

# XGS-5008

## User Manual

11-2017 / v1.0

### **Edimax Technology Co., Ltd.**

No. 278, Xinhua 1st Rd., Neihu Dist., Taipei City, Taiwan

Email: [support@edimax.com.tw](mailto:support@edimax.com.tw)

---

### **Edimax Technology Europe B.V.**

Fijenhof 2, 5652 AE Eindhoven, The Netherlands

Email: [support@edimax.nl](mailto:support@edimax.nl)

---

### **Edimax Computer Company**

3350 Scott Blvd., Bldg.15 Santa Clara, CA 95054, USA

Live Tech Support: 1(800) 652-6776

Email: [support@edimax.com](mailto:support@edimax.com)

# CONTENTS

---

<b>Chapter 1</b>	<b>Product Introduction .....</b>	<b>4</b>
1-1	Product Overview .....	4
1-2	Features .....	4
1-3	External Component Description .....	5
1-3-1	Front Panel .....	5
1-3-2	Rear Panel.....	6
1-3-3	Package Contents.....	6
<b>Chapter 2</b>	<b>Installing and Connecting the Switch.....</b>	<b>7</b>
2-1	Installation.....	7
2-1-1	Desktop Installation .....	7
2-1-2	Rack-mountable Installation in 19-inch Cabinet.....	8
2-1-3	Power on the Switch .....	9
2-2	Connect Computer (NIC) to the Switch .....	9
<b>Chapter 3</b>	<b>Login .....</b>	<b>10</b>
3-1	Switch to End Node .....	10
3-2	Login .....	10
<b>Chapter 4</b>	<b>Switch Configuration .....</b>	<b>12</b>
4-1	4.1 System Status .....	13
4-1-1	System Information .....	13
4-1-2	System Name.....	13
4-1-3	Software Version.....	14
4-1-4	Networking.....	14
4-1-5	Save Current .....	15
4-1-6	Restore .....	15
4-1-7	Factory Default.....	16
4-1-8	Reboot device.....	16
4-2	Port Configuration.....	17
4-2-1	Port Configuration.....	17
4-3	Traffic Statistics .....	18
4-4	VLAN Configuration.....	19
4-4-1	802.1Q VLAN .....	19
4-5	Mac Table Display .....	20
4-6	Trunking - Port Aggregation .....	21
4-7	Port Mirroring .....	22

4-8	Cable Diagnostic .....	23
4-9	QOS .....	25
4-10	Rate Limit .....	26
4-11	Loop Detection .....	27
4-12	Multicast Setting - IGMP Snooping .....	28
4-13	Access Control – Limited User Access .....	29
4-14	User Name and Password management .....	30
<b>Chapter 5</b>	<b>CLI command.....</b>	<b>31</b>

# Chapter 1 Product Introduction

---

Thank you for purchasing an Edimax PoE Web Smart Ethernet Switch. Before you install and use the product, please read this manual carefully to make the best use of the product's functions.

## 1-1 Product Overview

The Edimax Pro XGS-5008 is a web smart switch with 8 10 Gigabit ports. Designed for medium to large network environments, it equips a standard 19-inch rack-mount brackets allow for integration with the most widely used mounting systems on the market. The Edimax XGS-5008 is a superb choice to boost your network environment's performance and efficiency.

## 1-2 Features

- Supports 8 100/1000/10000Mbps Gigabit Ethernet ports
- Automatically detects link partner in the best connection on 10G, GE or 100Mbps.
- IEEE 802.1Q VLAN allows network segmentation to enhance performance and security
- Supports 80.21p QoS queue mapping and Port Base QoS queue mapping.
- Supports IGMP Snooping V1 / V2 disable/enable.
- Supports Loop detection
- Supports Port Mirroring
- Supports port base rate limiting.
- Supports port static link aggregation
- Supports web access control
- 16K MAC address table and 9K jumbo frames
- Equip 19-inch rack-mountable metal case
- Switch capacity: 160Gbps

## 1-3 External Component Description

### 1-3-1 Front Panel

The front panel of the switch consists of 8 x /100/1000/10000Mbps RJ-45 ports, and per port phone jack with dual LED indicators as shown as below:



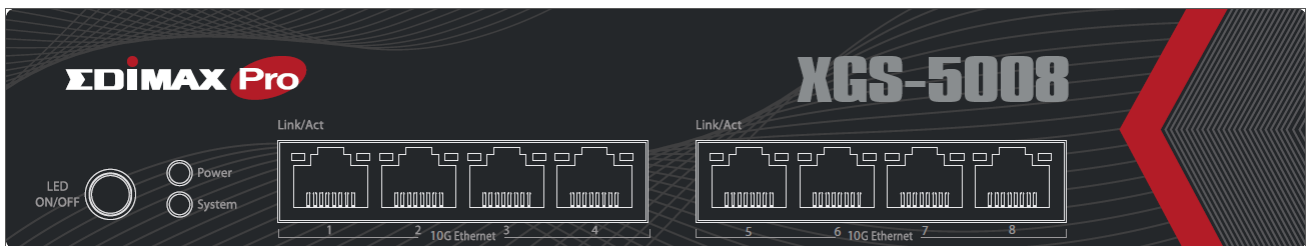
Front Panel

#### 100/1000/10000Mbps RJ-45 ports (1~8):

Designed to connect to network devices with a bandwidth of 100Mbps, 1000Mbps or 10000Mbps. Each has a corresponding 100/1000/10000Mbps link/active and cable diagnostic LED.

#### LED indicators:

The LED Indicators will allow you to monitor, diagnose and troubleshoot any potential problem with the switch, connection or attached devices.



LED Indicators

The following chart shows the LED indicators of the Switch along with explanation of each indicator.

#### Power: Green

- Off: Power off
- On: Power on

#### System:

- Amber On : System booting
- Green On : System ready

### Copper Port Left LED : Link/Active

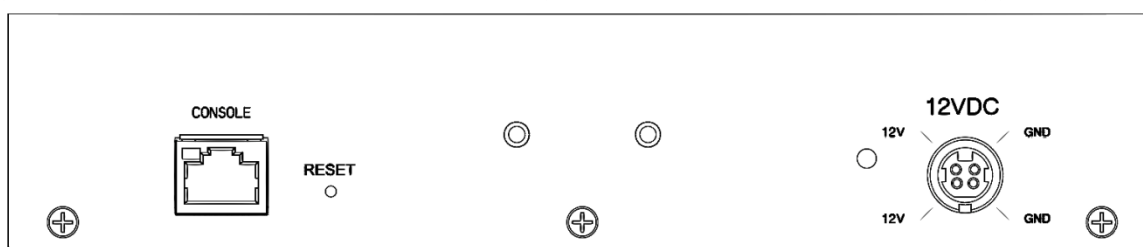
- Amber Off: No link
- Amber On: 100M/1G link
- Green Off: No link
- Green On: 10G link

### Copper Port Right LED : Cable Diagnostic

- Green Blinking: Executing cable diagnostic
- Amber On: Not Healthy , short or open
- Green On: Cable connection Healthy.

