User's Guide

TRENDNET®

8-Port Gigabit EdgeSmart PoE+ Switch

TPE-TG44ES

Contents

Product Overview

TPE-TG44ES

Package Contents

In addition to your switch, the package includes:

- Quick Installation Guide
- CD-ROM (Utility & User's Guide)
- Power adapter (55V DC, 1.3A)

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 8-Port Gigabit EdgeSmart PoE+ Switch, model TPE-TG44ES, is a cost-effective switch solution for high-speed gigabit PoE+ applications. This EdgeSmart switch features the most commonly used managed switch features, reducing unnecessary switch complexity. The web-based management interface offers features for traffic control, troubleshooting, access controls, and monitoring. TRENDnet's TPE-TG44ES provides four gigabit PoE+ and four gigabit non-PoE ports. The PoE+ standard supplies up to 30W of power per port for devices such as high power wireless access points, PTZ (Pan Tilt Zoom) Internet cameras, and VoIP telephony systems.

Ports

Four gigabit PoE+ ports and four gigabit ports provides a 16Gbps switching capacity

PoE Power

Supplies up to 30W of PoE+ power per PoE port with a 60W power budget

Compact Design

With a compact and lightweight housing design this switch is well-suited for desktop installations. Its fanless design is perfect for quiet environments that require silent operation.

Network Management

A broad range of network configurations are supported by: 802.3ad link aggregation, 802.1Q VLAN, bandwidth controls, IGMP, loopback detection, port mirroring and 802.1p (QoS).

Troubleshooting

Traffic statistics and a convenient cable diagnostic test aid in network troubleshooting.

Housing

Compact wall mountable metal housing

LED Indicators

LED indicators convey port status

Product Hardware Features
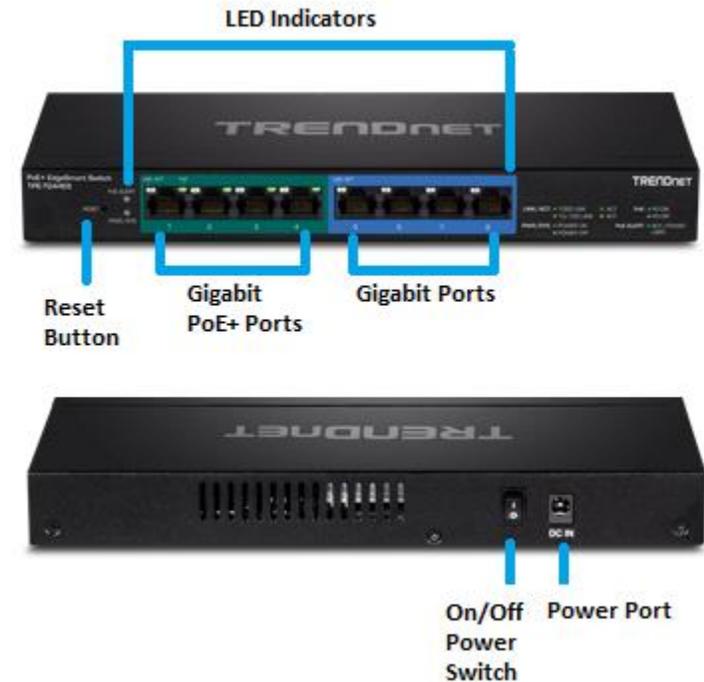
- **Reset Button –** Press and hold this button for 10 seconds and release to reset the switch to factory defaults.
- **PoE+ ports (1-4)** – Ports 1-4 can supply power and Gigabit connectivity to both PoE (802.3af) or PoE+ (802.3at) PoE devices.
- **PoE ports (5-8)** – Ports 5-8 can provide Gigabit connectivity to network non-PoE devices. (When using LACP, only ports 7 & 8 can be used for link aggregation.)
- **On/Off Power Switch** – Turns the switch on (|) or off (o).
- **Power Connector –** Connect the included DC power adapter to the connector and the other side of the power adapter to an available power outlet.

- **PoE Alert**

On	:	Indicates if 80% or more of the PoE power budget is used. (equal or greater than 50W)

- **PWR/SYS LED**

On	:	When the Power LED lights on, the device is powered and on and ready.
Blinking	:	System boot up.
Off	:	When the Power LED light is off, the device is powered off or power is not connected.

- **Gigabit Ports 1-8**
  - **Link/ACT LED**

On (Green)	:	When the Green LED lights are on, the link is established at Gigabit connectivity.
On (Amber)	:	When the Amber LED lights are on, the link is established at 10/100Mbps connectivity.
Blinking	:	When the LED is blinking, the port is transmitting or receiving data.
Off		The link is disconnected or not established.

  - **PoE**

On (Green)	:	When the Green LED lights are on, PoE power is being supplied to the connected device.
Off		PoE power is off and not supplying power to the connected device.

