless encryption: WEP, WPA/WPA2-Personal, WPA/WPA2-Enterprise
- 802.11 mode
- Channel width
- Transmit power
- SSID broadcast
- Bandwidth control (download limit per SSID & client, upload limit per client)
- Set RSSI scanning/threshold
- Seamless WiFi roaming using 802.11r and OKC (opportunistic key caching) protocols
- 802.11k radio resource management
- Band steering
- Access point/client statistics monitoring
- Batch configuration deployment
- Batch firmware upgrade deployment
- Captive portal
- Client blacklist
- 802.1Q VLAN
- Create multiple access point groups for management flexibility
- Upload custom floor plans using WAP Maps™

Access Point Compatibility

- TEW-755AP (Firmware Version: 1.03 or above)
- TEW-821DAP (Firmware Version: 1.05 or above)
- TEW-825DAP (Firmware Version: 1.01 or above)

Power

- Input: 100 – 240 V AC, 50/60 Hz
- Output: 12V DC, 1A external power adapter
- Consumption: 12W (max.)

Operating Temperature

- 0 – 40°C (32 – 104°F)

Operating Humidity

- Max. 90% non-condensing

Dimensions

- 215 x 130 x 44.45 mm (8.27 x 6.3 x 1.73 in.)
- Rack mountable 1U height

Weight

- 68 g (1.5 lbs.)

Certifications

- CE
- FCC

N300 PoE Access Point (TEW-755AP)

Standards

- IEEE 802.1Q
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3x
- IEEE 802.3ab
- IEEE 802.3af
- IEEE 802.11b
- IEEE 802.11g
- IEEE 802.11n (up to 300 Mbps)

Device Interface

- 1 x PoE Gigabit LAN port
- Power port (optional non-PoE installation)
- Reset button
- LED indicators
- Mounting plate

Special Features

- WiFi traffic shaping
- 802.1Q VLAN assignment per SSID
- IPv6 support (Link-Local, Static IPv6, Auto-Configuration (SLAAC/DHCPv6)
- Multi-Language interface, English, French, Spanish, German, Russian
- LEDs on/off
- Captive Portal (External Coovachilli server authentication)
- Internal Captive Portal (Local user account authentication and customizable portal page)
- 802.11k radio resource management
- RSSI Scanner (Client signal strength and tolerance)

Operation Modes

- Access Point
- Client
- WDS AP
- WDS Bridge
- WDS Station
- Repeater

Management/Monitoring

- Web based management
- SNMP v1/v3
- STP
- Event logging
- Ping test
- Traceroute
- CLI

Access Control

- Wireless encryption: WEP, WPA/WPA2-PSK, WPA/WPA2-RADIUS
- MAC filter
- Maximum client limit

QoS

- WMM
- Traffic shaping per SSID

SSID

- Up to 8 SSIDs per access point

Frequency

- 2.4 GHz: 2.412 - 2.472 GHz

Wireless Channels

- 2.4 GHz: FCC: 1-11, ETSI: 1 – 13

Modulation

- DBPSK/DQPSK/CCK for DSSS technique
- BPSK/QPSK/16-QAM/64-QAM for OFDM technique

Antenna Gain

- 2.4 GHz: 2 x 4 dBi

Wireless Output Power/Receiving Sensitivity

- 802.11b: FCC: 23 dBm (Max.), CE: 10 dBm (Max) / -83 dBm (typical) @ 11 Mbps
- 802.11g: 19 dBm (Max.), CE: 12 dBm (Max.) / -65 dBm (typical) @ 54 Mbps
- 802.11n: FCC: 19 dBm (Max.), CE: 12 dBm (Max.) / -64 dBm (typical) @ 300 Mbps

Power

- 12 V DC/ 1 A or PoE, consumption: 9.6 Watts Max.