## 1-3-2 Rear Panel

The rear panel of the switch features the DC power connector and RJ-45 type console port:



Rear Panel

### 12V DC Power Connector:

Power is supplied through an external AC power adapter. Supports AC 100 – 240V, 50-60Hz

### RJ-45 type Console Port Phone Jack:

Going through console port, user can

1. Showing & configing device's system IP address/subnet & Gateway (CLI)
2. Modify administrator's password.

## 1-3-3 Package Contents

Before you start using this product, please check if there is anything missing in the package, and contact your dealer to claim the missing item(s):

- XGS-5008 10GbE Web Smart Switch
- Quick Installation Guide
- CD
- Power Adaptor and power Cord
- Rack-Mount Kit

## Chapter 2 Installing and Connecting the Switch

---

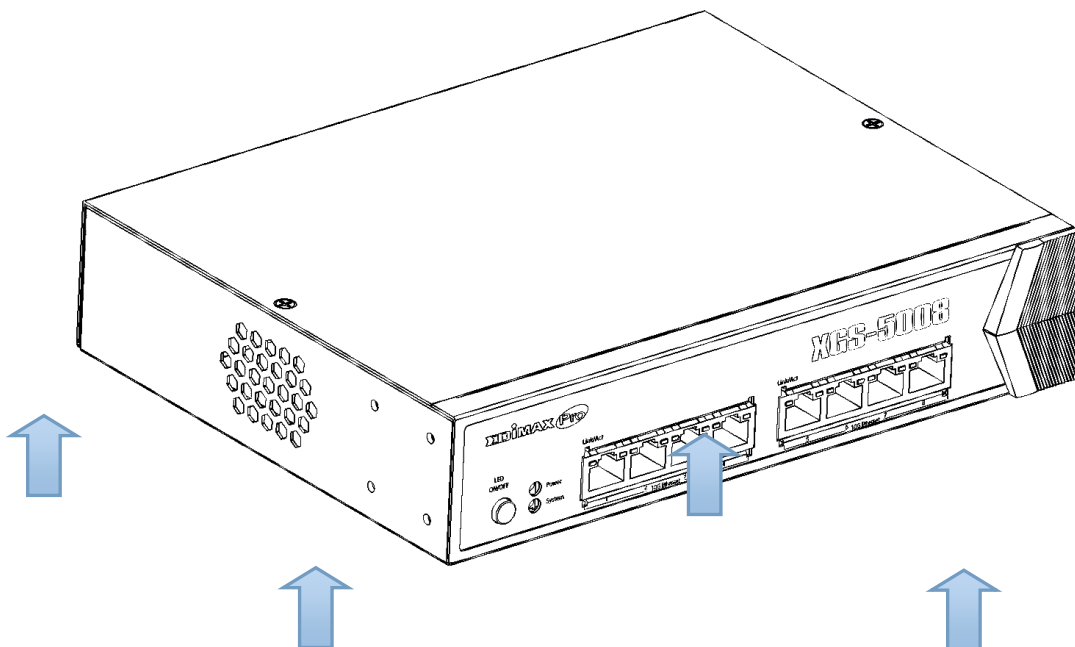
This chapter describes how to install and connect your XGS-5008 Ethernet Switch. Please read the following topics and perform the procedures in the correct order. Incorrect installation may cause damage to the product.

### 2-1 Installation

- Put the switch in a stable place such as a desktop to avoid falling.
- Ensure the switch works in the proper AC input range and matches the voltage labeled.
- Do not open the switch's outer case even in the event of power failure.
- Ensure there is proper heat dissipation from and adequate ventilation around the switch.
- Ensure the switch's location can support the weight of the switch and its accessories.

#### 2-1-1 Desktop Installation

Where standard 19-inch cabinet is not available, install the switch on a desktop and attach the cushioning rubber feet provided on the bottom corners of the switch to protect against external vibration. Allow adequate space for ventilation between the device and any objects around.