Applications

PoE Power
A 60W PoE power budget supports up to four Power over Ethernet devices.
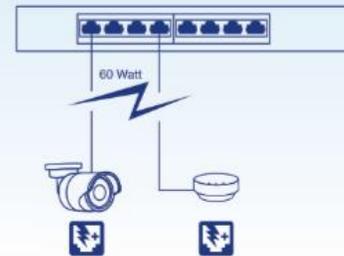
EdgeSmart Management
Provides an easy to use web-based GUI management for reduced switch configuration complexity and offers a combination of more commonly used SMB management features for easy deployment.
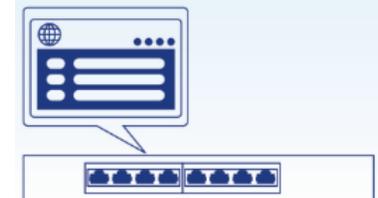
Integration Flexibility
Managed features include VLAN, IGMP Snooping, and QoS for flexible network integration.
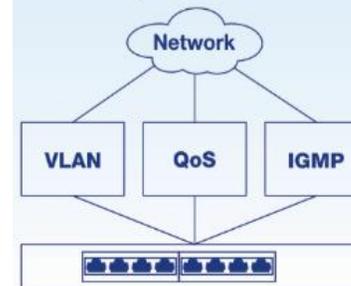
Switch Installation

Basic Installation
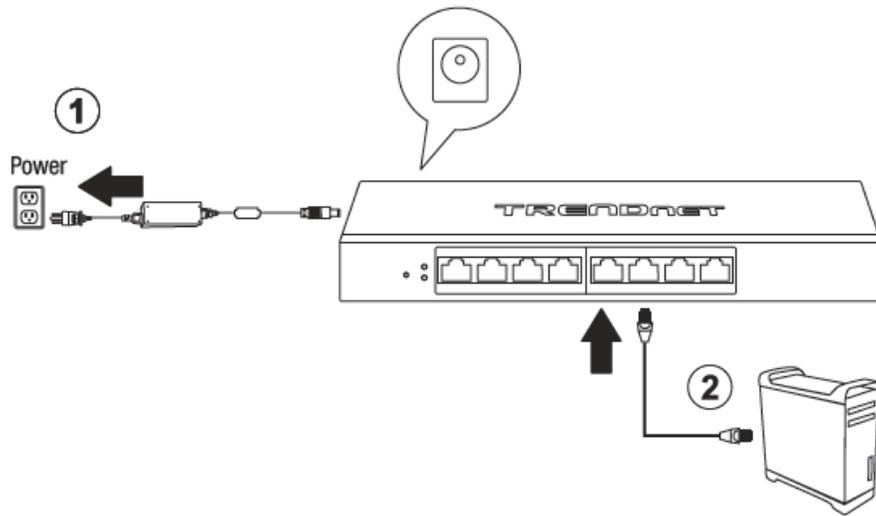
3. Push the power switch to the on (|) position.

4. 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.

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

6. 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.

7. Click **Management**.
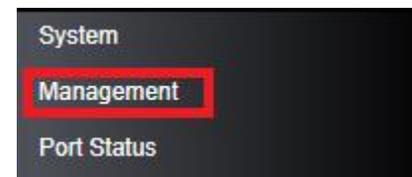
8. Configure the switch IP address settings to be within your network subnet, then click **Apply.**

Note: You may need to modify the static IP address settings of your computer's network adapter to IP address settings within your subnet in order to regain access to the switch.

Connect additional devices to your switch

You can connect additional computers or other network devices PoE (Power over Ethernet) (Ports 1-4 PoE+/PoE, Ports 5-8) or non-PoE devices to your switch using Ethernet cables to connect them to one of the available Gigabit Ports (1-8). Check the status of the LED indicators on the front panel of your switch to ensure the physical cable connection from your computer or device.

Note: If you encounter issues connecting to your network, there may be a problem with your computer or device network settings. Please ensure that your computer or device network settings (also called TCP/IP settings) are configured properly within the network subnet your switch is connected.
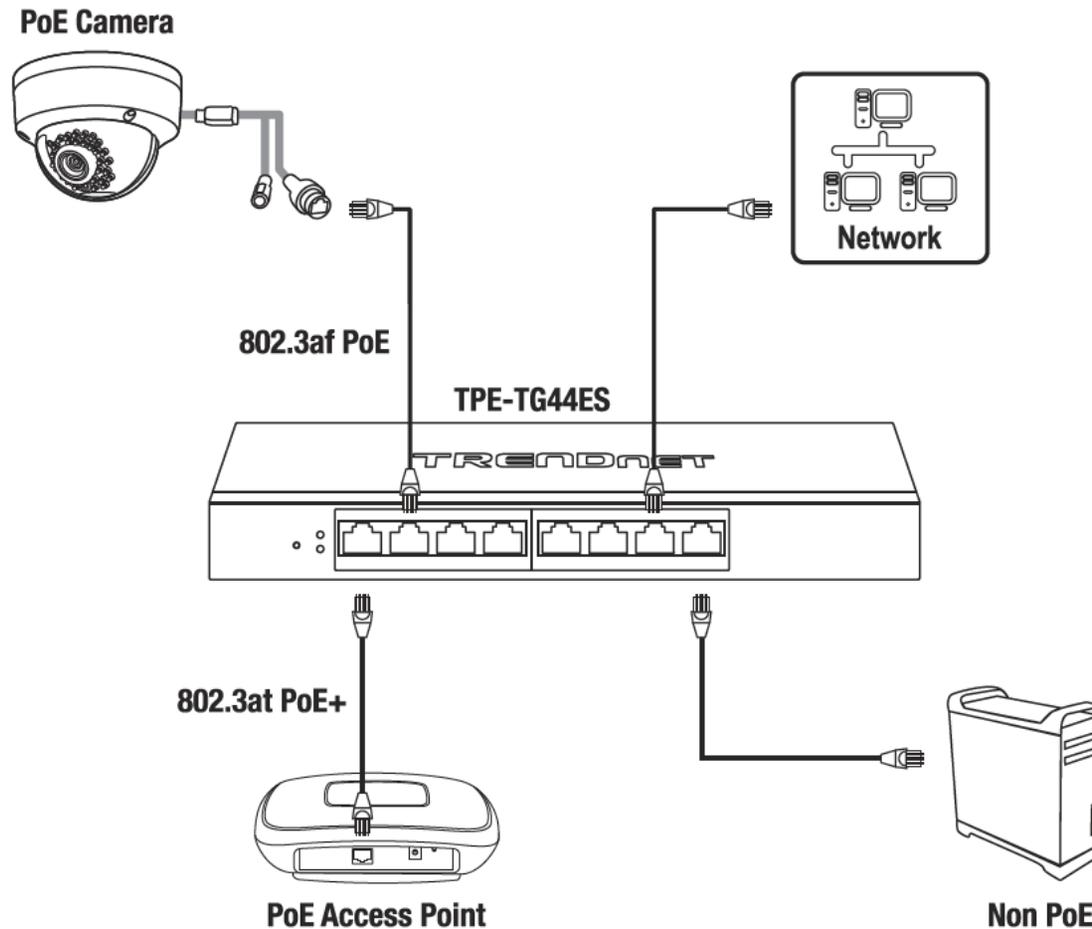
Configure your switch

