

GS1100-16

16-port Unmanaged Gigabit Ethernet Switch

User's Guide



Firmware Version 1.00
Edition 1, 3/2010

www.zyxel.com

ZyXEL

About This User's Guide

Intended Audience

This manual is intended for people who want to configure the Switch using the web configurator.

Documentation Feedback

Send your comments, questions or suggestions to: techwriters@zyxel.com.tw

Thank you!

The Technical Writing Team, ZyXEL Communications Corp.,
6 Innovation Road II, Science-Based Industrial Park, Hsinchu, 30099, Taiwan.

Need More Help?

More help is available at www.zyxel.com.



- Download Library

Search for the latest product updates and documentation from this link. Read the Tech Doc Overview to find out how to efficiently use the User Guide, Quick Start Guide and Command Line Interface Reference Guide in order to better understand how to use your product.

- Knowledge Base

If you have a specific question about your product, the answer may be here. This is a collection of answers to previously asked questions about ZyXEL products.

- Forum

This contains discussions on ZyXEL products. Learn from others who use ZyXEL products and share your experiences as well.

Customer Support

Should problems arise that cannot be solved by the methods listed above, 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 http://www.zyxel.com/web/contact_us.php for contact information. Please have the following information ready when you contact an office.

- 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.

Document Conventions

Warnings and Notes

These are how warnings and notes are shown in this User's 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

- The GS1100-16 may be referred to as the "Switch", the "device", the "system" or the "product" in this User's Guide. Differentiation is made where needed.
- Product labels, screen names, field labels and field choices are all in **bold** font.
- A key stroke is denoted by square brackets and uppercase text, for example, [ENTER] means the "enter" or "return" key on your keyboard.
- "Enter" means for you to type one or more characters and then press the [ENTER] key. "Select" or "choose" means for you to use one of the predefined choices.
- A right angle bracket (>) within a screen name denotes a mouse click. For example, **Maintenance > Log > Log Setting** means you first click **Maintenance** in the navigation panel, then the **Log** sub menu and finally the **Log Setting** tab to get to that screen.
- Units of measurement may denote the "metric" value or the "scientific" value. For example, "k" for kilo may denote "1000" or "1024", "M" for mega may denote "1000000" or "1048576" and so on.
- "e.g.," is a shorthand for "for instance", and "i.e.," means "that is" or "in other words".

Icons Used in Figures

Figures in this User's Guide may use the following generic icons. The Switch icon is not an exact representation of your device.

The Switch 	Computer 	Notebook computer 
Server 		

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 install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Do not obstruct the device ventilation slots as insufficient airflow may harm your device.
- 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).
- Use ONLY power wires of the appropriate wire gauge for your device. Connect it to a power supply of the correct voltage.
- 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.
- Fuse Warning! Replace a fuse only with a fuse of the same type and rating.

Your product is marked with this symbol, which is known as the WEEE mark. WEEE stands for Waste Electronics and Electrical Equipment. It means that used electrical and electronic products should not be mixed with general waste. Used electrical and electronic equipment should be treated separately.



Table of Contents

Table of Contents	1
Chapter 1	
Getting to Know Your Switch	3
1.1 Introduction	3
1.2 Features	3
1.3 Package Contents	4
1.4 Applications	4
1.4.1 Standalone Workgroup	4
1.4.2 Bridging	5
Chapter 2	
Hardware Description and Connection.....	7
2.1 Rear Panel	7
2.1.1 Rear Panel Power Connection	7
2.2 Front Panel	7
2.2.1 RJ-45 Auto-negotiating Ports	7
2.2.2 Front Panel Connections	8
2.2.3 Front Panel LEDs	8
2.3 Hardware Installation	9
2.3.1 Wall-mounting	9
2.3.2 Rack Mounting	10
2.3.3 Mounting the Switch on a Rack	11
Chapter 3	
Troubleshooting.....	13
3.1 Improper Network Cabling and Topology	14
Chapter 4	
Product Specifications	15
Appendix	
A	
Appendix A Legal Information	17

Getting to Know Your Switch

1.1 Introduction

This chapter describes the key features, benefits and applications of your Switch.

The Switch is a 10/100/1000 Mbps Gigabit multi-port switch that can be used to build high-performance switched workgroup networks. The Switch is a store-and-forward device that offers low latency for high-speed networking. The Switch is designed for workgroups, departments or backbone computing environments for SME (small, medium enterprise) businesses.