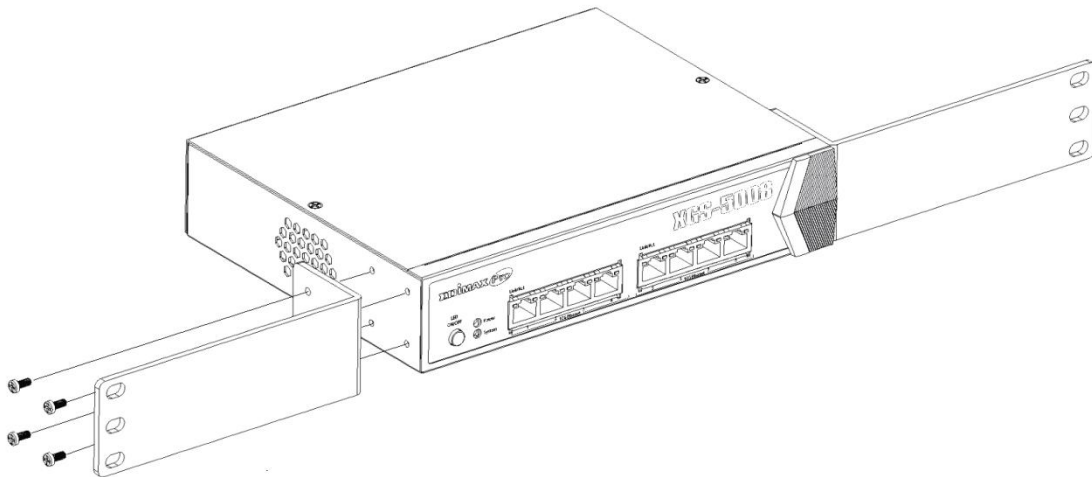


Desktop Installation

## 2-1-2 Rack-mountable Installation in 19-inch Cabinet

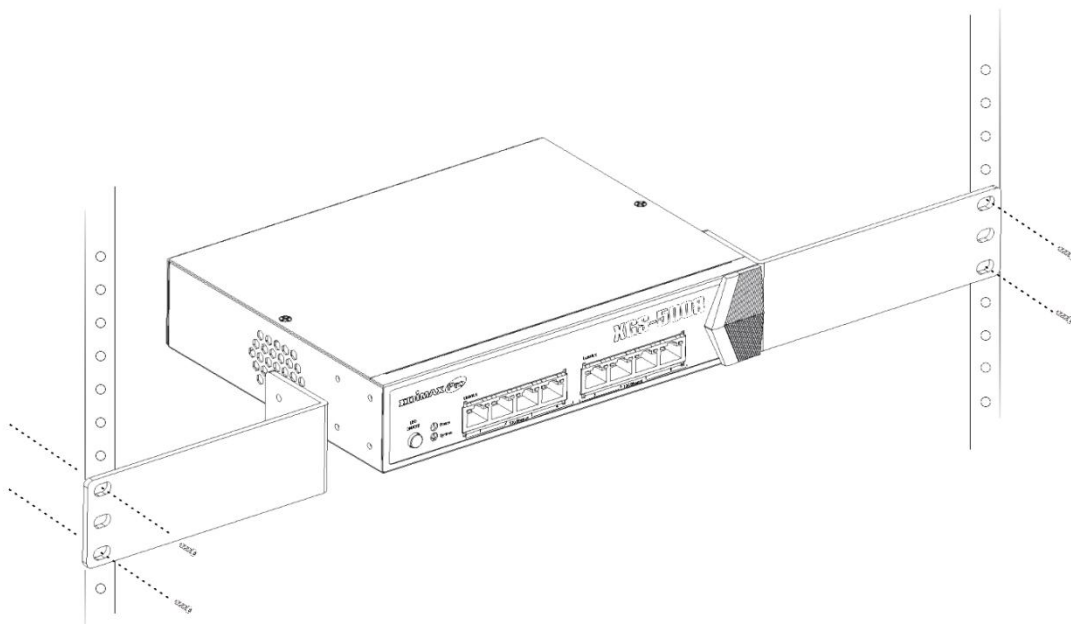
The switch can be mounted in an EIA standard-sized 19-inch rack which can be placed in a wiring closet with other equipment. To install the switch, please follow these steps:

- A.** Attach the mounting brackets on the switch's side panels (one on each side) and secure them with the screws provided.



Bracket Installation

- B.** Use the screws provided with the equipment rack to mount the Switch on the rack and tighten it.



Rack Installation



### **2-1-3 Power on the Switch**

The Switch is powered on by the AC 100-240 V 50/60Hz External high-performance power supply.

#### **AC Electrical Outlet:**

It is recommended to use a single-phase three-wire receptacle with neutral outlet or multifunctional computer professional receptacle. Please make sure to connect the metal ground connector to the grounding source on the outlet and connect to DC power adaptor well.

#### **DC Power Cord Connection:**

Connect the DC power-din connector on the back panel of the switch to power adaptor with the included power cord, and check the power LED is on.

### **2-2 Connect Computer (NIC) to the Switch**

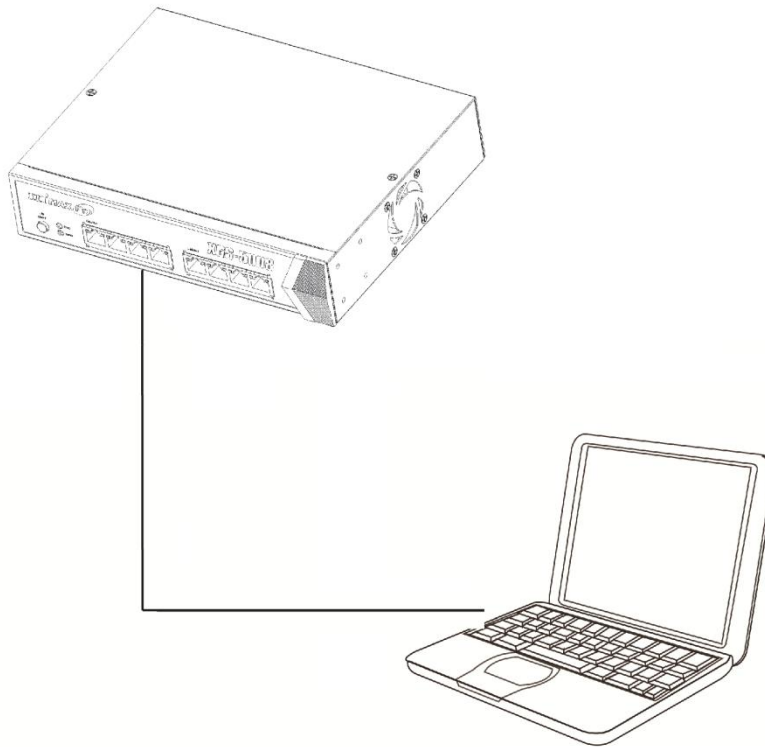
Please insert the NIC into the computer, and after installing network card driver connect one end of the RJ-45 cable to your computer and the other end to any RJ-45 port of the switch, with a maximum distance between switch and computer around 100 meters. After the devices are powered on the LINK/ACT/Speed status indicator lights will display for corresponding ports of the switch.

## Chapter 3 Login

---

### 3-1 Switch to End Node

Use a standard Cat 5e or Cat 6/6A or Cat 7 Ethernet cable (UTP/STP) to connect the switch to end nodes as shown below. Switch ports will automatically adjust to the characteristics (MDI/MDI-X, speed, duplex) of the device to which it's connected.



PC Connect

### 3-2 Login

Open a web browser and go to the switch's IP address. The default IP address is 192.168.2.1. Your computer's IP address must be in the same subnet as the switch. For the default IP address this is any IP address in the range 192.168.2.x (x = 2 – 254). You can modify the IP address of your computer if you need.