Access your switch management page

Note: Your switch 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®, and 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 switch 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.

*Note: You can also click **Logout** at the bottom of the left hand navigation to log out of the switch management page.*

System Info
View your switch status information

System

You may want to check the general system information of your switch such as firmware version, build date, and IP address information. You can also enable or disable jumbo frames or power saving (EEE) features.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **System**.

- **Mode Name:** The model name of the switch.
- **Device Name:** The current device name assigned to the switch. This can be changed by clicking the TPE-TG44ES, entering new device name and clicking Apply.
- **Firmware Version:** The current software or firmware version your switch is running.
- **Build Date**: The build of the current software or firmware running on your switch.
- **MAC Address:** Displays the switch system MAC address.
- **IPv4 Address**: Displays the current IP address assigned to your switch.
- **Subnet Mask**: Displays the current IP subnet mask assigned to your switch.
- **Gateway**: Displays the current gateway address assigned to your switch.
- **Loop Status:** If loopback prevention is enabled, displays if loops have been detected on the network.

Model Name	TPE-TG44ES
Device Name	TPE-TG44ES
Firmware Version	1.00.38
Build Date	2017.07.22
MAC Address	00:23:79:00:23:79
IPv4 Address	192.168.10.201
Subnet Mask	255.255.255.0
Gateway	192.168.10.254
Loop Status	Normal

- **Jumbo Frame**: Check the option and click Apply to enable jumbo frames. The switch can support jumbo frames up to 9KB in size.
- **Power Saving (EEE)**: Check the option and click Apply to enable IEEE 802.3az power saving.
  The IEEE 802.3 EEE standard defines mechanisms and protocols intended to reduce the energy consumption of network links during periods of low utilization, by transitioning interfaces into a low-power state without interrupting the network connection. The transmitted and received sides should be IEEE802.3az EEE compliance.

Configure IP address settings
Set your switch IP address settings

Management

This section allows you to change your switch 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 Switch IP Address: 192.168.10.200

Default Switch IP Subnet Mask: 255.255.255.0
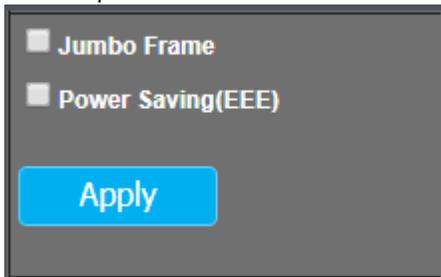
1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Management**.

3. Review the settings. When you have completed making changes, click **Apply** to save the settings.
   - **DHCP:** Click the drop-down list and select **Disable** to manually specify your IP address settings or **DHCP** to allow your switch to obtain IP address settings automatically from a DHCP server on your network
   - **IP Address:** Enter the new switch IP address. (e.g. *192.168.200.200*)
   - **Subnet Mask:** Enter the new switch 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).

Port Status

Port status will display the link status/speed, and frame statistics of transmit and receive for each port for troubleshooting purposes.

View Traffic Information Statistics

Port Status

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Port Status**.

3. View the Traffic Information Statistics. Clicking the **Clear Counters**, will reset all of the TX and RX information to 0 and restart the frame counters.

- **Port:** Displays the port number.
- **Link Status:** Displays the current link status and speed if connected.
- **TX:** Displays the total amount of frames transmitted on the specified port.
- **RX:** Displays the total amount of frames received on the specified port.

Port	Link Status	TX	RX
1	1000 Mbps	1250	4386
2	Down	0	0
3	Down	0	0
4	Down	0	0
5	Down	0	0
6	Down	0	0
7	Down	0	0
8	Down	0	0

VLAN

Add, modify, and remove VLANs

VLAN

A VLAN is a group of ports that can be anywhere in the network, but communicate as though they were in the same area.

