

**GEL2P-ESW26G**  
**Gigabit Managed Switch**

**Installation and Getting Started Guide**

# **GEL2P-ESW26G Gigabit Managed Switch**

## **Installation and Getting Started Guide**

# ABOUT THIS GUIDE

## PURPOSE

This guide gives specific information on how to operate and use the management functions of the switch.

## AUDIENCE

The guide is intended for use by network administrators who are responsible for operating and maintaining network equipment; consequently, it assumes a basic working knowledge of general switch functions, the Internet Protocol (IP), and Simple Network Management Protocol (SNMP).

## CONVENTIONS

The following conventions are used throughout this guide to show information:



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**NOTE:** Emphasizes important information or calls your attention to related features or instructions.

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**WARNING:** Alerts you to a potential hazard that could cause personal injury.

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**CAUTION:** Alerts you to a potential hazard that could cause loss of data, or damage the system or equipment.

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## WARRANTY

See the Customer Support/ Warranty booklet included with the product.

A copy of the specific warranty terms applicable to your Manufacture products and replacement parts can be obtained from your Manufacture Sales and Service Office pr authorized dealer.

# COMPLIANCES AND SAFETY STATEMENTS

## FCC-CLASS A

This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

You may use unshielded twisted-pair (UTP) for RJ-45 connections – Category 3 or better for 10 Mbps connections, Category 5 or better for 100 Mbps connections, Category 5, 5e, or 6 for 1000 Mbps connections. For fiber optic connections, you may use 50/125 or 62.5/125 micron multimode fiber or 9/125 micron single-mode fiber.

## CE MARK DECLARATION OF CONFORMANCE FOR EMI AND SAFETY (EEC)

This equipment has been tested and found to comply with the protection requirements of European Emission Standard EN55022/EN61000-3 and the Generic European Immunity Standard EN55024.

## EMC:

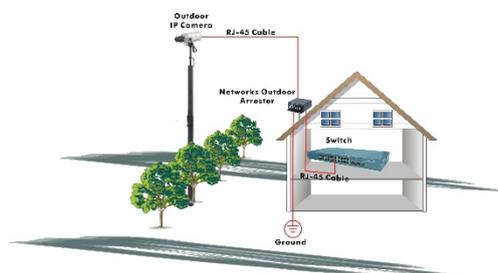
EN55022(2006)+A1:2007/CISPR 22:2006+A1:2006	Class A 4K V CD, 8KV, AD
IEC61000-4-2 (2001)	3V/m
IEC61000-4-3( 2002)	1KV – (power line), 0.5KV – (signal line)
IEC61000-4-4(2004)	Line to Line: 1KV, Line to Earth: 2KV
IEC61000-4-5 (2001)	130dBuV(3V) Level 2
IEC61000-4-6 (2003)	1A/m
IEC61000-4-8 (2001)	Voltage dips: >95%, 0.5period, 30%, 25periods
IEC61000-4-11(2001)	Voltage interruptions: >95%, 250periods



**CAUTION:** Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge.

To protect your device, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.
- Pick up the device by holding it on the left and right edges only.
- If you need using outdoor device connect to this device with cable then you need to addition an arrester on the cable between outdoor device and this device.



**Fig. Addition an arrester between outdoor device and this switch**

- The switch supports the SFP Vendor includes: Manufacture, Agilent, Avago and Finisar



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**NOTE:** The switch is indoor device; if it will be used in outdoor environment or connects with some outdoor device, then it must use a lightning arrester to protect the switch

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**WARNING:**

- Self-demolition on Product is strictly prohibited. Damage caused by self-demolition will be charged for repairing fees.
  - Do not place product at outdoor or sandstorm.
  - Before installation, please make sure input power supply and product specifications are compatible to each other.
  - To reduce the risk of electric shock. Disconnect all AC or DC power cord and RPS cables to completely remove power from the unit.
  - Before importing / exporting configuration please make sure the firmware version is always the same.
  - After firmware upgrade, the switch will remove the configuration automatically to latest firmware version.
- 

**RELATED PUBLICATIONS**

The following publication gives specific information on how to operate and use the management functions of the switch:

The User's Manual

**REVISION HISTORY**

This section summarizes the changes in each revision of this guide.

Release	Date	Revision
6.38	01/06/2016	A1

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# INTRODUCTION

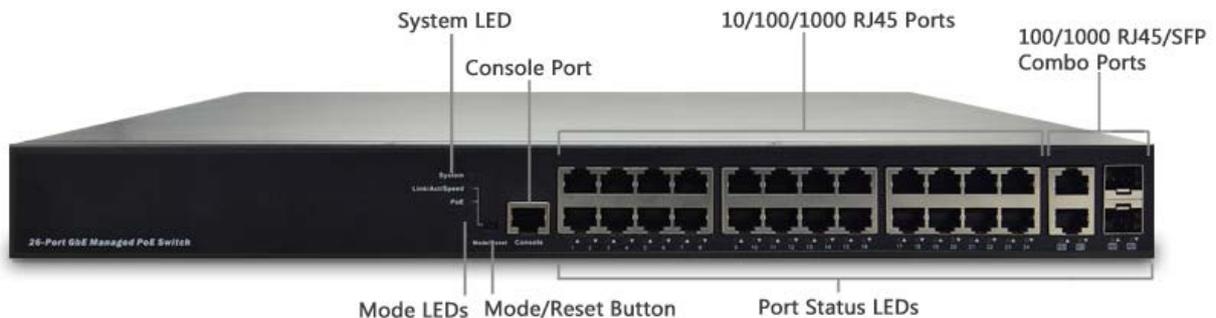
## OVERVIEW

GEL2P-ESW26G L2+ Managed Switch is a next-generation Ethernet Switch offering full suite of L2 features, including advanced L3 features such as Static Route that delivers better cost performance and lower total cost of ownership in Enterprise networks via fiber or copper connections.

