ZYXEL
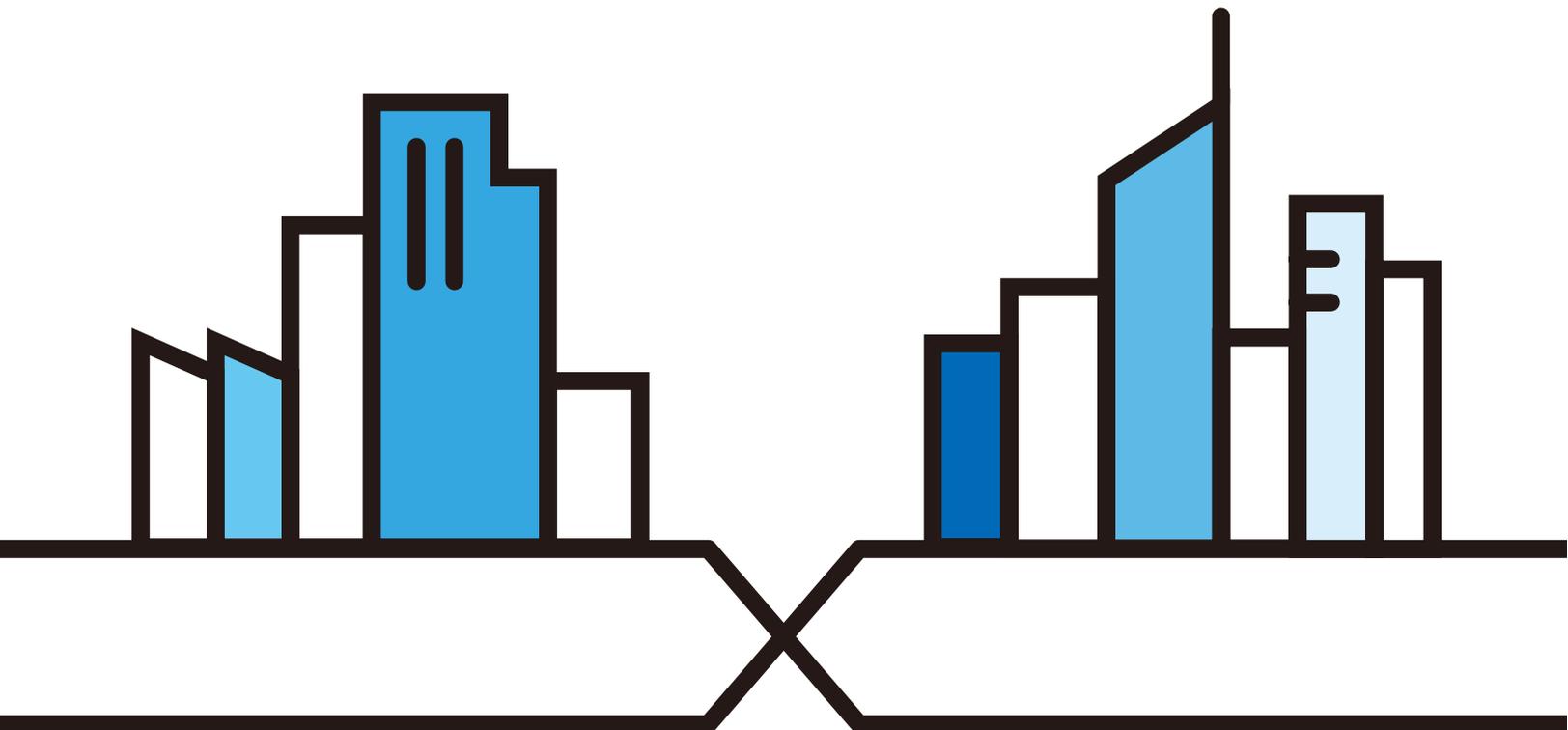Your Networking Ally

User's Guide

ES1100 Series

Unmanaged Fast Ethernet Switches

Version 1.00 Edition 5, 07/2019

IMPORTANT!

READ CAREFULLY BEFORE USE.

KEEP THIS GUIDE FOR FUTURE REFERENCE.

This is a User's Guide for a series of products. Not all products support all firmware features. Screenshots and graphics in this book may differ slightly from your product due to differences in your product firmware or your computer operating system. Every effort has been made to ensure that the information in this manual is accurate.

Related Documentation

- More Information

  Go to **support.zyxel.com** to find other information on the Switch.

Document Conventions

Warnings and Notes

These are how warnings and notes are shown in this guide.

Warnings tell you about things that could harm you or your device.

Note: Notes tell you other important information (for example, other things you may need to configure or helpful tips) or recommendations.

Syntax Conventions

• All models may be referred to as the "Switch" in this guide.

Icons Used in Figures

Figures in this user guide may use the following generic icons. The Switch icon is not an exact representation of your device.

Switch	Generic Router	Wireless Router / Access Point
Generic Switch	Server	Desktop
Laptop	Analog Camera	Printer

Table of Contents

Getting to Know Your Switch

1.1 Overview

This User's Guide covers the following models: ES1100-8P, ES1100-16, ES1100-16P, ES1100-24, and ES1100-24E. The Switch can be used to build high-performance switched workgroup networks.

Table 1   ES1100 Series Comparison Table

PORT/SWITCH DETAILS	ES1100-8P	ES1100-16	ES1100-16P	ES1100-24	ES1100-24E
16 10/100Base-TX Ethernet ports		✓			
24 10/100Base-TX Ethernet ports				✓	✓
8 10/100Base-TX Ethernet ports (including 4 FE PoE ports)	✓				
16 10/100Base-TX Ethernet ports (including 8 FE PoE ports)			✓		
IEEE 802.3az ON/OFF switch	✓		✓		
Power ON/OFF switch	✓	✓	✓		✓
FE PoE ports	✓		✓		
IEEE 802.3az EEE	✓	✓	✓	✓	✓
Loop detection		✓		✓	✓
Jumbo frame		✓		✓	✓

The following features apply to all models:

- Conforms to IEEE 802.3, 802.3u, and 802.3x wired Ethernet standards.
- 10/100 Mbps Fast Ethernet RJ-45 ports.
- Auto-negotiating Ethernet RJ-45 ports.
- Auto-sensing crossover for all RJ-45 ports.
- Supports N-Way protocol for speed (10/100/1000 Mbps) and duplex mode (Half/Full) auto-detection.
- Supports store-and-forward switching.
- Supports automatic address learning (8000 MAC addresses for ES1100-16, ES1100-16P, ES1100-24, and ES1100-24E; 1000 MAC addresses for ES1100-8P).
- Full wire speed forwarding rate.
- 802.1p CoS support.
- Inactive link detection to reduce power usage on idle devices.
- Detects cable length and adjusts power usage based on this.

