D-Link®

DES-1008D
8-Port 10/100Mbps
Dual Speed Ethernet Switch
User's Guide

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; provided that a completed Registration Card is returned to an Authorized DLink Service Office within ninety (90) days after the date of original retail purchase of the Hardware. If a completed Registration Card is not received by an authorized D-Link Service Office within such ninety (90) period, then the Warranty Period shall be ninety (90) days from the date of purchase.

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 by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or of an identical make, model or part; D-Link may in its discretion may replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects

to the defective Hardware. The Warranty Period shall extend for an additional ninety (90) days after any repaired or replaced Hardware is delivered. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

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Registration Card. The Registration Card provided at the back of this manual must be completed and returned to an Authorized DLink Service Office for each DLink product within ninety (90) days after the product is purchased and/or licensed. The addresses/telephone/fax list of the nearest Authorized D-Link Service Office is provided in the back of this manual. FAILURE TO PROPERLY COMPLETE AND TIMELY RETURN THE

REGISTRATION CARD MAY AFFECT THE WARRANTY FOR THIS PRODUCT.

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What Is Not Covered:

This limited warranty provided by D-Link does not cover:

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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GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides

specific legal rights and the product owner may also have other rights which vary from state to state.

FCC Warning

This equipment has been tested and found to comply with the regulations 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 Mark 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

Congratulations on your purchase of the DES-1008D. This device integrates 100Mbps Fast Ethernet and 10Mbps Ethernet network capabilities in a highly flexible desktop package.

Purpose

The purpose of this manual is to show you how to install and configure your DES-1008D.

Overview of this User's Guide

? Chapter 1, *Introduction.* Describes the DES-1008D and its features.

? Chapter 2, U*npacking and Setup.* Helps you get started with the basic installation of the DES-1008D.

? Chapter 3, *Identifying External Components*. Describes the front panel, rear panel and LED indicators of the DES-1008D.

? Chapter 4, *Connecting the DES-1008D.* Tells how you can connect the DES-1008D to your Ethernet network.

? Appendix A, *Technical Specifications.* Lists the technical (general, physical and environmental, and performance) specifications of the DES-1008D.

? Appendix B, *RJ-45 Pin Specification.* Describes the RJ-45 receptacle/connector and the straight and crossover cable connector.

INTRODUCTION

This chapter describes the features of the DES-1008D and some background information about Ethernet/Fast Ethernet switching technology.

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 approach to pushing beyond the limits of Ethernet technology is the development 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 dividing a local area network into different *segments*, which don't compete with each other for network transmission capacity.

The DES-1008D acts as a high-speed selective bridge between the individual segments. The DES-1008D, without interfering with any other segments, automatically forwards traffic that needs to go from one segment to another. By doing this the total network capacity is multiplied, while still maintaining the same network cabling and adapter cards.

For Fast Ethernet networks, a DES-1008D is an effective way of eliminating problems of chaining hubs beyond the "two-repeater limit." A DES-1008D can be used to split parts of the network into different collision domains, making it possible to expand your Fast Ethernet network beyond the 205-meter network diameter limit for 100BASE-TX networks. DES-1008Ds supporting both traditional 10Mbps Ethernet and 100Mbps Fast Ethernet are also ideal for bridging between the existing 10Mbps networks and the new 100Mbps networks.

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, the setup and maintenance required make routers relatively impractical. Today switches are an ideal solution to most kinds of local area network congestion problems.

Features

The DES-1008D was designed for easy installation and high performance in an environment where traffic on the network and the number of users increase continuously.

The DES-1008D with its small, compact size was specifically designed for small to middle workgroups. The DES-1008D can be installed where space is limited; moreover, the DES-1008D provides immediate access to a rapidly growing network through a wide range of functions.

The DES-1008D is ideal for deployment with multiple high-speed servers for shared bandwidth 10Mbps or 100Mbps workgroups. With the highest bandwidth 200Mbps (100Mbps full-duplex mode), any port can provide workstations with a congestion-free data pipe for simultaneous access to the server.

The DES-1008D is expandable by cascading two or more DES-1008Ds together. As all ports support 200Mbps, the DES-1008D can be cascaded from any port and to any number of DES-1008Ds.

The DES-1008D is a perfect choice for sites planning to upgrade to Fast Ethernet in the future. Ethernet workgroups can connect to the DES-1008D now, and you can change adapters and hubs anytime later without needing to change the DES-1008Ds or reconfigure the network.

The DES-1008D combines dynamic memory allocation with store-and-forward switching to ensure that the buffer is effectively allocated for each port, while controlling the data flow between the transmit and receive nodes to guarantee against all possible packet loss.

