

Hardware Installation Guide

Product Model: DGS-3000-28X

Gigabit Ethernet Switch

Release 4.00

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FCC Warning

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 manual, 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 expense.

CE Mark Warning

This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

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。 VCCI-A

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Safety Compliance

Warning: Class 1 Laser Product:

- **EN:** When using a fiber optic media expansion module, never look at the transmit laser while it is powered on. Also, never look directly at the fiber TX port and fiber cable ends when they are powered on.
- **FR:** Ne regardez jamais le laser tant qu'il est sous tension. Ne regardez jamais directement le port TX (Transmission) à fibres optiques et les embouts de câbles à fibres optiques tant qu'ils sont sous tension.

SFP (Mini-GBIC), XENPAK, and XFP Regulatory Compliance

Networks pluggable optical modules meet the following regulatory requirements:

- Class 1 Laser Product.
- EN60825-1+A2:2001 or later, European laser standard.
- FCC 21 CFR Chapter 1, Subchapter J in accordance with FDA & CDRH requirements.

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Intended Readers

Intended Readers
Typographical Conventions
Notes and Cautions
Safety Instructions
General Precautions for Rack-Mountable Products
Protecting Against Electrostatic Discharge

The **DGS-3000-28X Hardware Installation Guide** contains information about the installation, maintenance and technical information of switches in this series. This manual is intended for network administrators familiar with network management concepts and terminology.

For all practical reasons all the switches in this series will simply be referred to as the **Switch** throughout this manual. All example screenshots are taken from the **DGS-3000-28X** switch.

Typographical Conventions

Convention	Description
Bold Font	Indicates a button, a toolbar icon, menu, or menu item. For example: Open the File menu and choose Cancel . Used for emphasis. May also indicate system messages or prompts appearing on screen. For example: You have mail .
<i>Italics</i>	Indicates a window name or a field. Also can indicate a variables or parameter that is replaced with an appropriate word or string. For example: type <i>filename</i> means that the actual filename should be typed instead of the word shown in italic.
Courier New Font	Indicates commands and responses to prompts that must be typed exactly as printed in the manual.

Notes and Cautions




A **NOTE** indicates important information that helps make better use of the device.



A **CAUTION** indicates a 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 precautions that need to be reviewed and followed.

Safety Precautions

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 the system documentation.
- Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose the user to 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:
 - Damage to the power cable, extension cable, or plug.
 - 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 the operating instructions are correctly followed.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
- Do not push any objects into the openings of the system. Doing so can cause fire or 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 unsure of the type of power source required, consult your service provider or local power company.
- To help avoid damaging the system, be sure the voltage selection switch (if provided) on the power supply is set to match the power available at the Switch's 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 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 using an extension cable is necessary, 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 the 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.



CAUTION: Risk of explosion if the battery is replaced by an incorrect battery type. Dispose of used batteries according to the instructions.

ATTENTION: Risque d'explosion si la batterie est remplacée par un type incorrect. Jetez les piles usagées selon les instructions.

注意：如果更換不正確之電池型式會有爆炸的風險，請依製造商說明書處理用過之電池。

General Precautions for Rack-Mountable Products

Observe the following precautions for rack stability and safety. Also, refer to the rack installation documentation accompanying the system and the rack for specific caution statements and procedures.

- Systems are considered to be components in a rack. Thus, "component" refers to any system as well as to various peripherals or supporting hardware.



CAUTION: Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack. After installing system/components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and may result in serious injury.

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Make sure that the rack is level and stable before extending a component from the rack.
- Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.
- After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Ensure that proper airflow is provided to components in the rack.
- Do not step on or stand on any component when servicing other components in a rack.



NOTE: A qualified electrician must perform all connections to DC power and to safety grounds. All electrical wiring must comply with applicable local or national codes and practices.



CAUTION: Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if uncertain that suitable grounding is available.



CAUTION: The system chassis must be positively grounded to the rack cabinet frame. Do not attempt to connect power to the system until grounding cables are connected. Completed power and safety ground wiring must be inspected by a qualified electrical inspector. An energy hazard will exist if the safety ground cable is omitted or disconnected.

Protecting Against Electrostatic Discharge

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

The following steps can also be taken to prevent damage from electrostatic discharge (ESD):

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

Chapter 1 Introduction

Switch Description
Package Contents
Features
Front Panel Components
Rear Panel Components
Side Panel Components

This **Hardware Installation Guide** is a detailed document explaining information about the hardware installation, configuration, specifications, guidelines, and maintenance of a D-Link Ethernet switch.

Switch Description

The DGS-3000-28X is D-Link's latest generation of Gigabit Ethernet switches with 1Gbps SFP port connectivity and 10Gbps SFP+ port connectivity. The DGS-3000-28X provides a reliable, scalable, and modular interconnection between core switches and edge switches with rich capabilities and simplified flexibility.

