DES-1008FX
100 Fast Ethernet Switch
User's Guide

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RECYCLABLE

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Denmark House, Staples Corner, The Broadway, London NW9 7BW, U.K.
Tel. (44)181-203-9900 Fax (44)181-203-6915

In the Middle East (except Israel), Asia, Oceania and Africa:
D-Link Corporation
No. 233-2, 2nd F. Pao Chiao Road, Hsin Tien Taipei, Taiwan
TEL. (886)2-916-1600

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Wenden Sie sich mit allen Fragen die Service und Repartur betreffen an Ihren Servicepartner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.

TABLE OF CONTENTS

ABOUT THIS GUIDE

This User's guide tells you how to install your DES-1008FX, how to connect it to your Fast Ethernet network using fiber cable, and how to set its configuration using the built-in back panel DIP switch.

Terms

For simplicity, this documentation uses the terms "Switch" (first letter upper case) to refer to the DES-1008FX 100 Fast Ethernet Switch, and "switch" (first letter lower case) to refer to all Ethernet switches, including the DES-1008FX.

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 DES-1008FX to your Fast Ethernet network.

- Chapter 5, *Configuring the Switch*. Tells how to use the built-in back panel DIP switch to set switch parameters for full or half duplex.

- Appendix A, *Technical Specifications*. Lists the technical specifications of the DES-1008FX.

- Appendix B, Fiber Connector SC *Pin Specifications*. Shows the details and pin assignments for the Fiber Module receptacle/ connector.

1

INTRODUCTION

This section describes the features of the DES-1008FX, as well as giving some background information about Fast Ethernet switching technology.

Fast Ethernet Technology

The growing importance of LAN s and the increasing complexity of desktop computing applications are fueling the need for high performance networks. A number of high-speed LAN technologies are proposed to provide greater bandwidth and improve client/server response times. Among them, Fast Ethernet, or 100Base-TX or 100Base-FX, 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 company's 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 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.

For Fast Ethernet networks, a switch is an effective way of eliminating problems of chaining hubs beyond the "two-repeater limit." A switch 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-FX networks. Switches supporting both traditional 10Mbps Ethernet and 100Mbps Fast Ethernet are also ideal for bridging between existing 10Mbps networks and 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 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-1008FX Switch 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-1008FX Switch features:

Ports

- 8 high performance 100BaseFX ports all operating at 100 Mbps for connection to workstation, servers and hubs. All ports can be selected to perform half-duplex or full duplex connections.
- Select any of 8 ports for uplink/ MDI-X (media dependent interface) port for uplink to another switch, hub or repeater.

Performance features

- Store and forward switching scheme capability to support rate adaptation and protocol conversion.

- Full and Half-duplex at 100Mbps to allow two communicating stations to transmit and receive at the same time.
- Data forwarding rate 148,800 pps per port at 100% of fiber-speed.
- Data filtering rate eliminates all error packets, runts, etc. at 148,800 pps per port at 100% of fiber-speed.
- 8K active MAC address entry table per device with self-learning and table aging.
- 2 MB packet buffer per port.
- Supports broadcast storm rate filtering.

2

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 DES-1008FX 100Mbps Fast Ethernet Switch
- Four rubber feet with adhesive backing
- 1 AC power cord
- This user's guide with Registration Card

If any item is found missing or damaged, please contact your local D-Link Reseller for replacement.

Setup

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

- The surface must support at least 3 Kg.
- 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.

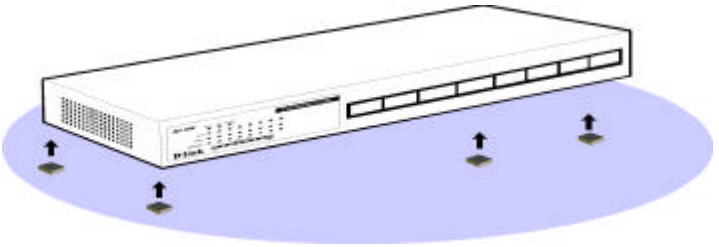


Figure 1. DES-1008FX Fast Ethernet Switch installed on a Desktop or Shelf

Rack Installation

The DES-1008FX can be mounted in an EIA standard size, 19-inch rack, which can be placed in a wiring closet with other equipment. To install, attach the mounting brackets on the switch's front panel (one on each side) and secure them with the screws provided.