VLANs can be easily organized to reflect department groups (such as R&D, Marketing), usage groups (such as e-mail), or multicast groups (multimedia applications such as video conferencing), and therefore help to simplify network management by allowing users to move devices to a new VLAN without having to change any physical connections.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **VLAN**.

The PVID table displays the current port VLAN ID assignment.

Note: when untagged or VLAN-unaware ports are assigned to a VLAN, the port VLAN ID should be assigned the same ID as the VLAN to be properly configured. (ex. If adding ports 7 & 8 as untagged port members of VLAN ID 100, the PVID assignment for ports 7 & 8 should be set to 100.)

PVID								Apply
Port	01	02	03	04	05	06	07	08
PVID	1	1	1	1	1	1	1	1

The VLAN table displays the current list of VLANs. By default, all ports are assigned as untagged members of VLAN ID 1. The color code on each port indicates the type of membership for each port assigned to a specific VLAN. Up to 32 VLANs can be created.

- **Untagged port member –** Green
- **Tagged port member –** Orange
- **Non- member or restricted port -** Gray
- **VLAN ID –** Displays the VLAN ID.
- **Modify –** Click modify to edit the VLAN configuration. The default VLAN cannot be modified.
- **Delete –** Click delete to delete the VLAN. The default VLAN cannot be deleted.

   Note: VLAN VID 1 is set as the Management VLAN.

VLAN ID	Non-Member		Tag Egress Member		Untag Egress Member				Modify	Delete
	01	02	03	04	05	06	07	08		
1									Modify	Delete

Click on button to change member state or remove vlan.

To create a new VLAN, click **Create New VLAN**.

Create New VLAN

Enter the VLAN ID to assign to the new VLAN. (ex. ID 100)

VLAN ID	Non-Member		Tag Egress Member		Untag Egress Member			
	01	02	03	04	05	06	07	08
100								

By default, all ports are set as tagged members of the new VLAN.

To change the port membership to untagged or non-member, click on the port box multiple times to cycle through the port membership type based on the color code.

VLAN ID	Non-Member		Tag Egress Member		Untag Egress Member			
	01	02	03	04	05	06	07	08
100								

After you have assigned all the ports with the desired port membership to the new VLAN, click **Apply**.

VLAN ID	Non-Member		Tag Egress Member		Untag Egress Member			
	01	02	03	04	05	06	07	08
100								

Note: when untagged or VLAN-unaware ports are assigned to a VLAN, the port VLAN ID should be assigned the same ID as the VLAN to be properly configured. (ex. If adding ports 7 & 8 as untagged port members of VLAN ID 100, the PVID assignment for ports 7 & 8 should be set to 100.)

PVID   Apply

Port	01	02	03	04	05	06	07	08
PVID	1	1	1	1	100	100	100	100

Tagged/Untagged/Non-Member VLAN Ports

On a port, the tag information within a frame is examined when it is received to determine if the frame is qualified as a member of a specific tagged VLAN. If it is, it is eligible to be switched to other member ports of the same VLAN. If it is determined that the frame's tag does not conform to the tagged VLAN, the frame is discarded.

Since these VLAN ports are VLAN aware and able to read VLAN VID tagged information on a frame and forward to the appropriate VLAN, typically tagged VLAN ports are used for uplink and downlink to other switches to carry and forward traffic for multiple VLANs across multiple switches. Tagged VLAN ports can be included as members for multiple VLANs. Computers and other edge devices are not typically connected to tagged VLAN ports unless the network interface on these device can be enabled to be VLAN aware.

Trunk/Link Aggregation

Configure port trunk settings

Trunking/Link Aggregation

The trunking function enables the cascading of two or more ports for a combined larger total bandwidth. Only a single trunk group can be created consisting of ports 7 & 8 only. Only 802.3ad LACP dynamic trunking is supported.

Important Note: Do not connect the cables of a port trunk to the ports on the switch until you have configured the ports on both sides of the trunk configured for link aggregation. Connecting the cables prior to configuring the ports can create loops in your network topology. Loops can result in broadcast storms which can severely limited the effective bandwidth of your network.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Trunking/Link Aggregation**.

3. Review the settings. Click **Apply** to save the settings.
   - **LACP Global State –** Click the drop-down list and select **Enable** to enable LACP trunking.
   - **Link Aggregation Algorithm –** Click the drop-down list and select the algorithm to use for the trunk. The algorithm used should be the same on both sides of the link aggregation trunk. (ex. If MAC SA & DA is configured on the switch, then the device on the other end of the trunk should also be configured to use the MAC SA & DA algorithm.)
     - **MAC SA & DA –** MAC source and destination address
     - **MAC SA** – MAC source address only.
     - **MAC DA** – MAC destination address only.
   - **Link Group Activity –** Select Active mode for 802.3ad link aggregation.
   - **Link Group Member -** Only ports 7 & 8 may be used for link aggregation. The ports will not be checked if a link aggregation trunk has not been established. If a link aggregation trunk has been successfully established, ports 7 & 8 will automatically be checked.

Mirroring

Configure port mirror settings

Mirror

Port mirroring allows you to monitor the ingress and egress traffic on a port by having the traffic copied to another port where a computer or device can be set up to capture the data for monitoring and troubleshooting purposes.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Mirror**.