Default IP address	192.168.2.1
Default user name	admin
Default password	1234

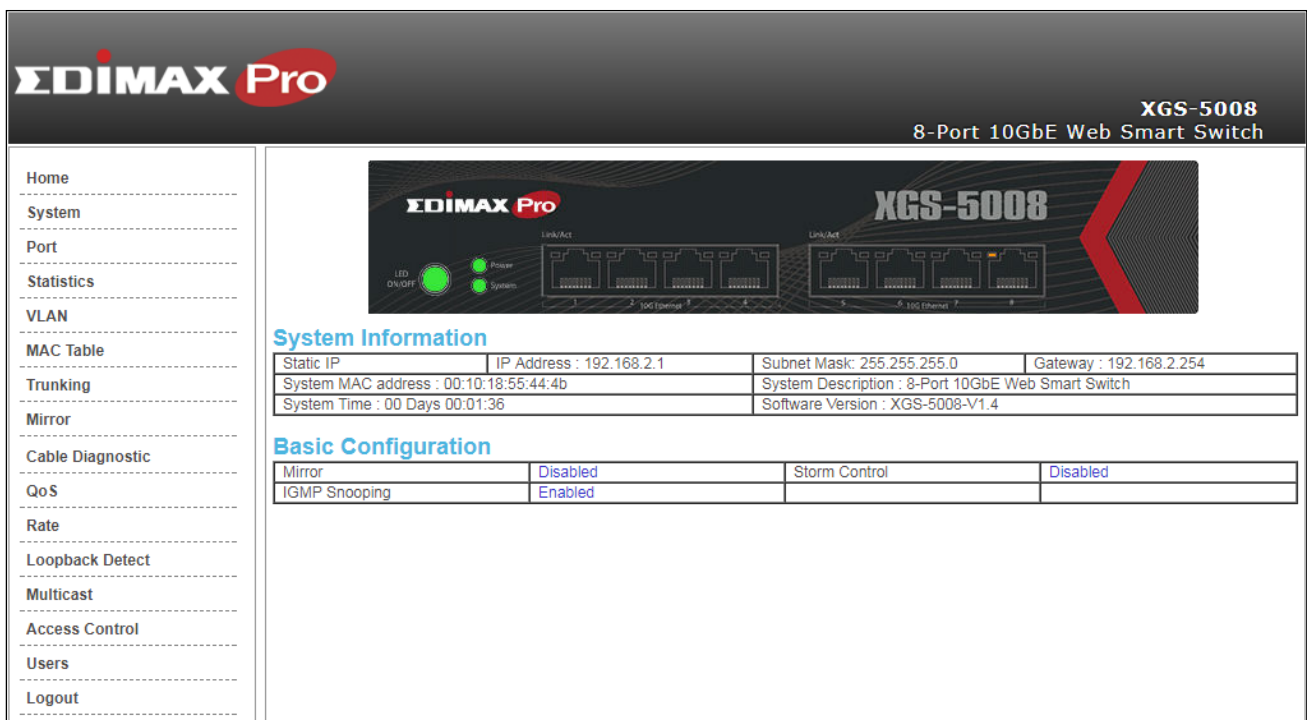
1. Enter the switch's IP address (**192.168.2.1**) in the URL bar of a web browser. IE 7 or above is recommended.

2. At the following screen login with the default username “**admin**” and password “**1234**”.



The login screen features the EDIMAX Pro logo at the top. Below it, the model name 'XGS-5008' is displayed. There are two input fields: 'User Name' with a user icon and 'Password' with a lock icon. A 'Login' button is positioned at the bottom.

3. You will arrive at the switch configuration window as shown below:



The configuration window displays the EDIMAX Pro logo and the model name 'XGS-5008' with the description '8-Port 10GbE Web Smart Switch'. On the left is a navigation menu with options: Home, System, Port, Statistics, VLAN, MAC Table, Trunking, Mirror, Cable Diagnostic, QoS, Rate, Loopback Detect, Multicast, Access Control, Users, and Logout. The main content area shows a switch image and two sections: 'System Information' and 'Basic Configuration'.

**System Information**

Static IP	IP Address : 192.168.2.1	Subnet Mask: 255.255.255.0	Gateway : 192.168.2.254
System MAC address : 00:10:18:55:44:4b		System Description : 8-Port 10GbE Web Smart Switch	
System Time : 00 Days 00:01:36		Software Version : XGS-5008-V1.4	

**Basic Configuration**

Mirror	Disabled	Storm Control	Disabled
IGMP Snooping	Enabled		

# Chapter 4    Switch Configuration

The XGS-5008 10GbE smart switch software provides basic layer 2 functionality for switches in your networks. This chapter describes how to use the web-based management interface (Web UI) to configure the switch’s features.

The left column shows the configuration menu. The top row shows the switch’s current link status. Green squares indicate the port link is up, while black squares indicate the port link is down. Below the switch panel, you can find a common toolbar to provide useful functions. The rest of the screen area displays the configuration settings.

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

EDIMAX Pro

XGS-5008

LED ON/OFF

Power

System

Link/Act

Link/Act

1 2 3 4 5 6 7 8

10G Ethernet 10G Ethernet

System Information

Static IP	IP Address : 192.168.2.1	Subnet Mask: 255.255.255.0	Gateway : 192.168.2.254
System MAC address : 00:10:18:55:44:4b		System Description : 8-Port 10GbE Web Smart Switch	
System Time : 00 Days 00:06:39		Software Version : XGS-5008-V1.4	

Basic Configuration

Mirror	Disabled	Storm Control	Disabled
IGMP Snooping	Enabled		

4-1      4.1 System Status

View device information and status.

4-1-1    System Information

Go to **System**.

This page allow you to configure status related information and view status information such as Device ID, MAC address, IP Address and Link port and Bonjour function.

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

System

RefreshHelp

Device Name	XGS-5008
Software Version	XGS-5008-V1.4
Build Date	Oct 25 2017
MAC Address	00:10:18:55:44:4b
IPv6 Address	fe80:0:0:0:210:18ff:fe55:444b (Link-Local)
IPv4 Address	192.168.2.1 (Static)
Subnet Mask	255.255.255.0
Gateway	192.168.2.254
Link Ports	P8
Bonjour	Disabled

SaveRestoreFactoryReboot

4-1-2    System Name

Go to **System > Device Name**

System Name:

XGS-5008

Apply

Cancel

4-1-3 Software Version

Go to **System > Software Version**

This page allows you to do the new firmware upgrade.

System

Refresh

Help

Device Name	XGS-5008
Software Version	XGS-5008-V1.4
Build Date	Oct 25 2017
MAC Address	00:10:18:55:44:4b
IPv6 Address	fe80:0:0:0:210:18ff:fe55:444b (Link-Local)
IPv4 Address	192.168.2.1 (Static)
Subnet Mask	255.255.255.0
Gateway	192.168.2.254
Link Ports	P8
Bonjour	Disabled

Save

Restore

Factory

Reboot

192.168.2.1 顯示 :

Do you want to reboot device for Firmware upgrade?

OK

Cancel

4-1-4 Networking

Use the System page to configure settings for the switch network interface and connections to a remote server.

4-1-4-1 IP Address

**System > IPV4 Address**

This page allows you to edit IP address, Net Mask and Gateway.

IP Settings

☒ Static

☐ DHCP

IPv4 Address	192.168.2.1
Subnet Mask	255.255.255.0
Gateway	192.168.2.254

Apply

Cancel

**IP Address:** If static mode is enabled, enter IP address in this field.

**Net Mask:** If static mode is enabled, enter subnet mask in this field.

**Gateway:** Enter IP address in this field.

## 4-1-5 Save Current

### System > Save

Click Save to download all system configuration files.