Operating Temperature

- 0 – 40 °C (32 – 104 °F)

Operating Humidity

- Max. 95 % non-condensing

Dimensions

- 187 x 187 x 46 mm (7.3 x 7.3 x 1.8 in.) per access point

Weight

- 402 g (14.2 oz.) per access point

Certifications

- CE
- FCC
- IC

AC1200 Dual Band PoE Access Point (TEW-821DAP)

Standards

- IEEE 802.1Q
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3x
- IEEE 802.3ab
- IEEE 802.3af
- IEEE 802.11a
- IEEE 802.11b
- IEEE 802.11g
- IEEE 802.11n (up to 300 Mbps)
- IEEE 802.11ac (up to 867 Mbps)

Device Interface

- 1 x PoE Gigabit LAN port
- Power port (optional non-PoE installation)
- Reset button
- LED indicators
- Mounting plate

Special Features

- Concurrent Dual band
- Band Steering
- WiFi traffic shaping
- 802.1Q VLAN assignment per SSID
- IPv6 support (Link-Local, Static IPv6, Auto-Configuration (SLAAC/DHCPv6)
- Multi-Language interface, English, French, Spanish, German, Russian
- LEDs on/off
- Captive Portal (External Coovachilli server authentication)
- Internal Captive Portal (Local user account authentication and customizable portal page)
- 802.11k radio resource management
- RSSI Scanner (Client signal strength and tolerance)

Operation Modes

- Access Point

- Client
- WDS AP
- WDS Bridge
- WDS Station
- Repeater

Management/Monitoring

- Web based management
- SNMP v1/v3
- STP
- Event logging
- Ping test
- Traceroute
- CLI

Access Control

- Wireless encryption: WEP, WPA/WPA2-PSK, WPA/WPA2-RADIUS
- MAC filter
- Maximum client limit

QoS

- WMM
- Traffic shaping per SSID

SSID

- Up to 8 SSIDs per wireless band (16 total) per access point

Frequency

- 2.4 GHz: 2.412 - 2.472 GHz
- 5 GHz: 5.180 – 5.8525 GHz

Wireless Channels

- 2.4 GHz: FCC: 1-11, ETSI: 1 – 13
- 5 GHz: FCC: 36, 40, 44, 48, 149, 153, 157, 161 and 165 ETSI: 36, 40, 44, 48 (52, 56, 60, 64, 100,104,108,112,116, 132,136,140)***

Modulation

- DBPSK/DQPSK/CCK for DSSS technique
- BPSK/QPSK/16-QAM/64-QAM/256-QAM for OFDM technique

Antenna Gain

- 2.4 GHz: 2 x 4 dBi
- 5 GHz: 2 x 4 dBi

Wireless Output Power/Receiving Sensitivity

- 802.11a: FCC: 24 dBm, CE: 22 dBm (Max.) /-65 dBm (typical) @ 54 Mbps
- 802.11b: FCC: 23 dBm (Max.), CE: 10 dBm (Max) /-83 dBm (typical) @ 11 Mbps
- 802.11g: 19 dBm (Max.), CE: 12 dBm (Max.) /-65 dBm (typical) @ 54 Mbps
- 802.11n: FCC: 19 dBm (Max.), CE: 12 dBm (Max.) /-64 dBm (typical) @ 300 Mbps 2.4 GHz
- 802.11n: FCC: 24 dBm, CE: 22 dBm (Max.)/-61 dBm (typical) @ 300 Mbps 5 GHz
- 802.11ac: FCC: 15 dBm, CE: 22 dBm (Max.)/-51 dBm (typical) @ 867 Mbps

Power

- 12 V DC/ 1 A or PoE, consumption: 9.6 Watts Max.

Operating Temperature

- 0 – 40 °C (32 – 104 °F)

Operating Humidity

- Max. 95 % non-condensing

Dimensions

- 187 x 187 x 46 mm (7.3 x 7.3 x 1.8 in.) per access point

Weight

- 408 g (14.4 oz.) per access point

Certifications

- CE
- FCC
- IC

Gigabit PoE Injector (TPE-113GI)

Standards

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-TX
- IEEE 802.3ab Gigabit Ethernet
- IEEE 802.3af Power over Ethernet

Network Media

- 10 Mbps: UTP/STP Cat. 5 and 5e up to 100 Meters
- 100 Mbps: UTP/STP Cat. 5, and 5e up to 100 Meters
- Gigabit: UTP/STP Cat 5e and 6 up to 100 meters

Ports

- 1 x 10/100/1000 Mbps DATA-IN (Data only)
- 1 x 10/100/1000 Mbps PWR+DATA OUT (Data + Power)

Data Lines

- Pair 1: Pin 1, 2
- Pair 2: Pin 3, 6

Power

- Input: 100~240V, 50~60Hz, 0.4A max.
- Output: 48V DC, 0.5A 18W max.

Power Consumption

- 15.4 Watts (max.)