GEL2P-ESW26G delivers 24 (10M/100M/1G) RJ45 ports, 2 Combo GbE RJ45/SFP ports and RJ45 Console port. GEL2P-ESW26G provides high HW performance and environment flexibility for SMBs and Enterprises.

GEL2P-ESW26G is ideal to deliver management simplicity, optimum user experience, and lower cost. The embedded Device Managed System is designed to be extremely easy-to-use/manage/install IP Phone, IP Cam, or Wifi-AP for Enterprise Applications.

## Front of the Switches



## Back of the Switches



## SWITCH ARCHITECTURE

The switch performs a wire-speed, non-blocking switching fabric. This allows wire-speed transport of multiple packets at low latency on all ports simultaneously. The switch also features full-duplex capability on all ports, which effectively doubles the bandwidth of each connection.

This switch uses store-and-forward technology to ensure maximum data integrity. With this technology, the entire packet must be received into a buffer and checked for validity before being forwarded. This prevents errors from being propagated throughout the network.

## NETWORK MANAGEMENT OPTIONS

The switch can also be managed over the network with a web browser or Telnet application. The switch includes a built-in network management agent that allows it to be managed in-band using SNMP or RMON (Groups 1, 2, 3, 9) protocols. It also has an RJ45 console port connector on the front panel for out-of-band management. A PC may be connected to this port for configuration and monitoring out-of-band via a null-modem serial cable.



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**NOTE:** For a detailed description of the management features, refer to the *User's manual*.

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# DESCRIPTION OF HARDWARE

## 1000BASE-T PORTS

The switch contains 26 1000BASE-T RJ-45 ports. All RJ-45 ports support automatic MDI/MDI-X operation, auto-negotiation and IEEE 802.3x auto-negotiation of flow control, so the optimum data rate and transmission can be selected automatically.

## SFP TRANSCEIVER SLOTS

GEL2P-ESW26G supports the Small Form Factor Pluggable (SFP) transceiver slots are shared with RJ-45 port 25 to 26. In the default configuration, if an SFP transceiver (purchased separately) is installed in a slot and has a valid link on the port, the associated RJ-45 port is disabled.

The following table shows a list of transceiver types which have been tested with the switch. For an updated list of vendors supplying these transceivers, contact your local dealer. For information on the recommended standards for fiber optic cabling, see "[1000 Mbps Gigabit Ethernet Collision Domain](#)".

## Supported SFP Transceivers

Media Standard	Fiber Diameter (microns)	Wavelength (nm)	Maximum Distance*
1000BASE-SX	50/125	850	550 m
	62.5/125	850	275 m
1000BASE-LX/ LHX/ XD/ZX	9/125	1310	10 km
	9/125	1550	30.50 km
	9/125	1300	10 km
1000BASE-LX Single Fiber	N/A	TX-1310/RX-1550	20 km
		Tx-1550/RX-1310	20 km
1000BASE-T	N/A	N/A	100 m
100-FX	50/125	850	2 km
	62.5/125	1550	15km



**NOTE:** \* Maximum distance may vary for different SFP vendors

## PORT AND SYSTEM STATUS LEDs

The GEL2P-ESW26G switch includes a display panel for system and port indications that simplify installation and network troubleshooting. The LEDs, which are located on left hand side of the front panel for easy viewing. Details are shown below and described in the following tables.

### Port Status LEDs

LED	Condition	Status
TP SPEED	Green/Yellow	Lit Green when TP link on 1000Mbps Yellow when TP link on 10/100Mbps
PoE (Link/ACT)	Green	Lit Green when PoE link with PD and supply power to PD
SFP SPEED	Green/Yellow	Lit Green when SFP link on 1000Mbps Yellow when SFP link on 100Mbps

### Mode Status LEDs

LED	Condition	Status
Link/ACT/Speed	Green	Lit Green indicates all LED of each port are in Link/ACT/Speed mode.

### System Status LED

SYSTEM LED	Condition	Status
Power	Green OFF	Lit green when power is coming up Off when Power is turn off

## POWER SUPPLY SOCKET

There are a power sockets on the rear panel of the switch. For normal power supply, the GEL2P-ESW26G Switch has standard power socket for AC power cord.

# NETWORK PLANNING

## INTRODUCTION TO SWITCHING

A network switch allows simultaneous transmission of multiple packets; it can partition a network more efficiently than bridges or routers. Therefore the switch has been recognized as one of the most important devices for today's networking technology.

When performance bottlenecks are caused by congestion at the network access point such as file server, the device can be connected directly to a switched port. And, by using full-duplex mode, the bandwidth of the dedicated segment can be doubled to maximize throughput.

When networks are based on repeater (hub) technology, the distance between end stations is limited by a maximum hop count. However, a switch can subdividing the network into smaller and more manageable segments, and linking them to the larger network than it turns the hop count back to zero and removes the limitation.

A switch can be easily configured in any Ethernet, Fast Ethernet, or Gigabit Ethernet network to significantly increase bandwidth while using conventional cabling and network cards.

## APPLICATION EXAMPLES

The GEL2P-ESW26G Switch implements 24 Gigabit Ethernet TP ports with auto MDIX and 2 slots for the removable SFP module (GEL2P-ESW26G port 25/26) which supports comprehensive types of fiber connection, such as LC and BiDi-LC modules. It is not only designed to segment your network, but also to provide a wide range of options in setting up network connections. Some typical applications are described below.