Figure 1 Front Panel



The Switch has a built-in algorithm that automatically assigns priority to received packets. It can operate in low power idle mode in compliance with draft IEEE 802.3az Energy Efficient Ethernet (EEE).

1.2 Features

The following are the essential features of the Switch.

- Conforms to IEEE 802.3, 802.3u, 802.3ab and 802.3x standards.
- Auto-negotiating 10/100/1000 Mbps Ethernet RJ-45 ports.
- Auto-sensing crossover for all 10/100/1000 Mbps Ethernet 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.

- Full wire speed forwarding rate.
- Embedded 8K MAC address table providing 8000 MAC addresses entries.

Refer to [Chapter 4 on page 15](#) for the product specifications.

1.3 Package Contents

Compare the contents of your Switch package with the checklist below. If any item is missing or damaged, please contact your local dealer.

- An Ethernet switch
- Power cord
- This User's Guide

1.4 Applications

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

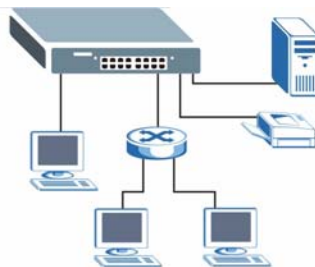
1.4.1 Standalone Workgroup

In this 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 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 2 Standalone Workgroup Example

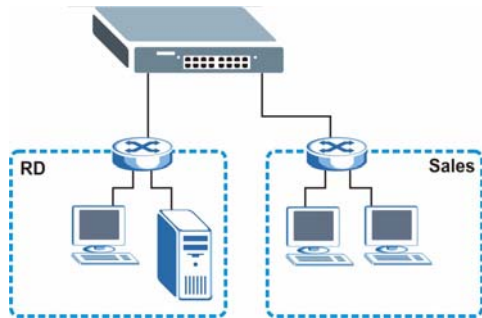


1.4.2 Bridging

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 3 Bridging Example



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 [Appendix on page 15](#) for power specification.

Figure 4 Rear Panel



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. Use the 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/1000 Base-T RJ-45 ports and the LEDs.

2.2.1 RJ-45 Auto-negotiating Ports

The 10 Base-T/100 Base-TX/1000 Base-T RJ-45 ports are auto-negotiating and 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 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 1 Network Cable Types

SPEED	NETWORK CABLE TYPE
10 Mbps	Category 3, 4 or 5 UTP/STP
100 Mbps	Category 5 UTP/STP
1000 Mbps	Category 5e, 6 UTP/STP

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

2.2.3 Front Panel LEDs

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

Figure 5 Front Panel LEDs



The following table describes the LEDs.

Table 2 The Front Panel LED Descriptions

LED	COLO R	STATUS	DESCRIPTION
PWR	Green	On	The Switch is on and receiving power.
		Off	The Switch is not receiving power.

Table 2 The Front Panel LED Descriptions

LED	COLO R	STATUS	DESCRIPTION
LINK/ ACT	Green	On	The port is connected to an Ethernet network.
		Blinking	The port is receiving or transmitting data.
		Off	The port is not connected to an Ethernet network.

2.3 Hardware Installation

You can place the Switch directly on top of your desk. 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.

Note: The Switch is a desktop device, but it is also rackmountable and wall-mountable. Ask an authorized technician to attach the Switch to the rack/wall.

2.3.1 Wall-mounting

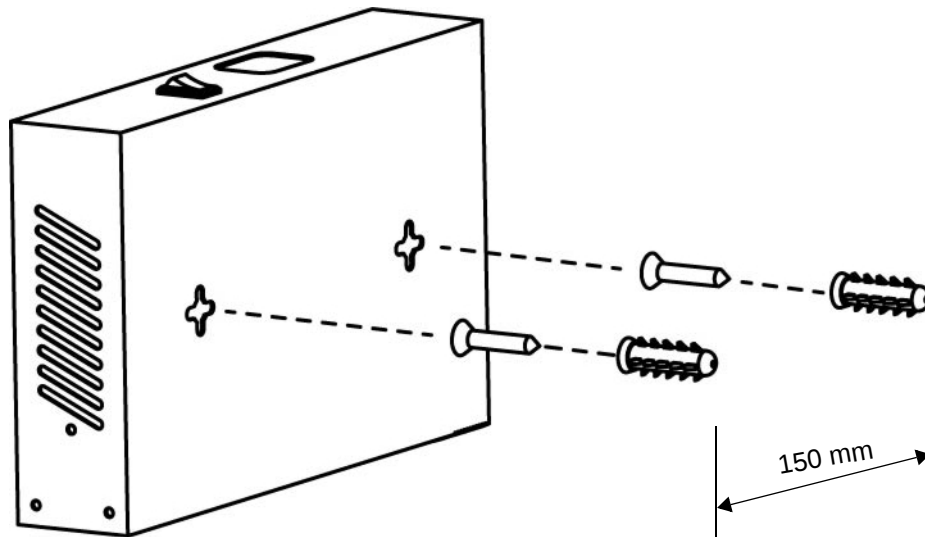
Do the following to attach your Switch to a wall.