System

Refresh

Help

Device Name	<a href="#">XGS-5008</a>
Software Version	<a href="#">XGS-5008-V1.4</a>
Build Date	Oct 25 2017
MAC Address	00:10:18:55:44:4b
IPv6 Address	fe80:0:0:0:210:18ff:fe55:444b (Link-Local)
IPv4 Address	<a href="#">192.168.2.111</a> (Static)
Subnet Mask	<a href="#">255.255.255.0</a>
Gateway	<a href="#">192.168.2.254</a>
Link Ports	<a href="#">P8</a>
Bonjour	<a href="#">Disabled</a>

Save

Restore

Factory

Reboot

192.168.2.111 says:

Do you want to download current device configuration?

OK

Cancel

## 4-1-6 Restore

### System > Restore

This page allows you to restore previous saved device configuration.

System

Refresh

Help

Device Name	<a href="#">XGS-5008</a>
Software Version	<a href="#">XGS-5008-V1.4</a>
Build Date	Oct 25 2017
MAC Address	00:10:18:55:44:4b
IPv6 Address	fe80:0:0:0:210:18ff:fe55:444b (Link-Local)
IPv4 Address	<a href="#">192.168.2.111</a> (Static)
Subnet Mask	<a href="#">255.255.255.0</a>
Gateway	<a href="#">192.168.2.254</a>
Link Ports	<a href="#">P8</a>
Bonjour	<a href="#">Disabled</a>

Save

Restore

Factory

Reboot

192.168.2.111 says:

Do you want to restore previous saved device configuration?

OK

Cancel

## 4-1-7 Factory Default

### System > Factory

This page allows you to apply factory default setting and reboot device, excluding IP & passwords.

**System**

Refresh

Help

Device Name	XGS-5008
Software Version	XGS-5008-V1.4
Build Date	Oct 25 2017
MAC Address	00:10:18:55:44:4b
IPv6 Address	fe80:0:0:0:210:18ff:fe55:444b (Link-Local)
IPv4 Address	192.168.2.111 (Static)
Subnet Mask	255.255.255.0
Gateway	192.168.2.254
Link Ports	P8
Bonjour	Disabled

Save

Restore

Factory

Reboot

192.168.2.111 says:

Do you want to apply factory default setting and reboot device, excluding IP and password ?

OK

Cancel

## 4-1-8 Reboot device

### System > Reboot

This page allows you to reboot the device.

**System**

Refresh

Help

Device Name	XGS-5008
Software Version	XGS-5008-V1.4
Build Date	Oct 25 2017
MAC Address	00:10:18:55:44:4b
IPv6 Address	fe80:0:0:0:210:18ff:fe55:444b (Link-Local)
IPv4 Address	192.168.2.111 (Static)
Subnet Mask	255.255.255.0
Gateway	192.168.2.254
Link Ports	P8
Bonjour	Disabled

Save

Restore

Factory

Reboot

192.168.2.111 says:

Do you want to reboot device?

OK

Cancel



## 4-2 Port Configuration

### 4-2-1 Port Configuration

Home	<div><b>PORT Status &amp; Configuration</b></div> <div><div>Refresh</div><div>Help</div></div> <table border="1"><thead><tr><th>Port</th><th>Description</th><th>Enable</th><th>Link Status</th><th>Speed Duplex</th><th>Flow Control</th><th>Auto-nego</th><th>PVID</th></tr></thead><tbody><tr><td>01</td><td></td><td><input checked="" type="checkbox"/></td><td>Down</td><td>--</td><td><input type="checkbox"/></td><td>--</td><td>1 ▼</td></tr><tr><td>02</td><td></td><td><input checked="" type="checkbox"/></td><td>Down</td><td>--</td><td><input type="checkbox"/></td><td>--</td><td>1 ▼</td></tr><tr><td>03</td><td></td><td><input checked="" type="checkbox"/></td><td>Down</td><td>--</td><td><input type="checkbox"/></td><td>--</td><td>1 ▼</td></tr><tr><td>04</td><td></td><td><input checked="" type="checkbox"/></td><td>Down</td><td>--</td><td><input type="checkbox"/></td><td>--</td><td>1 ▼</td></tr><tr><td>05</td><td></td><td><input checked="" type="checkbox"/></td><td>Down</td><td>--</td><td><input type="checkbox"/></td><td>--</td><td>1 ▼</td></tr><tr><td>06</td><td></td><td><input checked="" type="checkbox"/></td><td>Down</td><td>--</td><td><input type="checkbox"/></td><td>--</td><td>1 ▼</td></tr><tr><td>07</td><td></td><td><input checked="" type="checkbox"/></td><td>Down</td><td>--</td><td><input type="checkbox"/></td><td>--</td><td>1 ▼</td></tr><tr><td>08</td><td></td><td><input checked="" type="checkbox"/></td><td>Up</td><td>1000Mbps Full</td><td><input type="checkbox"/></td><td>On</td><td>1 ▼</td></tr></tbody></table> <div><div>Apply</div></div>	Port	Description	Enable	Link Status	Speed Duplex	Flow Control	Auto-nego	PVID	01		<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼	02		<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼	03		<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼	04		<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼	05		<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼	06		<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼	07		<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼	08		<input checked="" type="checkbox"/>	Up	1000Mbps Full	<input type="checkbox"/>	On	1 ▼
Port		Description	Enable	Link Status	Speed Duplex	Flow Control	Auto-nego	PVID																																																																	
01			<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼																																																																	
02			<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼																																																																	
03			<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼																																																																	
04			<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼																																																																	
05			<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼																																																																	
06			<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼																																																																	
07			<input checked="" type="checkbox"/>	Down	--	<input type="checkbox"/>	--	1 ▼																																																																	
08			<input checked="" type="checkbox"/>	Up	1000Mbps Full	<input type="checkbox"/>	On	1 ▼																																																																	

#### Provide configurable parameters:

Port functions provide an overview of the system. The Port Status Screen displays each port's status, such as Link, Speed, Duplex and Flow Control.

**Port Number** indicates the port numbers of the system.

**Description:** Per port Base.

**Enable / Disable port:** Per port base.

**Link Status** displays the link status of the port.

**Duplex Speed** indicates the duplex speed of the port when it is linked. If the port link is down, there is no status display.

**PVID** assigns default VLAN ID for untagged packets in 802.1q VLAN.

**Refresh** retrieves port status and updates the Port Status pages.

## 4-3 Traffic Statistics

Statistics			Clear Counters	Refresh	Help
Port	Tx	Rx			
01	240200486	240060320			
02	23182528	23272576			
03	60741926	60757432			
04	17618496	17574208			
05	27867072	27855936			
06	107097664	107060376			
07	330482586	49147			
08	3557312	3675392			
			Unit: bytes		

### Per port counter provides

- Tx & Rx packet

This category shows both the received packet count(excluding the incorrect packet) and the transmitted packet count.