The DES-1008D is a managed 10/100 Fast Ethernet switch that offers solutions in accelerating small Ethernet workgroup bandwidth. Other key features are:

- ✍✍ Uplink/ MDI-II (media dependent interface) port for uplink to another switch, hub or repeater.
- ✍✍ Store and forward switching scheme capability. As the result of complete frame checking and error frame filtering, this scheme prevents error packages from transmitting among segments.
- ✍✍ NWay Auto-negotiation for any port. This allows for auto-sensing of speed (10/100Mbps) thereby providing you with automatic and flexible solutions in your network connections.
- ✍✍ Flow control for any port. This minimizes dropped packets by sending out collision signals when the port's receiving buffer is full. Note that flow control is only available in half duplex mode.
- ✍✍ Data forwarding rate per port is at wire-speed for 100Mbps speed.
- ✍✍ Data forwarding rate per port is at wire-speed for 10Mbps speed.
- ✍✍ Data filtering rate eliminates all error packets, runts, etc., per port at wire-speed for 100Mbps speed.
- ✍✍ Data filtering rate eliminates all error packets, runts, etc., per port at wire-speed for 10Mbps speed.
- ✍✍ 8K MAC address entries table per device for the DES-1008D.
- ✍✍ 256 KB RAM buffer per device for the DES-1008D.
- ✍✍ Network looped detecting.

Unpacking and Setup

This chapter provides unpacking and setup information for the DES-1008D.

Unpacking

Open the box and carefully unpacks its contents. The box should contain the following items:

? One DES-1008D

? One external power adapter

? This User's Guide.

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

Setup

The setup for the DES-1008D can be performed using the following steps:

?? The surface must support at least 1.5 Kg for the DES-1008D.
?? The power outlet should be within 1.82 meters (6 feet) of the DES-1008D.
?? Visually inspect the DC power jack and make sure that it is fully secured to the power adapter.
?? Make sure that there is proper heat dissipation from and adequate ventilation around the DES-1008D. Do not place heavy objects on the DES-1008D.

IDENTIFYING EXTERNAL COMPONENTS

This section identifies all the major external components of the DES-1008D. Both the front and rear panels are shown followed by a description of each panel feature. The indicator panel is described in detail in the next chapter.

Front Panel

The figure below shows the front panel of the DES-1008D.

? **LED Indicator Panel**

Refer to the LED Indicator section for detailed information about each of the DES-1008D's LED indicators.

LED Indicators

Power Indicator (PWR)

This indicator lights green when the hub is receiving power, otherwise, it is off.

Loop Detect (LOOP)

When this indicator lights amber, it means that there is a loop detected, then the network needs to be re-configuration.
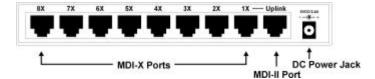
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Full-Duplex/Collision (Full-Duplex/Collision)

This LED indicator lights green when a respective port is in full duplex (FDX) mode. Otherwise, it is blinking when collisions are occurring on the respective port.

100M Link/Activity, 10M Link/Activity (100M LINK/ACT *(green)***, 10LINK/ACT** *(amber)***)**

This indicator lights green when the port is connected to a 100Mbps Fast Ethernet station, if the indicator blinking green will be transmission or received data on the 100Mbps network. Otherwise, if the indicator light amber when the port is connected to a 10Mbps Ethernet station, if the indicator blinking amber will be transmission or received data on the 10Mbps network.

Rear Panel

? **DC Power Jack:** Power is supplied through an external AC power adapter. Check the technical specification section for information about the AC power input voltage.

Since the DES-1008D does not include a power switch, plugging its power adapter into a power outlet will immediately power it on.

? **MDI-X Jacks:** Use these jacks to connect stations to the hub. These are **MDI-X** (Medium-Dependent Interface, Cross-wired) jacks, which mean, you can use ordinary straight-through twisted-pair cables to connect user machines and servers to the hub through them. If you need to connect another device with an **MDI-X** jack, such as another hub or an Ethernet switch, you should use a crossover cable, or make the connection using the **MDI-X** jack (described below).

? **Uplink Jack(s) (MDI-II):** Use this jack to connect stations to the hub. This is an **MDI-II** (Medium-dependent Interface, straight-wired) jack, which means you can connect the hub to a device with an **MDI-X** port using an ordinary straight-through cable, making a crossover cable unnecessary.

CONNECTING THE DES-1008D

This chapter describes how to connect the DES-1008D to your Fast Ethernet network. In each of the following figures, the DES-1008D is shown.

PC to DES-1008D

A PC can be connected to DES-1008D via a two-pair Category 3, 4, 5 UTP/STP straight cable. The PC (equipped with a RJ-45 10/100Mbps phone jack) can be connected to any of the 8 ports (1x - 8x).

The LED indicators for PC connection depend on the LAN card's capabilities. If LED indicators are not lit after making a proper connection, check the PC LAN card, the cable and the DES-1008D conditions and connections.

The following are LED indicator possibilities for a PC to DES-1008D connection:

1. The "100LINK/ACT,10LINK/ACT" LED indicator lights green for hookup to 100Mbps speed or light amber for hookup to 10Mbps speed.

2. The "Full-Duplex/Collision" LED indicator depends upon LAN card capabilities for full duplex or half duplex.

Hub to DES-1008D

A hub (10 or 100BASE-TX) can be connected to the DES-1008D via a two-pair Category 3, 4, 5 UTP/STP straight cables. The connection is accomplished from the hub uplink (MDI-II) port to any of the DES-1008D (MDI-X) ports: 1x - 8x for the DES-1008D.

