D-Link®

DES-1008M
Flex-Media Ethernet Switch
User's Guide

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6DES1008M.01

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RECYCLABLE

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.

2. Heben Sie diese Anleitung für den spätern Gebrauch auf.

3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Vervenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.

4. Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugelassen sind.

5. Das Gerät is vor Feuchtigkeit zu schützen.

6. Bei der Aufstellung des Gerätes ist auf sichern Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere Standorte und beachten Sie die Aufstellhinweise des Herstellers.

7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.

8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.

9. Die Netzanschlußsteckdose muß aus Gründen der elektrischen Sicherheit einen Schutzleiterkontakt haben.

10. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollete auch nichts auf der Leitung abgestellt werden.

11. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.

12. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.

13. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. Elektrischen Schlag auslösen.

14. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.

15. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:

    a– Netzkabel oder Netzstecker sind beschädigt.

    b– Flüssigkeit ist in das Gerät eingedrungen.

    c– Das Gerät war Feuchtigkeit ausgesetzt.

    d– Wenn das Gerät nicht der Bedienungsanleitung ensprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

    e– Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.

    f– Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

16. Bei Reparaturen dürfen nur Orginalersatzteile bzw. den Orginalteilen entsprechende Teile verwendet werden. Der Einsatz von ungeeigneten Ersatzteilen kann eine weitere Beschädigung hervorrufen.

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

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The one-year period of warranty on complete products applies on condition that the product's Registration Card is filled out and returned to a D-Link office within ninety (90) days of purchase. A list of D-Link offices is provided at the back of this manual, together with a copy of the Registration Card. Failing such timely registration of purchase, the warranty period shall be limited to 90 days.

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TABLE OF CONTENTS

ABOUT THIS GUIDE

This guide discusses how to install the D-Link's DES-1008M Flex-Media 10/100Mbps Ethernet Switch, work with its panels, and make network connections.

Terms

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

Overview of the User's Guide

♦ Chapter 1, *Product Overview*. Describes the Switch and its features.

♦ Chapter 2, *Unpacking and Component Identification*. Provides information on system unpacking and description of various external components of the Switch.

♦ Chapter 3, *Installation*. Describes the Switch installation procedure including site installation, port module installation, connecting power, and replacing the system fuse.

♦ Chapter 4, *Making Network Connections*. Provides information on making connections to various network devices such as workstations, repeaters, and switches.

♦ Appendix A, *Technical Specifications*. Lists the technical specifications of the Switch.

♦ Appendix B, *Cables and Connectors*. Provides specifications on cables and connectors.

♦ Appendix C, *Slide-in Port Modules*. Describes the various slide-in port modules that are supported by the Switch.

1

PRODUCT OVERVIEW

The Switch is a modularized 10/100Mbps Ethernet switch that offers users the ability to configure the number of network ports and port types, and to meet all media requirements and servers' high throughput.

The Switch provides four expansion slots, each of which supports one slide-in port module with two network ports. Ports can vary from ordinary twisted-pair ports to BNC or fiber-optic ports depending on the installed modules. With these modules, you can configure the Switch to provide a maximum of eight switched Ethernet ports connecting to various network media.

By adding the Switch to your existing bandwidth-constricted Ethernet network, you can dramatically increase your available Ethernet bandwidth.

The following lists the other features of the Switch:

♦ **Bandwidth Boost**

The Switch segments up a workgroup to eliminate unnecessary traffic, multiply the available bandwidth, and relieve congestion on server paths.

♦ **Eight User-Configurable Ports**

The Switch provides four expansion slots for installation of up to eight switched network ports, which can be any combination of 10BASE2, 10BASE-T/100BASE-TX N-Way, 10BASE-FL, and 100BASE-FX.

♦ **Easy Installation**

Supporting all media types, auto-learning of network configuration, and requiring no configuration setting, the Switch allows workgroups to implement performance enhancement quickly and easily anywhere on the network.

♦ **Powerful Performance**

The Switch supports wire-speed data filtering and forwarding rates, and large per-port MAC address routing table for efficient packet switching.

♦ **Comprehensive LED Indicators**

LED indicators are provided to report on the status of power and port status (speed, Link/Act, FDX/Col) on the connected segments. The BNC module also provides an additional indicator for reporting on port status.