Switches in this series are equipped with Ethernet ports, fully industrial-like manageability and implements the latest IEEE 802.3az EEE standard to save power. The Switch is designed with built-in surge and lightning protection.

Package Contents

When purchasing the Switch, a list of items will be included in the package of the Switch. Open the shipping carton of the Switch and carefully unpack its contents. The following items should be included in the package:

- One D-Link DGS-3000-28X Switch
- One Quick Installation Guide
- One AC power cord
- One console cable
- One power cord clip
- One mounting kit (two brackets and screws)
- Four rubber feet with adhesive backing
- One compact disk that includes a digital copy of the following:
 - Hardware Installation Guide,

- CLI Reference Guide, and
- Web UI Reference Guide.



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

Features

The list of features below highlights the significant features of the Switch.

- Supports Virtual Stacking. D-Link Single IP Management (SIM)
- Supports a 16K MAC address table
- Supports Flow Control (802.3x) in full-duplex compliant
- Supports Jumbo Frames of up to 9Kbytes
- Supports Spanning Tree with 802.1D 2004 STP/RSTP and 802.1Q 2005 MSTP
- Supports Ethernet Ring Protection Switching (ERPS)
- Supports Loopback Detection (LBD)
- Supports Link Aggregation (IEEE 802.3ad/802.1ax) with a maximum of 26 groups per Switch
- Supports Port Mirroring
- Supports L2 Protocol Tunneling (L2PT)
- Supports Layer 2 Multicast Filtering
- Supports IGMP Snooping v1, v2 and v3 awareness
- Supports MLD Snooping v1 and v2 awareness
- Supports Virtual LAN (802.1Q) with up to 4K static VLAN groups and 4K dynamic VLAN groups
- Supports Port-based VLAN
- Supports IEEE 802.1v Protocol-based VLAN
- Supports MAC-based VLAN
- Supports Double VLAN (Q in Q)
- Supports VLAN Translation
- Supports IGMP snooping and Multicast VLAN (ISM VLAN)
- Supports VLAN Trunking
- Supports IPv6 Neighbor Discovery (ND)
- Supports Static Route
- Supports Quality of Service (QoS)
- Supports Access Control List (ACL)
- Supports Secure Shell (SSHv2)
- Supports Secure Sockets Layer (SSL) v1/v2/v3
- Supports Port Security
- Supports Broadcast and Multicast Storm Control
- Supports Traffic Segmentation
- Supports IP-MAC-Port Binding (IMPB)
- Supports D-Link SafeGuard Engine

- Supports DHCP Server Screening
- Supports DHCP client filtering
- Supports ARP Spoofing Prevention
- Supports BPDU Attack Protection
- Supports DoS Attack Prevention
- Supports L3 Control Packet Filtering
- Supports IEEE 802.1X Port-based and Host-based Access Control
- Supports MAC-based Access Control (MAC)
- Supports Guest VLAN
- Supports Microsoft® NAP -- IPv4, 802.1X NAP, and DHCP NAP
- Supports Authentication for Mgmt. Access(Local, TACACS, XTACACS, TACACS+, and RADIUS database)
- Supports User Account Privilege for Management Access
- Supports Authentication Database failover
- Supports Trusted Host
- Supports Zone Defense
- Supports IEEE 802.3ah Ethernet Link OAM
- Supports IEEE 802.1ag Connectivity Fault Management (CFM)
- Supports Cable Diagnostics
- Supports Optical Transceiver Digital Diagnostic Monitoring (DDM)
- Supports D-link Unidirectional Link Detection (DULD)
- Supports Port Status, Device Status, Traffic, Switch Performance Monitoring
- Supports Accessibility using multiple interfaces like the Command Line Interface (CLI), Web User Interface (Web UI), and more
- Supports Telnet Server and Client from IPv4
- Supports Trivial File Transfer Protocol (TFTP) Client
- Supports File Transfer Protocol(FTP) client
- Supports Simple Network Management Protocol (SNMP) version 1, 2c, and 3. Also supports SNMP Traps
- Supports System Log
- Supports Trap/ Alarm/ Log Severity Control
- Supports Simple Mail Transfer Protocol (SMTP)
- Supports Simple Network Time Protocol (SNTP)
- Supports Link Layer Discovery Protocol (LLDP) and LLDP Media Endpoint Discovery (LLDP-MED)
- Supports Microsoft® NLB (Network Load Balancing)
- Supports Gratuitous ARP
- Supports BOOTP/DHCP Client
- Supports DHCP Auto-configuration
- Supports Dynamic Host Configuration Protocol (DHCP) Relay
- Supports PPPoE Circuit Insertion
- Supports IEEE 802.3az compliance
- Supports Standard MIBs like MIBII, Bridge MIB, SNMPv2 MIB, RMON MIB, RMONv2 MIB, Ether-like MIB, 802.3 MAU MIB, 802.1p MIB, RADIUS Authentication Client MIB, Ping & Traceroute MIB, and D-Link Private MIBs

Front Panel Components

The front panel of the Switch features a variety of ports, LED indicators, and a Reset/ZTP button that will be discussed in detail in this section.