3. Review the settings. Click **Apply** to save the settings.
   - **Enable Mirror** – Check the option to enable port mirroring.
   - **Mirror Direction**
     - **Ingress –** Only mirror received frames on the selected ports.
     - **Egress –** Only mirror transmitted frames on the selected ports.
     - **Both** – Mirror both received and transmitted frames on the selected ports.
   - **Monitor Port** – Click the drop-down to select the target port to send the mirrored or copied frames. (*ex. Computer or device with packet capture or data analysis software.)*
   - **Mirrored Port List –** Check which ports to mirror.

QoS (Quality of Service)

When a port on an Ethernet switch becomes oversubscribed, its egress queues contain more packets than the port can handle in a timely manner. In this situation, the port may be forced to delay the transmission of some packets, resulting in the delay of packets reaching their destinations. A port may be forced to delay transmission of packets while it handles other traffic, and, in some situations, some packets destined to be forwarded to an oversubscribed port from other switch ports may be discarded.

Minor delays are often of no consequence to a network or its performance. But there are applications, referred to as delay or time sensitive applications, which can be impacted by packet delays. Voice transmission and video conferences are two examples. If packets carrying data in either of these cases are delayed from reaching their destination, the audio or video quality may suffer.

The switch supports port-based QoS or IEEE 802.1p QoS (CoS).

Port-Based QoS

QoS

The switch will assign priority to each queue per port based on the weight assignment for each queue.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Port-Based QoS** and when prompted to change the QoS mode, click **OK**.

3. Review the settings. Click **Apply** to save the settings.

By default, queue configuration can be found at the bottom of the page, queue 0 being the lowest priority and queue 3 being the highest.

- **1-8 –** Indicates the port number. By default, all ports are assigned to the lowest priority queue 0. This would require manually configuration to apply per port priority.
- **Weight –** The weight value indicates the queue priority value 1 being the lowest and 32 being the highest. The higher the weight value assigned to a specified queue, the higher the amount of packets from that queue are sent

out and processed before other lower priority queues. This can be adjusted accordingly however default settings should be sufficient.

- **Strict Priority** - Using this scheduling method, the port transmits all frames out of higher priority queues before transmitting any from the lower priority queues.
- **WFQ (Weighted Fair Queuing)** – Using this scheduling method, the port transmits a set number of bits from random queues, in a round robin fashion, so that each has a chance to transmit traffic.

IEEE 802.1p QoS

QoS

The switch will accept frames with specified 802.1p CoS priority tags from other network devices and process and schedule according to the IEEE 802.1p QoS configuration but will not add priority tags to new frames originating from the switch. Supports passthrough 802.1p QoS only.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **IEEE 802.1p QoS** and when prompted to change the QoS mode, click **OK**.

3. Review the settings. Click **Apply** to save the settings.

By default, queue configuration can be found at the bottom of the page, queue 0 being the lowest priority and queue 3 being the highest.

- **1-7** – Indicates the 802.1p CoS tag values, 1 being the lowest and 7 being the highest. Based on the priority tag value identified on the incoming frame, the frame will be assigned to the specified queue assigned for the priority tag value. This can be adjusted accordingly however default settings should be sufficient.
- **Weight –** The weight value indicates the queue priority value 1 being the lowest and 32 being the highest. The higher the weight value assigned to a specified queue, the higher the amount of packets from that queue are sent out and processed before other lower priority queues. This can be adjusted accordingly however default settings should be sufficient.
- **Strict Priority** - Using this scheduling method, the port transmits all frames out of higher priority queues before transmitting any from the lower priority queues.
- **WFQ (Weighted Fair Queuing)** – Using this scheduling method, the port transmits a set number of bits from random queues, in a round robin fashion, so that each has a chance to transmit traffic.

Storm Control
Configure Storm Control

Broadcast Storm Control

The switch can set rate limits on broadcast, multicast, and unicast (DLF) traffic and drop traffic once the configured rate threshold is reached. This feature can be useful more specifically for broadcast storms.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Broadcast Storm Control**.

3. Review the settings. Click **Apply** to save the settings.

- **Broadcast** – Click the drop-down list and select the speed threshold for broadcast traffic which will be applied to the switch on all ports.
- **Multicast** – Click the drop-down list and select the speed threshold for multicast traffic which will be applied to the switch on all ports.
- **DLF (Destination Lookup Failure)** – Click the drop-down list and select the speed threshold for unicast (DLF) traffic which will be applied to the switch on all ports.

Rate Limiting
Set Per Port Rate Limiting

Rate Limiting

The switch allows you to set a rate or bandwidth limit per port both transmitting and receiving.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Rate Limiting**.

3. Review the settings for each port. Click **Apply** to save the settings.
- **Port** – Indicates the port number.
- **Ingress rate** – Click the drop-down list to select the rate or bandwidth limit for received on a specific port.
- **Egress rate** – Click the drop-down list to select the rate or bandwidth limit for transmitted from a specific port.

Loopback Detection & Prevention
Enable loopback prevention

Loopback Prevention

The loopback detection and prevention feature allows the switch to detect and prevent disruption from loops that occur on other switches directly connected to your switch. Ex. A loop occurs on another switch that is connected to your switch on port 5. If loopback detection and prevention is enabled on your switch, the switch will detect a loop occurrence on port 5 and disable it until the loop issue is resolved.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Loopback Prevention**.