2

UNPACKING AND COMPONENT IDENTIFICATION

This chapter provides unpacking information and description on the various external components of the Switch.

Unpacking

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

♦ One Switch

♦ One AC power cord

♦ Four self-adhesive rubber feet

♦ Eight screws and two mounting brackets

♦ One hex screwdriver

♦ This User's Guide

Inspect the Switch and all accompanying items. If any item is damaged or missing, report the problem immediately to your networking equipment dealer.

NOTE: *The base unit does not include any slide-in port modules. You need to purchase these modules separately from your networking equipment dealer.*

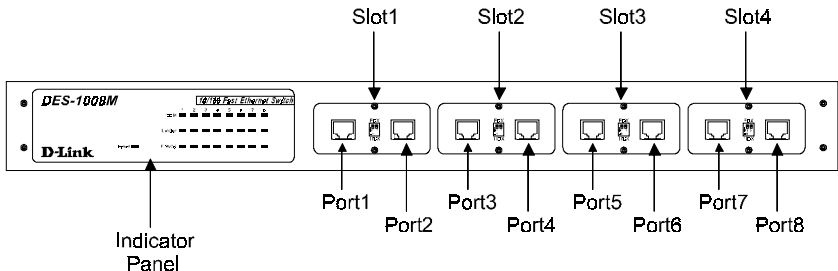# Identifying External Components

This section identifies all the major external components of the Switch. It is divided into three sections with one diagram per section. Each diagram is followed by a list of components that are found in the respective diagram. The sections are *Front Panel*, *Indicator Panel*, and *Rear Panel*.

Front Panel

♦ **Indicator Panel**

Refer to the *Indicator Panel* section (below) to identify the different status indicators and scales.

♦ **Slots 1 to 4**

Support the slide-in port modules. Each module provides two switched ports for maximum system configuration of eight switched ports. Depending on the installed modules, port types can vary from ordinary twisted-pair ports to BNC or fiber-optic ports. The base unit does not include any slide-in port modules to provide users the freedom to choose their system's port configuration.

For the list of supported slide-in port modules and their respective specifications, see Appendix C, *Slide-in Port Modules*. For information on module installation, see the *Port Module Installation* section of Chapter 3, *Installation*.

Indicator Panel
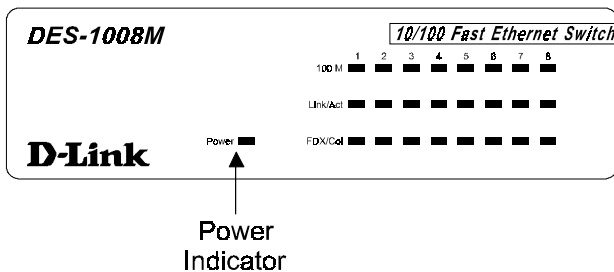
♦ **Power Indicator**

This LED lights green when the Switch is receiving power; otherwise, it is off. If this indicator does not light after turning on the Switch, check the system fuse. This fuse can be found inside the fuse case located just beneath the AC power connector. Pry open this case with a small flat-bladed screwdriver and replace the fuse if necessary.

♦ **100M Indicator**

This LED lights green when the port is operating at 100Mbps. If the port is operating at 10Mbps, the speed indicator remains dark.

♦ **Link/Act Indicator**

This LED lights green when the port is connected to a powered-on Ethernet/Fast Ethernet station. It blinks off briefly when information is transmitted or received on the port. Please note that when the BNC module is connected, the Link LED is not lit.

♦ **FDX/Col Indicator**

This LED lights green when the port is operating in 10/100BASE-T full-duplex mode. When the Switch is not in full-duplex mode, the indicator remains dark. If there is data collision on the segment connected to the respective port, the indicator briefly blinks amber. Packet collisions are not uncommon, and occur when two or more devices attempt to transmit data simultaneously on a network. When a collision occurs, devices pause then re-transmit after a somewhat random wait period. Because wait periods vary among devices, successive collisions become increasingly improbable.

If the port connects to another switch or hub, collision indicators of these devices would indicate the same collision, since collisions span an entire local area network.

The BNC port module also provides an additional LED indicator for reporting on the status of the ports. For information about these indicators, see Appendix C, *Slide-in Port Modules*.

