D-Link®

DES-1009G
8-Port 10/100M
with 1-Port 10/100/1000M
Gigabit Ethernet Switch

User's Guide

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RECYCLABLE

LIMITED WARRANTY

D-Link Systems, Inc. ("D-Link") provides this limited warranty for its product only to the person or entity who originally purchased the product from D-Link or its authorized reseller or distributor.

Limited Hardware Warranty: D-Link warrants that the hardware portion of the D-Link products described below ("Hardware") will be free from material defects in workmanship and materials from the date of original retail purchase of the Hardware, for the period set forth below applicable to the product type ("Warranty Period") if the Hardware is used and serviced in accordance with applicable documentation.

Product Type	**Warranty Period**
Product (excluding power supplies and fans), if purchased and delivered in the fifty (50) United States, or the District of Columbia ("USA")	As long as the original purchaser still owns the product.
Product purchased or delivered outside the USA	One (1) Year
Power Supplies and Fans	One (1) Year
Spare Parts and spare kits	Ninety (90) days

D-Link's sole obligation shall be to repair or replace the defective Hardware at no charge to the original owner. Such repair or replacement will be rendered

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Products that have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for

the product, or if the model or serial number has been altered, tampered with, defaced or removed;

Initial installation, installation and removal of the product for repair, and shipping costs;

Operational adjustments covered in the operating manual for the product, and normal maintenance;

Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; and

Any hardware, software, firmware or other products or services provided by anyone other than D-Link.

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Trademarks

Copyright Statement

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B 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 this user's guide, 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 B product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

VCCI Warning

注意

この装置は、情報処理装置等電波障害自主規制協議会(VCCI)の基準に基づく第一種情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

TABLE OF CONTENTS

ABOUT THIS GUIDE

This user's guide tells you how to install your DES-1009G Gigabit Ethernet Switch, and how to connect it to your network.

Terms

For simplicity, this documentation uses the terms "Switch" (first letter upper case) to refer to the DES-1009G Gigabit Ethernet Switch, and "switch" (first letter lower case) to refer to all Ethernet switches, including the DES-1009G Gigabit Ethernet Switch.

Overview of this User's Guide

- Chapter 1, *Introduction*. Describes the Switch and its features.
- Chapter 2, *Unpacking and Setup*. Helps you get started with the basic installation of the Switch.
- Chapter 3, *Identifying External Components*. Describes the front panel, rear panel, and LED indicators of the Switch.
- Chapter 4, *Connecting the Switch*. Tells how you can connect the Switch to your Ethernet network.
- Appendix A, *Technical Specifications*. Lists the technical specifications of the DES-1009G Gigabit Ethernet Switch.

INTRODUCTION

This section describes the features of the DES-1009G Gigabit Ethernet Switch, as well as giving some background information about Gigabit Ethernet, Fast Ethernet and Switching technology.

Gigabit Ethernet Technology

Gigabit Ethernet is an extension of IEEE 802.3 Ethernet utilizing the same packet structure, format, and support for CSMA/CD protocol, full duplex, flow control, and management objects, but with a tenfold increase in theoretical throughput over 100-Mbps Fast Ethernet and a hundredfold increase over 10-Mbps Ethernet. Since it is compatible with all 10-Mbps and 100-Mbps Ethernet environments, Gigabit Ethernet provides a straightforward upgrade supplementing the company's existing investment in hardware, software, and trained personnel.

The increased speed and extra bandwidth offered by Gigabit Ethernet is essential to coping with the network bottlenecks that frequently develop as computers and their busses get faster and more users use applications that generate more traffic. Upgrading key components, such as your backbone and servers to Gigabit Ethernet will greatly improve network response times as well as significantly speed up the traffic between your subnets.

Gigabit Ethernet enables fast optical fiber connections to support video conferencing, complex imaging, and similar data-intensive applications. Likewise, since data transfers occur 10 times faster than Fast Ethernet, servers outfitted with Gigabit Ethernet NIC's are able to perform 10 times the number of operations in the same amount of time.