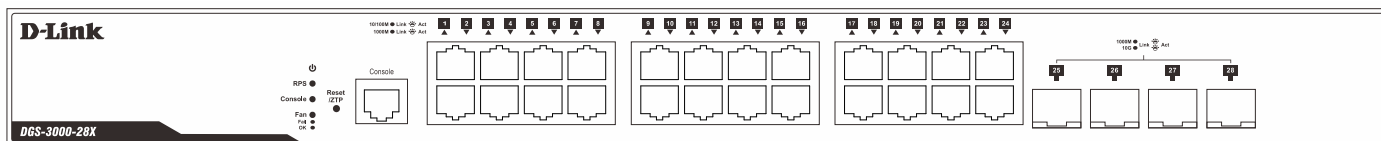


Figure 1-5 Front panel view of a DGS-3000-28X Switch

Ports

The following ports are available on the front panel of switches in this series:

- **DGS-3000-28X:**
 - Twenty-four Copper RJ45 Ports (10/100/1000Mbps)
 - Four SFP/SFP+ Ports (1/10Gbps)
 - One RJ45 Console Port

LED Indicators

The front panel of switches in this series features LED indicators for Power, Console, Link/Act, RPS, and Fan indicators for all the ports. The **DGS-3000-28X** switches are equipped with an additional PoE light, to indicate whether the ports are running in Power over Ethernet mode.

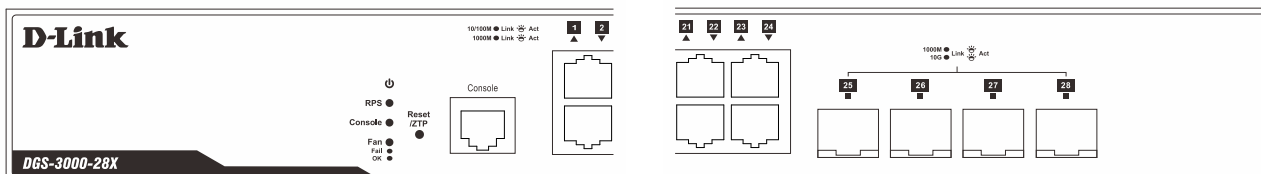


Figure 1-15 LED indicators for a DGS-3000-28X Switch

The following table describes the LED indicators in more detail.

LED	Description
Power	This LED will light green after powering the Switch on to indicate the ready state of the device. The indicator is off when the Switch is no longer receiving power (i.e. powered off).
RPS	This LED will light green if the Redundant Power Supply (RPS) is in use. If the indicator is off, the RPS is not in use.
Console	This LED will blink green during the Power-On Self Test (POST). When the POST is finished, the LED will turn off. The indicator will light steady green when a user is logged in through the console port.
Fan	This LED will light green after the diagnostics have passed with no errors. This LED is steady red when any of the fans fail.
Link/Act LEDs	The Switch has LED indicators for Link and Activity. Copper Ports: The LED will light steady green when there is a secure connection (or link) to a 1000Mbps Ethernet device or steady orange when there is a secure connection (or link) to a 10/100Mbps Ethernet device at any of the copper ports. The

LED will blink green when a 1000Mbps port is active or blink orange when a 10/100Mbps port is active. The LED remains off when there is no link or activity.

SFP Ports: The LED will light steady green when there is a secure connection (or link) to a 1000Mbps Ethernet device at any of the SFP ports. The LED remains off when there is no link or activity.

SFP+ Ports: The LED will light steady green when there is a secure connection (or link) to a 10Gbps Ethernet device or steady orange when there is a secure connection (or link) to a 1Gbps Ethernet device at any of the SFP+ ports. The LED will blink green when a 10Gbps port is active or blink orange when a 1Gbps port is active. The LED remains off when there is no link or activity.

For more information about LED Indicators, refer to **LED Indicators** on page 41.

Reset/ZTP

The Reset/ZTP button is used to restart the Switch, initiate the Zero Touch Provisioning (ZTP) function, or to factory reset the Switch. The press and hold duration of the Reset/ZTP button will determine which of the three functions will be executed. Press and hold the Reset/ZTP button:

- For less than 5 seconds to restart the Switch. Unsaved software modifications will be lost.
- For more than 5 seconds and less than 10 seconds to initiate the ZTP function.
 - The LEDs on the front panel of the Switch will light green when ZTP is processing. After the image and/or configuration file(s) was downloaded successfully, the Switch will restart and use the new image and/or configuration file(s).
 - The LEDs on the front panel of the Switch will light amber when ZTP failed. To recover the LEDs to the normal state, press the Reset/ZTP button again.
- For more than 10 seconds to factory reset the Switch. All software settings will return the factory default settings. After this the Switch will restart.