Rear Panel

AC Power Connector

Power Switch

Fuse
Case
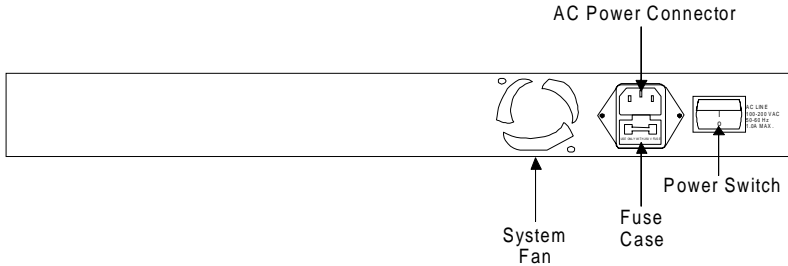
System
Fan

♦ **System Fan**

This fan is 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 ensure to 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.

For information on the proper way of installing the Switch, see Chapter 3, *Installation*.

♦ **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 100V to 240V AC at 50 to 60 Hz.

♦ **Fuse Case**

This case contains the system fuse and a spare fuse. The fuse protects the system from power surges. To access the fuse, pry open this case with a flat-bladed screwdriver.

♦ **Power Switch**

Turns on and off the Switch. To turn on the system, slide this switch to the "1" position; to turn off, slide it to the "0" position.

3

INSTALLATION

This chapter describes the installation requirements, rack mounting, installing slide-in port modules, turning on the system, and replacing the system fuse.

Site Installation

Installation Notes

The Switch is suited for use in the office where it can be mounted in a standard 19-inch equipment rack or placed on desktops. Alternatively, the system can be rack-mounted in a wiring closet or equipment room. A rack-mounting and desktop-mounting kit containing mounting brackets and rubber feet are supplied with the Switch.

When choosing a site for the Switch, consider the following:

♦ The front panel should be readily and visually accessible for cable connections and LED monitoring. The rear panel should also be easily accessible for power cable connection.

♦ The cables are away from sources of electrical noise such as motors, radios, and transmitters. Ensure also that they are not in close proximity with power lines and fluorescent lighting fixtures.

♦ The site is in a fairly cool and dry place. See Appendix A, *Technical Specifications*, for the acceptable temperature and humidity operating ranges.

♦ Air-flow around the system and through the heat vents on the sides of the case is not blocked. We recommend that you provide at least 25 mm (1 inch) clearance.

♦ No heavy objects are placed on the system.

♦ Install the Switch in a sturdy, level surface that can support at least the weight of the system, or in an EIA standard-size rack. For information on installing in a rack, see the next section, *Rack Mounting*.

When installing the Switch on a level surface, ensure to attach the self-adhesive rubber feet at the bottom of the device. The rubber feet act as cushioning devices.

Rack Mounting

The Switch can be mounted in an EIA standard-size, 19-inch rack, which can be placed in a wiring closet with other equipment. Follow these steps to install the system in a rack,

1. Disconnect all cables from the system. Remove also the self-adhesive rubber feet at the bottom of the device, if already fitted.

2. Place the Switch on a flat surface with the front panel facing you.

3. Place a mounting bracket over the mounting holes on one side of the system. Ensure that the mounting holes coincide with the holes on the mounting bracket.

4. Insert the appropriate screws and tighten them with a suitable screwdriver.
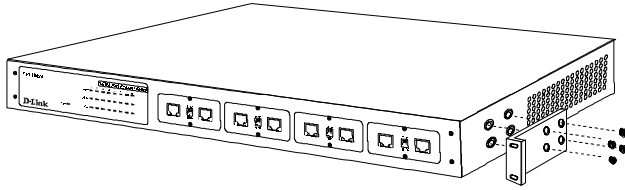
1. Repeat the same procedure to install the other mounting bracket on the other side of the Switch.

2. Insert the system in the 19-inch rack and secure it with the screws provided with the rack. Ensure that the heat vents are not obstructed.