The switch is suitable for the following applications.

- Remote site application is used in Enterprise or SMB
- Peer-to-peer application is used in two remote offices
- Office network
- High Performance Requirement environment
- Advance Security for network safety application
- Suitable for data/ voice and video conference application

# INSTALLING THE SWITCH

## SELECTING A SITE

The Switch can be mounted in a standard 19-inch equipment rack (Via **Optional Rack mount Kit**) or on a flat surface. Be sure to follow the guidelines below when choosing a location.

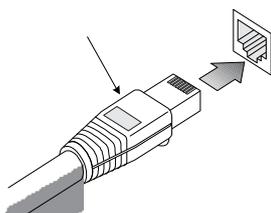
- ◆ The site should:
  - Be at the center of all the devices you want to link and near a power outlet.
  - Be able to maintain its temperature within 0 to 45°C (32 to 113 °F) and its humidity within 10% to 90%, non-condensing.
  - Be accessible for installing, cabling and maintaining the devices.
  - Allow the status LEDs to be clearly visible.
- ◆ Make sure the twisted-pair Ethernet cable is always routed away from power lines, radios, transmitters or any other electrical interference.
- ◆ Make sure that GEL2P-ESW26G 26Port Series Switch is connected to a separate grounded power outlet that provides 100 to 240 VAC, 50 to 60 Hz.

## ETHERNET CABLING

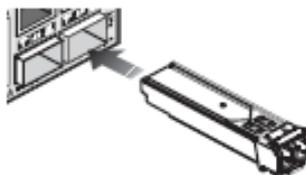
To ensure proper operation when installing the switch into a network, make sure that the current cables are suitable for 100BASE-TX or 1000BASE-T operation. Check the following criteria against the current installation of your network:

- ◆ Cable type: Unshielded twisted pair (UTP) or shielded twisted pair (STP) cable with RJ-45 connectors; Category 5 or Category 5e with maximum length of 100 meters is recommend 100BASE-TX, and Category 5e or 6 with maximum length of 100 meters is recommend for 1000BASE-T.
- ◆ Protection from radio frequency interference emissions.
- ◆ Electrical surge suppression.
- ◆ Separation of electrical wires and data based network wiring.
- ◆ Safe connections with no damaged cables, connectors or shields.

## RJ-45 Connections



## SFP Transceiver



## EQUIPMENT CHECKLIST

After unpacking this switch, please check the contents to be sure you have received all the components. Then, before beginning the installation, be sure you have all other necessary installation equipment.

## PACKAGE CONTENTS

- GEL2P-ESW26G 26 Port Series GbE Management Switch
- Four adhesive rubber feet
- Mounting Accessory (for 19" Rack Shelf, Optional)
- This Installation Guide
- User's Manual CD
- AC Power Cord
- RJ-45 Console Cable



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**NOTE:** Please notify your sales representative immediately if any of the aforementioned items is missing or damaged.

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**WARNING:** The mini-GBICs are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.

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## MOUNTING

The switch can be mounted in a standard 19-inch equipment rack or on a desktop or shelf. Mounting instructions for each type of site as follow.

### RACK MOUNTING

Before rack mounting the switch, please pay attention to the following factors:

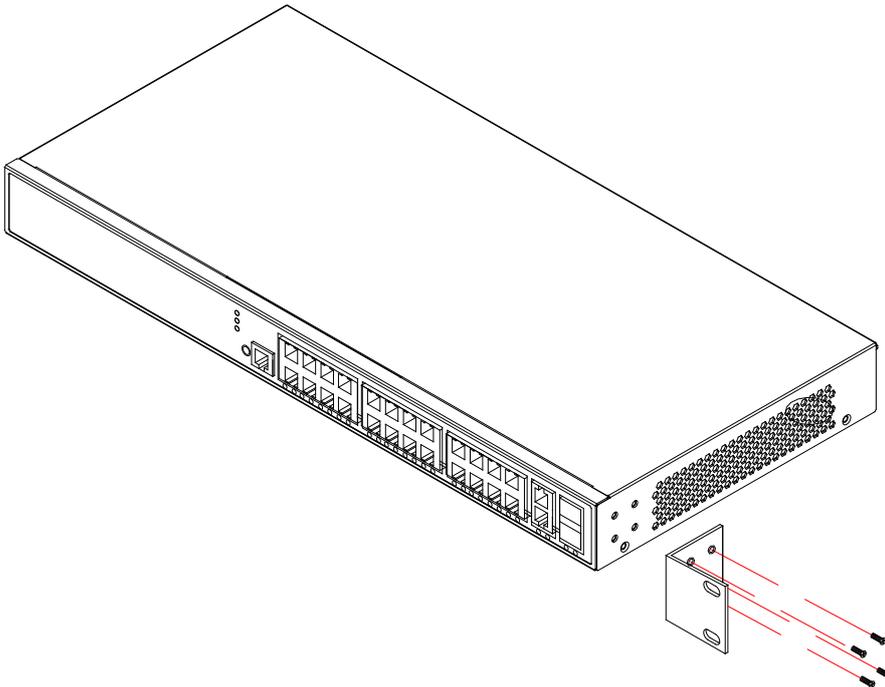
- Temperature: Since the temperature within a rack assembly may be higher than the ambient room temperature, check that the rack-environment temperature is within the specified operating temperature range (0 to 45 °C).
- Mechanical Loading: Do not place any equipment on top of a rack-mounted unit.

- Circuit Overloading: Be sure that the supply circuit to the rack assembly is not overloaded.
- Grounding: Rack-mounted equipment should be properly grounded.

