

D-Link® DGS-1016A
DGS-1024A
16/24-PORT GIGABIT DESKTOP SWITCH

Manual

D-Link®
Building Networks for People



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

Warnung!

Dies ist ein Produkt der Klasse A. Im Wohnbereich kann dieses Produkt Funkstörungen verursachen. In diesem Fall kann vom Benutzer verlangt werden, angemessene Massnahmen zu ergreifen.

Precaución!

Este es un producto de Clase A. En un entorno doméstico, puede causar interferencias de radio, en cuyo caso, puede requerirse al usuario para que adopte las medidas adecuadas.

Attention!

Ceci est un produit de classe A. Dans un environnement domestique, ce produit pourrait causer des interférences radio, auquel cas l'utilisateur devrait prendre les mesures adéquates.

Attenzione!

Il presente prodotto appartiene alla classe A. Se utilizzato in ambiente domestico il prodotto può causare interferenze radio, nel cui caso è possibile che l'utente debba assumere provvedimenti adeguati.

VCCI Warning

この装置は、クラスA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。

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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Preface

The *DGS-1016A/DGS-1024A Manual* is divided into sections that describe the system installation and operating instructions with examples.

Section 1, Introduction - A description of the physical features of the Switch, including LED indicators, ports and panel descriptions.

Section 2, Installation – A description of the physical installation of the Switch, mounting the Switch on a wall and powering on the Switch.

Section 3, Connecting the Switch – A description of how to connect your Switch to an end node, hub, another switch or backbone server.

Appendix Technical Specifications - The technical specifications of the DGS-1016A/DGS-1024A.

Notes, Notices, and Cautions



NOTE: A NOTE indicates important information that helps you make better use of your device.




NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



CAUTION: A CAUTION indicates the potential for property damage, personal injury or death.

Safety Instructions

Use the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage. Throughout this safety section, the caution icon () is used to indicate cautions and precautions that you need to review and follow.



Safety Cautions

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions.

Observe and follow service markings. Do not service any product except as explained in your system documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to an electrical shock. Only a trained service technician should service components inside these compartments.

If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:

- The power cable, extension cable, or plug is damaged.
 - An object has fallen into the product.
 - The product has been exposed to water.
 - The product has been dropped or damaged.
 - The product does not operate correctly when you follow the operating instructions.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
 - Do not place any device on top of Switch, or place the Switch on top of any device or object that will block the free flow of air through the ventilation slots on the sides, top, and bottom of the Switch's case.
 - Keep your hand away from top and bottom of device that generates a significant amount of heat.
 - Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide or contact your trained service provider.
 - Do not push any objects into the openings of your system. Doing so can cause a fire or an electric shock by shorting out interior components.
 - Use the product only with approved equipment.
 - Allow the product to cool before removing covers or touching internal components.
 - Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

Safety Instructions (continued)

- To help avoid damaging your system, be sure the voltage selection Switch (if provided) on the power supply is set to match the power available at your location:
 - 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
 - 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan.
 - 230 V/50 Hz in most of Europe, the Middle East, and the Far East.
- Also be sure that attached devices are electrically rated to operate with the power available in your location.
- Use only approved power cable(s). If you have not been provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- To help prevent an electric shock, plug the system and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a 3-wire cable with properly grounded plugs.
- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables and power cables carefully; route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local/national wiring rules.
- When connecting or disconnecting power to hot-pluggable power supplies, if offered with your system, observe the following guidelines:
 - Install the power supply before connecting the power cable to the power supply.
 - Unplug the power cable before removing the power supply.
 - If the system has multiple sources of power, disconnect power from the system by unplugging *all* power cables from the power supplies.
- Move products with care; ensure that all casters and/or stabilizers are firmly connected to the system. Avoid sudden stops and uneven surfaces.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your system. To prevent static damage, discharge static electricity from your body before you touch any of the electronic components, such as the microprocessor. You can do so by periodically touching an unpainted metal surface on the chassis.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

1. When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your system. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
2. When transporting a sensitive component, first place it in an antistatic container or packaging.
3. Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads, workbench pads, and an antistatic grounding strap.