Figure 2A. Attaching the mounting brackets to the DES-1008FX 100Mbps Fast Ethernet Switch

Then, use the screws provided with the equipment rack to mount the Switch in the rack.

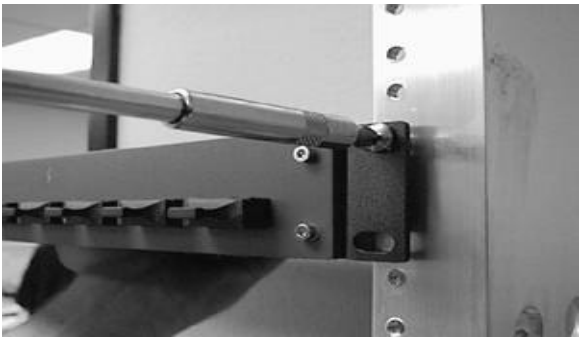


Figure 2B. Installing the DES-1008FX 100Mbps Fast Ethernet Switch in an equipment rack

Power on

The DES-1008FX Switch can be used with AC power sources 100 - 240 VAC, 50 - 60 Hz. The power switch is located at the rear of the unit adjacent to the AC power connector and the system fan. 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.

After the power switch is turned on, the LED indicators should respond as follows:

- The power LED indicator will turn on and remain *ON*. .

Power Failure

As a precaution, the Switch should be turned **OFF** in case of power failure. When power is resumed, turn the Switch ON. At all times, avoid leaving the Switch ON after the occurrence of a power failure.

3

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 (100 Mbps) 100BaseFX ports and LED indicators.

Figure 3. Front panel view of the DES-1008FX Switch

- 8 high performance 100BaseFX ports all operating at 100 Mbps for connection to servers and hubs. All ports can be set to perform 100Mbps half-duplex or full duplex connections.
- Select any of 8 ports for uplink to another switch, hub or repeater.
- 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 a power switch, an AC power connector, an Half/Full Duplex DIP switch and a system fan. The following shows the rear panel of the Switch.

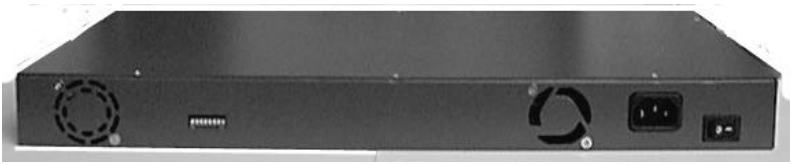


Figure 4. Rear panel view of the DES-1008FX

- **System Fans.** These fans are used to circulate air inside the Switch and also to dissipate heat. The sides of the system also provide heat vents to serve the same purpose. Do not block these openings, and leave adequate space at the rear and sides of the Switch for proper ventilation. Be reminded that without proper heat dissipation and air

circulation, system components might overheat, which could lead to system failure.

- **Duplex Mode Switch.** This bank of eight switches changes the ports between full and Half-Duplex modes. The switches are ordered reverse to the front panel ports. Example front port 1 is switch 8. Half-Duplex is "DOWN" or "ON". Full-Duplex is "UP" or "OFF". Default settings for the DES-1008FX are all "DOWN/ON" at Half-Duplex.

- **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.

- **Power Switch.** This turns the Switch on and off. To turn on the system, press the switch to the “1” position; to turn off, press the switch to the “0” position.

LED Indicators

The LED indicators of the Switch include Power, Link, Act, FDX and Col. The following shows the LED indicators for the Switch along with an explanation of each indicator.

Figure 5. The DES-1008FX Switch LED indicators

- **Power**. This indicator operates when the Switch is turned ON (***green***). If this indicator is not lit, check the AC power connector to assure proper insertion of the power cord and the power switch is turned ON.

- **Link** These LED indicators are illuminated (***green***) when a 100 Mbps device is connected to any of the 8 ports or uplink port.

- **Act.** The LED indicators turn on (***green***) whenever there is reception or transmission (i.e. Activity--Act) of data occurring at a port.

- **FDX** This LED indicator is ***green*** when a respective port is in full duplex (FDX) mode.

- **Col**. It blinks ***yellow*** when collisions are occurring on the respective port.

4

CONNECTING THE SWITCH

This chapter describes how to connect the DES-1008FX to your Fast Ethernet network.