Dimensions (W x D x H)

- 70 x 45 x 25mm (2.75 x 1.8 x 1 in.)

Weight

- 45 g (1.6 oz.)

Temperature

- Operation: 0°C~50°C (32°F~ 122°F)
- Storage: -20°C~60°C (-4°F~140 °F)

Humidity

- Max. 90% (non-condensing)

Certifications

- CE
- FCC

Disclaimers

*For wireless controller compatibility, access points must have the corresponding firmware versions listed below.

- TEW-755AP (Firmware Version: 1.03 or above)
- TEW-821DAP (Firmware Version: 1.05 or above)
- TEW-825DAP (Firmware Version: 1.01 or above)

**Maximum wireless signal rates are referenced from IEEE 802.11 theoretical specifications. Actual data throughput and coverage will vary depending on interference, network traffic, building materials and other conditions.

***Due to regulatory requirements, the wireless channels specified cannot be statically assigned, but will be available within the available wireless channels when set to auto.

Troubleshooting

Q: I typed http://192.168.10.200 in my Internet Browser Address Bar, but an error message says "The page cannot be displayed." How can I access the controller management page?
Answer:
1. Check your hardware settings again. See "Access point Installation" on page 8.
2. Make sure the Power and port Link/Activity and WLAN lights are lit.
3. Make sure your network adapter TCP/IP settings are set to *Use the following IP address* or *Static IP*(see the steps below).
4. Make sure your computer is connected to one of the Ethernet controller ports.
5. Since the controller default IP address is 192.168.10.200, make sure there are no other network devices assigned an IP address of 192.168.10.200

Windows 7/8.1/10

a. Go into the **Control Panel**, click **Network and Sharing Center**.

b. Click **Change Adapter Settings**, right-click the **Local Area Connection** icon.

c. Then click **Properties** and click **Internet Protocol Version 4 (TCP/IPv4)**.

d. Then click **Use the following IP address,** and make sure to assign your network adapter an IP address in the subnet of 192.168.10.x. Click **OK**

Windows Vista

a. Go into the **Control Panel**, click **Network and Internet**.
b. Click **Manage Network Connections,** right-click the **Local Area Connection** icon and click **Properties**.
c. Click **Internet Protocol Version (TCP/IPv4)** and then click **Properties**.

d. Then click **Use the following IP address,** and make sure to assign your network adapter an IP address in the subnet of 192.168.10.x. Click **OK**

Windows XP/2000

a. Go into the **Control Panel**, double-click the **Network Connections** icon
b. Right-click the **Local Area Connection** icon and the click **Properties**.
c. Click **Internet Protocol (TCP/IP)** and click **Properties**.

d. Then click **Use the following IP address,** and make sure to assign your network adapter an IP address in the subnet of 192.168.10.x. Click **OK**

Note: *If you are experiencing difficulties, please contact your computer or operating system manufacturer for assistance.*

Q: If my controller IP address is different than my network's subnet, what should I do?
Answer:
You should still configure the controller first. After all the settings are applied, go to the controller configuration page, click on System, click IPv4 Setup and change the IP address of the controller to be within your network's IP subnet. Click Apply, then click OK. Then click Save Settings to Flash (menu) and click Save Settings to Flash to save the IP settings to the NV-RAM.

Q: I changed the IP address of the controller, but I forgot it. How do I reset my controller?
Answer:
Using a paper clip, push and hold the reset button on the front of the controller and release after 15 seconds.
The default IP address of the controller is 192.168.10.200. The default user name and password is "admin".

Appendix

How to choose the type of security for your wireless network

Setting up wireless security is very important. Leaving your wireless network open and unsecure could expose your entire network and personal files to outsiders. TRENDnet recommends reading through this entire section and setting up wireless security on your new controller.

There are a few different wireless security types supported in wireless networking each having its own characteristics which may be more suitable for your wireless network taking into consideration compatibility, performance, as well as the security strength along with using older wireless networking hardware (also called legacy hardware).

It is strongly recommended to enable wireless security to prevent unwanted users from accessing your network and network resources (personal documents, media, etc.).

In general, it is recommended that you choose the security type with the highest strength and performance supported by the wireless computers and devices in your network. Please review the security types to determine which one you should use for your network.