SECTION 1

Introduction

About This Guide
Switch Description
Switch Features
D-Link Green Technology
Ports
Front-Panel Components
LED Indicators
Power Input on Rear Panel

About This Guide

Congratulations on your purchase of the 16/24-PORT GIGABIT DESKTOP SWITCH. These devices are using compact plastic case and are highly flexible solution for SOHO or small office customers.

Switch Description

The 16-port DGS-1016A and 24-port DGS-1024A Switches provide dedicated 10, 100 or 1000 Mbps Ethernet bandwidth on each port. The ports will automatically detect the speed, duplex and MDI/MDIX status of the device it is connecting to, and adjust these settings accordingly. The Switch ports can be used to network computers, printers, servers, routers, other switches or any device equipped with an Ethernet port. For best performance, use Category 5 or better Ethernet cabling. This stand alone Switch is very easy to set up. There is no network management is required; simply power on the Switch and connect the cables.

However, please keep in mind that the standard rules of available Ethernet cable length from one device to another which cannot exceed 100 meters (or 300 feet).

Switch Features

The DGS-1016A 16-Port and DGS-1024A 24-port Switches do not require any management. Both Switches are designed for easy installation, flexibility and high performance. Connect devices to the Switch as the scale and volume of network traffic increases.

- Support 10/100/1000 Base-T on both 16 and 24 ports models
- Store and Forward Switching Method
- D-Link Green Technology
- Auto Negotiation on Duplex Mode
- Auto MDI/MDIX supported
- Support Full/Half Duplex Transfer Mode on 10/100 Mbps
- Support Full Duplex Transfer Mode on 1000 Mbps
- Wire-Speed reception and transmission
- 8K absolute MAC Address (DGS-1016A) ; 8K absolute MAC Address (DGS-1024A)
- 2Mbits RAM for data buffering (DGS-1016A) ; 4.1Mbits RAM for data buffering (DGS-1024A)
- IEEE 802.3x Flow Control for Full-duplex mode
- Back Pressure Flow Control for Half-duplex mode
- Jumbo Frame support (9216Bytes)
- Support IEEE802.3az EEE

Gigabit Ethernet Technology

Gigabit Ethernet is an extension of IEEE 802.3 Ethernet utilizing the same packet structure, format, and support for CSMA/CD protocol, full duplex, flow control, and management objects, but with a tenfold increase in theoretical throughput over 100-Mbps Fast Ethernet and a hundredfold increase over 10-Mbps Ethernet. Since it is compatible with all 10-Mbps and 100-Mbps Ethernet environments, Gigabit Ethernet provides a straightforward upgrade without wasting a company's existing investment in hardware, software and trained personnel.

The increased speed and extra bandwidth offered by Gigabit Ethernet is necessary to coping with the network bottlenecks; more computers and their bus speeds getting faster, and more applications generate more traffic in the network. Upgrading key components, such as your backbone and servers to Gigabit Ethernet can greatly improve network response times as well as significantly speed up the traffic between your subnets.

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

D-Link Green Technology

- IEEE 802.3az Energy-Efficient Ethernet (EEE):

It is the first standard in the history of Ethernet to address proactive reduction in energy consumption for networked devices. The IEEE 802.3 EEE standard defines mechanisms and protocols intended to reduce the energy consumption of network links during periods of low utilization, by transitioning interfaces into a low-power state without interrupting the network connection.

- Power Saving Technology:
 - Power saving by link status.

If there is no link on a port, such as when there is no computer connected to the port or the connected computer is powered off, D-Link's Green Technology will enter a "sleep mode", drastically reducing power used for that port.

- Power saving by cable length: 0~20m, 21~100m.

D-Link's Green Technology detects the length of connected Ethernet cable and adjusts power usage accordingly without affecting performance. This way, a port connected to a 20m cable only uses as much power as it needs, instead of using full power, which is only needed for 100m cables.

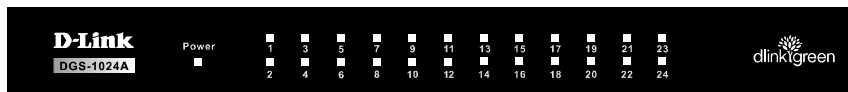
Front-Panel Components

On the front panel of the Switch you will see the following.