In addition, the phenomenal bandwidth delivered by Gigabit Ethernet is the most cost-effective method to take advantage of today and tomorrow's rapidly improving switching and routing internetworking technologies. And with expected advances in the coming years in silicon technology and digital signal processing that will enable Gigabit Ethernet to eventually operate over unshielded twisted-pair (UTP) cabling, outfitting your network with a powerful 1000-Mbps-capable backbone/server connection creates a flexible foundation for the next generation of network technology products.

Fast Ethernet Technology

The growing importance of LANs and the increasing complexity of desktop computing applications are fueling the need for high performance networks. A number of high-speed LAN technologies have been proposed to provide greater bandwidth and improve client/server response times. Among them, 100BASE-T (Fast Ethernet) provides a non-disruptive, smooth evolution from the current 10BASE-T technology. The non-disruptive and smooth evolution nature, and the dominating potential market base, virtually guarantee cost effective and high performance Fast Ethernet solutions in the years to come.

100Mbps Fast Ethernet is a new standard specified by the IEEE 802.3 LAN committee. It is an extension of the 10Mbps Ethernet standard with the ability to transmit and receive data at 100Mbps, while maintaining the CSMA/CD Ethernet protocol. Since the 100Mbps Fast Ethernet is compatible with all other 10Mbps Ethernet environments, it provides a straightforward upgrade and takes advantage of the existing investment in hardware, software, and personnel training.

Switching Technology

Another key development pushing the limits of Ethernet technology is in the field of switching technology. A switch bridges Ethernet packets at the MAC address level of the Ethernet protocol transmitting among connected Ethernet or fast Ethernet LAN segments.

Switching is a cost-effective way of increasing the total network capacity available to users on a local area network. A switch increases capacity and decreases network loading by making it possible for a local area network to be divided into different *segments* which don't compete with each other for network transmission capacity, giving a decreased load on each.

The switch acts as a high-speed selective bridge between the individual segments. Traffic that needs to go from one segment to another is automatically forwarded by the switch, without interfering with any other segments. This allows the total network capacity to be multiplied, while still maintaining the same network cabling and adapter cards.

Switching LAN technology is a marked improvement over the previous generation of network bridges, which were characterized by higher latencies. Routers have also been used to segment local area networks, but the cost of a router and the setup and maintenance required make routers relatively impractical. Today's switches are an ideal solution to most kinds of local area network congestion problems.

Features

The DES-1009G Gigabit Ethernet Switch was designed for easy installation and high performance in an environment where traffic on the network and the number of users increase continuously.

Switch features include:

Ports

- One 10/100/1000Mbps NWay Gigabit Ethernet port (port 9).
- Eight 10/100Mbps NWay Ethernet ports (port 1 ~ 8).
- One 10/100/Mbps NWay MDI-X Uplink port, share with port 8.

Performance features

- Store and forward switching scheme capability to support rate adaptation and protocol conversion.
- Full duplex to allow two communicating stations to transmit and receive at the same time.
- Wire-speed data forwarding rate for each port.
- Wire-speed data filtering rate for each port.
- 4K active MAC address entry table per device with automatic learning and aging.
- 2M bits packet buffer per device.
- Supports broadcast storm rate filtering

UNPACKING AND SETUP

This chapter provides unpacking and setup information for the Switch.

Unpacking

Open the shipping carton of the Switch and carefully unpack its contents. The carton should contain the following items:

- **One 8-Port 10/100 Mbps, 1-Port 10/100/1000Mbps NWay Gigabit Ethernet Switch**
- **Four rubber feet with adhesive backing**
- **One AC power cord**
- **One User's Guide**

If any item is found missing or damaged, please contact your local reseller for replacement.

Setup

The setup of the Switch can be performed using the following steps:

- The surface must support at least 5 kgs.
- The power outlet should be within 1.82 meters (6 feet) of the device.
- Visually inspect the power cord and see that it is secured fully to the AC power connector.
- Make sure that there is proper heat dissipation from and adequate ventilation around the Switch. Do not place heavy objects on the Switch.

Desktop or Shelf Installation

When installing the Switch on a desktop or shelf, the rubber feet included with the device must be first attached. Attach these cushioning feet on the bottom at each corner of the device. Allow enough ventilation space between the device and the objects around it.

