

ES-105/ES-108

Ethernet Switch

User's Guide

December 2002

ZyXEL

TOTAL INTERNET ACCESS SOLUTION

Interference Statements and Warnings

FCC Interference Statement

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

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operations.

FCC Warning

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 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.

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.

Taiwanese BCIQ A Warning

警告使用者

這是甲類的資訊產品，在居住的環境使用時，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。

Certifications

Refer to the product page at www.zyxel.com.

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 (2) 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 value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product is 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 of character to the purchaser.

To obtain the services of this warranty, contact ZyXEL's Service Center for your Return Material Authorization number (RMA). Products must be returned Postage Prepaid. It is recommended that the unit be insured when shipped. Any returned products without proof of purchase or those with an out-dated warranty will be repaired or replaced (at the discretion of ZyXEL) and the customer will be billed for parts and labor. All repaired or replaced products will be shipped by ZyXEL to the corresponding return address, Postage Paid. This warranty gives you specific legal rights, and you may also have other rights that vary from country to country.

Getting to Know Your Switch

Introduction

The switch is a multi-port switch that can be used to build high-performance switched networks. The switch is a store-and-forward device that offers low latency for high-speed networking. The switch is designed for SOHO (Small Office Home Office) businesses.

Standalone Workgroup Application

The switch can be used as a standalone switch to which computers, servers and print server are directly connected to form a small workgroup.

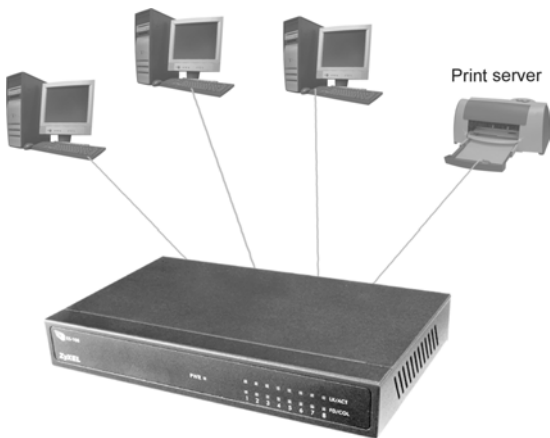


Figure 1 Standalone Workgroup Example using the ES-108

Hardware Description and Installation

The switch is suitable for an office environment where it can be placed on a desktop.

Desktop Installation

- Step 1.** Make sure the switch is clean and dry.
- Step 2.** Set the switch on a smooth, leveled and sturdy flat space strong enough to support the weight of the switch and the connected cables. Make sure there is a power outlet nearby.
- Step 3.** Make sure there is enough clearance around the switch to allow air circulation and the attachment of cables and the power cord.

Do not block the ventilation holes. Leave space between switches when stacking.

Rear Panel Connection

The RJ-45 ports and the power port are located on the rear panel of the switch.



Figure 2 Rear Panel of the ES-105

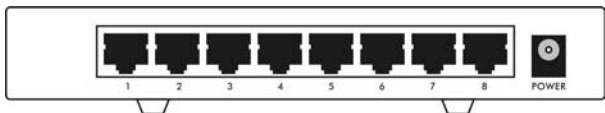


Figure 3 Rear Panel of the ES-108

RJ-45 Auto-negotiating Ports

Your switch comes with 5 or 8 10Base-T/100Base-TX RJ-45 ports depending on the model of your switch. The auto-negotiation feature allows the switch to detect the speed of incoming transmission and adjust appropriately without manual intervention. It allows data transfers of either 10 Mbps or 100 Mbps in either half-duplex or full-duplex mode depending on your Ethernet network.

Auto-sensing MDI/MDIX ports

Each 10Base-T/100Base-TX RJ-45 MDI/MDIX port allows you to connect to a computer or to a hub using either a straight-through or a crossover Ethernet cable.

Rear Panel Ethernet Cable Connections

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 Base-T	100 Ω 2-pair UTP/STP Category 3, 4 or 5
100 Base-TX	100 Ω 2-pair UTP/STP Category 5

Make sure the cable length between connections does not exceed 100 meters (328 feet).

Power Port

Use the supplied power adapter to connect your switch to a power source. Refer to the label on the power adapter for more information.

Front Panel LEDs

The LED indicators give real-time information about the status of the switch.

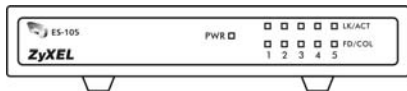


Figure 4 The Front Panel LEDs of the ES-105

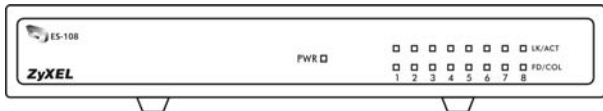


Figure 5 The Front Panel LEDs of the ES-108

The following table provides descriptions of the LEDs.

Table 2 The Front Panel LED Descriptions

LED	COLOR	STATUS	DESCRIPTION
PWR	Green	On	The switch is on and receiving power.
		Off	The switch is not receiving power.
LK/ACT	Green	On	The port is connected to an Ethernet network.
		Off	The port is not connected to an Ethernet network.
		Blinking	The port is receiving or transmitting data.
FD/COL	Orange	On	The port is operating in full-duplex mode.
		Blinking	Packet collision occurred on this port.
		Off	The port is operating in half-duplex mode or no Ethernet device is connected to this port.

Troubleshooting

Troubleshoot the switch using the LEDs to detect problems.

Power LED

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

Table 3 Troubleshooting Power LED

STEPS	CORRECTIVE ACTION
1	Check the connections from your switch to the power source. Make sure you are using the supplied power adapter and that you are using an appropriate power source.
2	Make sure the power source is turned on and that the switch is receiving sufficient power.
3	If these steps fail to correct the problem, contact your local distributor for assistance.

LK/ACT LED

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

Table 4 Troubleshooting LK/ACT LED

STEPS	CORRECTIVE ACTION
1	Verify that the attached device(s) is turned on and properly connected to your switch.
2	Make sure the Network Interface Cards (NICs) are working on the attached devices.

Table 4 Troubleshooting LK/ACT LED

STEPS	CORRECTIVE ACTION
3	Verify that proper network cable type is used and its length does not exceed 100 meters. For more information on network cable types, see the <i>Rear Panel Ethernet Cable Connections</i> section.

FD/COL LED

The FD/COL LED blinks. Some collisions in the network are normal. If the FD/COL LED blinks continuously, proceed to the steps below.

Table 5 Troubleshooting FD/COL LED

STEP	CORRECTIVE ACTION
1	Verify that proper network cable type is used and its length does not exceed 100 meters (328 feet). For more information on network cable types, see the <i>Rear Panel Ethernet Cable Connections</i> section.
2	Your network is busy. Try sending large files later, reduce the number of users or segment your network.

Improper Network Cabling and Topology

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

Table 6 Troubleshooting Improper Network Cabling and Topology

DESCRIPTION	PROBLEMS AND 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 the <i>Rear Panel Ethernet Cable Connections</i> section 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 (328 feet).
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.