Wireless Encryption Types

- **WEP:** Legacy encryption method supported by older 802.11b/g hardware. This is the oldest and least secure type of wireless encryption. It is generally not recommended to use this encryption standard, however if you have old 802.11 b or 802.11g wireless adapters or computers with old embedded wireless cards(wireless clients), you may have to set your access point to WEP to allow the old adapters to connect to the access point.
  Note: *This encryption standard will limit connection speeds to 54Mbps.*
- **WPA:** This encryption is significantly more robust than the WEP technology. Much of the older 802.11g hardware was been upgraded (with firmware/driver upgrades) to support this encryption standard. Total wireless speeds under this encryption type however are limited to 54Mbps.
  - **WPA-**Auto: This setting provides the access point with the ability to detect wireless devices using either WPA or WPA2 encryption. Your wireless network will automatically change the encryption setting based on the first wireless device connected. For example, if the first wireless client that connects to your wireless network uses WPA encryption your wireless network will use WPA encryption. Only when all wireless clients disconnect to the network and a wireless client with WPA2 encryption connects your wireless network will then change to WPA2 encryption.

  Note: *WPA2 encryption supports 802.11n speeds and WPA encryption will limit your connection speeds to 54Mbps*
- **WPA2:** This is the most secure wireless encryption available today, similar to WPA encryption but more robust. This encryption standard also supports the highest connection speeds. TRENDnet recommends setting your access point to this encryption standard. If you find that one of your wireless network devices does not support WPA2 encryption, then set your access point to either WPA or WPA-Auto encryption.
  Note: *Check the specifications of your wireless network adapters and wireless appliances to verify the highest level of encryption supported. Below is brief comparison chart of the wireless security types and the recommended configuration depending on which type you choose for your wireless network.*

Security Standard	WEP	WPA	WPA2
Compatible Wireless Standards	IEEE 802.11a/b/g (802.11n devices will operate at 802.11g to connect using this standard)	IEEE 802.11a/b/g (802.11n devices will operate at 802.11g to connect using this standard)	IEEE 802.11a/b/g/n/ac
Highest Performance Under This Setting	**Up to 54Mbps**	**Up to 54Mbps**	**Up to 800Mbps (11n) or 1.7 Gbps (11ac) or max. 11n & 11ac data rates.**
Encryption Strength	Low	Medium	High
Additional Options	Open System or Shared Key, HEX or ASCII, Different key sizes	TKIP or AES, Preshared Key or RADIUS	TKIP or AES, Preshared Key or RADIUS
Recommended Configuration	Open System ASCII 13 characters	TKIP Preshared Key 8-63 characters	AES Preshared Key 8-63 characters

*Dependent on the maximum 802.11n data rate supported by the device (150Mbps, 300Mbps, 450Mbps, 600Mbps, 800Mbps) or maximum 802.11ac data rate supported by the device (433Mbps, 867Mbps, 1.3Gbps, 1.7Gbps).

Steps to improve wireless connectivity

There are a number of factors that can impact the range of wireless devices. Follow these tips to help improve your wireless connectivity:

1. Keep the number of obstructions to a minimum. Each obstruction can reduce the range of a wireless device. Position the wireless devices in a manner that will minimize the amount of obstructions between them.
    a. For the widest coverage area, install your router near the center of your home, and near the ceiling, if possible.
    b. Avoid placing the router on or near metal objects (such as file cabinets and metal furniture), reflective surfaces (such as glass or mirrors), and masonry walls.
    c. Any obstruction can weaken the wireless signal (even non-metallic objects), so the fewer obstructions between the router and the wireless device, the better.
    d. Place the router in a location away from other electronics, motors, and fluorescent lighting.
    e. Many environmental variables can affect the router's performance, so if your wireless signal is weak, place the router in several locations and test the signal strength to determine the ideal position.

2. Building materials can have a large impact on your wireless signal. In an indoor environment, try to position the wireless devices so that the signal passes through less dense material such as dry wall. Dense materials like metal, solid wood, glass or even furniture may block or degrade the signal.

3. Antenna orientation can also have a large impact on your wireless signal. Use the wireless adapter's site survey tool to determine the best antenna orientation for your wireless devices.

4. Interference from devices that produce RF (radio frequency) noise can also impact your signal. Position your wireless devices away from anything that generates RF noise, such as microwaves, radios and baby monitors.

If possible, upgrade wireless network interfaces (such as wireless cards in computers) from older wireless standards to 802.11n or 802.11ac. If a wirelessly networked device uses an older standard, the performance of the entire wireless network may be slower. If you are still experiencing low or no signal consider repositioning the wireless devices, installing additional access points or wireless extenders.