1.1.1 Power over Ethernet (PoE)

The Switch is a Power Sourcing Equipment (PSE) because it provides a source of power via its Ethernet ports. Each device that receives power through an Ethernet port is a Powered Device (PD).

The Switch is configured in consumption mode, that is, it supplies the actual power the PD needs.

The Switch supports the IEEE 802.3af Power over Ethernet (PoE) standard.

The Switch supplies power with the lowest numbered port having the highest priority by default. For example, port 1 has the highest priority, port 2 the next, and so on.

Not all models support PoE. See Table 1 on page 5.

Key PoE feature comparison is as follows:

Table 2   PoE Comparison

FEATURE	ES1100-8P	ES1100-16P
PoE Ports	4 (ports 1-4)	8 (ports 1-8)
PoE Power Budget	64 W	130 W
Power management mode	Consumption	Consumption
PoE Standard	IEEE 802.3af	IEEE 802.3af
Maximum Power per Port	15.4W	15.4W

1.2 Applications

This section provides two network topology examples in which the Switch is used.

1.2.1 Backbone Example Application

The Switch is an ideal solution for small networks where rapid growth can be expected in the near future. The Switch can be used standalone for a group of heavy traffic users. You can connect computers and servers directly to the Switch's port or connect other switches to the Switch.

In this example, all computers can share high-speed applications on the server. To expand the network, simply add more networking devices such as switches, routers, computers, print servers etc.

Figure 1   Backbone Example Application
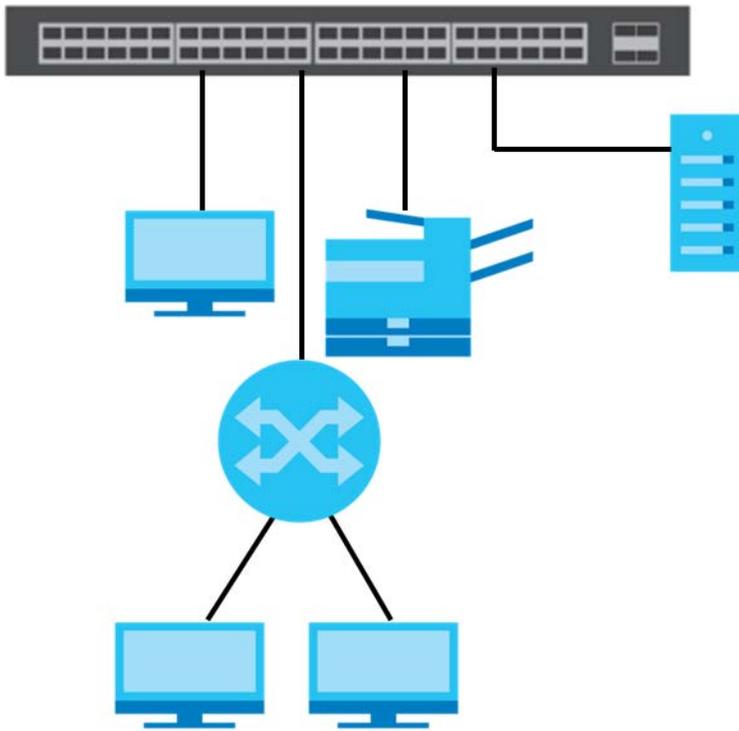
1.2.2 Bridging Example Application

With its large address table and high performance, the Switch is an ideal solution for department networks to connect to the corporate backbone or for connecting network segments.

The following figure depicts a typical segment bridge application of the Switch in an enterprise environment. The two networks (**RD** and **Sales**), the standalone server and the computers can all communicate with each other and share all network resources.

Figure 2   Bridging Example
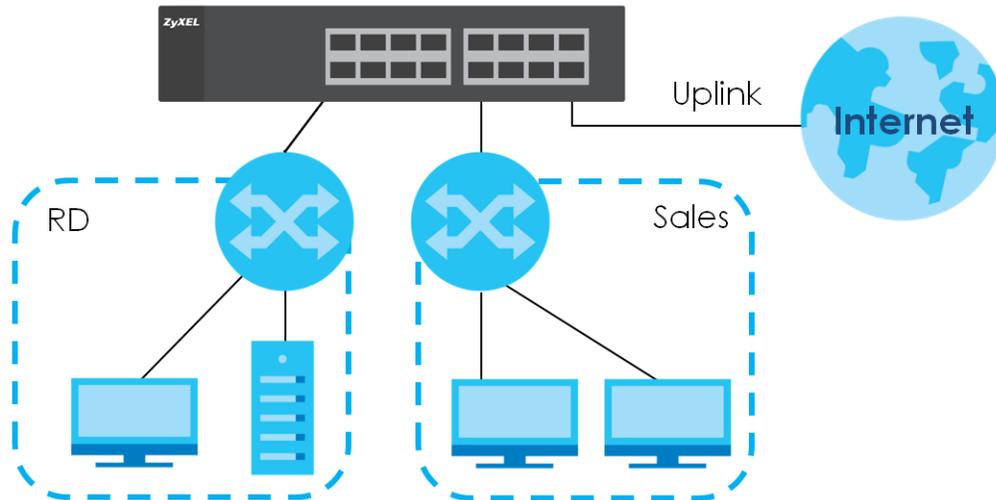
1.2.3 PoE Example Application

The following example figure shows a Switch supplying PoE (Power over Ethernet) to Powered Devices (PDs) such as an IP camera, a wireless router, an IP telephone and a general outdoor router that are not within reach of a power outlet. For more information about PoE, see Section 1.1.1 on page 6.