- LED status indicators
- 16 Auto-Negotiating 10/100/1000Mbps ports on the DGS-1016A
- 24 Auto-Negotiating 10/100/1000Mbps ports on the DGS-1024A



DGS-1016A Front Panel



DGS-1024A Front Panel

LED Indicators

The LED indicators of the Switch include a Power status indicator and Link/Act/Speed indicator for each port.



LED Indicators

LED Indicator	Description
Power	This lights green while the Switch is receiving power.
Link/Act/Speed	<p>When connected to a 1000Mbps device, this LED indicator light is green when the port is connected to a device and will blink as data is transmitted or received.</p> <p>When connected to a 10/100Mbps device, this LED indicator light is amber when the port is connected to a device and will blink as data is transmitted or received.</p>

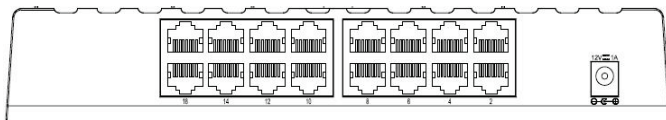
Rear Panel Description

The power cable connection is located on the rear panel of the Switch.

DC Power Jack:

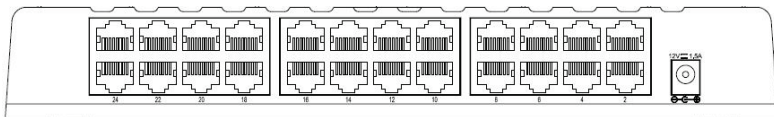
Power is supplied through an external 12V/1A AC power adapter for DGS-1016A and an external 12V/1.5A AC power adapter for DGS-1024A. Check the technical specification section for information about the AC power input voltage.

- **DGS-1016A**



DGS-1016A Rear Panel

- **DGS-1024A**



DGS-1024A Rear Panel

10/100/1000BASE-T Ports:

There are 16/24 Gigabit Ethernet, Auto-Negotiating ports (10/100/1000Mbps)

Comprehensive LED indicators display the conditions of the Switch and status of the network.

SECTION 2

Installation

Package Contents

Before You Connect to the Network

Installing the Switch

Power On

Package Contents

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

- One DGS-1016A 16-Port/ DGS-1024A 24-Port 10/100/1000BASE-T GIGABIT DESKTOP SWITCH
- One AC power adapter
- Quick Install Guide
- Wall-mounting kits

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

Before You Connect to the Network

The site where you install the Switch may greatly affect its performance. Please follow these guidelines for setting up the Switch.

- Install the Switch on a sturdy, level surface that can support at least 3 kg (6.6 lbs.) of weight. Do not place heavy objects on the Switch.
- The power outlet should be within 1.82 meters (6 feet) of the Switch.
- Visually inspect the power cord and see that it is fully secured to the AC power port.
- Make sure that there is adequate space for proper heat dissipation from and adequate ventilation around the Switch. Leave at least 10 cm (4 inches) of space at the front and rear of the Switch for ventilation.
- Install the Switch in a fairly cool and dry place for the acceptable temperature and humidity operating ranges.
- Install the Switch in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.
- When installing the Switch on a level surface, attach the rubber feet to the bottom of the device. The rubber feet cushion the Switch, protect the casing from scratches, and prevent it from scratching other surfaces.

Mounting the Switch on a Wall

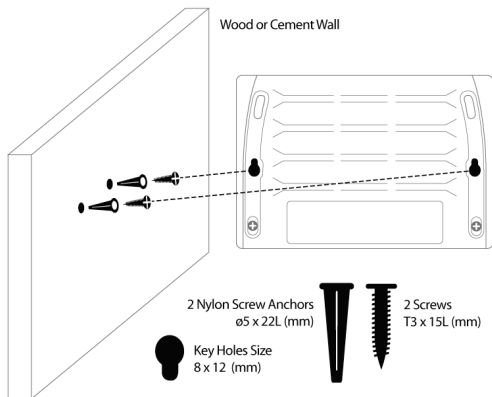
The DGS-1016A /24A can be mounted on a wall. Two mounting slots are provided on the bottom of the switch for this purpose. Please make sure that the front panel is exposed in order to view the LEDs. Please refer to the illustration below:

A.) Mounting on a cement wall

1. Mount the Nylon screw anchors into a cement wall.
2. Drive the T3 x 15L screws into the Nylon screw anchors.
3. Hook the mounting holes of the switch back on the screws; you have completed the wall-mount.