How to find your IP address?

Note: *Please note that although the following procedures provided to follow for your operating system on configuring your network settings can be used as general guidelines, however, it is strongly recommended that you consult your computer or operating system manufacturer directly for assistance on the proper procedure for configuring network settings.*

Command Prompt Method

Windows 2000/XP/Vista/7/8.1/10

1. On your keyboard, press **Windows Logo+R** keys simultaneously to bring up the Run dialog box.
2. In the dialog box, type ***cmd*** to bring up the command prompt.
3. In the command prompt, type ***ipconfig /all*** to display your IP address settings.

MAC OS X

1. Navigate to your **Applications** folder and open **Utilities**.
2. Double-click on **Terminal** to launch the command prompt.
3. In the command prompt, type ***ipconfig getifaddr <en0 or en1>*** to display the wired or wireless IP address settings.

Note: en0 *is typically the wired Ethernet and* ***en1*** *is typically the wireless Airport interface.*

Graphical Method

MAC OS 10.6/10.5

1. From the Apple menu, select **System Preferences**.
2. In System Preferences, from the **View** menu, select **Network**.
3. In the Network preference window, click a network port (e.g., Ethernet, AirPort, modem). If you are connected, you'll see your IP address settings under "Status:"

MAC OS 10.4

1. From the Apple menu, select **Location**, and then **Network Preferences**.

2. In the Network Preference window, next to "Show:", select **Network Status**. You'll see your network status and your IP address settings displayed.

Note: *If you are experiencing difficulties, please contact your computer or operating system manufacturer for assistance.*

How to configure your network settings to use a static IP address?

Note: *Please note that although the following procedures provided to follow for your operating system on configuring your network settings can be used as general guidelines, however, it is strongly recommended that you consult your computer or operating system manufacturer directly for assistance on the proper procedure for configuring network settings.*

Windows 7/8.1/10

a. Go into the **Control Panel**, click **Network and Sharing Center**.

b. Click **Change Adapter Settings**, right-click the **Local Area Connection** icon.

c. Then click **Properties** and click **Internet Protocol Version 4 (TCP/IPv4)**.

d. Then click **Use the following IP address,** and assign your network adapter a static IP address. Click **OK**

Windows Vista

a. Go into the **Control Panel**, click **Network and Internet**.

b. Click **Manage Network Connections,** right-click the **Local Area Connection** icon and click **Properties**.

c. Click **Internet Protocol Version (TCP/IPv4)** and then click **Properties**.

d. Then click **Use the following IP address,** and assign your network adapter a static IP address. Click **OK**

Windows XP/2000

a. Go into the **Control Panel**, double-click the **Network Connections** icon

b. Right-click the **Local Area Connection** icon and the click **Properties**.

c. Click **Internet Protocol (TCP/IP)** and click **Properties**.

d. Then click **Use the following IP address,** and assign your network adapter a static IP address. Click **OK**

MAC OS 10.4/10.5/10.6

a. From the **Apple**, drop-down list, select **System Preferences**.

b. Click the **Network** icon.

c. From the **Location** drop-down list, select **Automatic**.

d. Select and view your Ethernet connection.

In MAC OS 10.4, from the **Show** drop-down list, select **Built-in Ethernet** and select the **TCP/IP** tab.

In MAC OS 10.5/10.6, in the left column, select **Ethernet**.

e. Configure TCP/IP to use a static IP.

In MAC 10.4, from the **Configure IPv4**, drop-down list, select **Manually** and assign your network adapter a static IP address. Then click the **Apply Now** button.

In MAC 10.5/10.6, from the **Configure** drop-down list, select **Manually** and assign your network adapter a static IP address . Then click the **Apply** button.

f. Restart your computer.

Note: *If you are experiencing difficulties, please contact your computer or operating system manufacturer for assistance.*

How to find your MAC address?

In Windows 2000/XP/Vista/7/8.1/10,

Your computer MAC addresses are also displayed in this window, however, you can type ***getmac –v*** to display the MAC addresses only.

In MAC OS 10.4,

1. **Apple Menu > System Preferences > Network**
2. From the **Show** menu, select **Built-in Ethernet**.
3. On the **Ethernet** tab, the **Ethernet ID** is your MAC Address.