Figure 3   Powered Device Examples
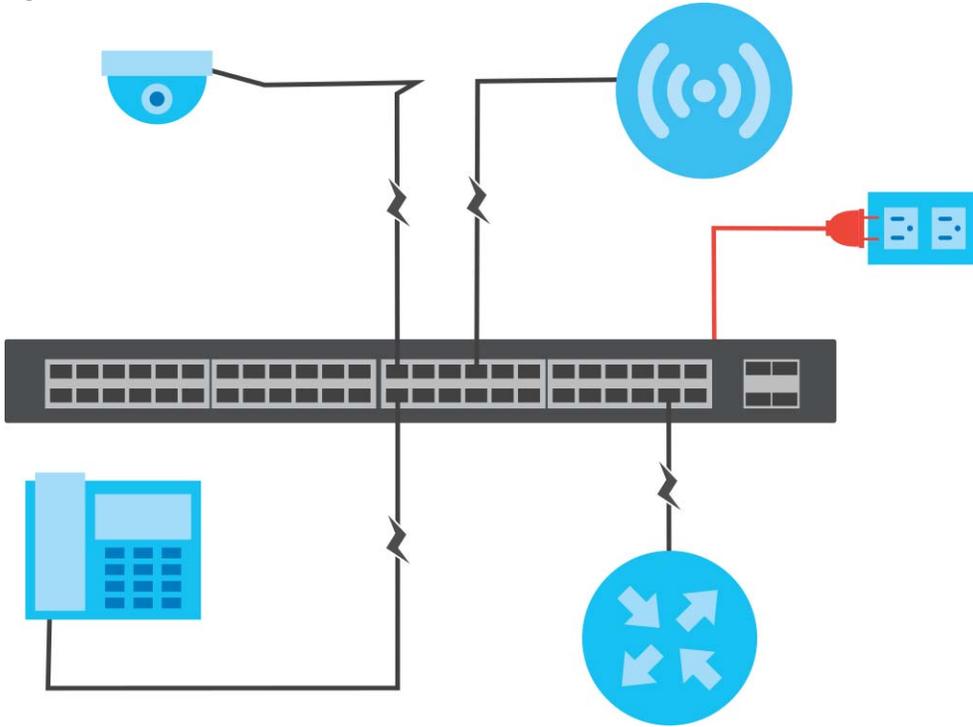
CHAPTER 2
Hardware Description and Connection

2.1 Rear Panel

The three-pronged power receptacle is located on the rear panel of the Switch. Refer to the power supply requirements on the panel.

Figure 4   Rear Panel

ES1100-8P

ES1100-16

ES1100-16P

ES1100-24

ES1100-24E

2.1.1 Rear Panel Power Connection

Connect one end of the supplied power cord to the power receptacle on the back of the Switch and the other end to the appropriate power source.

For ES1100-8P, ES1100-16, ES1100-16P and ES1100-24E, use the **POWER ON/OFF** switch to have the Switch power on or off.

2.2 Front Panel

The front panel of the Switch includes the auto-negotiating 10 Base-T/100 Base-TX RJ-45 ports and the LEDs. The following shows the front panels of each ES1100 model.

Figure 5 Front Panels

ES1100-8P

ES1100-16
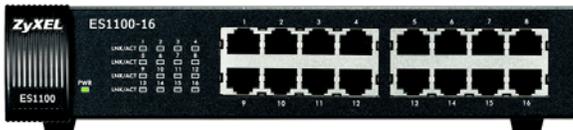
ES1100-16P

ES1100-24

ES1100-24E

2.2.1 RJ-45 Auto-negotiating Ports

All the RJ-45 ports in the ES1100 series are auto-negotiating and supports auto-crossover.

An auto-negotiating port can detect and adjust to the optimum Ethernet speed (10/100/1000 Mbps) and duplex mode (full duplex or half duplex) of the connected device.

An auto-crossover (auto-MDI/MDI-X) port automatically works with a straight-through or crossover Ethernet cable.

2.2.2 IEEE 802.3az Energy Efficient Ethernet

The Switch supports the IEEE 802.3az EEE (Energy Efficient Ethernet) standard to help reduce power consumption. This allows the Switch to go into power saving mode and switch off part of receive and transmit circuitry when it is not transmitting or receiving data through an Ethernet connection. See Section 1.1 on page 5 to check which devices support EEE.

An EEE-enabled device initiates Low Power Idle (LPI) signals to negotiate and wake up the remote device when there is data to be transmitted. To use EEE, both devices should be EEE compliant.

EEE is configured on a per-system basis in the Switch. If one of the networking devices that connect to the Switch doesn't support EEE, EEE may not work in the Switch to save power.

The EEE feature is enabled by default on the ES1100-16, ES1100-24 and ES1100-24E. Press in the **IEEE 802.3az EEE ON/OFF** button on the ES1100-8P and ES1100-16P front panel to turn on the EEE feature. Disable it if the remote side doesn't support it or you don't want the network performance to be impacted due to the latency from the additional time required for the sleep and wake transition.

2.2.3 Front Panel Connections

You can use unshielded twisted pair (UTP) or shielded twisted-pair (STP) Ethernet cables for RJ-45 ports. The following table describes the types of network cable used for the different connection speeds.

Table 3   Network Cable Types

SPEED	NETWORK CABLE TYPE
10 Mbps	Category 3, 4 or 5 UTP/STP
100 Mbps	Category 5 UTP/STP

You can use either crossover or straight-through cables for all the ports.

2.2.4 Front Panel LEDs

The LED Indicators give real-time information about the status of the Switch. The following tables provide descriptions of the LEDs.

**Figure 6**   LEDs for ES1100-16/24/24E

ES1100-16   **ES1100-24**   **ES1100-24E**

The following table describes the LEDs.