- 1 Screw the two screws provided with your Switch into the wall 150 mm apart (see the figure in step 2). Use screws with 6 mm ~ 8 mm (0.24" ~ 0.31") wide heads. Do not screw the screws 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 connection cables 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 Align the holes on the back of the Switch with the screws on the wall. Hang the Switch on the screws.



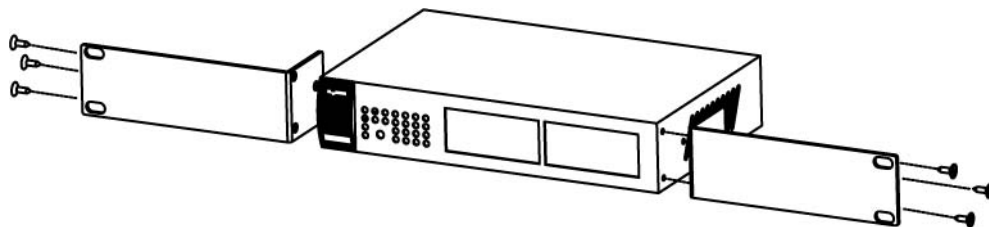
The Switch should be wall-mounted horizontally. The Switch's side panels with ventilation slots should not be facing up or down as this position is less safe.

2.3.2 Rack Mounting

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 6 Attaching the Mounting Brackets

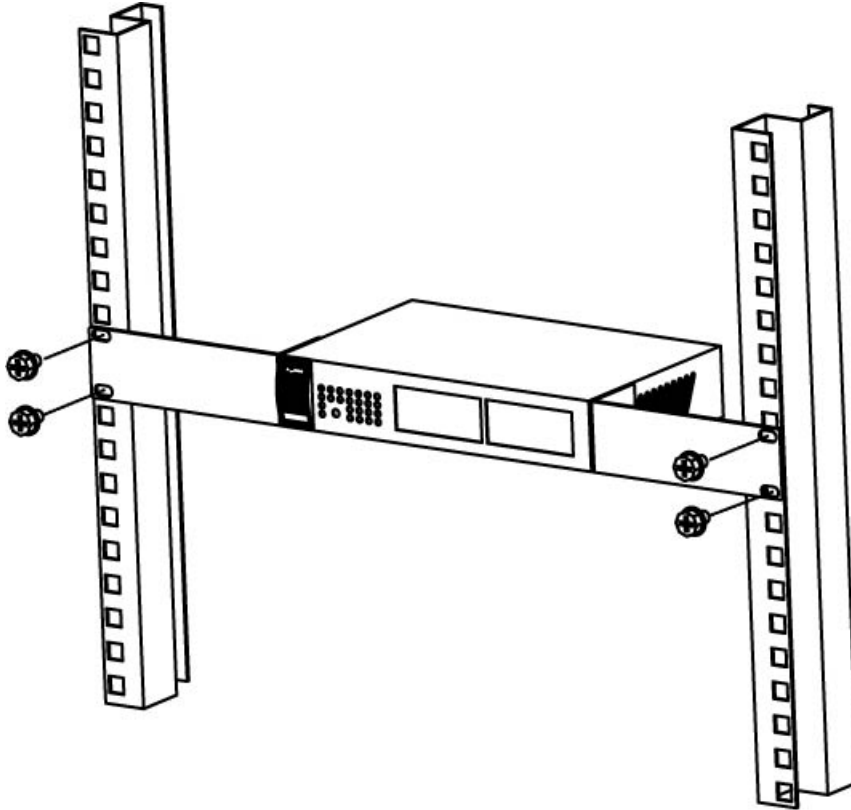


- 2 Using a #2 Philips screwdriver, install the M3 flat head screws through the mounting bracket holes into the Switch.
- 3 Repeat steps 1 and 2 to install the second mounting bracket on the other side of the Switch.
- 4 You may now mount the Switch on a rack. Proceed to the next section.