3. Reconnect the cables.
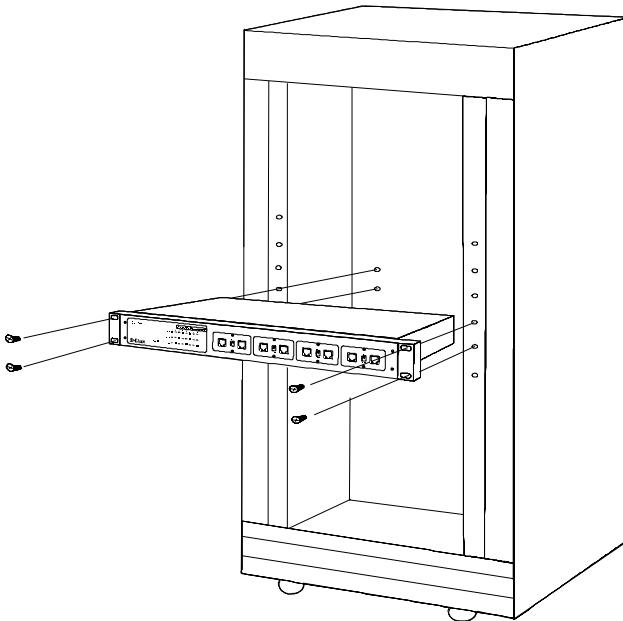
Port Module Installation

The Switch supports various slide-in port modules which can be installed into the slots to provide interface to different network media like twisted-pair, thin coaxial cable, and fiber-optic cable. Four slide-in port modules are available for use with the Switch: DES-108FL, DES-108FX, DES-108TX, and DES-108C providing ST, SC, RJ-45, and BNC connectors, respectively. Each module comes with two switched ports, thus allowing maximum port configuration of eight switched ports.

Follow these steps to install a module,

1. Turn off the system (if already on), and unplug it from the power outlet.

2. Choose a slot to install the module. When choosing a slot, take into consideration the nodes you intend to connect to the module's ports.

3. Remove the coverplate or module (if there is one installed) from the selected slot. Use the provided hex screwdriver to loosen and remove the screws. Set aside these screws.

4. Align the module with the railings on the slot, and then push the module all the way in until it locks into place.

5. Secure the module on the slot with the screws you removed in step 3. Use the same screwdriver to tighten the screws.

Connecting Power

The Switch features a power supply unit that automatically adjusts to the level of the input voltage. Supported voltage levels range from 100V to 240V AC at 50 to 60 Hz. Your local voltage level should fall within this range.

To turn on the Switch, plug in the provided AC power cord into the power connector at the rear of the system, then slide the rocker power switch to the "1" position. After turning on the power, the Power indicator on the front panel turns on.

It is not necessary to turn off the system when connecting or disconnecting cables; this applies to all types of connections. However, when installing, removing, or replacing system components, the power must be shut off.

Replacing the Fuse

A 1.5A fuse protects the system's power supply unit from power surges. In case of power surge, the system fuse will be blown out, thus cutting off the connection and preventing high voltages from reaching the power supply or the other sensitive parts of the device. The fuse, plus a spare one, are contained in a fuse case located just beneath the AC power connector. When replacement becomes necessary, pry open this case with a small flat-bladed screwdriver and replace the damaged fuse. You may also purchase a new 1.5A fuse, which is readily available in most local stores.

Fuse

Spare Fuse
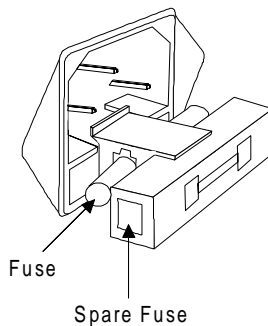
WARNING! *Ensure that the power is disconnected before opening the fuse case.*

DO NOT defeat the purpose of the fuse by using a jumper (such as a wire) in place of a

damaged one. Doing so may cause serious damage to the Switch.

4

MAKING NETWORK CONNECTIONS

This chapter provides information on creating network connections to the Switch.

Network Design Notes

When adding a Switch into your network, take into consideration the information provided in this section.

Node Connections

There are some Ethernet switches that only support a single dedicated station per port. This prevents network designers from interconnecting shared-media hubs using this type of switches. The Switch supports connections to various types of nodes including workstations, repeaters, and switches, providing network designers a vast range of comprehensive and scaleable switched networking solution.

Cable Limitations

When connecting network devices to the Switch, you must observe some rules on the allowable segment length and cable type to maintain networks within the set specifications. The table below lists the allowable segment lengths and cable types as specified by IEEE 802.3.