Table 4   LED Descriptions for ES1100-16/24/24E

LED	COLOR	STATUS	DESCRIPTION
PWR	Green	On	The Switch is on and is receiving power.
		Off	The Switch is not receiving power.
LINK/ACT	Green	On	The port is connected to an Ethernet network at 10M or 100M speed.
		Blinking (Normal)	The port is receiving or transmitting data.
		Blinking (Slow)	The Ethernet network link is down due to loop detection.
		Off	The port is not connected to an Ethernet network.

Figure 7   LEDs for ES1100-8P/16P
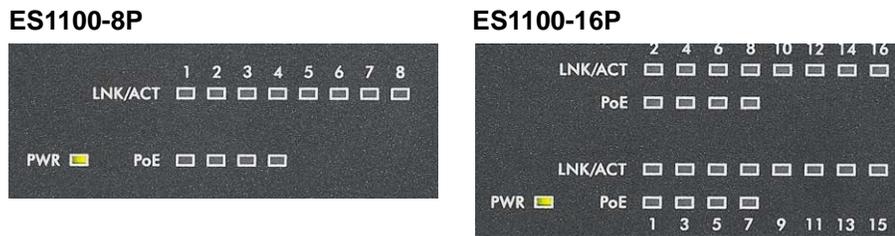
The following table describes the LEDs.

Table 5   LED Descriptions for ES1100-8P/16P

LED	COLOR	STATUS	DESCRIPTION
PWR	Green	On	The Switch is on and receiving power.
		Off	The Switch is not receiving power.
LINK/ACT	Green	On	The port is connected to an Ethernet network at 10M or 100M speed.
		Off	The port is not connected to an Ethernet network.
PoE	Green	On	Power is supplied to the FE PoE port.
		Off	Power is not supplied to the FE PoE port.

2.3 Hardware Installation

See the following table for a comparison of the hardware installation methods of each ES1100 model:

Table 6   ES1100 Series Installation Comparison Table

MODEL FEATURE	ES1100-8P	ES1100-16	ES1100-16P	ES1100-24	ES1100-24E
Desktop Installation	✓	✓	✓		✓
Wall-mounting	✓	✓	✓		✓
Rack-mounting	✓	✓	✓	✓	✓

Note: Ask an authorized technician to attach the Switch to the rack/wall.

Make sure you connect the Switch's power cord to a socket-outlet with an earthing connection or its equivalent.

For ES1100-8P/16/16P/24E, you can place the Switch directly on top of your desk or have it rack-mounted. Take note of the following:

- The Switch should have a minimum 25 mm space around it for ventilation.
- The Switch should be placed in a desk that has a level surface and that is able to support the weight of the Switch.

To start using it, simply connect the power cables and turn on the Switch.

2.3.1 Wall Mounting

Do the following to attach your Switch to a wall. See which models can be wall mounted in Section 2.3 on page 12.

See Table 7 on page 13 for the distance between screws.

Table 7   Distance between the centers of the holes for wall mounting

MODEL	DISTANCE
ES1100-8P and ES1100-16P	198 mm
ES1100-16	150 mm
ES1100-24E	210 mm

The following figure shows the screw specifications used for wall mounting.

- D = 7.00 mm
- H = 2.00 mm
- L= 15.50 mm
- d = 3.50 mm
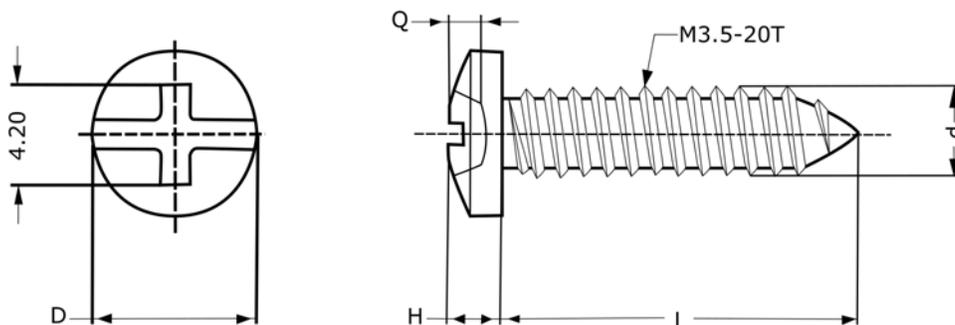
1 Screw the two screws provided with your Switch into the wall (see the figure in step 2). Do not screw them all the way in to the wall; leave a small gap between the head of the screw and the wall.

The gap must be big enough for the screw heads to slide into the screw slots and the power cord to run down the back of the Switch.

Note: Make sure the screws are securely fixed to the wall and strong enough to hold the weight of the Switch with the connection cables.

2 Use the mounting holes on the Switch to hang the Switch on the screws.
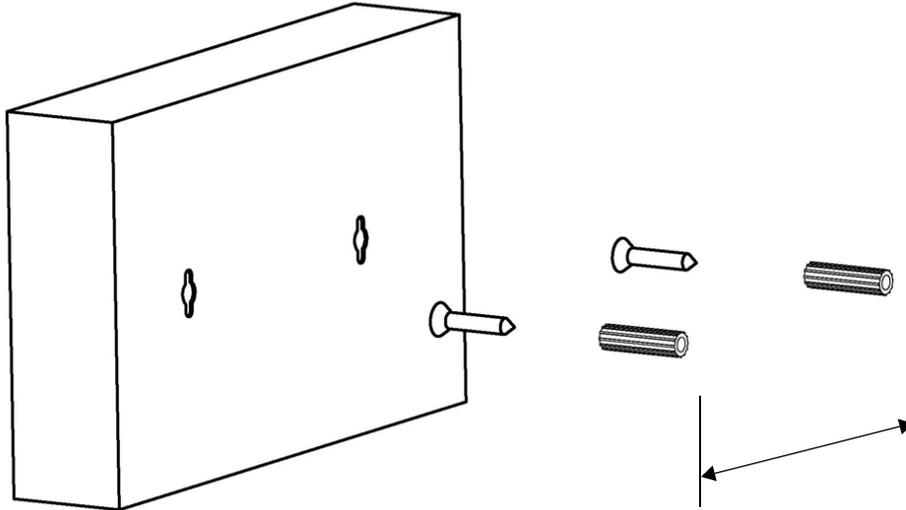
Wall-mount the Switch with the Ethernet ports facing down and the ventilation holes on the side.