PC to Switch

A PC can be connected to the Switch via a two-string fiber straight cable. The PC (equipped with a 100 Mbps SC jack) should be connected to any of the eight ports (1x - 8x) of the DES-1008FX.

The LED indicators for PC connection are dependent on the LAN card capabilities. If LED indicators are not illuminated after making a proper connection, check the PC's LAN card, the cable, Switch conditions and connections.

NOTE: If your SC connectors are not locked together the TX and RX on the PC's side, the cable connectors at the switch must reversed to RX and TX of the Switch. This allows a TX from the card to enter into the RX of the switch. Locked (paired) SC connectors should be manufactured in this manner.

The following are LED indicator possibilities for a PC to Switch connection:

1. The Link LED indicator comes ON upon hookup.
2. The Act. LED indicator illuminates if dataupon hookup.
3. The FDX LED indicator depends upon LAN card capabilities and DIP switch setting at DES-1008FX back panel.
4. The Col. LED indicator depends upon communication activity.

Hub to Switch

A hub (100Base-FX) can be connected to the Switch via a two-string fiber crossover cable.

NOTE: If your SC connectors are not locked together the TX and RX on the PC's side, the cable connectors at the switch must reversed to RX and TX of the Switch. This allows a TX from the card to enter into the RX of the switch. Locked (paired) SC connectors should be manufactured in this manner.

100Base-FX Hub

A traditional repeater/hub can only accomplish Half-Duplex setting. Set the DES-1008FX Duplex Mode switches for Half-Duplex of the ports that are hook to these hubs.

For a 100Base-FX hub, the Switch's LED indicators should illuminate the following:

- The Link LED indicator comes ON upon hookup.
- The Act. LED indicator illuminates if data upon hookup.
- The FDX LED indicator should be off.

- The Col. LED indicator depends upon communication activity.

Switch to Switch

A 100Base-FX compatible switch can be connected to the Switch via a two-string fiber crossover cable.

Switch the Duplex mode switches to the appropriate selections to get the maximum bandwidth. Consult the other switches manual for the proper setting of Duplex Modes. The DES-1008FX Duplex Mode switches can be found on the back of the unit. "DOWN/ON" is Half-Duplex and "UP/OFF" is Full-Duplex.

NOTE: If your SC connectors are not locked together the TX and RX on the PC's side, the cable connectors at the switch must reversed to RX and TX of the Switch. This allows a TX from the card to enter into the RX of the switch. Locked (paired) SC connectors should be manufactured in this manner.

The "uplinked" Switch LED indicators for the respective connected ports are as follows:

- The Link LED indicator comes ON upon hookup.
- The Act. LED indicator illuminates if data upon hookup.
- The FDX LED indicator depends upon the "uplinked" switch's capabilities and Duplex Mode switch setting at DES-1008FX back panel.
- The Col. LED indicator depends upon communication activity.

5

CONFIGURING THE SWITCHES

Summary

The DES-1008FX is a Auto-Learning unintelligent 100BaseFX Fast Ethernet Switch.

The only configuration that can be done is the Duplex Mode. This bank of eight switches changes the ports between full and half duplex modes. The switches are ordered reverse to the front panel ports. Example front port 1 is switch 8. Half-Duplex is "DOWN" or "ON". Full-Duplex is "UP" or "OFF". Default settings for the DES-1008FX are all "DOWN/ON" at Half-Duplex.

Any further configuration is not necessary for the DES-1008FX.

A

TECHNICAL SPECIFICATIONS

General	
Standards:	IEEE 802.3u 100 Base-FX Fast Ethernet ANSI/IEEE Std 802.3 IEEE 802.3 Frame types: Transparent IEEE 802.3 MAC layer frame size: 64 - 1518
Protocol:	CSMA/CD
Data Transfer Rate:	Fast Ethernet: 100Mbps (half duplex) 200Mbps (full duplex)
Topology:	Star

General	
Network Cables:	100Base-FX: ISO/IEC 11801 62.5/125-um optical fiber cable cable (100 m) EIA/TIA-568-A horizontal 62.5/125-um optical fiber cable (100 m) Or ISO/IEC 9314-3
Number of Ports:	8 x 100 Mbps LAN ports
Controller Chips	VLSI