## TO Rack-mount Devices:

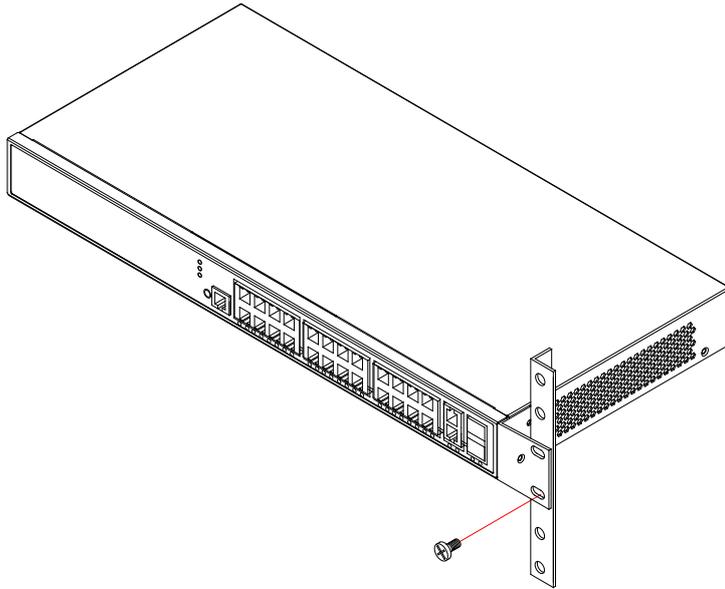
**Step1.** Attach the brackets to the device using the screws provided in the Mounting Accessory.

### Attaching the Brackets



**Step2.** Mount the device in the rack (Via Optional Rack-Mount kit), using four rack-mounting screws (not provided). Be sure to secure the lower rack-mounting screws first to prevent the brackets being bent by the weight of the switch.

### Installing the switch in a Rack



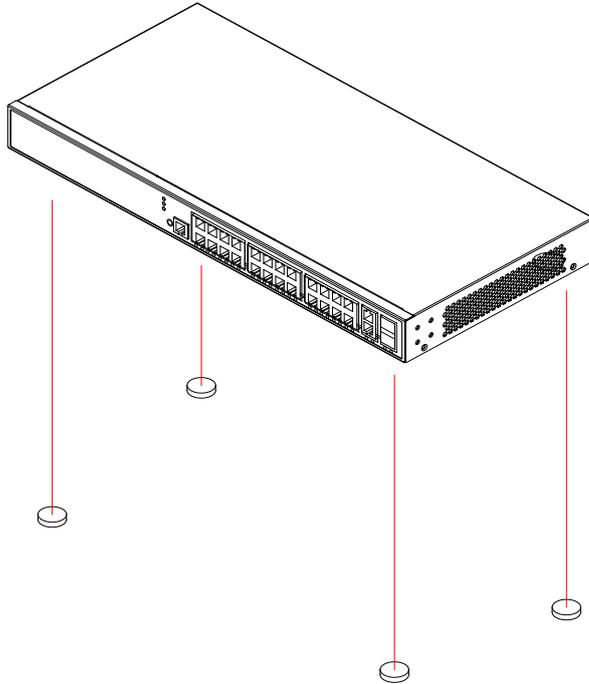
**Step3.** If installing a single switch only, turn to “Connection to a Power Source” at the end of this chapter.

**Step4.** If installing multiple switches, mount them in the rack, one below the other, in any order.

## DESKTOP OR SHELF MOUNTING:

**Step1.** Attach the four adhesive rubber feet to the bottom of the first switch.

### Attaching the Adhesive Rubber Feet



**Step2.** Set the device on a flat surface near an AC power source, making sure there are at least two inches of space on all sides for proper air flow.

**Step3.** If installing a single switch only, go to [“Connecting to a Power Source”](#) at the end of this Chapter.

**Step4.** If installing multiple switches, attach four adhesive feet to each one. Place each device squarely on top of the one below, in any order.

## INSTALLING AN OPTIONAL SFP TRANSCEIVER

You can install or remove a mini-GBIC SFP from a mini-GBIC slot without having to power off the switch. Use only Manufacture mini-GBIC.



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### NOTE:

- The mini-GBIC slots are shared with the two 10/ 100/ 1000Base-T RJ-45 ports. If a mini-GBIC is installed in a slot, the associated RJ-45 port is disabled and cannot be used.
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- 
- The mini-GBIC ports operate only at full duplex. Half duplex operation is not supported.
  - Ensure the network cable is NOT connected when you install or remove a mini-GBIC.
- 

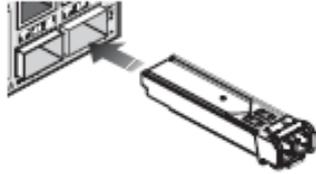


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**CAUTION:** Use only supported genuine Manufacture mini-GBICs with your switch. Non-Manufacture mini-GBIC might have compatible issue, and their use may result in product malfunction.

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## Inserting an SFP Transceiver into a Slot



The SFP slots support the following optional SFP transceivers:

Description
1000Base-SX GE SFP Fiber Module, LC Multi-Mode 850nm
1000Base-SX GE SFP Fiber Module, LC Multi-Mode 1310nm 2km
1000Base-LX GE SFP Fiber Module, LC Single-Mode 10km
1000Base-LX GE SFP Fiber Module, LC Single-Mode 30km
1000Base-LX GE SFP Fiber Module, LC Single-Mode 50km
1000Base-LX GE SFP Fiber Module, LC Single-Mode 50km
1000Base-LX GE SFP Fiber Module, Bidi LC Single-Mode 10km, 1310nm
1000Base-LX GE SFP Fiber Module, Bidi LC Single-Mode 10km, 1550nm
1000Base-LX GE SFP Fiber Module, Bidi LC Single-Mode 20km, 1550nm
1000Base-LX GE SFP Fiber Module, Bidi LC Single-Mode 20km, 1310nm
100Base-FX FE SFP Fiber Module, LC Multi-Mode
100Base-FX FE SFP Fiber Module, LC Single-Mode 20km

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 **CAUTION: We recommend the SFP Transceiver from the following vendors:**

- Manufacture Corporation
- Agilent Technologies
- AVAGO Technologies
- Finisar Corporation

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**TO Install a SFP transceiver, do the following:**

**Step1.** Consider network and cabling requirements to select an appropriate SFP transceiver type.

**Step2.** Insert the transceiver with the optical connector facing outward and the slot connector facing down. Note that SFP transceivers are keyed so they can only

be installed in one orientation.