2.3.2 Rack Mounting

The Switch can be mounted on an EIA standard size, 19-inch rack or in a wiring closet with other equipment. Follow the steps below to mount your Switch on a standard EIA rack using a rack-mounting kit. See Section 2.3 on page 12 for a list of models that can be rack mounted.

Rack-mounted Installation Requirements

- Two mounting brackets.
- Eight M3 flat head screws and a #2 Philips screwdriver.
- Four M5 flat head screws and a #2 Philips screwdriver.

Failure to use the proper screws may damage the unit.

Precautions

- Make sure the rack will safely support the combined weight of all the equipment it contains.
- Make sure the position of the Switch does not make the rack unstable or top-heavy. Take all necessary precautions to anchor the rack securely before installing the unit.

Attaching the Mounting Brackets to the Switch

1 Position a mounting bracket on one side of the Switch, lining up the four screw holes on the bracket with the screw holes on the side of the Switch.

Figure 8   Attaching the Mounting Brackets (ES1100-8P/16/16P/24E)
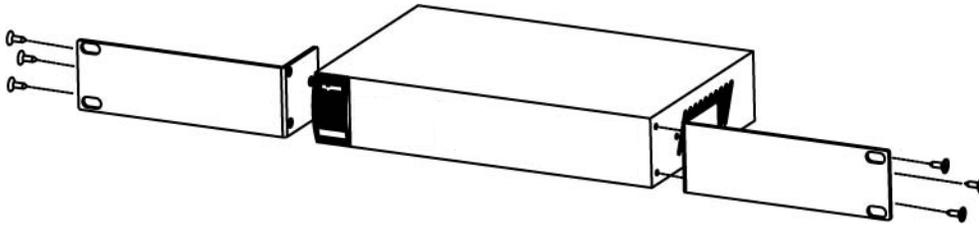
Figure 9   Attaching the Mounting Brackets (ES1100-24)
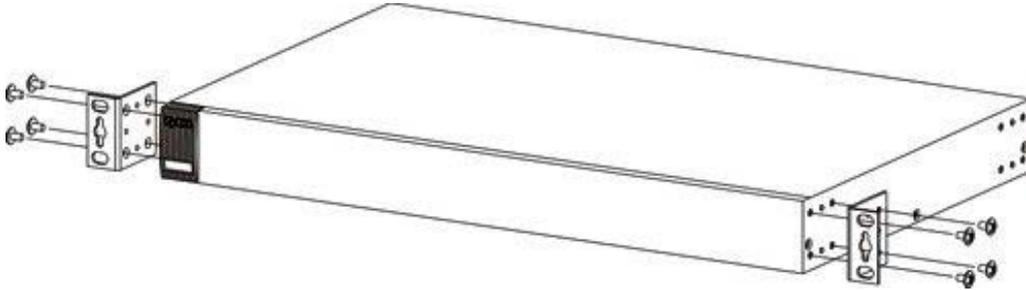
2   Using a #2 Philips screwdriver, install the M3 flat head screws through the mounting bracket holes into the Switch.

3   Repeat steps 1 and 2 to install the second mounting bracket on the other side of the Switch.

4   You may now mount the Switch on a rack. Proceed to the next section.

2.3.3 Mounting the Switch on a Rack

1   Position a mounting bracket (that is already attached to the Switch) on one side of the rack, lining up the two screw holes on the bracket with the screw holes on the side of the rack.

Figure 10   Mounting the Switch on a Rack (ES1100-8P/16/16P/24E)
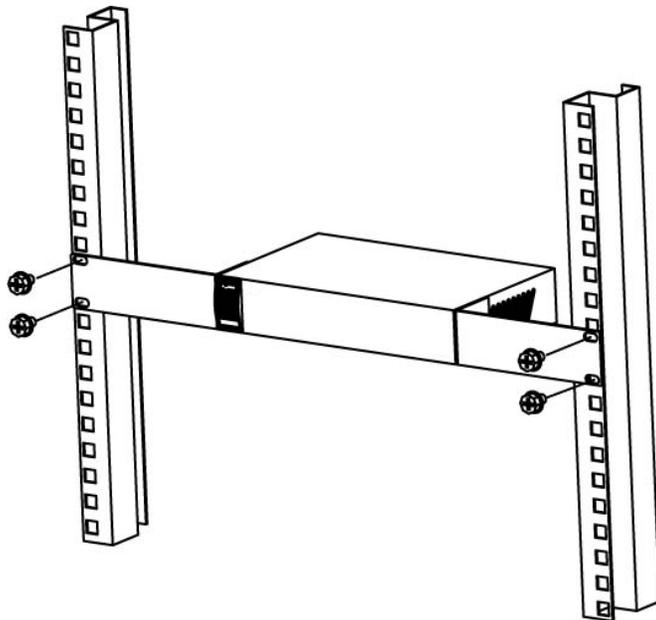
Figure 11   Mounting the Switch on a Rack (ES1100-24)
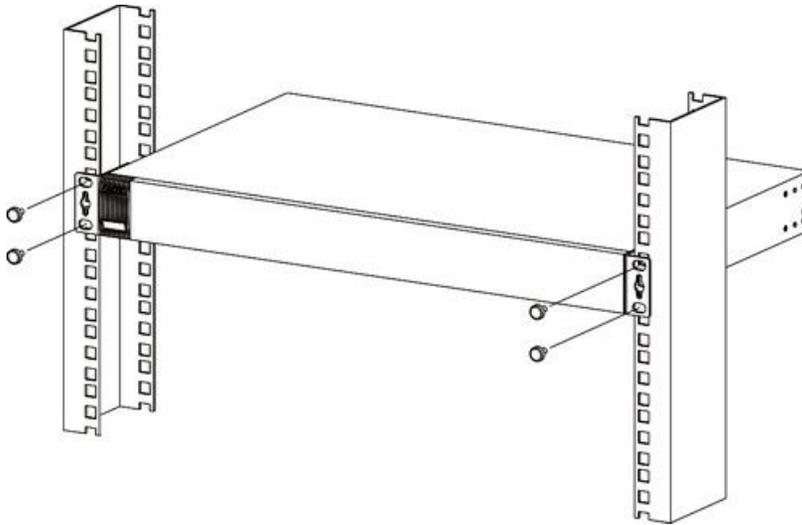
2   Using a #2 Philips screwdriver, install the M5 flat head screws through the mounting bracket holes into the rack.