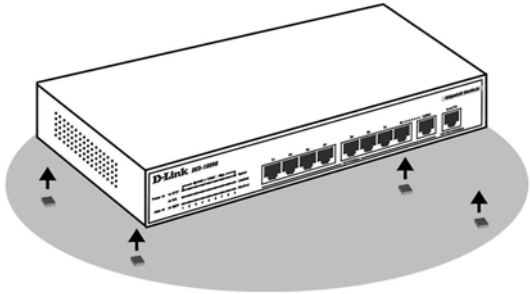

Figure 2-1. Gigabit Ethernet Switch installed on a Desktop or Shelf

Connecting Network Cable

The DES-1009G Gigabit Ethernet Switch supports one 10/100/1000Mbps NWay Gigabit Ethernet port and eight 10/100Mbps NWay Fast Ethernet ports. Port 1 to port 8 support 10Mbps Ethernet or 100Mbps Fast Ethernet and it runs both in half and full duplex mode. Port 9 is a NWay Gigabit Ethernet port, it supports 10Mbps, 100Mbps and 1000Mbps, it runs both half duplex and full duplex while it's running in 10Mbps or 100Mbps, but it can only run full duplex mode in 1000Mbps.

Note: For having best connection, please check your connecting speed.

Port 1 to port 8 are MDI-X type port, you can use standard cable to connect to the NIC. If you want to connect to the hub or switch, you have to connect the uplink port to the other hub's MDI-X type port by using the standard cable.

Port 9 is Auto-MDI type ports, this port can auto transform to MDI-II or MDI-X type, so you can just make an easy connection without worrying if you are using a standard or crossover cable.

Power on

The DES-1009G Gigabit Ethernet Switch can be used with AC power sources 100 - 240 VAC, 50 - 60 Hz. The Switch's power supply will adjust to the local power source automatically and may be turned on without having any or all LAN segment cables connected.

IDENTIFYING EXTERNAL COMPONENTS

This chapter describes the front panel, rear panel and LED indicators of the Switch.

Front Panel

The front panel of the Switch consists of 8 10/100Mbps NWay Ethernet ports, 1 10/100/1000Mbps NWay Gigabit Ethernet port, and LED indicators.

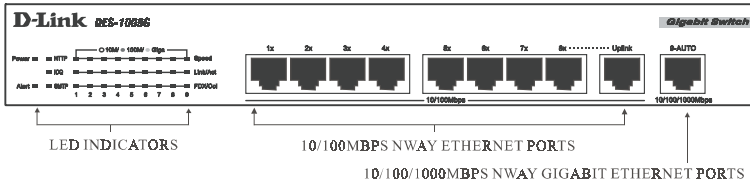

Figure 3-1. Front panel view of the DES-1009G Gigabit Ethernet Switch

- One 10/100/1000Mbps NWay Gigabit Ethernet port (port 9).
- Eight 10/100Mbps NWay Ethernet ports (port 1 ~ 8).
- One 10/100Mbps MDI-II Uplink port, share with port 8.
- Comprehensive LED indicators that display the conditions of the Switch and status of the network. A description of these LED indicators follows (see *LED Indicators*).

Rear Panel

The rear panel of the Switch consists of an AC power connector. The following shows the rear panel of the Switch.

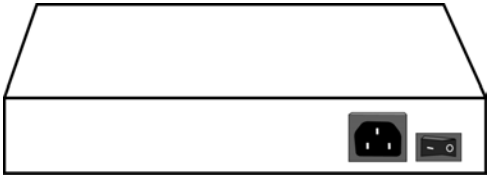

Figure 3-2. Rear panel view of the DES-1009G Gigabit Ethernet Switch

- **AC Power Connector** This is a three-pronged connector that supports the power cord. Plug in the female connector of the provided power cord into this connector, and the male into a power outlet. Supported input voltages range from 100 ~ 240 VAC at 50 ~ 60 Hz**.**

LED Indicators

The LED indicators of the Switch include Power, ALERT, HTTP, ICQ, SMTP, SPEED, LINK/ACT and FDX/COL. The following shows the LED indicators for the Switch along with an explanation of each indicator.