In MAC OS 10.5/10.6,

1. **Apple Menu > System Preferences > Network**
2. Select **Ethernet** from the list on the left.
3. Click the **Advanced** button.
3. On the **Ethernet** tab, the **Ethernet ID** is your MAC Address.

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.

IMPORTANT NOTE:

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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US/CANADA

RoHS

This product is RoHS compliant.

Europe – EU Declaration of Conformity

Safety

- **EN60950-1 : 2006 + A11 : 2009 + A1: 2010 + A12: 2011 + A2: 2013**

EMC

- **EN 301 489-1 V1.9.2: 09-2011 (TEW-755AP/TEW-821DAP)**
- **EN 301 489-17 V2.2.1: 09-2012 (TEW-755AP/TEW-821DAP)**
- **EN 55032: 2012 + AC: 2013 (TEW-755AP/TEW-821DAP)**
- **EN 55024: 2010 (TEW-755AP/TEW-821DAP/TPE-113GI)**
- **EN 55022: 2010 + AC: 2011 (TEW-WLC100 / TPE-113GI)**
- **EN 55024: 2010 + A1: 2015 (TEW-WLC100)**
- **EN 55032: 2015 (TEW-WLC100)**

Radio Spectrum and Health

- **EN 300 328 V1.9.1: 02-2011 (TEW-755AP/TEW-821DAP)**
- **EN 301 893 V1.8.1: 03-2015 (TEW-821DAP)**
- **EN 62311: 2008 (TEW-755AP/TEW-821DAP)**

Energy Efficiency

- **Regulation (EC) No. 1275/2008, No. 278/2009, No. 801/2013**

Directives:

Low Voltage Directive 2014/35/EU
EMC Directive 2014/30/EU
EMF Directive 1999/519/EC
R&TTE Directive 1999/5/EC
Ecodesign Directive 2009/125/EC
RoHS Directive 2011/65/EU
REACH Regulation (EC) No. 1907/2006

CE Mark Warning

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.

Industry Canada Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation Exposure Statement:

This equipment complies with IC 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.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Limited Warranty

TRENDnet warrants only to the original purchaser of this product from a TRENDnet authorized reseller or distributor that this product will be free from defects in material and workmanship under normal use and service. This limited warranty is non-transferable and does not apply to any purchaser who bought the product from a reseller or distributor not authorized by TRENDnet, including but not limited to purchases from Internet auction sites.

Limited Warranty

TRENDnet warrants its products against defects in material and workmanship, under normal use and service. Specific warranty periods are listed on each of the respective product pages on the TRENDnet website.

- AC/DC Power Adapter, Cooling Fan, and Power Supply carry a one-year warranty.

Limited Lifetime Warranty

TRENDnet offers a limited lifetime warranty for all of its metal-enclosed network switches that have been purchased in the United States/Canada on or after 1/1/2015.

- Cooling fan and internal power supply carry a one-year warranty

To obtain an RMA, the ORIGINAL PURCHASER must show Proof of Purchase and return the unit to the address provided. The customer is responsible for any shipping-related costs that may occur. Replacement goods will be shipped back to the customer at TRENDnet's expense.

Upon receiving the RMA unit, TRENDnet may repair the unit using refurbished parts. In the event that the RMA unit needs to be replaced, TRENDnet may replace it with a refurbished product of the same or comparable model.

In the event that, after evaluation, TRENDnet cannot replace the defective product or there is no comparable model available, we will refund the depreciated value of the product.

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, or (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. International customers

shipping from outside of the USA and Canada are responsible for any return shipping and/or customs charges, including but not limited to, duty, tax, and other fees.

Refurbished product: Refurbished products carry a 90-day warranty after date of purchase. Please retain the dated sales receipt with purchase price clearly visible as evidence of the original purchaser's date of purchase. Replacement products may be refurbished or contain refurbished materials. If TRENDnet, by its sole determination, is unable to replace the defective product, we will offer a refund for the depreciated value of the product.

WARRANTIES EXCLUSIVE: IF THE TRENDNET PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, THE CUSTOMER'S SOLE REMEDY SHALL BE, AT TRENDNET'S OPTION, REPAIR OR REPLACE. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. TRENDNET NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, OR USE OF TRENDNET'S PRODUCTS.

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Product Warranty Registration

Please take a moment to register your product online.
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TRENDnet
20675 Manhattan Place
Torrance, CA 90501. USA