D-Link
DES-1008PA
8-Port 10/100Mbps
IEEE802.3af Switch

User's Guide

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/her 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

This is a product of VCCI Class B Compliance.

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。

UL Warning

a) Elevated Operating Ambient Temperature- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

b) Reduced Air Flow- Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

c) Mechanical Loading- mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

d) Circuit Overloading- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

e) Reliable Earthing- Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

The PoE is intended to be connected to not exposed (outside plant) networks or equivalent.

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ABOUT THIS GUIDE

Congratulations on your purchase of the D-Link DES-1008PA, an 8-Port 10/100Mbps Fast Ethernet Switch with 4-Port PoE. This Switch integrates 100Mbps Fast Ethernet and 10Mbps Ethernet network capabilities in a highly flexible package. Port-1 to Port-4 on the switch support Power over Ethernet (PoE), meaning it will automatically detect the presence of an IEEE 802.3af-compliant powered device (PD) and provide power through the port. The switch provides up to 15.4 W per PoE port and can be used to power WLAN access points, IP phones, video cameras, and other PD devices. The Switch will automatically detect the network appliance's requirements, and will supply the required power to each appliance accordingly.

Purpose

This guide discusses how to install your 8-Port 10/100Mbps Fast Ethernet Switch with 4-Port PoE.

Terms/Usage

In this guide, the term "Switch" (first letter upper case) refers to your 8-Port 10/100Mbps Fast Ethernet Switch with 4-Port PoE and "switch" (first letter lower case) refers to other Ethernet switches.

INTRODUCTION

This chapter describes the features of the D-Link DES-1008PA Fast Ethernet PoE Switch and some background information about Ethernet/Fast Ethernet, Switching and Power over Ethernet 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-TX (Fast Ethernet) provides a non-disruptive, smooth evolution from the current 10BASE-T technology.

100Mbps Fast Ethernet is a 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 switch acts as a high-speed selective bridge between the individual segments. The switch, 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.

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.

Power over Ethernet (PoE)

Power over Ethernet (PoE) integrates power and data onto one single cabling infrastructure, eliminating the need to have AC power available at all locations.

Power and Data is integrated onto the same cable, supporting category 5/5e up to 100 Meters. PoE will provide power to PoE compatible devices, such as IP telephones, wireless LAN access points and IP security cameras.

PoE is already widely adopted in the market, saving up to 50% of overall installation costs by eliminating the need to install separate electrical wiring and power outlets.

Features

◆ 8 ×10/100Mbps Auto-negotiation Fast Ethernet RJ45 ports with 4-port PoE function (port-1 ~ port-4)
◆ Compliant with 802.3af specification
◆ Supports PoE power up to 15.4W for PoE Port 1 to 4
◆ Supports PoE power up to 52W for PoE Port 1 to 4
◆ Supports PoE IEEE802.3af compliant Powered Device (PD)
◆ Each port supports auto MDI/MDIX, so there is no need to use cross-over cables or an up-link port
◆ Full/half duplex transfer mode for each port
◆ Wire speed reception and transmission
◆ Up to 1K unicast addresses entities per device, self-learning, and table aging
◆ 96KBytes packet buffer
◆ Supports IEEE 802.3x flow control for full-duplex mode ports
◆ Supports Back-pressure flow control for half-duplex mode ports

UNPACKING AND INSTALLATION

This chapter provides unpacking and installation information for the Switch.

Unpacking

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

> One DES-1008PA
>
> One AC power adapter
>
> Four rubber feet to be used for shock cushioning
>
> User's Guide

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

Installation

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

> The surface must support at least 1.5 Kg (3.5 lbs) for the Switch.
> The power outlet should be within 1.82 meters (6 feet) of the Switch.
> 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 Switch. Do not place heavy objects on the Switch.

Note: Be sure to connect 48V/1.25A power adapter DC plug to DC jack of DES-1008PA before plugging the power cord to AC power outlet.

Connecting Network Cable

The Switch support 8 10/100Mbps Ethernet ports and Port 1 ~ port 4 are PoE Enabled ports, these PoE port will automatically activate when a compatible terminal is identified. The Switch will supply power through the Ethernet port to the connected PoE powered device (PD).

For legacy devices that are not compatible, the PoE port will not offer power to this device. This feature allows users to freely and safely mix legacy and Power over LAN compatible devices on their network.

The Switch supports 10Mbps Ethernet or 100Mbps Fast Ethernet and it runs both in half and full duplex mode using two pair of Category 5 cable.

These RJ45 ports are Auto-MDI type port. The Switch can auto negotiate to MDI-II or MDI-X type, so you can connect any RJ-45 cable regardless if it is a standard or crossover cable.

IDENTIFYING EXTERNAL COMPONENTS

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

Front Panel

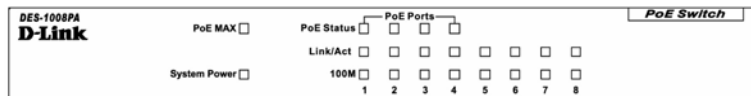The figure below shows the front panels of the Switch.

Figure 1. Front panel

LED Indicator:

Comprehensive LED indicators display the status of the switch and the network (see the LED Indicators chapter below).

Rear Panel

Figure 2. Rear panel

PoE Ports (Port 1~4):

These ports are PoE Enabled ports, the PoE port will automatically activate when a compatible terminal is identified. The Switch will supply power through the Ethernet port to the connected PoE device.

For legacy devices that are not compatible, the PoE port will not offer the power to this device. This feature allows users to freely and safely mix legacy and Power over LAN compatible devices on their network.