B.) Mounting on a wood wall

1. Drive the T3 x 15 L screws into the wood wall.
2. Hook the mounting holes of the switch back on the screws; you have completed the wall-mount.



Power On

Plug one end of the AC to DC power adapter into the power connector of the Switch and the other end into the local power source outlet.

After the Switch is powered on, the LED indicators will momentarily blink. This blinking of the LED indicators represents a reset of the system.

Power Failure

As a precaution, in the event of a power failure, unplug the Switch. When power is resumed, plug the Switch back in.

Section 3

Connecting the Switch

Switch to End Node

Switch to Hub or Switch

Connecting to a Server



NOTE: All Ethernet ports auto-detect MDI/MDIX, port speed (10, 100, 1000Mbps) and duplex of the device connected to the Switch.

Cable Quality

For all connections to the Switch, use these rules to determine the

- For connections to 10BASE-T and 100BASE-TX devices, use Category 5 or 5e UTP/STP cable.
- For connections to 100BASE-TX and 1000BASE-T devices, use Category 5e or better UTP/STP cable. All 1000BASE-T connections operate in full duplex mode.

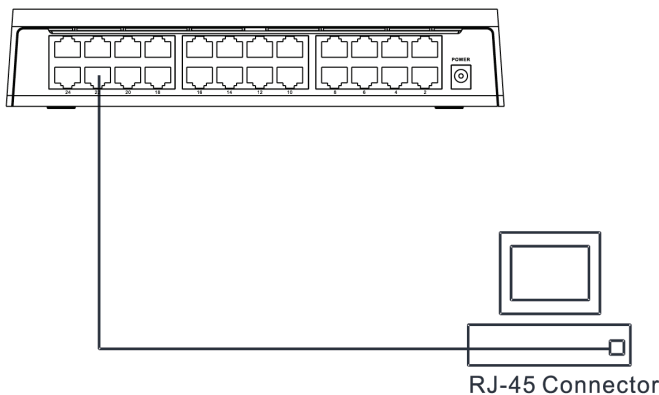


NOTE: UTP (Unshielded Twisted Pair) Ethernet cabling is adequate for most small office environments. More expensive STP (Shielded Twisted Pair) can also be used, but is generally only needed where there will be risk of strong Electromagnetic or Radio Frequency Interference.

Connect to an End Node

End nodes include PCs outfitted with a 10, 100, or 1000 Mbps RJ-45 Ethernet/Fast Ethernet Network Interface Card (NIC) and most routers.

An end node can be connected to the Switch via a twisted-pair Category 3, 4, 5, or 5e UTP/STP cable. The end node can be connected to any of the ports of the Switch.

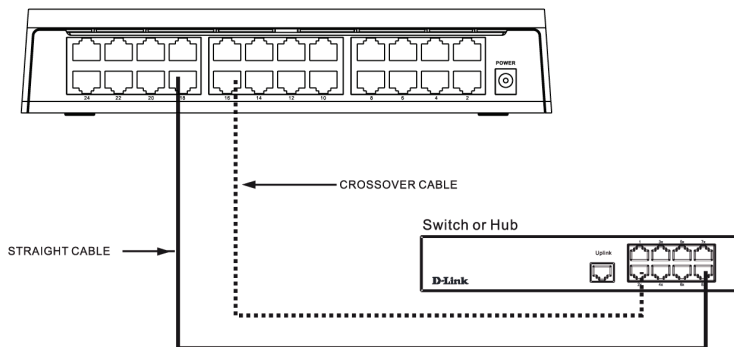


Switch connected to an end node

Connect to Hub or Switch

These connections can be accomplished in a number of ways using a standard Ethernet cable.