Rear Panel Components

The rear panel of switches in this series features an AC power socket, power cord clip hole, a DC power RPS port with an ON/OFF toggle switch, a security lock, and an electrical grounding point. The DC power RPS port can be used to either supply power to the Switch from a DC power supply or from an RPS.

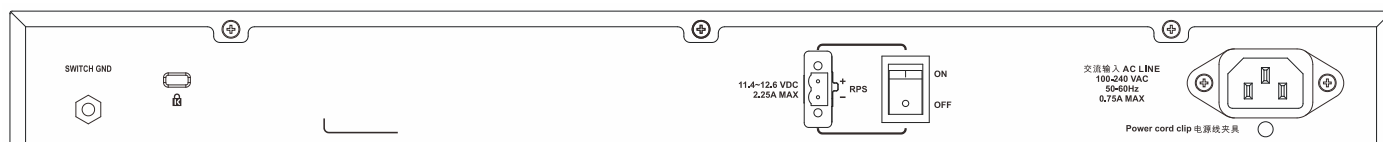


Figure 1-25 Rear panel view of a DGS-3000-28X Switch

The AC power socket is a standard three-pronged connector that supports the power cord. Plug-in the female connector of the provided power cord into this socket, and the male side of the cord into a power outlet. The Switch automatically adjusts the power setting to any supply voltage in the range from 100 to 240 VAC at 50 to 60 Hz.

The electrical grounding point, on the back panel, and the protective ground connector in the AC power socket are connected. We'll simply refer to this shared connection and Ground (GND). Surge protection in the Switch allows for 2 KV surges between the Line/Single-phase/Hot (L) wire and the Neutral (N) wire, 4 KV surges between the L/N wires and Ground (GND), and 6 KV surges between the Ethernet ports and Ground (GND).

An optional external RPS can be plugged into the RPS port. When the internal power fails, this optional external RPS will take over all the power immediately and automatically.

For more information about installing the DC power supply, refer to **Power On (DC Power)** on page 24.

Side Panel Components

The side panels of switches in this series contain heat vents, fans, and rack-mounting screw holes. The heat vents are used to dissipate internal heat and facilitate internal air circulation. Do not block these openings. Leave at least 6 inches of space at the rear and sides of the Switch for proper ventilation. Without proper heat dissipation and air circulation, system components might overheat which could lead to system failure or even severely damaged components.

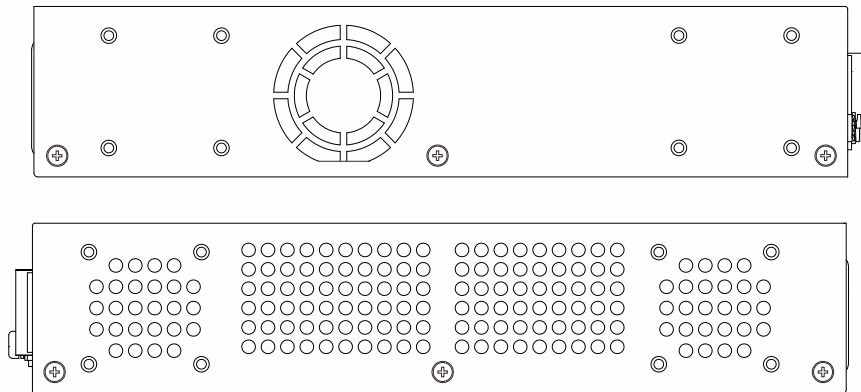


Figure 1-35 Side panels view of a DGS-3000-28X Switch

Smart Fans

Switches in this series include **smart fans** that will automatically change their speed depending on the internal temperature detected by the sensors built-in the Switch's hardware.

The following will explain at what temperature the speed of the fan(s) will change:

Switch	Default On/Off Speed	High Speed	Medium Speed	Low Speed
DGS-3000-28X	5400 RPM	7800 RPM @ above 48 °C	--	5400 RPM @ below 43 °C

Chapter 2 Installation

Installation Guidelines

Installing the Switch without a Rack

Installing the Switch in a Standard 19" Rack

Installing Transceivers into the Transceiver Ports

Power On (AC Power)

Power On (DC Power)

Installing the Redundant Power Supply (RPS)

Installing the RPS into a Rack-mount Chassis

Installation Guidelines

When installing this Switch, follow these guidelines:

- Install the Switch in a fairly cool and dry place for the acceptable temperature and humidity operating ranges.
- Visually inspect the power cord and see that it is fully secured to the AC power port.
- The power outlet should be within 1.82 meters (6 feet) of the Switch.
- Make sure that there is 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 site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.



NOTE: Please review the Installation Guidelines above before installing the Switch.