## 4-4 VLAN Configuration

### 4-4-1 802.1Q VLAN

#### VLAN > VLAN Setting

<div>Home</div> <div>System</div> <div>Port</div> <div>Statistics</div> <div>VLAN</div> <div>MAC Table</div> <div>Trunking</div> <div>Mirror</div> <div>Cable Diagnostic</div> <div>QoS</div> <div>Rate</div> <div>Loopback Detect</div> <div>Multicast</div> <div>Access Control</div> <div>Users</div> <div>Logout</div>	<b>VLAN Setting</b> <span>Help</span>			
	VLAN ID : <span>▼</span> <span>Create New VLAN</span> <span>Maximum number of VLAN : 16</span>			
	VLAN ID	Member ports	<span>Tag egress packet</span>	<span>Untag egress packet</span>
	<u>1</u>	01 02 03 04 05 06 07 08		
	Click on VLAN ID to change member state or remove vlan.			

#### VLAN setting provides

- New VLAN ID creation
- Remove existed VALN
- Assign Port No. to VLAN
- Remove Port No. from existed VLAN
- Assign Port type to tagged or untagged

## 4-5 Mac Table Display

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

### MAC Address Table

The total number of entries is 2.

Refresh |<< >>

VLAN	MAC Address	Port
1	B8-6B-23-6D-C1-14	8
1	00-10-18-55-44-4B	CPU

## 4-6 Trunking - Port Aggregation

Aggregate multiple Ethernet ports together to form a logical port, supports static allocation.

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

Trunk Setting

Help

Distribution Criterion:

SA + DA

	01	02	03	04	05	06	07	08
Trunk Group 01	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trunk Group 02	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trunk Group 03	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trunk Group 04	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No Trunking	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

Maximum number of ports per trunk: 8

Minimum number of ports per trunk: 2

Apply

Support Static Trunking.

Support 4 trunking Groups.

Distribution Criterion is as following.

1. Source MAC address and destination MAC address.
2. Source MAC address only
3. Destination MAC address only

## 4-7 Port Mirroring

Port mirroring is mirroring the TX/RX data flow from the source port to the destination port.

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

Mirror Setting

Help

☐ Enable Mirror

	01	02	03	04	05	06	07	08
Mirror	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mirror To	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Apply

Allows to the user to set port mirroring 1:1 or Many: 1

- Destination port only can be one port.
- Source port, the bi-direction traffic source that will be copied to the destination port.

## 4-8 Cable Diagnostic

Cable diagnostic can let system detect those wired cable's healthy status.

<a href="#">Home</a>	<h3>Cable Diagnostic</h3> <div>Help</div> <p>Cable Diagnostic</p> <p>tests ..... Running</p> <p>Please wait. It may take a moment to complete.</p> <p>You will be directed to the results when it's done.</p>
<a href="#">System</a>	
<a href="#">Port</a>	
<a href="#">Statistics</a>	
<a href="#">VLAN</a>	
<a href="#">MAC Table</a>	
<a href="#">Trunking</a>	
<a href="#">Mirror</a>	
<a href="#">Cable Diagnostic</a>	
<a href="#">QoS</a>	
<a href="#">Rate</a>	
<a href="#">Loopback Detect</a>	
<a href="#">Multicast</a>	
<a href="#">Access Control</a>	
<a href="#">Users</a>	
<a href="#">Logout</a>	

Support Enhanced cable diagnostic detecting common cable problems:

- Shorts
- Opens
- After cable diagnostic , system will show up all ports' status
  - Green LED shows healthy
  - Amber LED shows shorts/opens or no-link

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

Cable Diagnostic

Help

Cable Diagnostic

Start

Port Status

Clear

Port	Test Result
1	Open
2	Open
3	Open
4	Open
5	Open
6	Open
7	Healthy
8	Open

User can clear the result of cable diagnostic status then system will auto-reboot.



## 4-9 QOS

This page can let you configure QoS mapping and method.

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

☒ IEEE 802.1P QoS☐ Port-Based QoS

### QoS Setting

Help

Scheduling Method: Weighted Round Robin ▼

Priority	(Low) 0	1	2	3	4	5	6	(High) 7	Weight
Queue 0 (Low)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1 ▼
Queue 1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2 ▼
Queue 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	4 ▼
Queue 3 (High)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	8 ▼

Apply

Scheduling mode:

- All-High-before-Low (Strict priority)
- Weight-Round-Robin (WRR- by packet)

Support IEEE 802.1p Qos queue mapping

Support Port-Based Qos queue mapping

## 4-10 Rate Limit

### Per Port's Ingress & Egress Rate Settings and Storm Control

This page allows you to set per port's ingress & egress throughput rate and also enable the storm control.

Home	<b>Port Rate</b> <div>Help</div> <table border="1"><thead><tr><th>Port</th><th>Ingress Rate</th><th>Egress Rate</th></tr></thead><tbody><tr><td><a href="#">01</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td><a href="#">02</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td><a href="#">03</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td><a href="#">04</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td><a href="#">05</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td><a href="#">06</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td><a href="#">07</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td><a href="#">08</a></td><td>No Limit</td><td>No Limit</td></tr><tr><td colspan="2">Storm Control</td><td><a href="#">Disable</a></td></tr></tbody></table>	Port	Ingress Rate	Egress Rate	<a href="#">01</a>	No Limit	No Limit	<a href="#">02</a>	No Limit	No Limit	<a href="#">03</a>	No Limit	No Limit	<a href="#">04</a>	No Limit	No Limit	<a href="#">05</a>	No Limit	No Limit	<a href="#">06</a>	No Limit	No Limit	<a href="#">07</a>	No Limit	No Limit	<a href="#">08</a>	No Limit	No Limit	Storm Control		<a href="#">Disable</a>
Port		Ingress Rate	Egress Rate																												
<a href="#">01</a>		No Limit	No Limit																												
<a href="#">02</a>		No Limit	No Limit																												
<a href="#">03</a>		No Limit	No Limit																												
<a href="#">04</a>		No Limit	No Limit																												
<a href="#">05</a>		No Limit	No Limit																												
<a href="#">06</a>		No Limit	No Limit																												
<a href="#">07</a>		No Limit	No Limit																												
<a href="#">08</a>		No Limit	No Limit																												
Storm Control		<a href="#">Disable</a>																													
System																															
Port																															
Statistics																															
VLAN																															
MAC Table																															
Trunking																															
Mirror																															
Cable Diagnostic																															
QoS																															
Rate																															
Loopback Detect																															
Multicast																															
Access Control																															
Users																															
Logout																															

This page also allows you to set global ingress storm control.

**Rate Limit For Port 01**

Help

Ingress Rate

No Limit ▼

Egress Rate

No Limit ▼

Apply

Provides bi-direction bandwidth control on per port basis, Once the rate limited protection is enabled, the excessive packets will be discarded.