Physical and Environmental	
AC inputs:	100 - 240 VAC, 50/60 Hz (internal universal power supply)
Power Consumption:	40 watts maximum
DC fans:	2 built-in 40x40 mm fan
Operating Temperature:	0 ~ 50 degrees Celsius
Storage Temperature:	-40 ~ 70 degree Celsius
Humidity:	5% ~ 95% non-condensing
Dimensions:	324x231x43 mm (1U), 19 inch rack-mount width
Weight:	3 Kg
EMI:	FCC Class A, CE Mark Class A, VCCI Class I
Safety:	UL (UL 1950), CSA (CSA950), TUV/GS (EN60950)

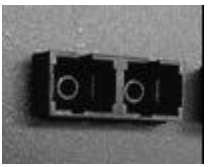
Performance	
Transmission Method:	Store-and-forward
RAM Buffer:	8 M bytes per device
Filtering Address Table:	8 K entries per device
Packet Filtering/Forwarding Rate:	148,800 pps per port (for 100Mbps)
MAC Address Learning:	Automatic update Max age: fixed

B

FIBER CONNECTOR SC PIN SPECIFICATIONS

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

SC fiber connector has push-pull mating mechanism with keyed, molded housing. Connector internal contains a 2.5 mm diameter keyed ferrule. Please refer to EIA/TIA-568A for detail description. The following diagram and tables show the standard fiber connector SC receptacle/connector and their pin assignments for the switch to network adapter card, switch, hub or bridge connection.



The standard fiber connector SC receptacle/connector

SC Fiber Connector pin assignment	
Contact	Media Crossover Interface Signal
1	Tx +(transmit)
2	Rx - (receive)

The standard SC Fiber Connector pin assignment

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Registration Card

Print, type or use block letters.

Your name: Mr./Ms_____
Organization: _____ Dept. _____
Your title at organization: _____
Telephone: _____ Fax:_____
Organization's full address: _____
_____
Country: _____
Date of purchase (Month/Day/Year): _____

Product Model	Product Serial No.	* Product installed in type of computer (e.g., Compaq 486)	* Product installed in computer serial No.

(* Applies to adapters only)

Product was purchased from:
Reseller's name: _____
Telephone: _____ Fax:_____
Reseller's full address: _____
_____

Answers to the following questions help us to support your product:

1. Where and how will the product primarily be used?
☐Home ☐Office ☐Travel ☐Company Business ☐Home Business ☐Personal Use

2. How many employees work at installation site?
☐1 employee ☐2-9 ☐10-49 ☐50-99 ☐100-499 ☐500-999 ☐1000 or more

3. What network protocol(s) does your organization use ?
☐XNS/IPX ☐TCP/IP ☐DECnet ☐Others_____

4. What network operating system(s) does your organization use ?
☐D-Link LANsmart ☐Novell NetWare ☐NetWare Lite ☐SCO Unix/Xenix ☐PC NFS ☐3Com 3+Open
☐Banyan Vines ☐DECnet Pathwork ☐Windows NT ☐Windows NTAS ☐Windows '95
☐Others_____

5. What network management program does your organization use ?
☐D-View ☐HP OpenView/Windows ☐HP OpenView/Unix ☐SunNet Manager ☐Novell NMS
☐NetView 6000 ☐Others_____

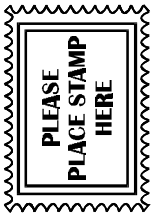
6. What network medium/media does your organization use ?
☐Fiber-optics ☐Thick coax Ethernet ☐Thin coax Ethernet ☐10BASE-T UTP/STP
☐100BASE-TX ☐100BASE-T4 ☐100VGAnyLAN ☐Others_____

7. What applications are used on your network?
☐Desktop publishing ☐Spreadsheet ☐Word processing ☐CAD/CAM
☐Database management ☐Accounting ☐Others_____

8. What category best describes your company?
☐Aerospace ☐Engineering ☐Education ☐Finance ☐Hospital ☐Legal ☐Insurance/Real Estate ☐Manufacturing
☐Retail/Chainstore/Wholesale ☐Government ☐Transportation/Utilities/Communication ☐VAR
☐System house/company ☐Other_____

9. Would you recommend your D-Link product to a friend?
☐Yes ☐No ☐Don't know yet

10.Your comments on this product?
_____
_____



TO:

D-Link®