Installing the Switch without a Rack

When installing the switch in an area other than inside a switch rack, like on a desktop, rubber feet can be attached to the bottom panel of the switch. On the bottom panel of the switch, there are clearly marked squares where the rubber feet can be attached. These marked squares are usually found close to the corners of the switch's bottom panel.

Adhesive material is included on the rubber feet. Simply pull away the protective sticker, of each rubber foot and then attach the foot into the appropriately marked square. The rubber feet cushion the switch, protecting the casing from scratches and preventing it from scratching other surfaces.

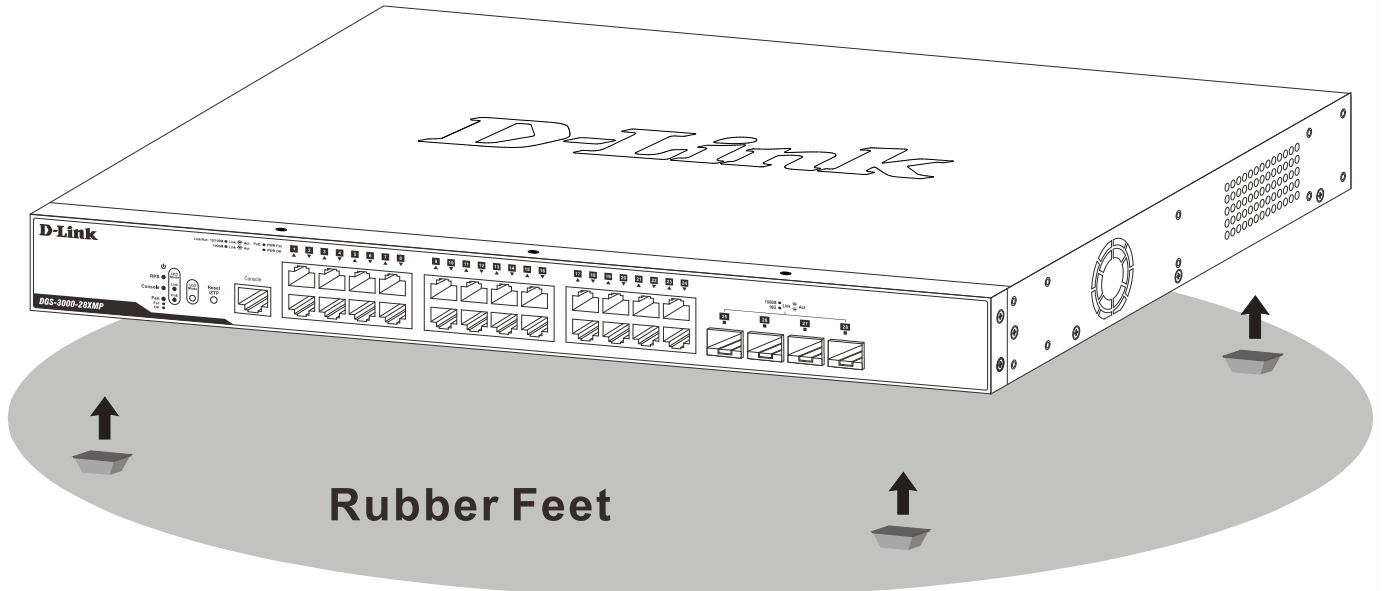


Figure 2-1 Attaching rubber feet to the Switch

Install the Switch on a sturdy, level surface that can support at least 5 kg (11 lb). Do not place heavy objects on the Switch.

Installing the Switch in a Standard 19" Rack

The Switch can be mounted in a standard 19" rack using the rack-mount brackets included in the package. Use the following diagrams as a guide.