- The threshold is per port base level and applies to selected port.
- Ingress rate selected range : 512K/1Mbps/2/4/8/16/62/64/128/512Mbps
- Egress rate selected range : 512K/1Mbps/2/4/8/16/62/64/128/512Mbps

## 4-11 Loop Detection

### Per Port's based loop detection

This page allows you to enable system Loop Detection and let system auto detect and blocking / link down those looping ports.

Home

System

Port

Statistics

VLAN

MAC Table

Trunking

Mirror

Cable Diagnostic

QoS

Rate

Loopback Detect

Multicast

Access Control

Users

Logout

Loop Detection

Help

☐ Enable Loop Detection

Apply

Port Status

Refresh

Port	Loop Status
1	---
2	---
3	---
4	---
5	---
6	---
7	---
8	---

Loopback Detect Function: Enable/Disable the loopback detects function.

When loopback detection function is enabled and a port received it's own PDU, the detection agent drops the loopback PDU and places the interface in discarding mode. This loopback status can be released by user to eliminate the looping wired cables then enable the port again.

## 4-12 Multicast Setting - IGMP Snooping

This page allows you to enable system IGMP snooping function to guide all registered multicast streams from multicast server to those designated clients.

And also can let user to filter all un-registered multicast streams from servers. That can make the networks more clear without multicast disturbed.

Home	<h3>Multicast Setting</h3> <div>Help</div> <div><input checked="" type="checkbox"/> <b>IGMP Snooping Enable</b></div> <div>VLAN ID for IGMP snooping (1-4094) <input type="text" value="1"/></div> <div><input type="checkbox"/> <b>Block Unknown Multicast Address Enable</b></div> <div>Apply</div>
System	
Port	
Statistics	
VLAN	
MAC Table	
Trunking	
Mirror	
Cable Diagnostic	
QoS	
Rate	
Loopback Detect	
Multicast	
Access Control	
Users	
Logout	

User can Enable/disable support for IGMP V1/ V2.

**VLAN ID for IGMP snooping**, user can select an existing VLAN where IGMP snooping is available.

**Block Unknown Multicast Address Enable** enables or disables Block Unknown Multicast Address

## 4-13 Access Control – Limited User Access

This page allows you to enable user access control security. User access control can be limited by single user or multiple user by dedicated IP address or IP subnet.

<div>Home</div> <div>System</div> <div>Port</div> <div>Statistics</div> <div>VLAN</div> <div>MAC Table</div> <div>Trunking</div> <div>Mirror</div> <div>Cable Diagnostic</div> <div>QoS</div> <div>Rate</div> <div>Loopback Detect</div> <div>Multicast</div> <div>Access Control</div> <div>Users</div> <div>Logout</div>	<div><h3>Access Control</h3><div>Help</div></div> <div><input type="checkbox"/> Limit Designated IP Access</div> <div><div>Access IP 1: <input type="text"/></div><div>Access IP 2: <input type="text"/></div><div>Access IP 3: <input type="text"/></div><div>Access IP 4: <input type="text"/></div><div>Access IP 5: <input type="text"/></div><div>Mask 1: <input type="text"/></div><div>Mask 2: <input type="text"/></div><div>Mask 3: <input type="text"/></div><div>Mask 4: <input type="text"/></div><div>Mask 5: <input type="text"/></div><div>Apply</div></div> <div><input type="checkbox"/> Limit Single User Access <div>Apply</div></div>
--	---

Support Limit Designated IP Access, While enable "Limit Designated IP Access", the format of ip/mask is xx.xx.xx.xx, xx is number between 0-255. Those IP can access the devices.  
Support Single User Access, When the "Limit Single User Access" is selected then only single user access. Timeout is 5 minutes.

## 4-14 User Name and Password management

This page allows you to enable user to change the system default user name and password.

Home	<div><h3>User Setting</h3><div>Help</div><div><a href="#">Change Password</a></div><table border="1"><tr><td>Old Password:</td><td></td></tr><tr><td>New Password:</td><td></td></tr><tr><td>Confirm New Password:</td><td></td></tr></table><div>Apply</div><div><a href="#">Change User Name</a></div><table border="1"><tr><td>Old User Name:</td><td></td></tr><tr><td>New User Name:</td><td></td></tr><tr><td>Confirm New User Name:</td><td></td></tr></table><div>Apply</div></div>	Old Password:		New Password:		Confirm New Password:		Old User Name:		New User Name:		Confirm New User Name:	
Old Password:													
New Password:													
Confirm New Password:													
Old User Name:													
New User Name:													
Confirm New User Name:													
System													
Port													
Statistics													
VLAN													
MAC Table													
Trunking													
Mirror													
Cable Diagnostic													
QoS													
Rate													
Loopback Detect													
Multicast													
Access Control													
Users													
Logout													

## Chapter 5 CLI command

1. RJ45 type Console port :
  - Baud rate : 9600 bps
2. CLI command Support :
  - Showing & configing device's system IP address/subnet & Gateway (CLI
  - Modify administrator's password.

### ■ CLI command :

- enable/disable dhcp
- config ipif ipaddress xx.xx.xx.xx subnet xx.xx.xx.xx gateway xx.xx.xx.xx
- config password oldpassword (< 20 characters) newpassword (<20 characters) confirmpassword ( < 20 characters)
- show system

Command	Description/Command line
enable	Enable command
- DHCP	CMD\$enable dhcp
Disable	Disable command
- DHCP	CMD\$disable dhcp
Config	Config command
- Password	Change Password CMD\$config password oldpassword          old Password newpassword        new Password confirmpassword    confirm Password CMD\$config password oldpassword old_pass    The old password CMD\$config password oldpassword 1234 newpassword new_pass    The maximum length of new password is 20 characters. CMD\$config password oldpassword 1234 newpassword 1234 confirmpassword confirm_pass    Confirm New Password <u>Example:.</u> CMD\$config password oldpassword 1234 newpassword 1234 confirmpassword 1234
- ipif	Config/change system interface IP address CMD\$config ipif ipaddress    Config ipif ipaddress subnet       Config ipif subnet gateway      Config ipif gateway CMD\$config ipif ipaddress ip_address    ip address xxx.xxx.xxx.xxx CMD\$config ipif ipaddress 192.168.2.1 subnet ip_subnet    subnet xxx.xxx.xxx.xxx CMD\$config ipif ipaddress 192.168.2.1 subnet 255.255.255.0 gateway

	ip_gateway      gateway xxx.xxx.xxx.xxx <u>Example:</u> CMD\$config ipif ipaddress 192.168.2.1 subnet 255.255.255.0 gateway 192.168.2.254
show	Show command CMD\$show system      Show system information CMD\$show system  ----- Device Name       : Edimax Firmware Version   : XGS-5008-V1.1B02 Build Date         : Oct 5 2016 MAC Address        : 00:10:18:55:44:4b IP Type             : STATIC IPv4 Address        : 192.168.2.1 Subnet Mask         : 255.255.255.0 Gateway            : 192.168.2.254 -----
exit	logout



## **COPYRIGHT**

Copyright © Edimax Technology Co., Ltd. all rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission from Edimax Technology Co., Ltd.