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 7 Mounting the Switch on a Rack



- 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.

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 14](#).

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 8 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 2.2.2 on page 8 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.

Product Specifications

These are the product specifications.

Table 3 Product Specifications

Dimension	215 mm (L) x 133 mm (W) x 42 mm (H)
Weight	1 kg
Standard	IEEE802.3 10 BASE-T IEEE802.3u 100 BASE-TX IEEE802.3ab 1000 BASE-T IEEE802.3x full-duplex flow control IEEE802.3az (EEE)
Interface	16 x 10/100/1000 Mbps auto MDI/MDI-X RJ-45 switching ports
Cable connections	RJ-45 (10 BASE-T): Category 3,4,5 UTP/STP RJ-45 (100 BASE-TX): Category 5 UTP/STP RJ-45 (1000 BASE-T): Category 5e, 6 or enhanced UTP/STP
Network Data Rate	10/100/1000 Mbps Auto-negotiation
Transmission Mode	10/100 Mbps: Full-duplex, Half-duplex 1000 Mbps: Full-duplex
Data Forwarding Rate	14880 pps for 10 Base-T 148800 pps for 100 Base-T 1488000 pps for 1000 Base-T
LED Indications	System: Power Ports: Link/ACT
Memory	8 K MAC entries 256 K bytes buffer Memory
Jumbo Frame	9 K bytes
Operating Temperature	0 ~ 40 °C

Table 3 Product Specifications

Operating Humidity	10 % - 90 % (non-condensing)
Power Supply	Power rating: 100-240 V ~50/60 Hz 0.5A Max Power consumption: 6 W
Emission	FCC, CE, CSA

Legal Information

Copyright

Copyright © 2010 by ZyXEL Communications Corporation.

The contents of this publication may not be reproduced in any part or as a whole, transcribed, stored in a retrieval system, translated into any language, or transmitted in any form or by any means, electronic, mechanical, magnetic, optical, chemical, photocopying, manual, or otherwise, without the prior written permission of ZyXEL Communications Corporation.

Published by ZyXEL Communications Corporation. All rights reserved.

Disclaimer

ZyXEL does not assume any liability arising out of the application or use of any products, or software described herein. Neither does it convey any license under its patent rights nor the patent rights of others. ZyXEL further reserves the right to make changes in any products described herein without notice. This publication is subject to change without notice.

Trademarks

ZyNOS (ZyXEL Network Operating System) is a registered trademark of ZyXEL Communications, Inc. Other trademarks mentioned in this publication are used for identification purposes only and may be properties of their respective owners.

Certifications

Federal Communications Commission (FCC) Interference Statement

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

- This device may not cause harmful interference.

-
- This device must accept any interference received, including interference that may cause undesired operations.

FCC Warning

This device has been tested and found to comply with the limits for a Class A digital switch, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This device 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 device 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.

CE Mark Warning:

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Notices

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Viewing Certifications

- 1 Go to <http://www.zyxel.com>.
- 2 Select your product on the ZyXEL home page to go to that product's page.
- 3 Select the certification you wish to view from this page.

ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in materials or workmanship for a period of up to two years from the date of purchase. 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.

Index

Numerics

10/100/1000 Mbps [3](#)

A

Applications [4](#)

Segment Bridge [5](#)

auto-negotiating ports [7](#)

C

Cabling Length [14](#)

certifications [17](#)

notices [18](#)

viewing [18](#)

copyright [17](#)

D

Data path loop [14](#)

disclaimer [17](#)

F

Faulty cables [14](#)

FCC interference statement [17](#)

Front Panel [7](#)

Front Panel Connections [8](#)

L

LED Descriptions

LK/ACT [9](#)

PWR [8](#)

M

mounting brackets [10](#)

N

network cable

crossover [8](#)

straight-through [8](#)

Network Cable Types [8](#)

Non-standard network cables [14](#)

P

Package Contents [4](#)

product registration [19](#)

Product specification [15](#)

R

Rear Panel [7](#)

Rear Panel Power Connection [7](#)

registration

product [19](#)

S

safety warnings [7](#)

Standalone Workgroup [4](#)

syntax conventions [5](#)

T

trademarks [17](#)

Troubleshooting

Improper Network Cabling and Topology [14](#)

W

wall-mounting [9](#)

warranty [18](#)

note [19](#)