Port	Node	Maximum Segment Length	Cable Type
Twisted-Pair	Ethernet hub/Switch	100 meters	Crossover Category 3, 4, or 5 unshielded twisted-pair cable or straight 100-ohm shielded twisted-pair cable
Twisted-Pair	Other network devices	100 meters	Straight Category 3, 4, or 5 unshielded twisted-pair cable or straight 100-ohm shielded twisted-pair cable
BNC	Any network device	185 meters	RG58A/U 50-ohm thin coaxial cable
Fiber	Any network device	2,000 meters	62.5/125 μm multimode fiber, 100BASE-FX uses SC connector, 10BASE-FL uses ST connector

Making Twisted-Pair Attachments

You can make twisted-pair attachments to the Switch by first installing DES-108TX modules. The system can be configured to have a maximum of eight switched twisted-pair ports. Each of these ports support N-Way or 100Mbps full-duplex force mode.

Depending on the node you are connecting to a twisted-pair port, you will need either a straight or crossover twisted-pair cable. For connection to a hub, you will need a crossover twisted-pair cable; for connection to other network devices such as servers and switches, you will need a crossover cable. A crossover cable is almost the same as an ordinary twisted-pair cable only that the pin configuration of a crossover cable is crossed over. Maximum cable length is 100 meters.

For information on cable pin configuration, see Appendix B, *Cables and Connectors*.

NOTE: *You do not need to turn off the Switch when making network connections; just plug in the cables into the ports.*

To make twisted-pair attachments to the Switch, follow these steps:

1. Depending on the number of twisted-pair attachments you want to create, install the appropriate number of DES-108TX modules into the Switch. Take note that each module provides two switched twisted-pair ports. For information on the installation procedure, see the *Port Module Installation* section of Chapter 3, *Installation*.

2. Obtain the cable needed in the connection; that is, straight cable for connection to a server, crossover twisted-pair for other devices. Ensure that this cable does not exceed 100 meters.

3. If the server is connected to the module and it supports 100Mbps full-duplex mode but does not have N-Way capability, then the 108TX module can be forced into 100Mbps full-duplex mode to make the bandwidth aggressive.
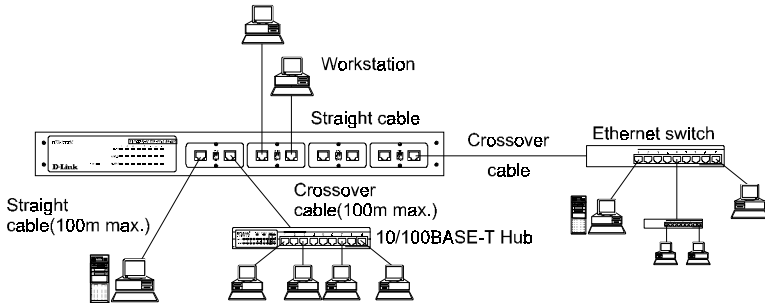
4. Repeat the same procedure to connect the other nodes.

After making the connection, the Link indicator of the port should turn on to show a successful link (assuming that both devices are on). For more information about the indicators on the slide-in port modules, see Appendix C, *Slide-in Port Modules*.

Making Thin Coaxial Attachments

You can make BNC attachments to the Switch by first installing DES-108C modules. The system can be configured to have a maximum of eight switched BNC ports. You will need a T-connector and thin coaxial cable to make a BNC link; a 50-ohm BNC terminator is not necessary since each BNC port can be terminated via the on-board DIP switches. Maximum total cable length is 185 meters.

NOTES: *You do not need to turn off the Switch when making network connections; just plug in the cables into the ports.*

When terminating a port, use either the on-board termination or a 50-ohm BNC terminator. DO NOT use both as this will cause network errors.

Follow these steps to make thin coaxial attachments to the Switch,

1. Depending on the number of BNC attachments you want to create, install the appropriate number of DES-108C modules into the Switch. Note that each module provides two switched BNC ports. For information on the installation procedure, see the *Port Module Installation* section of Chapter 3, *Installation*.