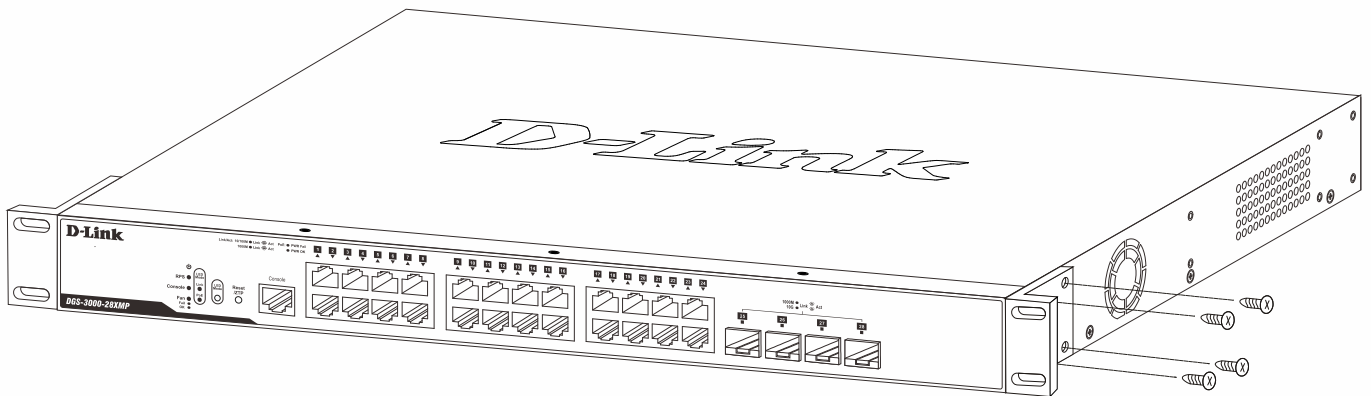


Figure 2-2 Attaching rack-mount brackets to the Switch

Fasten the rack-mount brackets to the Switch using the screws provided. With the brackets attached securely, the Switch can be mounted in a standard 19" rack, as shown below.

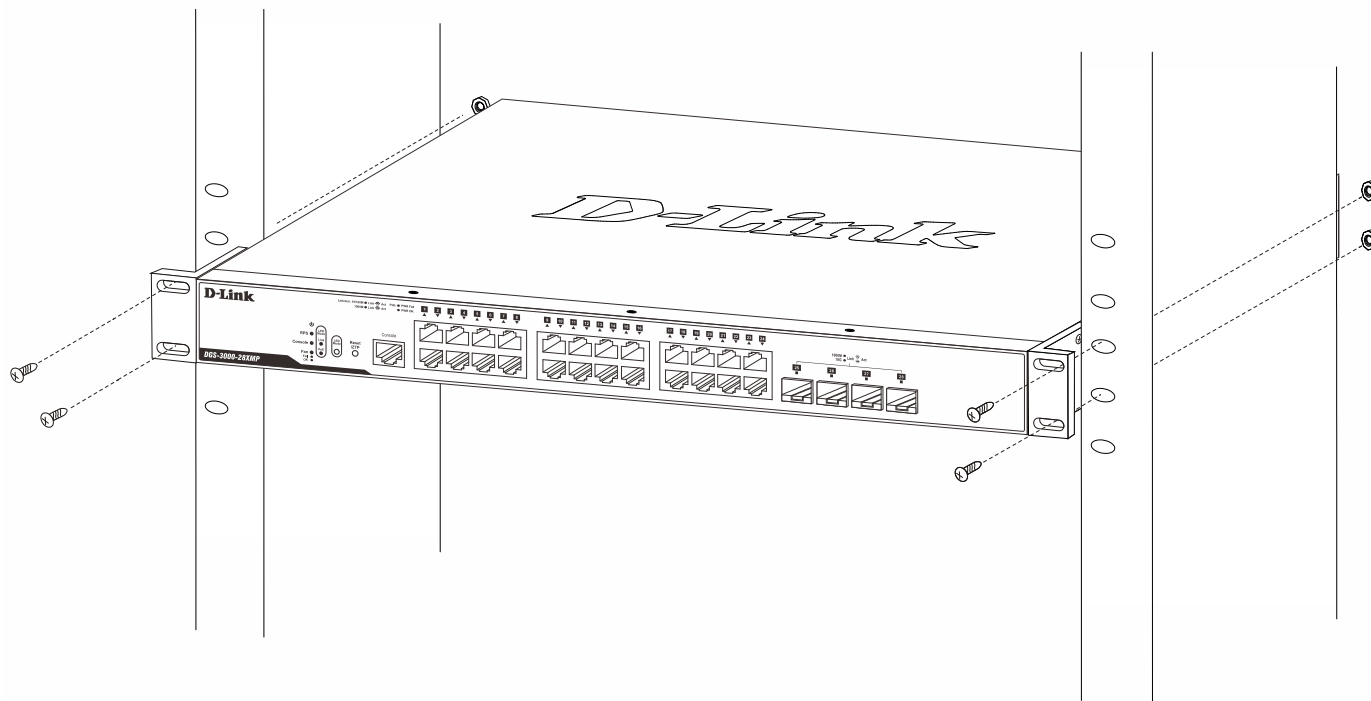


Figure 2–3 Installing the Switch in a Rack



CAUTION: Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack. After installing components in a rack, do not pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and may result in injury.

Installing Transceivers into the Transceiver Ports

The Switch is equipped with Small Form-factor Pluggable (SFP) and Enhanced Small Form-factor Pluggable (SFP+) ports, which are used with fiber-optical transceiver cabling. SFP/SFP+ ports support full-duplex transmissions, auto-negotiation, and can be uplinked with various other switches across the network. The SFP ports support data rates of up to 1Gbps and the SFP+ ports support data rates of up to 10Gbps.

See the figure below for installing an SFP+ transceiver into an SFP+ transceiver port on the Switch.