A. 10BASE-T Hub

For a 10BASE-T hub, the DES-1008D LED indicators should light up as the following:

"Full-Duplex/Collision" indicator is *OFF*.

"100LINK/ACT,10LINK/ACT LED" indicator is light amber.

B. 100BASE-TX Hub

For a 100BASE-TX hub, the DES-1008D LED indicators should light up as the following:

"Full-Duplex/Collision" LED indicator is *OFF*.

"100LINK/ACT,10LINK/ACT" LED indicator is light green.

Hub without Uplink (MDI-II) port

If a hub is not equipped with an uplink (MDI-II) port, connection can be made using either straight cable or crossover cable.

A. Using straight cable

When using straight cable, the connection can be made from the uplink (MDI-II) port of the DES-1008D to any port of the hub.

B. Using crossover cable

When using crossover cable, the connection can be made from any (MDI-X) ports of the DES-1008D to any port of the Hub.

DES-1008D to switch (other devices)

The DES-1008D can be connected to another switch or other devices (routers, bridges, etc.) via a two-pair Category 3, 4, 5 UTP/STP straight or crossover cable.

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A. Using straight cable

When using straight cable, this is done from the uplink (MDI-II) port of the DES-1008D (DES-1008D A) to any of the 10Mbps or 100Mbps (MDI-X) port of the other switch (switch B) or other devices.

B. Using crossover cable

When using crossover cable, this is done from any (MDI-X) port of the DES-1008D (DES-1008D A) to any of the 10Mbps, 100Mbps (MDI-X) port of the other switch (swit ch B) or other devices.

1. The "100LINK/ACT,10LINK/ACT" LED indicator light green for hookup to 100Mbps speed or light amber for hookup to 10Mbps speed.

2. The "Full-Duplex/Collision" LED indicator depends upon LAN card capabilities for full-duplex or half-duplex

Port Speed & Duplex Mode

After plugging the selected cable to a specific port, the system uses auto-negotiation to determine the transmission mode for any new twisted-pair connection:

If the attached device does not support auto-negotiation or has auto-negotiation disabled, an auto-sensing process is initiated to select the speed and set the duplex mode to **half-duplex**.
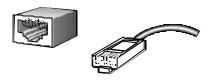
RJ-45 PIN SPECIFICATION

When connecting your DES-1008D to another switch, a bridge or a hub, a modified crossover cable is necessary. Please review these products for matching cable pin assignment.

The following diagram and tables show the standard RJ-45 receptacle/connector and their pin assignments for the switch-to-network adapter card connection, and the straight / crossover cable for the DES-1008D-to-switch/hub/bridge connection.
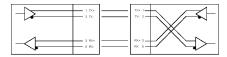
RJ-45 Connector pin assignment	
Contact	Media Direct Interface Signal
1	TX + (transmit)
2	TX - (transmit)
3	Rx + (receive)
4	Not used
5	Not used
6	Rx - (receive)
7	Not used
8	Not used

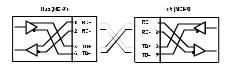**The standard cable, RJ-45 pin assignment**

The standard RJ-45 receptacle/connector

The following shows straight cable and crossover cable connection:

Straight cable for DES -1008D (uplink MDI-II port) to switch/Hub or other devices connection

Crossover cable for DES -1008D (MDI-X port) to switch/hub or other network devices (MDI-X port) connection

TECHNICAL SPECIFICATIONS

General	
Standards	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet ANSI/IEEE Std. 802.3 NWay Auto-negotiation
Protocol	CSMA/CD
Data Transfer Rate	Ethernet: 10Mbps (half duplex), 20Mbps (full-duplex) Fast Ethernet: 100Mbps (half duplex), 200Mbps (full- duplex)
Topology	Star
Network Cables	10BASE-T: 2-pair UTP Cat. 3,4,5 (100 m), EIA/TIA- 568 100-ohm STP (100 m) 100BASE-TX: 2-pair UTP Cat. 5 (100 m), EIA/TIA-568 100-ohm STP (100 m)
Number of Ports	8 x 10/100Mbps NWay ports
Uplink Port	MDI-II RJ-45 shared with port * 1, share with port 1

Physical and Environmental	
DC inputs	DC5V/2.4A
Power Consumption	1.2 watts. (max.)
Temperature	Operating: 0? ~ 50? C, Storage: -10? ~ 70? C
Humidity	Operating: 10% ~ 90%, Storage: 5% ~ 90%
Dimensions	171 x 98 x 29 mm (W x H x D)
EMI:	FCC Class B, CE Mark B, VCCHI
Performance	
Transmission Method:	Store-and-forward
RAM Buffer:	256KBytes per device
Filtering Address Table:	8K entries per device
Packet Filtering/Forwarding Rate:	10Mbps Ethernet: 14,880/pps 100Mbps Fast Ethernet: 148,800/pps
MAC Address Learning:	Automatic update