2. Obtain a thin coaxial cable. Ensure that the total cable length does not exceed 185 meters.

3. Select a BNC port to connect the node.

4. Connect a T-connector to the selected port.

5. Connect the T-connector to the thin coaxial cable. If the cable terminates at the port, enable the port's termination by sliding its respective DIP switch to the ON position, as shown in the figure below. Otherwise, leave the switch to its OFF position. The corresponding LED of the port indicates its termination status.
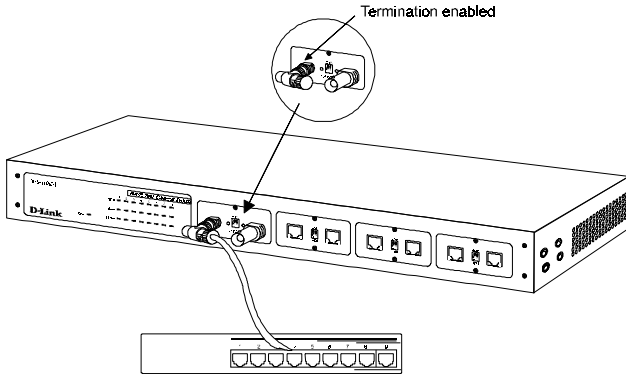
You may also use a 50-ohm BNC terminator if you wish. However, only one of these termination methods can be used at a time.

6. Repeat the same procedure to connect the other nodes.
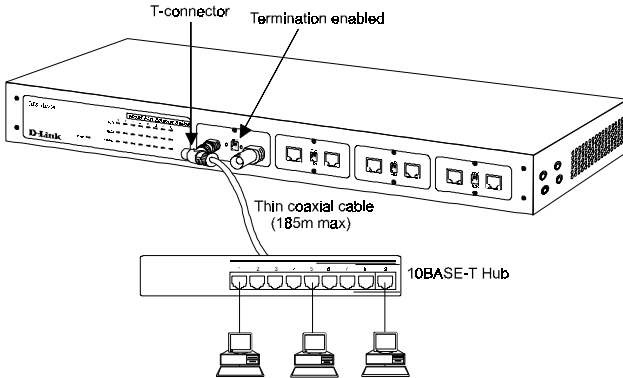
For information about the indicators on the slide-in port modules, see Appendix C, *Slide-in Port Modules*.

Making Fiber Attachments

If the node you intend to connect is located at a remote area, you may use fiber optics to link this device to the Switch. Fiber attachment to the system is available through both the DES-108FL and DES-108FX modules. These modules come with two switched fiber-optic ports, providing fiber links to remote nodes.

Each fiber-optic port on these two modules comes with two connectors; one for reception (Rx) and the other for transmission (Tx). They come with protective covers to protect the lens inside the connectors from dust, which could alter the intensity of light coming in and out of the port. Do not remove these protective covers unless you are ready to connect the port.

You will need a 62.5/125 μm multimode fiber cable in the connection. This cable can be up to 2 km long.

NOTE: *You do not need to turn off the Switch when making network connections; just plug the cables into the ports.*
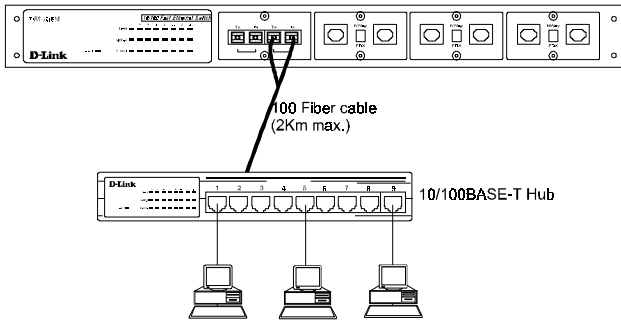
Perform these steps to connect nodes to the Switch using fiber-optic cables,

1. Depending on the number of nodes and which type of partner you intend to connect (if 10BASE, select DES-108FL, and if 100BASE, select DES-108FX) install the appropriate number of DES-108FL and/or DES-108FX modules into the Switch. Note that each module provides two switched fiber-optic ports. For information on the installation procedure, see the *Port Module Installation* section of Chapter 3, *Installation*.

2. Obtain a 62.5/125 μm multimode fiber cable. Ensure that this cable does not exceed 2 km.

3. Select a fiber-optic port to connect the node.

4. Remove the protective covers from the connectors of the selected port.

5. Using the fiber cable, connect the Rx connector of the selected port to the Tx connector of the node. Then, connect the Tx connector of the port to the Rx connector of the node.