**Step3.** Slide the SFP transceiver into the slot until it clicks into place.



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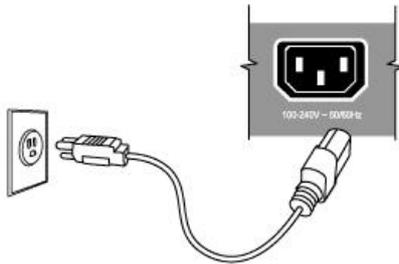
**NOTE:** SFP transceivers are not provided in the switch package.

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## CONNECTING TO A POWER SOURCE

You can plug or remove power cord from AC power socket , to switch the power on and off .

### Inserting the Power Cord to AC Power Socket



**Step1.** Insert the power cable plug directly into the AC Socket located at the back of the switch.

**Step2.** Plug the other end of the cable into a grounded, 3-Pin, AC power source.

**Step3.** Check the front-panel LEDs as the device is powered on to be sure the POWER LED is lit. If not, check that the power cable is correctly plugged in.



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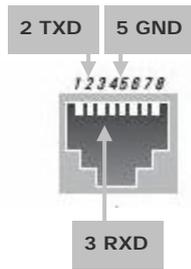
**WARNING:** For International use, you may need to change the AC line cord. You must use a line cord set that has been approved for the socket type in your country.

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## CONNECTING TO THE CONSOLE PORT

The RJ-45 serial port on the switch's front panel is used to connect to the switch for out-of-band console configuration. The command-line-driven configuration program can be accessed from a terminal or a PC running a terminal emulation program. The pin assignments used to connect to the serial port are provided in the following table

## Serial Port (RJ-45) Pin-Out



## WIRING MAP FOR SERIAL CABLE

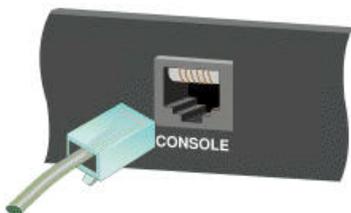
### Serial Cable Wiring

Switch's 8-Pin Serial Port	Null Modem	PC's 9-Pin DTE Port
6 RXD (receive data)	←-----	3 TXD (transmit data)
3 TXD (transmit data)	-----→	2 RXD (receive data)
5 SGND (Signal ground)	-----	5 SGND (Signal ground)



**NOTE:** No other pins are used.

### Plug in the Console Port



The serial port's configuration requirements are as follows:

- ◆ Default Baud rate—115,200 bps
- ◆ Character Size—8 Characters
- ◆ Parity—None
- ◆ Stop bit—One
- ◆ Data bits—8
- ◆ Flow control—none

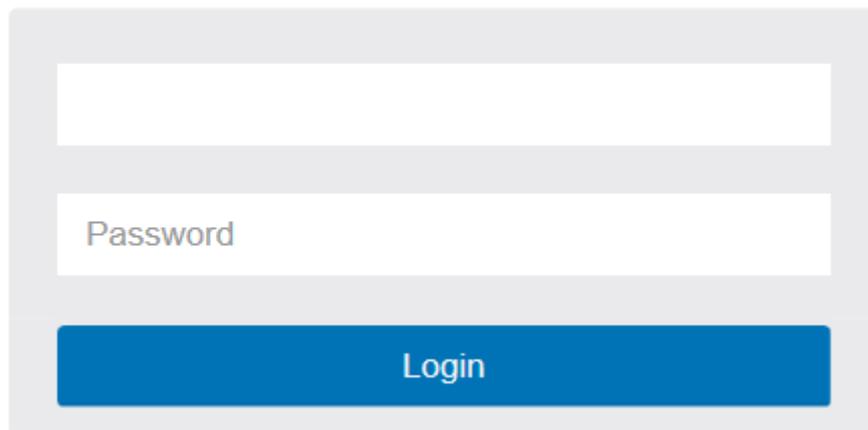
## Operation of Web-based Management

The default values of the managed switch are listed in the table below:

<b>IP Address</b>	192.168.1.1
<b>Subnet Mask</b>	255.255.255.0
<b>Default Gateway</b>	192.168.1.254
<b>Username</b>	admin
<b>Password</b>	

After the managed switch has been finished configuration in the CLI via the switch's serial interface, you can browse it. For instance, type <http://192.168.1.1> in the address row in a browser, it will show the following screen and ask you inputting username and password in order to login and access authentication. The default username is "**admin**" and password is empty. For the first time to use, please enter the default username and password, and then click the **Login** button. The login process now is completed.

GEL2P-ESW26G web user interface :



The image shows a web user interface for login. It consists of a light gray rectangular frame containing three main elements: a white rectangular input field at the top for the username, a second white rectangular input field below it for the password, and a blue rectangular button at the bottom with the word "Login" in white text. The word "Password" is faintly visible in light gray text inside the password input field.