3   Repeat steps 1 and 2 to attach the second mounting bracket on the other side of the rack.

CHAPTER 3
Troubleshooting

This section describes common problems you may encounter with the Switch and possible solutions.

Troubleshoot the Switch using the LEDs to detect problems.

The PWR LED on the front panel does not light up.

- Check the connections from your Switch to the power source. Make sure you are using the supplied power cord and that you are using an appropriate power source. Refer to the product specifications.
- Make sure the power source is turned on and that the Switch is receiving sufficient power.
- If these steps fail to correct the problem, contact your local distributor for assistance.

The **LINK/ACT** LED does not light up when a device is connected.

- Verify that the attached device(s) is turned on and properly connected to your Switch.
- Make sure the network adapters are working on the attached devices.
- Verify that proper network cable type is used and its length does not exceed 100 meters. For more information on network cable types, see Section 3.1 on page 18.

Power is not being supplied to my PoE-enabled device.

- See Section 1.1 on page 5 to check if your Switch supports PoE. Make sure it is connected to the PoE-enabled port (see Section 1.1.1 on page 6).
- If the PWR LED is off, check to see that the power cord is securely connected to the Switch and an appropriate power source. Make sure the power source is on and functioning properly.
- Check that the Ethernet cables are connected properly and that you are using the correct type of Ethernet cable.
- Make sure your powered device's power consumption does not exceed the maximum power that the port can supply. See Section 1.1.1 on page 6.
- Make sure that the total power consumption of all your connected powered devices is within the power budget of the Switch. See Section 1.1.1 on page 6.
- Contact your local distributor if the problem persists.

3.1 Improper Network Cabling and Topology

Improper network cabling or topology setup is a common cause of poor network performance or even network failure.

Figure 12   Troubleshooting Improper Network Cabling and Topology

PROBLEM	CORRECTIVE ACTION
Faulty cables	Using faulty network cables may affect data rates and have an impact on your network performance. Replace with new standard network cables.
Non-standard network cables	Non-standard cables may increase the number of network collisions and cause other network problems that affect your network performance. Refer to Section 2.2.3 on page 11 for more information on network cable types.
Cabling Length	If you use longer cables than are needed, transmission quality may be affected. The network cables should not be longer than the limit of 100 meters.
Too many hubs between the computers in the network	Too many hubs (or repeaters) between the connected computers in the network may increase the number of network collision or other network problems. Remove unnecessary hubs from the network.
A loop in the data path	A data path loop forms when there is more than one path or route between two networked computers. This results in broadcast storms that will severely affect your network performance. Make sure there are no loops in your network topology.

APPENDIX A
Customer Support

In the event of problems that cannot be solved by using this manual, you should contact your vendor. If you cannot contact your vendor, then contact a Zyxel office for the region in which you bought the device.

See *https://www.zyxel.com/homepage.shtml* and also *https://www.zyxel.com/about_zyxel/zyxel_worldwide.shtml* for the latest information.

Please have the following information ready when you contact an office.

Required Information

- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

Corporate Headquarters (Worldwide)

Taiwan

- Zyxel Communications Corporation
- http://www.zyxel.com

Asia

China

- Zyxel Communications (Shanghai) Corp.
  Zyxel Communications (Beijing) Corp.
  Zyxel Communications (Tianjin) Corp.
- https://www.zyxel.com/cn/zh/

India

- Zyxel Technology India Pvt Ltd
- https://www.zyxel.com/in/en/

Kazakhstan

- Zyxel Kazakhstan
- https://www.zyxel.kz

Korea

- Zyxel Korea Corp.
- http://www.zyxel.kr

Malaysia

- Zyxel Malaysia Sdn Bhd.
- http://www.zyxel.com.my

Pakistan

- Zyxel Pakistan (Pvt.) Ltd.
- http://www.zyxel.com.pk

Philippines

- Zyxel Philippines
- http://www.zyxel.com.ph

Singapore

- Zyxel Singapore Pte Ltd.
- http://www.zyxel.com.sg

Taiwan

- Zyxel Communications Corporation
- https://www.zyxel.com/tw/zh/

Thailand

- Zyxel Thailand Co., Ltd
- https://www.zyxel.com/th/th/

Vietnam

- Zyxel Communications Corporation-Vietnam Office
- https://www.zyxel.com/vn/vi

Europe

Belarus

- Zyxel BY
- https://www.zyxel.by

Belgium

- Zyxel Communications B.V.
- https://www.zyxel.com/be/nl/

- https://www.zyxel.com/be/fr/

Bulgaria

- Zyxel България
- https://www.zyxel.com/bg/bg/

Czech Republic

- Zyxel Communications Czech s.r.o
- https://www.zyxel.com/cz/cs/

Denmark

- Zyxel Communications A/S
- https://www.zyxel.com/dk/da/

Estonia

- Zyxel Estonia
- https://www.zyxel.com/ee/et/

Finland

- Zyxel Communications
- https://www.zyxel.com/fi/fi/

France

- Zyxel France
- https://www.zyxel.fr

Germany

- Zyxel Deutschland GmbH
- https://www.zyxel.com/de/de/

Hungary

- Zyxel Hungary & SEE
- https://www.zyxel.com/hu/hu/

Italy

- Zyxel Communications Italy
- https://www.zyxel.com/it/it/

Latvia

- Zyxel Latvia
- https://www.zyxel.com/lv/lv/

Lithuania

- Zyxel Lithuania
- https://www.zyxel.com/lt/lt/

Netherlands

- Zyxel Benelux
- https://www.zyxel.com/nl/nl/

Norway

- Zyxel Communications
- https://www.zyxel.com/no/no/

Poland

- Zyxel Communications Poland
- https://www.zyxel.com/pl/pl/

Romania

- Zyxel Romania
- https://www.zyxel.com/ro/ro

Russia

- Zyxel Russia
- https://www.zyxel.com/ru/ru/

Slovakia

- Zyxel Communications Czech s.r.o. organizacna zlozka
- https://www.zyxel.com/sk/sk/