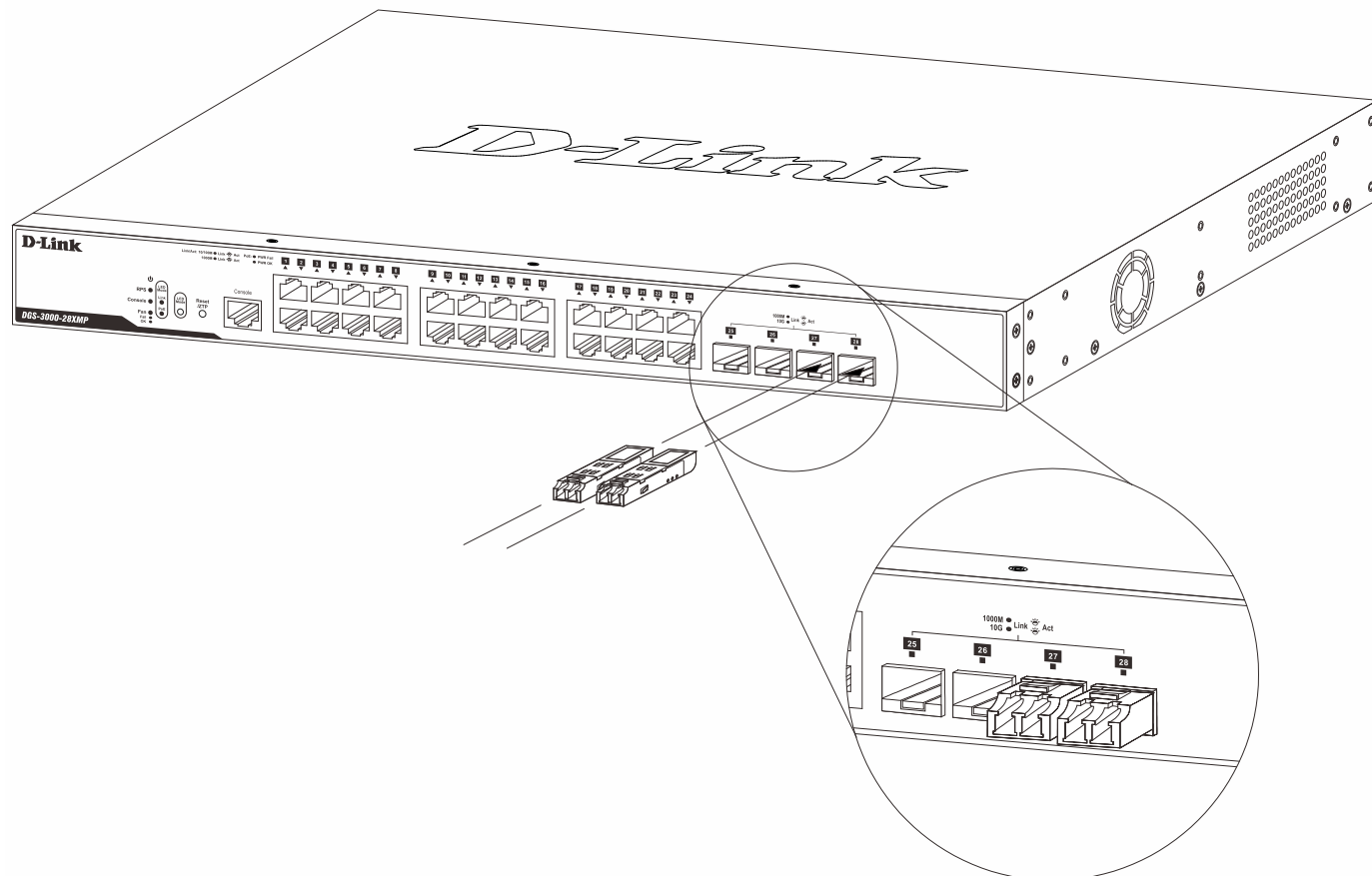


Figure 2-4 Inserting an SFP+ transceiver into an SFP+ transceiver port

For a full list of supported transceivers, compatible with switches in this series, refer to **Port Functions** on page 42.

Power On (AC Power)

Plug one end of the AC power cord into the AC power port of the Switch and the other end into the local power source outlet. After the system powered on, the LED's will blink green to indicate that the system is booting up.

Power Failure (AC Power)

In the event of a power failure, just as a precaution, unplug the power cord from the Switch. After the power returns, plug the power cord back into the power port of the Switch.

Installing the Power Cord Clip

To prevent the accidental removal of the AC power cord, it is recommended to install the power cord clip together with the power cord.