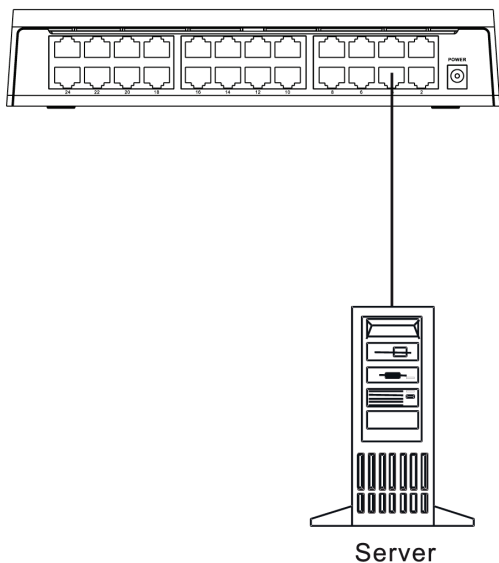
- A 10BASE-T hub or switch can be connected to the Switch via a twisted-pair Category 3, 4, 5, or 5e UTP/STP cable.
- A 100BASE-T hub or switch can be connected to the Switch via a twisted -pair Category 5 or better UTP/STP cable.
- A 1000BASE-T switch can be connected to the Switch via a twisted -pair Category 5 or better UTP/STP cable.



Switch connected to a port on a hub or switch using either a straight or crossover cable—any standard Ethernet cable is fine

Connect to Network Backbone or Server

Any of the 16/24 Gigabit Ethernet ports are ideal for uplinking to a network backbone or network server.



Connection to a Server

Appendix

Technical Specifications

General	
Standards:	IEEE 802.3 10BASE-T IEEE 802.3u compliance IEEE 802.3ab compliance IEEE 802.3x Flow Control supports for Full Duplex
Protocol:	CSMA/CD
Data Transfer Rate:	Ethernet: 10Mbps (Half-duplex) 20Mbps (Full-duplex) Fast Ethernet: 100Mbps (Half-duplex) 200Mbps (Full-duplex) Gigabit Ethernet: 2000Mbps (Full-duplex)
Topology:	Star
Network Cables:	Ethernet: 2-pair UTP Cat.3/4/5/5e, Unshield Twisted Pair (UTP)Cable Fast Ethernet: 2-pair UTP Cat.5/5e, Unshield Twisted Pair (UTP)Cable Gigabit Ethernet: 4-pair UTP Cat.5/ 5e, Unshield Twisted Pair (UTP)Cable
Number of Ports:	Sixteen (16) or twenty-four (24) 10/100/1000BASE-T Gigabit Ethernet ports

Physical and Environmental	
DC Inputs:	DGS-1016A : AC-DC 12V/1.0A DGS-1024A : AC-DC 12V/1.5A
Power Consumption:	DGS-1016A: 9 watts DGS-1024A: 15.7 watts
Fan	Fan-less
Operating Temperature:	32°F ~ 104°F ° (0 °C ~ 40 °C)
Storage Temperature:	14°F ~ 158°F (-10°C ~ 70°C)
Humidity:	5% ~ 90% RH, non-condensing
Dimensions (W x D x H)	DGS-1016A: 9.1 in x 6.2 in x 1.8 inches (231mm x 158mm x 46mm) DGS-1024A: 10.1 in x 7.0 in x 1.8 inches (257mm x 178mm x 46mm)
Weight	DGS-1024A: 0.74 kg / DGS-1016A: 0.53 kg
EMI	FCC Class A, ICES-003 Class A, CE Class A, C-Tick Class A
Safety:	cUL + CB + LVD

Performance	
Transmission Method:	Store-and-forward
RAM Buffer:	DGS-1016A: 2Mbits per device DGS-1024A: 4.1Mbits per device
Filtering Address Table:	DGS-1016A: 8K MAC address DGS-1024A: 8K MAC address
Packet Filtering/ Forwarding Rate:	Full wire speed
MAC Address Learning:	Self-learning, auto-aging
Jumbo Frame	9216Bytes support