Spain

- Zyxel Communications ES Ltd
- https://www.zyxel.com/es/es/

Sweden

- Zyxel Communications
- https://www.zyxel.com/se/sv/

Switzerland

- Studerus AG
- https://www.zyxel.ch/de
- https://www.zyxel.ch/fr

Turkey
- Zyxel Turkey A.S.
- https://www.zyxel.com/tr/tr/

UK
- Zyxel Communications UK Ltd.
- https://www.zyxel.com/uk/en/

Ukraine
- Zyxel Ukraine
- http://www.ua.zyxel.com

South America

Argentina
- Zyxel Communications Corporation
- https://www.zyxel.com/co/es/

Brazil
- Zyxel Communications Brasil Ltda.
- https://www.zyxel.com/br/pt/

Colombia
- Zyxel Communications Corporation
- https://www.zyxel.com/co/es/

Ecuador
- Zyxel Communications Corporation
- https://www.zyxel.com/co/es/

South America
- Zyxel Communications Corporation
- https://www.zyxel.com/co/es/

Middle East

Israel
- Zyxel Communications Corporation
- http://il.zyxel.com/

Middle East

- Zyxel Communications Corporation
- https://www.zyxel.com/me/en/

North America

USA

- Zyxel Communications, Inc. - North America Headquarters
- https://www.zyxel.com/us/en/

Oceania

Australia

- Zyxel Communications Corporation
- https://www.zyxel.com/au/en/

Africa

South Africa

- Nology (Pty) Ltd.
- https://www.zyxel.com/za/en/

APPENDIX B
Legal Information

Copyright

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Regulatory Notice and Statement

United States of America

The following information applies if you use the product within USA area.

Federal Communications Commission (FCC) EMC Statement

• This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operations.

• Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
• This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is 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.

Canada

The following information applies if you use the product within Canada area

Innovation, Science and Economic Development Canada ICES Statement

CAN ICES-3 (A)/NMB-3(A)

European Union

The following information applies if you use the product within the European Union.

CE EMC statement

WARNING: This equipment is compliant with Class A of EN55032. In a residential environment this equipment may cause radio interference.

List of National Codes

COUNTRY	ISO 3166 2 LETTER CODE	COUNTRY	ISO 3166 2 LETTER CODE
Austria	AT	Liechtenstein	LI
Belgium	BE	Lithuania	LT
Bulgaria	BG	Luxembourg	LU
Croatia	HR	Malta	MT
Cyprus	CY	Netherlands	NL
Czech Republic	CR	Norway	NO
Denmark	DK	Poland	PL
Estonia	EE	Portugal	PT
Finland	FI	Romania	RO
France	FR	Serbia	RS
Germany	DE	Slovakia	SK
Greece	GR	Slovenia	SI
Hungary	HU	Spain	ES
Iceland	IS	Sweden	SE
Ireland	IE	Switzerland	CH
Italy	IT	Turkey	TR
Latvia	LV	United Kingdom	GB

Safety Warnings

- Do NOT use this product near water, for example, in a wet basement or near a swimming pool.
- Do NOT expose your device to dampness, dust or corrosive liquids.
- Do NOT store things on the device.
- Do NOT obstruct the device ventillation slots as insufficient airflow may harm your device. For example, do not place the device in an enclosed space such as a box or on a very soft surface such as a bed or sofa.
- Do NOT install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do NOT open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Use ONLY an appropriate power adaptor or cord for your device. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe).
- DO NOT remove the plug and connect it to a power outlet by itself; always attach the plug to the power adaptor first before connecting it to a power outlet.
- Do NOT allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Do NOT use the device if the power adaptor or cord is damaged as it might cause electrocution.
- If the power adaptor or cord is damaged, remove it from the device and the power source.
- Do NOT attempt to repair the power adaptor or cord. Contact your local vendor to order a new one.
- DO NOT use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS. Dispose them at the applicable collection point for the recycling of electrical and electronic equipment. For detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased the product.
- Use ONLY power wires of the appropriate wire gauge for your device. Connect it to a power supply of the correct voltage.
- Fuse Warning! Replace a fuse only with a fuse of the same type and rating.
- The POE (Power over Ethernet) devices that supply or receive power and their connected Ethernet cables must all be completely indoors.
- This equipment must be grounded by qualified service personnel. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.
- When connecting or disconnecting power to hot-pluggable power supplies, if offered with your system, observe the following guidelines:
  - Install the power supply before connecting the power cable to the power supply.
  - Unplug the power cable before removing the power supply.
  - If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supply.
- The following warning statements apply, where the disconnect device is not incorporated in the equipment or where the plug on the power supply cord is intended to serve as the disconnect device,
  - For PERMANENTLY CONNECTED EQUIPMENT, a readily accessible disconnect device shall be incorporated external to the equipment;
  - For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.

Environment Statement

European Union - Disposal and Recycling Information

The symbol below means that according to local regulations your product and/or its battery shall be disposed of separately from domestic waste. If this product is end of life, take it to a recycling station designated by local authorities. At the time of disposal, the separate collection of your product and/or its battery will help save natural resources and ensure that the environment is sustainable development.

Die folgende Symbol bedeutet, dass Ihr Produkt und/oder seine Batterie gemäß den örtlichen Bestimmungen getrennt vom Hausmüll entsorgt werden muss. Wenden Sie sich an eine Recyclingstation, wenn dieses Produkt das Ende seiner Lebensdauer erreicht hat. Zum Zeitpunkt der Entsorgung wird die getrennte Sammlung von Produkt und/oder seiner Batterie dazu beitragen, natürliche Ressourcen zu sparen und die Umwelt und die menschliche Gesundheit zu schützen.