3. To enable loopback detection and prevention on all ports, click the drop-down list and select **Loopback Prevention.** Click **Apply** to save changes.

IGMP Snooping

Configure IGMP Snooping Settings

IGMP Snooping

The IGMP snooping feature filters multicast traffic sent across your switch only to the multicast hosts and servers. This will prevent multicast traffic from flooding all ports of the switch in order to prevent unnecessary switch processing and optimize switch traffic. The switch supports IGMP 1/2/3 snooping.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **IGMP Snooping**.

3. Review the settings. Click **Apply** to save the settings.

- **Block Unknown Multicast –** Enabling this option will prevent or drop multicast traffic from an unknown multicast source address.
- **Enable IGMP Snooping –** Check this option to enable IGMP snooping.
- **IGMP Static Router Port –** IGMP snooping will automatically learn the ports of the multicast server, you may statically set the port where the multicast server is connected or linked from another switch.

   The table will display the discovered multicast group address, multicast server/router port, and VLAN ID.

PoE Configuration

The main advantage of PoE is that it can make installing a network easier. The selection of a location for a network device is often limited by whether there is a power source nearby. This constraint limits equipment placement or requires the added time and cost of having additional electrical sources installed. However, with PoE, you can install PoE compatible devices wherever they are needed without having to worry about whether there is power source nearby.

Power Sourcing Equipment (PSE)

A device that provides PoE to other network devices is referred to as

power sourcing equipment (PSE). The Gigabit Web Smart PoE+ Switch is a PSE

device which provides DC power to the network cable and functions as a central power source for other network devices.

Powered Device (PD)

A device that receives power from a PSE device is called a *powered*

device (PD). Examples include wireless access points, IP phones, webcams, and even other Ethernet switches.

PD Classes PDs are grouped into five classes. The classes are based on the amount of power that PDs require. The Gigabit Web Smart PoE+ Switch supports all five classes.

Class	Maximum Power Output from a Switch Port	Power Ranges of the PDs
0	15.4W	0.44W to 12.95W
1	4.0W	0.44W to 3.84W
2	7.0W	3.84W to 6.49W
3	15.4W	6.49W to 12.95W
4	30W	12.95-25.50W

Power Budget

Power budget is the maximum amount of power that the PoE switch can provide at one time to the connected PDs.

Configure PoE settings

PoE Configuration

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **PoE**.

3. Review the settings for each port. Next to each port entry, click **Apply** to save the settings.

- **PSE Total Power –** Displays the maximum PoE power budget in watts.
- **PSE MAX LED Power -** Displays the threshold limit of PoE power usage when the PoE Alert LED will turn on to indicate 80% of total PoE power used.
- **PSE IC MAX Temperature –** Displays the maximum temperature allowable limit of the PoE IC chip.
- **PSE Voltage –** Displays the PoE voltage supplied to each PoE port.
- **Port –** Displays the port number. You can manually enable or disable PoE on the specified port by clicking the number and selecting **Turn on** or **Turn off**. By default, PoE is enabled on all PoE ports.

PoE port configuration

Port	Power Supply
1	Turn on ▼
2	Turn on ▼
3	Turn on ▼
4	Turn on ▼

- **Power Status** – Displays the current status of the PoE port, whether PoE is turned on or off.
- **Power Usage** – Displays the current PoE power provided to PoE device or PDs (Powered devices) in watts.
- **Temperature** – Displays the current temperature of each port supplying PoE.
- **Turned On** – Displays the total number of ports with PoE enabled.
- **Total Power** – Displays the current amount of PoE power used by all PoE ports.

POE Global Settings

PSE Total Power	60W
PSE MAX LED Power	50W
PSE IC MAX Temperature	150℃
PSE voltage	55.6V

POE Status

Port	Power Status	Power Usage (W)	Temperature(℃)
1	Turned on	0	54
2	Turned on	0	57
3	Turned on	0	58
4	Turned on	0	58

Turned on:4   Total Power:0 W
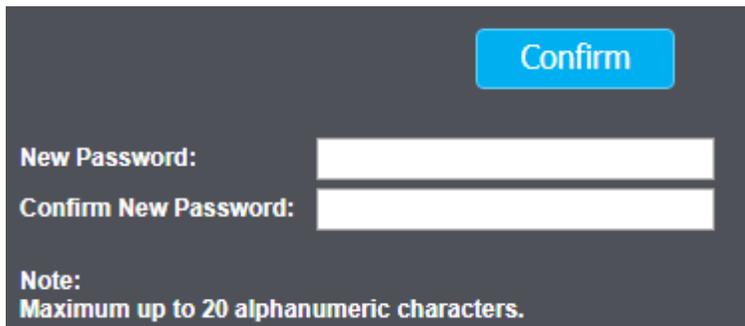
Switch Maintenance

Change administrator password

Password

This section explains how to change the administrator password.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Password**.

3. In the **New Password** and **Confirm Password** fields, enter the new password. Click **Confirm** to save the settings.

Upgrade your switch firmware

Management

TRENDnet may periodically release firmware upgrades that may add features or fix problems associated with your TRENDnet switch 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 switch is currently running. To identify the firmware that is currently loaded on your switch, log in to the switch, click on the System Info section or click on Tools and click on Firmware Upgrade. The firmware used by the switch is listed as Runtime Image or Image Version. 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, download the firmware to your computer.