Edimax Technology Co., Ltd. makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties, merchantability, or fitness for any particular purpose. Any software described in this manual is sold or licensed as is. Should the programs prove defective following their purchase, the buyer (and not this company, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software. Edimax Technology Co., Ltd. reserves the right to revise this publication and to make changes from time to time in the contents hereof without the obligation to notify any person of such revision or changes.

The product you have purchased and the setup screen may appear slightly different from those shown in this QIG. The software and specifications are subject to change without notice. Please visit our website [www.edimax.com](http://www.edimax.com) for updates. All brand and product names mentioned in this manual are trademarks and/or registered trademarks of their respective holders.

## ***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 FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio technician for help.

### **FCC Caution**

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. 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. Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

### **Federal Communications Commission (FCC) Radiation Exposure Statement**

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 2.5cm (1 inch) during normal operation.

### **Federal Communications Commission (FCC) RF Exposure Requirements**

SAR compliance has been established in the laptop computer(s) configurations with PCMCIA slot on the side near the center, as tested in the application for certification, and can be used in laptop computer(s) with substantially similar physical dimensions, construction, and electrical and RF characteristics. Use in other devices such as PDAs or lap pads is not authorized. This transmitter is restricted for use with the specific antenna tested in the application for certification. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **R&TTE Compliance Statement**

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

### **Safety**

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

### **EU Countries Intended for Use**

The ETSI version of this device is intended for home and office use in Austria, Belgium, Bulgaria, Cyprus, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, and United Kingdom. The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

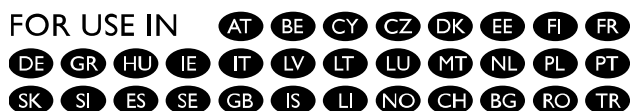
### **EU Countries Not Intended for Use**

None

## EU Declaration of Conformity

- English:** This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Français:** Cet équipement est conforme aux exigences essentielles et autres dispositions de la directive 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.
- Čeština:** Toto zařízení je v souladu se základními požadavky a ostatními příslušnými ustanoveními směrnic 1995/5/ES, 2009/125/ES, 2006/95/ES, 2011/65/ES.
- Polski:** Urządzenie jest zgodne z ogólnymi wymaganiami oraz szczególnymi warunkami określonymi Dyrektywą UE 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC..
- Română:** Acest echipament este în conformitate cu cerințele esențiale și alte prevederi relevante ale Directivei 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.
- Русский:** Это оборудование соответствует основным требованиям и положениям Директивы 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Magyar:** Ez a berendezés megfelel az alapvető követelményeknek és más vonatkozó irányelveknek (1995/5/EK, 2009/125/EK, 2006/95/EK, 2011/65/EK).
- Türkçe:** Bu cihaz 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC direktifleri zorunlu istekler ve diğer hükümlerle ile uyumludur.
- Українська:** Обладнання відповідає вимогам і умовам директиви 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Slovenčina:** Toto zariadenie spĺňa základné požiadavky a ďalšie príslušné ustanovenia smerníc 1995/5/ES, 2009/125/ES, 2006/95/ES, 2011/65/ES.
- Deutsch:** Dieses Gerät erfüllt die Voraussetzungen gemäß den Richtlinien 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Español:** El presente equipo cumple los requisitos esenciales de la Directiva 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Italiano:** Questo apparecchio è conforme ai requisiti essenziali e alle altre disposizioni applicabili della Direttiva 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.
- Nederlands:** Dit apparaat voldoet aan de essentiële eisen en andere van toepassing zijnde bepalingen van richtlijn 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC..
- Português:** Este equipamento cumpre os requisitos essenciais da Directiva 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Norsk:** Dette utstyret er i samsvar med de viktigste kravene og andre relevante regler i Direktiv 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Svenska:** Denna utrustning är i överensstämmelse med de väsentliga kraven och övriga relevanta bestämmelser i direktiv 1995/5/EG, 2009/125/EG, 2006/95/EG, 2011/65/EG.
- Dansk:** Dette udstyr er i overensstemmelse med de væsentligste krav og andre relevante forordninger i direktiv 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- suomen kieli:** Tämä laite täyttää direktiivien 1995/5/EY, 2009/125/EY, 2006/95/EY, 2011/65/EY oleelliset vaatimukset ja muut asiaankuuluvat määräykset.

FOR USE IN



---

### WEEE Directive & Product Disposal



At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

## Declaration of Conformity

We, Edimax Technology Co., Ltd., declare under our sole responsibility, that the equipment described below complies with the requirements of the European R&TTE directives.

**Equipment: XGS-5008 8 Port 10GbE Web Smart Switch**

**Model No.: XGS-5008**

The following European standards for essential requirements have been followed:

### Directives 2014/30/EU

EMC	:	EN55024:2010 EN55032:2012+AC:2013 EN61000-3-2:2014 EN61000-3-3:2013
Safety (LVD)	:	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011+A2:2013

Edimax Technology Co., Ltd.  
No. 3, Wu Chuan 3<sup>rd</sup> Road,  
Wu-Ku Industrial Park,  
New Taipei City, Taiwan



Date of Signature: Nov, 2016

Signature:

A handwritten signature in black ink, appearing to read 'Albert Chang', written over a horizontal line.

Printed Name:

Albert Chang

Title:

Director

Edimax Technology Co., Ltd.

## Notice According to GNU General Public License Version 2

This product includes software that is subject to the GNU General Public License version 2. The program is free software and distributed without any warranty of the author. We offer, valid for at least three years, to give you, for a charge no more than the costs of physically performing source distribution, a complete machine-readable copy of the corresponding source code.

Das Produkt beinhaltet Software, die den Bedingungen der GNU/GPL-Version 2 unterliegt. Das Programm ist eine sog. „Free Software“, der Autor stellt das Programm ohne irgendeine Gewährleistungen zur Verfügung. Wir bieten Ihnen für einen Zeitraum von drei Jahren an, eine vollständige maschinenlesbare Kopie des Quelltextes der Programme zur Verfügung zu stellen – zu nicht höheren Kosten als denen, die durch den physikalischen Kopiervorgang anfallen.

### GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA  
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and “any later version”, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### **NO WARRANTY**

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.