El símbolo de abajo indica que según las regulaciones locales, su producto y/o su batería deberán depositarse como basura separada de la doméstica. Cuando este producto alcance el final de su vida útil, llévelo a un punto limpio. Cuando llegue el momento de desechar el producto, la recogida por separado éste y/o su batería ayudará a salvar los recursos naturales y a proteger la salud humana y medioambiental.

Le symbole ci-dessous signifie que selon les réglementations locales votre produit et/ou sa batterie doivent être éliminés séparément des ordures ménagères. Lorsque ce produit atteint sa fin de vie, amenez-le à un centre de recyclage. Au moment de la mise au rebut, la collecte séparée de votre produit et/ou de sa batterie aidera à économiser les ressources naturelles et protéger l'environnement et la santé humaine.

Il simbolo sotto significa che secondo i regolamenti locali il vostro prodotto e/o batteria deve essere smaltito separatamente dai rifiuti domestici. Quando questo prodotto raggiunge la fine della vita di servizio portarlo a una stazione di riciclaggio. Al momento dello smaltimento, la raccolta separata del vostro prodotto e/o della sua batteria aiuta a risparmiare risorse naturali e a proteggere l'ambiente e la salute umana.

Symbolen innebär att enligt lokal lagstiftning ska produkten och/eller dess batteri kastas separat från hushållsavfallet. När den här produkten når slutet av sin livslängd ska du ta den till en återvinningsstation. Vid tiden för kasseringen bidrar du till en bättre miljö och mänsklig hälsa genom att göra dig av med den på ett återvinningsställe.

台灣

以下訊息僅適用於產品銷售至台灣地區

· 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

安全警告
為了您的安全，請先閱讀以下警告及指示：
· 請勿將此產品接近水、火焰或放置在高溫的環境。
· 避免設備接觸
  任何液體 - 切勿讓設備接觸水、雨水、高濕度、污水腐蝕性的液體或其他水份。
  灰塵及污物 - 切勿接觸灰塵、污物、沙土、食物或其他不合適的材料。
· 雷雨天氣時，不要安裝，使用或維修此設備。有遭受電擊的風險。
· 切勿重摔或撞擊設備，並勿使用不正確的電源變壓器。
· 若接上不正確的電源變壓器會有爆炸的風險。。
· 請勿隨意更換產品內的電池。
· 如果更換不正確之電池型式，會有爆炸的風險，請依製造商說明書處理使用過之電池。
· 請將廢電池丟棄在適當的電器或電子設備回收處。
· 請勿將設備解體。
· 請勿阻礙設備的散熱孔，空氣對流不足將會造成設備損害。
· 請插在正確的電壓供給插座（如：北美 / 台灣電壓 110V AC，歐洲是 230V AC）。
· 假若電源變壓器或電源變壓器的纜線損壞，請從插座拔除，若您還繼續插電使用，會有觸電死亡的風險。
· 請勿試圖修理電源變壓器或電源變壓器的纜線，若有毀損，請直接聯絡您購買的店家，購買一個新的電源變壓器。
· 請勿將此設備安裝於室外，此設備僅適合放置於室內。
· 請勿隨一般垃圾丟棄。
· 請參閱產品背貼上的設備額定功率。

- 請參考產品型錄或是彩盒上的作業溫度。
- 設備必須接地，接地導線不允許被破壞或沒有適當安裝接地導線，如果不確定接地方式是否符合要求可聯繫相應的電氣檢驗機構檢驗。
- 如果您提供的系統中有提供熱插拔電源，連接或斷開電源請遵循以下指導原則
  - 先連接電源線至設備連，再連接電源。
  - 先斷開電源再拔除連接至設備的電源線。
  - 如果系統有多個電源，需拔除所有連接至電源的電源線再關閉設備電源。
- 產品沒有斷電裝置或者採用電源線的插頭視為斷電裝置的一部分，以下警語將適用：
  - 對永久連接之設備，在設備外部須安裝可觸及之斷電裝置；
  - 對插接式之設備，插座必須接近安裝之地點而且是易於觸及的。

About the Symbols

Various symbols are used in this product to ensure correct usage, to prevent danger to the user and others, and to prevent property damage. The meaning of these symbols are described below. It is important that you read these descriptions thoroughly and fully understand the contents.

Explanation of the Symbols

SYMBOL	EXPLANATION
$\sim$	Alternating current (AC): AC is an electric current in which the flow of electric charge periodically reverses direction.
--- ---	Direct current (DC): DC if the unidirectional flow or movement of electric charge carriers.
(earth symbol)	Earth; ground: A wiring terminal intended for connection of a Protective Earthing Conductor.
(class II symbol)	Class II equipment: The method of protection against electric shock in the case of class II equipment is either double insulation or reinforced insulation.

Viewing Certifications

Go to http://www.zyxel.com to view this product's documentation and certifications.

Zyxel Limited Warranty

Zyxel warrants to the original end user (purchaser) that this product is free from any defects in material or workmanship for a specific period (the Warranty Period) from the date of purchase. The Warranty Period varies by region. Check with your vendor and/or the authorized Zyxel local distributor for details about the Warranty Period of this product. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, Zyxel will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal or higher value, and will be solely at the discretion of Zyxel. This warranty shall not apply if the product has been modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

Note

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. Zyxel shall in no event be held liable for indirect or consequential damages of any kind to the purchaser.

To obtain the services of this warranty, contact your vendor. You may also refer to the warranty policy for the region in which you bought the device at http://www.zyxel.com/web/support_warranty_info.php.

Registration

Register your product online to receive e-mail notices of firmware upgrades and information at www.zyxel.com for global products, or at www.us.zyxel.com for North American products.

Open Source Licenses

This product contains in part some free software distributed under GPL license terms and/or GPL like licenses. Open source licenses are provided with the firmware package. You can download the latest firmware at www.zyxel.com. To obtain the source code covered under those Licenses, please contact support@zyxel.com.tw to get it.

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