# MAKING NETWORK CONNECTIONS

## CONNECTING NETWORK DEVICES

The switch is designed to be connected to 10, 100 or 1000Mbps network cards in PCs and servers, as well as to other switches and hubs. It may also be connected to remote devices using optional SFP transceivers.

## TWISTED-PAIR DEVICES

Each device requires an unshielded twisted-pair (UTP) cable with RJ-45 connectors at both ends. Use Category 5, 5e or 6 cables for 1000BASE-T connections, Category 5 or better for 100BASE-TX connections.

## CABLING GUIDELINES

The RJ-45 ports on the switch support automatic MDI/MDI-X pinout configuration, so you can use standard straight-through twisted-pair cables to connect to any other network device (PCs, servers, switches, routers, or hubs).

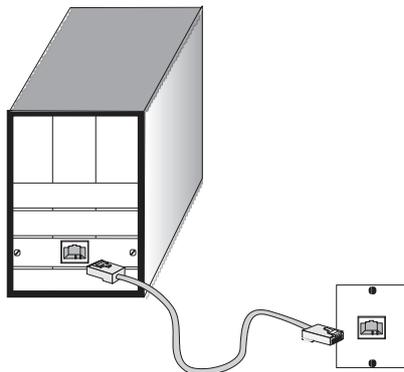


**CAUTION:** Do not plug a phone jack connector into an RJ-45 port. This will damage the switch. Use only twisted-pair cables with RJ-45 connectors that conform to FCC standards.

## CONNECTING TO PCS, SERVERS, HUBS AND SWITCHES

**Step 1.** Attach one end of a twisted-pair cable segment to the device's RJ-45 connector.

### Making Twisted-Pair Connections



**Step2.** If the device is a network card and the switch is in the wiring closet, attach the other end of the cable segment to a modular wall outlet that is connected to the wiring closet. (See the section "[Network Wiring Connections](#).”) Otherwise, attach the other end to an available port on the switch.

Make sure each twisted pair cable does not exceed 100 meters (328 ft) in length.



**NOTE:** Avoid using flow control on a port connected to a hub unless it is actually required to solve a problem. Otherwise back pressure jamming signals may degrade overall performance for the segment attached to the hub.

**Step3.** As each connection is made, the Link LED (on the switch) corresponding to each port will light green (1000 Mbps) or amber (100 Mbps) to indicate that the connection is valid.

## NETWORK WIRING CONNECTIONS

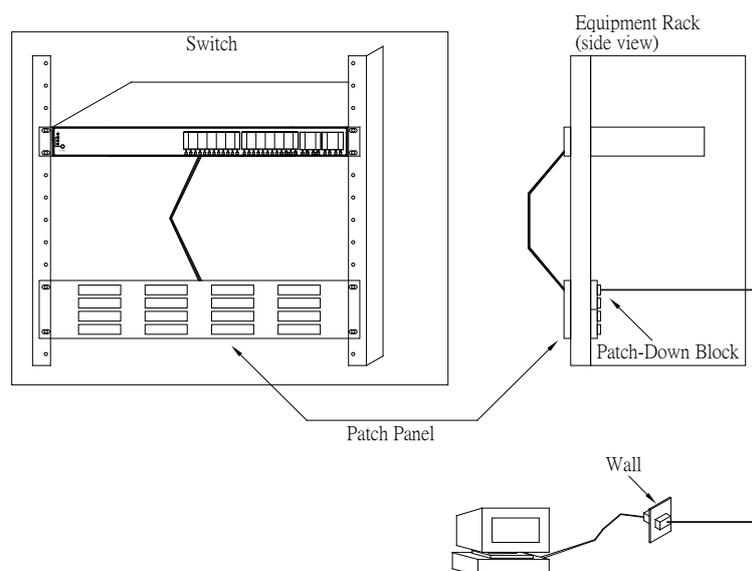
Today, the punch-down block is an integral part of many of the newer equipment racks. It is actually part of the patch panel. Instructions for making connections in the wiring closet with this type of equipment follows.

**Step1.** Attach one end of a patch cable to an available port on the switch, and the other end to the patch panel.

**Step2.** If not already in place, attach one end of a cable segment to the back of the patch panel where the punch-down block is located, and the other end to a modular wall outlet.

**Step3.** Label the cables to simplify future troubleshooting. See "[Cable Labeling and Connection Records](#)" .

### Network Wiring Connections



## FIBER OPTIC SFP DEVICES

An optional Gigabit SFP transceiver can be used for a backbone connection between switches, or for connecting to a high-speed server.

Each single-mode fiber port requires 9/125 micron single-mode fiber optic cable with an LC connector at both ends. Each multimode fiber optic port requires 50/125 or 62.5/125 micron multimode fiber optic cabling with an LC connector at both ends.



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**WARNING:** This switch uses lasers to transmit signals over fiber optic cable. The lasers are inherently eye safe in normal operation. However, user should never look directly at a transmit port when it is powered on.

**WARNING:** When selecting a fiber SFP device, considering safety, please make sure that it can function at a temperature that is not less than the recommended maximum operational temperature of the product. You must also use an approved Laser SFP transceiver.

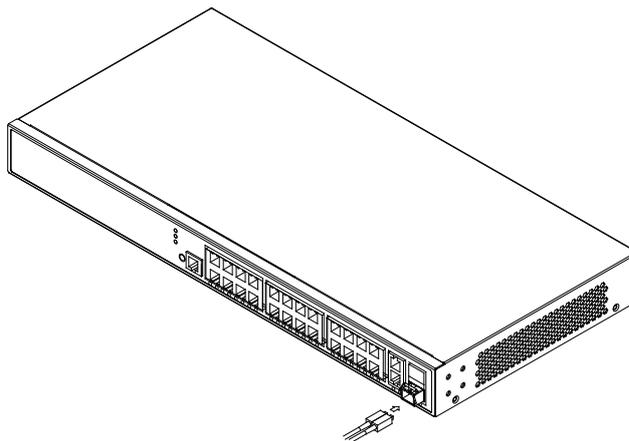
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**Step1.** Remove and keep the LC port's rubber plug. When not connected to a fiber cable, the rubber plug should be replaced to protect the optics.