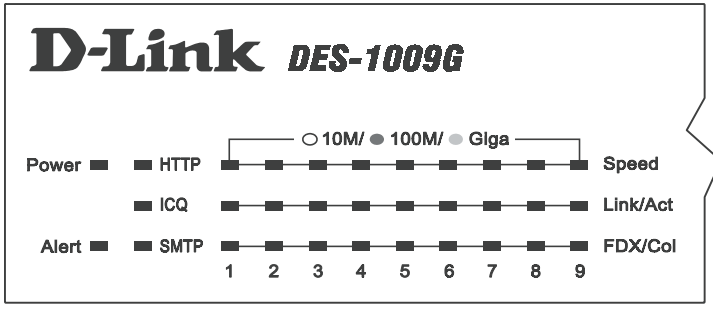

Figure 3-4. The DES-1009G Gigabit Ethernet Switch LED indicators

- **POWER:** After turning on the power, the Power indicator on the front panel should light to indicate the Switch is receiving power.

- **ALERT:** When power is on, the alert will light up, after self-testing , the light turns off. If the led always light up, then it means that there is some problem, please contact your dealer.

- **HTTP:** When this indicator is blinking green, the HTTP packets (Web browser) are transmitting or received on the Switch.

- **ICQ:** When this indicator is blinking green, the ICQ (Online chat program) packets are transmitting or received on the Switch.

- **SMTP:** When this indicator is blinking green, the SMTP packets (E-Mail) are transmitting or received on the Switch.

- **SPEED:** The indicator lights amber when the port is connected to 1000Mbps Gigabit Ethernet station, and the indicator lights green when the port is connected to 100Mbps Fast Ethernet station. Otherwise, this indicator remains off when the port is connected to a 10Mbps Ethernet station.

- **LINK/ACT:** This indicator light is green when this port is connected to a station successful, if this indicator blinking green means this port will be transmitting or received data on the network.

- **FDX/COL:** This LED indicator light is green when a respective port is in full duplex (FDX) mode. Otherwise, it is blinking green when collisions are occurring on the respective port.

TECHNICAL SPECIFICATIONS

General	
Standards:	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet ANSI/IEEE 802.3 NWay Auto-negotiation IEEE 802.3x Full duplex Flow Control
Protocol:	CSMA/CD
Data Transfer Rate:	Ethernet: 10Mbps (half-duplex), 20Mbps (full-duplex) Fast Ethernet: 100Mbps (half-duplex), 200Mbps (full-duplex) Gigabit Ethernet: 1000Mbps (half-duplex), 2000Mbps (full-duplex)
Topology	Star
Network Cables:	Ethernet: 2-pair UTP Cat. 3,4,5 , EIA/TIA- 568 100-ohm STP Fast Ethernet: 2-pair UTP Cat. 5, EIA/TIA-568 100-ohm STP Gigabit Ethernet: 4-pair UTP Cat. 5, EIA/TIA-568 100-ohm STP
Number of Ports:	8 x 10/100Mbps NWay Ethernet MDI-X port 1 x 10/100/1000Mbps NWay Gigabit Ethernet Auto-MDI port 1 x 10/100Mbps NWay Ethernet MDI-II port, share with port 8 (Uplink port)

Physical and Environmental

AC inputs:	100 – 240 VAC, 50/60 Hz (internal universal power supply)
Power Consumption:	30 watts maximum
Operating Temperature:	0 ~ 50 degrees Celsius
Storage Temperature:	-5 ~ 55 degree Celsius
Humidity:	5% ~ 95% RH, non-condensing
Dimensions:	280 mm x 180 mm x 44 mm
EMI:	FCC Class B, CE Mark Class B, VCCI Class B
Safety:	UL (UL 1950), TUV/GS (EN60950)

Performance

Transmission Method:	Store-and-forward
RAM Buffer:	2M bits per device
Filtering Address Table:	4K MAC address per device
Packet Filtering/Forwarding Rate:	Ethernet: 14880pps Fast Ethernet: 148800pps Gigabit Ethernet: 1488000pps
MAC Address Learning:	Self-learning, auto-aging