6. Repeat the same procedure to connect the other nodes.

A

TECHNICAL SPECIFICATIONS

Standards	IEEE 802.3 10BASE2, 10BASE-T, 10BASE-FL Ethernet, 10/100BASE-T, 100BASE-FX
Protocol	CSMA/CD
Data Transfer Rate	10/100 Mbps
Topologies: 10/100BASE-T, 10BASE-FL, 10BASE-FX	Star
10BASE2	Bus
Network Cables: 10BASE2 10/100BASE-T	RG58A/U 50-ohm thin coaxial (185 meters max.) Two-pair UTP Category 3, 4, 5 (100 meters max.) for 10BASE-T and Category 4 & 5 for 100BASE-T (100
10BASE-FL	meters max.); EIA/TIA-568 100-ohm shielded twisted-pair (100 meters
100BASE-FX	max.) 62.5/125 μm multimode fiber cable, ST connectors (2 km max.)

	62.5/125 μm multimode fiber cable, SC connectors (2 km max.)
Number of Ports	Maximum of 8 switched ports
Number of Slots	Four
Number of Ports/ Slot	Two
Transmission Method	Store-and-forward
Queue Buffer	1004 packets per 2 ports
Routing Table	Up to 8K per device
MAC Address Learning	Automatic
Packet Filtering Rate	14,880 pps per port
Packet Forwarding Rate	14,880 pps per port
AC Input	100V ~ 240V AC, 50 ~ 60 Hz
Power Consumption	40 W (max.)
Temperature: Operating Storage	0° to 50° Celsius -25° to 55° Celsius
Humidity	5 ~ 95% non-condensing
Dimensions	441 x 207 x 43 mm (1 U) 19-inch rack- mountable width
Weight	3 kg (base unit)
Emission (EMI)	CE Mark Class A, C-Tick

Safety	UL (UL 1950), TUV/GS (EN60950)

B

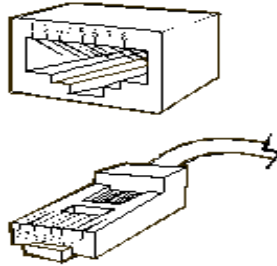# *CABLES AND CONNECTORS*

10/100BASE-T Twisted-Pair Cable

♦ Cable characteristics: 0.4 - 0.6 mm (22 - 26 AWG) 8-wire (only 4 wires are used)

♦ Maximum segment length: 100 meters

♦ Applicable connectors: RJ-45, Telco-50

| RJ-45 Connector ||
Contact	Media Direct Interface Signal
1	Rx + (transmit)
2	Rx - (transmit)
3	Tx + (receive)
4	Not used
5	Not used
6	Tx - (receive)
7	Not used
8	Not used

10BASE2 Thin Coaxial Cable

♦ Cable characteristics: 0.2 inch diameter RG-58A/U 50 ohms

♦ Maximum segment length: 185 meters

♦ Maximum distance between two nodes: 0.5 meter

♦ Maximum number of nodes per segment: 30

10BASE-FL/100BASE-FX Fiber-Optic Cable

♦ Cable characteristics: 62.5/125 μm multimode fiber

♦ Maximum distance between two nodes: 2 km

C

SLIDE-IN PORT MODULES

The Switch supports four types of slide-in port modules, DES-108TX, DES-108C, DES-108FL, and DES-108FX. These modules provide various ports for connection to different network media like twisted-pair, thin coaxial cable, and fiber-optic cable. This appendix describes each module.
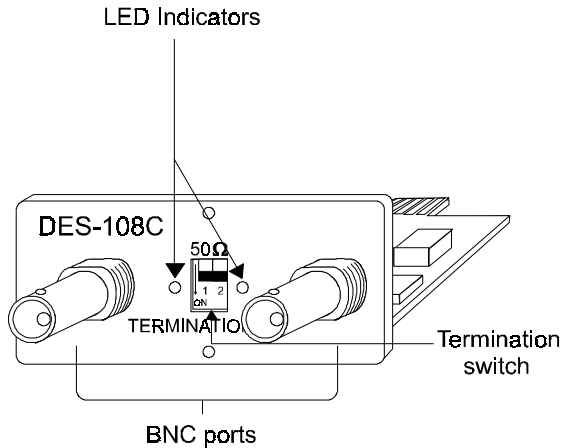
DES-108TX
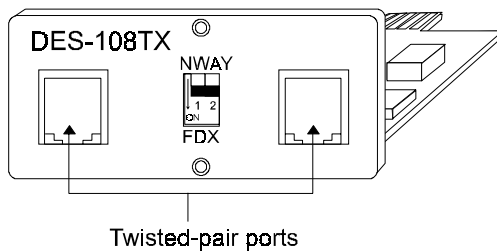
This module provides two switched twisted-pair ports or connection to twisted-pair segments. Each port supports N-Way and 100Mbps full-duplex operations.