**Step2.** Check that the fiber terminators are clean. You can clean the cable plugs by wiping them gently with a clean tissue or cotton ball moistened with a little ethanol. Dirty fiber terminators on fiber optic cables will impair the quality of the light transmitted through the cable and lead to degraded performance on the port.

**Step3.** Connect one end of the cable to the LC port on the switch and the other end to the LC port on the other device. Since LC connectors are keyed, the cable can be attached in only one orientation.

### Making Fiber Port Connections



**Step4.** As a connection is made, check the Link LED on the switch corresponding to the port to be sure that the connection is valid.

The fiber optic ports operate at 1 Gbps. The maximum length for fiber optic cable operating at Gigabit speed will depend on the fiber type as listed under "[1000 Mbps Gigabit Ethernet Collision Domain](#)".

## CONNECTIVITY RULES

When adding hubs to your network, please note that because switches break up the path for connected devices into separate collision domains, you should not include the switch or connected cabling in your calculations for cascade length involving other devices.

### 1000BASE-T CABLE REQUIREMENTS

All Category 5 UTP cables that are used for 100BASE-TX connections should also work for 1000BASE-T, providing that all four wire pairs are connected. However, it is recommended that for all critical connections, or any new cable installations, Category 5e or Category 6 cable should be used. The Category 5e and 6 specifications include test parameters that are only recommendations for Category 5. Therefore, the first step in preparing existing Category 5 cabling for running 1000BASE-T is a simple test of the cable installation to be sure that it complies with the IEEE 802.3-2005 standards

## 1000 MBPS GIGABIT ETHERNET COLLISION DOMAIN

### Maximum 1000BASE-T Gigabit Ethernet Cable Length

Cable Type	Maximum Cable Length	Connector
Category 5, 5e or 6 100-ohm UTP or STP	100.m (328 ft)	RJ-45

### Maximum 1000BASE-SX Gigabit Fiber Cable Lengths

Fiber Size	Fiber Bandwidth	Maximum Cable Length	Connector
62.5/125 micron multimode fiber	160 MHz/km	220 m (722 ft)	LC
	200 MHz/km	275 m (902 ft)	LC
50/125 micron multimode fiber	400 MHz/km	500 m (1641 ft)	LC
	500 MHz/km	550 m (1805 ft)	LC

### Maximum 1000BASE-LX/LHX/XD/ZX Gigabit Fiber Cable Length

Fiber Size	Fiber Bandwidth	Maximum Cable Length	Connector
9/125 micron single-mode fiber 1310nm	N/A	10km (6.2 miles)	LC
9/125 micron single-mode fiber 1550nm	N/A	30km (18.64 miles)	LC
		50km (31.06 miles)	LC

### Maximum 1000BASE-LX Single Fiber Gigabit Fiber Cable Length

Fiber Size	Fiber Bandwidth	Maximum Cable Length	Connector
Single-mode TX-1310nm RX-1550nm	N/A	20km (12.42miles)	BIDI
			LC
Single-mode TX-1550nm RX-1310nm	N/A	20km (12.42miles)	BIDI
			LC

## 100 MBPS FAST ETHERNET COLLISION DOMAIN

### Maximum Fast Ethernet Cable Lengths

Cable Type	Maximum Cable Length	Connector
Category 5, 5e or 6 100-ohm UTP or STP	100.m (328 ft)	RJ-45

# CABLE LABELING AND CONNECTION RECORDS

When planning a network installation, it is essential to label the opposing ends of cables and to record where each cable is connected. This will allow user to easily locate inter-connected devices, isolate faults and change your topology without need for unnecessary time consumption.

To best manage the physical implementations of your network, follow these guidelines:

- ◆ Clearly label the opposing ends of each cable.
- ◆ Using your building's floor plans, draw a map of the location of all network-connected equipment. For each piece of equipment, identify the devices to which it is connected.
- ◆ Note the length of each cable and the maximum cable length supported by the switch ports.
- ◆ For ease of understanding, use a location-based key when assigning prefixes to your cable labeling.
- ◆ Use sequential numbers for cables that originate from the same equipment.
- ◆ Differentiate between racks by naming accordingly.
- ◆ Label each separate piece of equipment.
- ◆ Display a copy of your equipment map, including keys to all abbreviations at each equipment rack.

# TROUBLESHOOTING

## Basic Troubleshooting Tips

Most problems are caused by the following situations. Check for these items first when starting your troubleshooting:

- **Connecting to devices that have a fixed full-duplex configuration.**

The RJ-45 ports are configured as "Auto". That is, when connecting to attach devices, the switch will operate in one of two ways to determine the link speed and the communication mode (half duplex or full duplex):

- ◆ If the connected device is also configured to Auto, the switch will automatically negotiate both link speed and communication mode.
- ◆ If the connected device has a fixed configuration, for example 100Mbps, at half or full duplex, the switch will automatically sense the link speed, but will default to a communication mode of *half duplex*.

Because the GEL2P-ESW26G Switch devices behave in this way (in *compliance with the IEEE802.3 standard*), if a device connected to the switch has a fixed configuration at full duplex, the device will not connect correctly to the switch. The result will be high error rates and very inefficient communications between the switch and the device.