2. Unzip the file to a folder on your computer.

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 switch.

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Management.**

3. Under the **Firmware Upgrade** section, click **Upgrade.**

4. When prompted to enter Loader Mode, click **OK**.
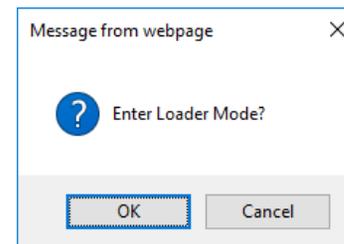
5. Wait for the loader page to appear and click **Browse** or **Choose File.** Navigate to the folder on your computer where the unzipped firmware file (*.bin*) is located and select it.

6. Click **Upgrade**. If prompted, click **Yes** or **OK**. You may also click **Reboot** to cancel the firmware upgrade.

Backup and restore your switch configuration settings

Tools > Config File Backup/Restore

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

Backup/Restore

To backup your switch configuration:

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Management**.

3. Under **Configuration Restore / Backup**, click **Backup** to save the configuration file (switch_cfg.bin) to your local hard drive.

Note: If prompted, choose the location on your local hard drive. If you are not prompted, the configuration file (switch_cfg.bin) will be saved to your default downloads folder.

Configuration Restore / Backup

Choose File No file chosen
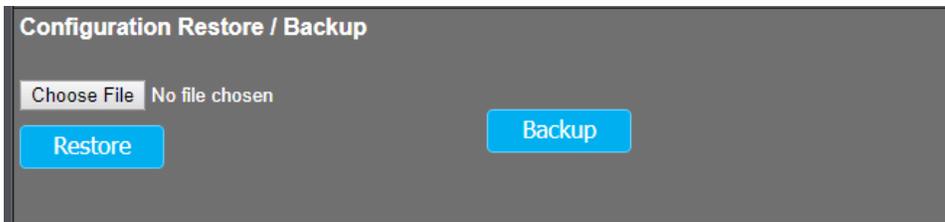
Restore   Backup

To restore your switch configuration:

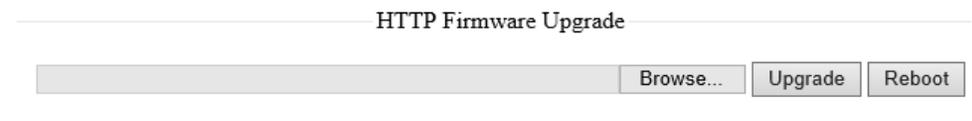1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Management**.

3. Under **Configuration Restore / Backup** and mext to **Select File,** depending on your web browser, click on **Browse** or **Choose File**.

File Backup/Restore via HTTP Settings

Select File: Browse...

Backup   Restore
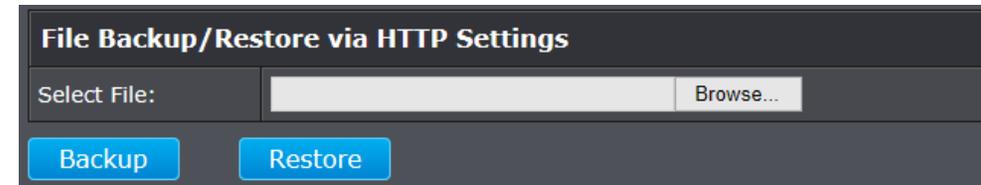
4. A separate file navigation window should open.

5. Select the switch configuration file to restore and click **Restore**. (Default Filename: switch_cfg.bin). If prompted, click **Yes** or **OK**.

6. Wait for the switch to restore settings.

Reboot/Reset to factory defaults

Tools > Reboot

This section provides the procedures for rebooting or resetting the switch to factory default settings.

To reboot your switch:

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

There are two methods that can be used to reboot your switch.

- **Hardware Method:** Push the power on/off switch to the off (o) position then to the on position (|) or disconnect the power adapter and reconnect.

- **Software Method (Switch Management Page):**
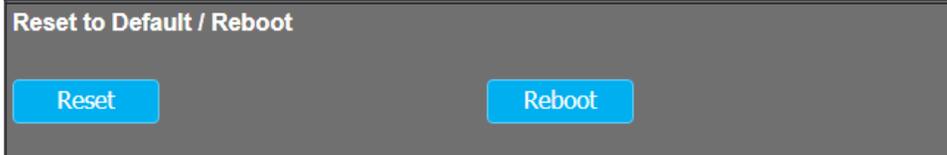
1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Management.**

3. Under the section Reset to Default / Reboot, click the **Reboot**. When prompted to Reboot System, click **OK**. Wait for the switch complete the rebooting process.

Reset to Default / Reboot

Reset   Reboot

To reset your switch to factory defaults:

You may want to reset your switch to factory defaults if you are encountering difficulties with your switch and have attempted all other troubleshooting. Before you reset your switch to defaults, if possible, you should backup your switch configuration first, see "Backup and restore your switch configuration settings" on page 77.

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

- **Hardware Method:** Using a paper clip, on the front panel of the switch, push and hold the **Reset** button more than 10 seconds and release. Located on the front panel of your switch, see "Product Hardware Features" on page 2. Use this method if you are encountering difficulties with accessing your switch management page.

- **Software Method (Switch Management Page):**

1. Log into your switch management page (see "Access your switch management page" on page 6).

2. Click on **Management.**

3. Under the section Reset to Default / Reboot, click the **Reboot**. When prompted to Reset System, click **OK**. Wait for the switch complete resetting the switch to factory default settings.