These ports support network speeds of either 10Mbps or 100Mbps, and can operate in half- and full- duplex transfer modes. These ports also support automatic MDI/MDIX crossover detection, which gives the Switch true, "plug and play" capabilities. Just connect any network cable between the Switch and the device, and The Switch will automatically detect the settings of the device and adjust itself accordingly.

Ethernet Ports (Port 5~8):

These ports support network speeds of either 10Mbps or 100Mbps, and can operate in half- and full- duplex transfer modes. These ports also support automatic MDI/MDIX crossover detection, which gives the Switch true, "plug and play" capabilities. Just connect any network cable between the Switch and the device, and The Switch will automatically detect the settings of the device and adjust itself accordingly.

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

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

UNDERSTANDING LED INDICATORS

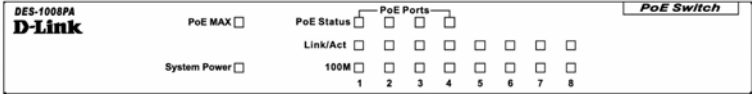The front panel LEDs provides instant status feedback, and helps monitor and troubleshoot when needed.

Figure 3. LED indicators of the Switch

System LED

PWR: (Power Indicator)

On	:	Power On
Off	:	Power Off

PoE status LEDs (Port 1 ~ Port 4)

PoE Status:

Green	:	When the PoE powered device (PD) is connected and the port supplies power successfully.
Red	:	When the PoE port has failed, possibly due to: PoE power circuit shortage Power over current: over the power current of PD's classification Out of PoE voltage of 44 ~ 57 VDC output
Off	:	No PoE powered device (PD) connected.

PoE MAX

Green	When the power output to PDs is over 42W. No additional PDs can be powered.
Off	When the system is using less than 42W
Blinking Green	After the power output to PDs has reached or exceeded the maximum power budget, if the user unplugged certain PDs and made the system power left over 10W, the PoE MAX will blink 2 minutes.

Ethernet port status LEDs (Ports 1~8)

10/100M Link/ACT:

10M	:	When the 10M LED lights on, the respective port is successfully connected to 10M Ethernet network. Otherwise, when the 10M LED is blinking, the port is transmitting or receiving data on the Ethernet network.
100M	:	When the 100M LED lights on, the respective port is successfully connected to 100M Fast Ethernet network. Otherwise, when the 100M LED is blinking, the port is transmitting or receiving data on the Fast Ethernet network.
Off	:	No link.

PoE Rule

POE M ax: this function will help to protect the POE Switch and to stabilize the power transmitting to the powered device (PD).

If the system power usage is >= 42, the POE MAX LED will turn on and the system will not provide power to the additional POE PD. This is done to protect the POE Switch itself and to stabilize the power transmitting to the other POE PDs plugged into the Switch.

For example: There are POE PDs connected to the POE Switch and the total power consumption is 48 watts. The system will reserve 4 watts for a buffer and the POE MAX LED will light up. Once there is another POE PD inserted, the system will not provide power to the additional POE PD.

Priority: This function will help protect the system when the system power is overloaded. The system will disable the PoE function of lower priority PoE ports to maintain the power to higher priority PoE ports.

The total power resource for the system is 52W shared between the 4 POE ports (maximum power for per port is 15.4W). If all POE PDs power consumption is over 52W, the system will automatically arrange the priority of these ports. The lower port number will have the higher priority and the higher port number will have a lower priority (Highest priority: Port 1 > Port 2 > Port 3 > Port 4).

For example: In this POE Switch, Port 2 is using 15 watts and Port 3,4 is using 15.4 watts, these two ports are using 45.8 watts total. If there is an additional POE PD inserted to Port 1 with 15.4 watts, the system power resource is over current and the priority function will activate. The priority will be applied to the lowest port number to highest port number, so Port 1,3 will use 15.4 watts, Port 2 will use 15 watts, and the system will cut off the power to Port 4 due to over current.

TECHNICAL SPECIFICATIONS

General	
Standards	IEEE 802.3 10BASE-T Ethernet
	IEEE 802.3u 100BASE-TX Fast Ethernet
	IEEE 802.3x Full Duplex Flow Control
	IEEE 802.3af Power over Ethernet
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	10BASET: 2-pair UTP Cat. 3, 4, 5; up to 100m
	100BASE-TX: 2-pair UTP Cat. 5; up to 100m
Number of Ports	4 × 10/100Mbps Auto-MDIX RJ45 ports with POE enabled (port 1 ~ port 4)
	4 × 10/100Mbps Auto-MDIX RJ45 ports (port 5 ~ port 8)
PoE Power on RJ-45	Power+: ping 3 & ping 6
	Power-: ping 1 & ping 2

Physical and Environmental	
DC inputs	48VDC/1.25A
Power Consumption	6.3 watts. (max. no PD device connected)
	63 watts (max. with 52w PoE Device connected)
Temperature	Operating: 0° ~ 40° C, Storage: -10° ~ 70° C
Humidity	Operating: 10% ~ 90%, Storage: 5% ~ 90%
Dimensions	171 x 98 x 29 mm
EMI:	FCC Class B, CE Mark Class B, VCCI Class B
Safety:	cUL(UL60950), CB(IEC60950)

Performance	
RAM Buffer:	96K bytes per device
Filtering Address Table:	1K entries per device
Packet Filtering/Forwarding Rate:	10Mbps Ethernet: 14,880/pps 100Mbps Fast Ethernet: 148,800/pps
MAC Address Learning:	Automatic update
Transmits Method:	Store-and-forward