Make sure all devices connected to the GEL2P-ESW26G Switch devices are configured to auto negotiate, or are configured to connect at half duplex (all hubs are configured this way, for example).

- **Faulty or loose cables.** Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.
- **Non-standard cables.** Non-standard and miswired cables may cause network collisions and other network problems, and can seriously impair network performance. Use a new correctly-wired cable. For pinouts and correct cable wiring. A category 5 cable tester is a recommended tool for every 100Base-TX and 1000Base-T network installation.
- **Improper Network Topologies.** It is important to make sure you have a valid network topology. If you no longer experience the problems, the new topology is probably at fault. In addition, you should make sure that your network topology contains *no data path loops*.

■ **Check the port configuration.**

A port on your Switch may not be operating as you expect because it has been put into a “ blocking” state by Spanning Tree, GVRP (automatic VLANs), or LACP (automatic trunking). (Note that the normal operation of the Spanning Tree, GVRP, and LACP features may put the port in a blocking state.) Or, the port just may have been configured as disabled through software.

**Troubleshooting Chart**

Symptom	Action
POWER LED is Off	<ul style="list-style-type: none"><li>◆ Check connections between the switch, the power cord and the wall outlet.</li><li>◆ Contact your dealer for assistance.</li></ul>
Link LED is Off	<ul style="list-style-type: none"><li>◆ Verify that the switch and attached device are powered on.</li><li>◆ Be sure the cable is plugged into the switch and corresponding device.</li><li>◆ If the switch is installed in a rack, check the connections to the punch-down block and patch panel.</li><li>◆ Verify that the proper cable types is used and its length does not exceed specified limits.</li><li>◆ Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.</li></ul>

# POWER AND COOLING PROBLEMS

## Installation

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet. If you still cannot isolate the problem, the internal power supply may be defective. Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (such as the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

## IN-BAND ACCESS

You can access the management agent in the switch from anywhere within the attached network using Telnet, a web browser. However, you must first configure the switch with a valid IP address, subnet mask, and default gateway. If you have trouble establishing a link to the management agent, check to see if you have a valid network connection. Then verify that you entered the correct IP address. Also, be sure the port through which you are connecting to the switch has not been disabled. If it has not been disabled, then check the network cabling that runs between your remote location and the switch.



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**NOTE:** The management agent accepts up to four simultaneous Telnet sessions. If the maximum number of sessions already exists, an additional Telnet connection will not be able to log into the system.

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# SPECIFICATIONS

## PHYSICAL CHARACTERISTICS

<b>PORTS</b>	24 10/100/1000Mbps UTP (PoE) 2 GbE Combo Port TP/ (100/1000M) SFP
<b>NETWORK INTERFACE</b>	Ports 1-24: RJ-45 connector, auto MDI/X 10BASE-T: RJ-45 (100-ohm, UTP cable; Category 3 or better) 100BASE-TX: RJ-45 (100-ohm, UTP cable; Category 5 or better) 1000BASE-T: RJ-45 (100-ohm, UTP or STP cable; Category 5, 5e or 6) *Maximum Cable Length - 100 m (328 ft) Ports 25-26: 100/1000M SFP ports
<b>BUFFER ARCHITECTURE</b>	512KB on-chip frame buffer
<b>AGGREGATE BANDWIDTH</b>	52 Gbps for GEL2P-ESW26G
<b>SWITCHING DATABASE</b>	8K MAC address entries
<b>LEDS</b>	System: POWER TP Port: status (LINK/ACT), 10/100/1000M SFP Port: status (LINK/ACT/SPD), 100/1000M
<b>SIZE</b>	44(H) x 442(W) x 211.2(D)mm
<b>TEMPERATURE</b>	Operating: 0°C to 45°C (32°F to 113°F)
<b>HUMIDITY</b>	Operating: 10% to 90% (non-condensing)
<b>POWER INPUT</b>	100~240VAC, 50~60Hz

## SWITCH FEATURES

<b>FORWARDING MODE</b>	Store-and-forward
<b>THROUGHPUT</b>	95.232 Mpps

**FLOW CONTROL** Full Duplex: IEEE 802.3x  
Half Duplex: Back pressure

## **MANAGEMENT FEATURES**

**IN-BAND MANAGEMENT** SSH/SSL, Telnet, SNMP, or HTTP

**OUT-OF-BAND MANAGEMENT** RJ-45 console port

**SOFTWARE LOADING** HTTP, TFTP in-band, Console out-of-band

## **STANDARDS**

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IEEE 802.3 => 10Base-T Ethernet (Twisted-pair Copper)  
IEEE 802.3u => 100Base-TX Ethernet (Twisted-pair Copper)  
IEEE 802.3ab => 1000Base-TX Ethernet (Twisted-pair Copper)  
IEEE 802.3z => 1000Base-X Ethernet  
IEEE 802.3x => Flow Control Capability  
ANSI/IEEE 802.3 => Auto-negotiation  
IEEE 802.1Q => VLAN  
IEEE 802.1p => Class of Service  
IEEE 802.1X => Access Control  
IEEE 802.1D => Spanning Tree  
IEEE 802.1w => Rapid Spanning Tree  
IEEE 802.1s => Multiple Spanning Tree  
IEEE 802.3ad => Link Aggregation Control Protocol (LACP)  
IEEE 802.1AB => Link Layer Discovery Protocol (LLDP)

## **COMPLIANCES**

**EMISSIONS** EN55022 (CISPR 22) Class A EN 61000-3  
FCC Class A  
CE Mark

**IMMUNITY** EN 61000-4-2/3/4/5/6/8/11  
EN 55024