DES-108C

This module provides two switched BNC ports for connection to thin coaxial segments. Each port can be terminated without the use of an external 50-ohm BNC terminator, via the on-board DIP switches. To enable the port's termination, slide its respective DIP switch to the ON position.

This module also provides LED indicators for displaying the termination status for the ports. This indicator turns on when the port's termination is enabled; otherwise, it is off.
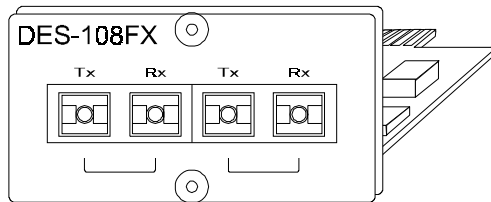
DES-108FL
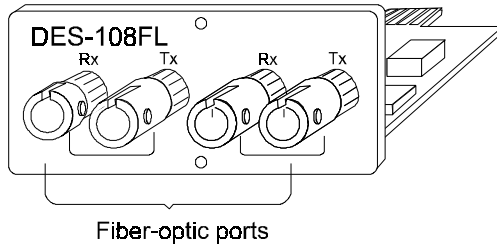
This Fiber-Optic Inter-Repeater Link (FOIRL) module provides two switched fiber-optic ports for creating fiber-optic links. Each of these ports has two connectors; one for reception (Rx) and another for transmission (Tx). When creating a link, ensure that the Rx connectors connect to the Tx connectors, and vice versa.

Each connector comes with a protective cover to prevent dust from accumulating inside the connector. Do not remove this cover unless you are ready to connect the port--too much dust may alter the intensity of light coming in and out of the port, which could lead to data interpretation errors.

DES-108FX

This module provides two switched fiber-optic ports for creating fiber-optic links. Each of these ports has two-in-one connectors. Set the module to full-duplex or half-duplex mode by the jumpers on the back panel (see instructions and diagram on the next page).
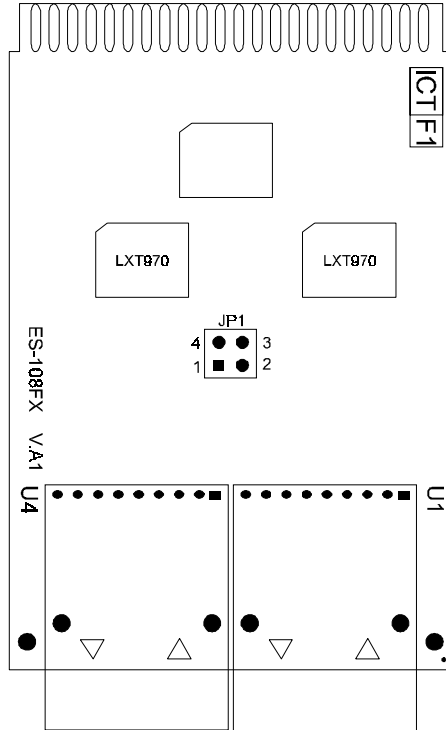
To set a port to full- or half-duplex mode, first power down the device. For half-duplex mode on port 1, use a minijumper to interconnect pins 1 and 4 of jumper pad JP1 (this is the factory default setting). For half-duplex mode on port 2, use a minijumper to interconnect pins 2 and 3 of JP1.

For full-duplex mode on port 1, disconnect the minijumper from pins 1 and 4 of JP1, and for full-duplex mode on port 2, disconnect the minijumper from pins 2 and 3 of JP1.

Each connector comes with a protective cover to prevent dust from accumulating inside the connector. Do not remove this cover unless you are ready to connect the port. Note that too much dust may alter the intensity of light coming in and out of the port, which could lead to data interpretation errors.

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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
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