Reset to Default / Reboot

Reset   Reboot
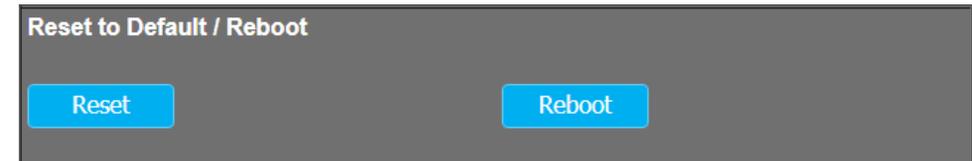
The switch factory default settings are below.

Administrator User Name	admin
Administrator Password	admin
Switch IP Address	192.168.10.200
Switch Subnet Mask	255.255.255.0

Technical Specifications

Standards

- IEEE 802.1p
- IEEE 802.1Q
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3x
- IEEE 802.3ab
- IEEE 802.3ad
- IEEE 802.3af (15.4 Watts/port)
- IEEE 802.3at (30 Watts/port)
- IEEE 802.3az

Device Interface

- 4 x Gigabit PoE+ ports (1-4)
- 4 x Gigabit ports (5-8)
- LED indicators
- Reset button

Data Transfer Rate

- Ethernet: 10 Mbps (half duplex), 20 Mbps (full duplex)
- Fast Ethernet: 100 Mbps (half duplex), 200 Mbps (full duplex)
- Gigabit Ethernet: 2000 Mbps (full duplex)

Performance

- Switch fabric: 16 Gbps
- RAM buffer: 192 KB
- MAC Address Table: 4K entries
- Jumbo Frames: 9 KB
- Forwarding rate: 11.9 Mpps (64-byte packet size)

Management

- HTTP Web based GUI
- Backup/Restore Configuration
- Upload Firmware

Link Aggregation

- 802.3ad Dynamic LACP

Quality of Service (QoS)

- Port-based QoS
- 802.1p Class of Service (CoS)
- Bandwidth Control/Rate Limiting per port (Min. Limit: 512Kbps)
- Queue Scheduling: Strict Priority (SP), Weighted Fair Queueing (WFQ)

VLAN

- Port-based VLAN
- 802.1Q Tagged VLAN
- Up to 32 VLAN groups, ID Range 1-4094

Multicast

- IGMP Snooping v1/2/3
- Block unknown multicast source
- Up to 128 multicast groups

Port Mirror

- One to one
- Many to one

Access Control

- Trusted Host/IP Access List

Storm Control

- Broadcast (Min. Limit: 512Kbps)
- Multicast (Min. Limit: 512Kbps)

- Destination Lookup Failure (DLF) (Min. Limit: 512Kbps)
- Loopback Detection

Special Features

- PoE+ support
- Enable/disable 802.3az Power Saving
- Wall mountable

Power

- Input: 100 - 240V AC, 50/60 Hz, 2.5A
- Output: 55V DC, 1.3A external power adapter
- Consumption: 65.28W (max.)

PoE

- PoE budget: 60 W (max.)
- 802.3at: Up to 30 W per port (ports 1-4)
- Mode A: Pins 1,2 for power(+) and pins 3,6 for power(-)
- PD auto classification
- Over current/short circuit protection

Fan / Acoustics

- Fanless design

MTBF

- 1,089,244 hours

Operating Temperature

- 0 – 50°C (32 - 122°F)

Operating Humidity

- Max. 90% non-condensing

Dimensions

- 240 x 105 x 27 mm (9.45 x 4.1 x 1.06 in.)
- Wall mountable

Weight

- 576 g (20.3 oz.)

Certifications

- CE
- FCC

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 switch management page?
Answer:
1. Check your hardware settings again. See "Switch 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 switch ports.
5. Since the switch 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 7/8/8.1/10

    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 switch IP address is different than my network's subnet, what should I do?
Answer:
You should still configure the switch first. After all the settings are applied, go to the switch configuration page, click on System, click IPv4 Setup and change the IP address of the switch 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 switch, but I forgot it. How do I reset my switch?
Answer:
Using a paper clip, push and hold the reset button on the front of the switch and release after 15 seconds.
The default IP address of the switch is 192.168.10.200. The default user name and password is "admin".

Appendix

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/7/8/8.1/10

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 7/8/8.1/10

    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 fo 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**
> > EN 60950-1: 2011 + A2: 2013
>
> **EMC**
> > EN 55032: 2015
> > EN 61000-3-2: 2014
> > EN 61000-3-3: 2013
> > EN 55024: 2010
> > AS/NZS CISPR 32: 2013

Directives:

> Low Voltage Directive 2014/35/EU
>
> EMC Directive EN 2014/30/EU
>
> RoHS Directive 2011/65/EU
>
> WEEE Directive 2012/19/EU
>
> REACH Regulation (EC) No. 1907/2006

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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LIMITATION OF LIABILITY: TO THE FULL EXTENT ALLOWED BY LAW, TRENDNET ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN

CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATE, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT TRENDNET'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

Governing Law: This Limited Warranty shall be governed by the laws of the state of California.

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PWP07172015v3   2019/08/08

TRENDNET®

Product Warranty Registration

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

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