1. With the rough side facing down, insert the Tie Wrap into the hole below the power socket.

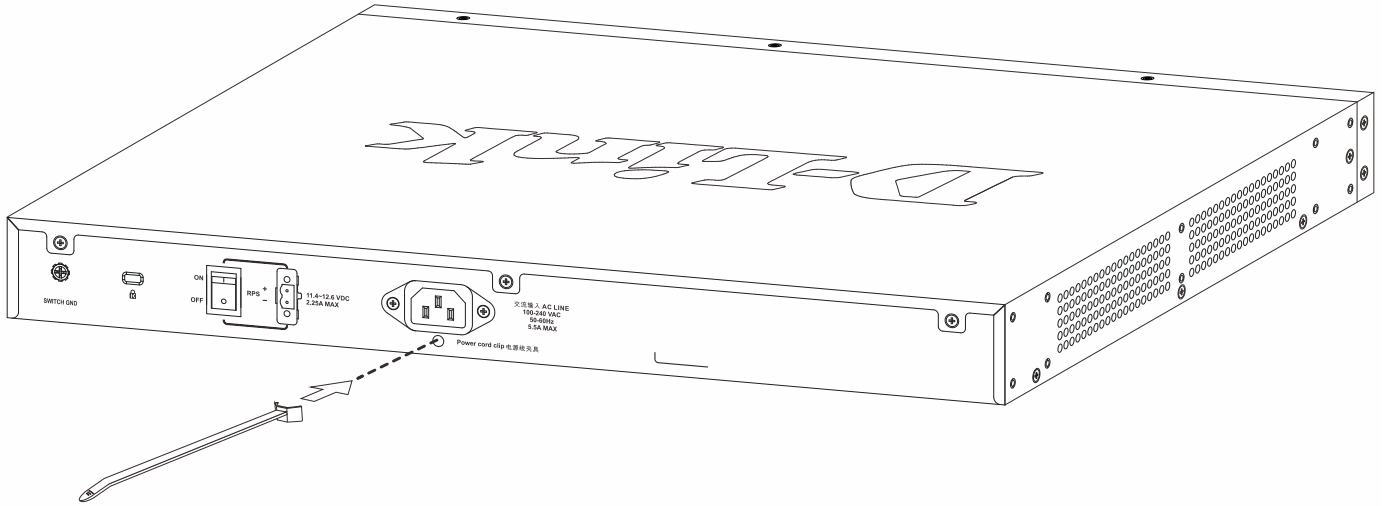


Figure 2-5 Inserting the tie wrap

2. Plug the AC power cord into the power socket of the Switch.

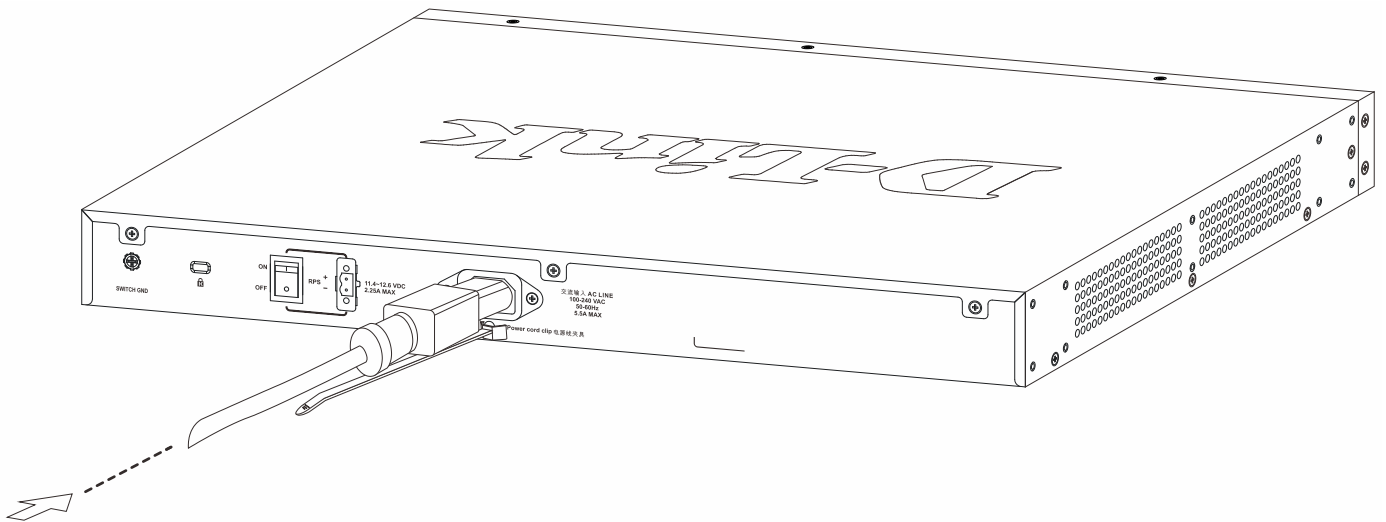


Figure 2-6 Inserting the power cord

3. Slide the Retainer through the Tie Wrap until the end of the cord.

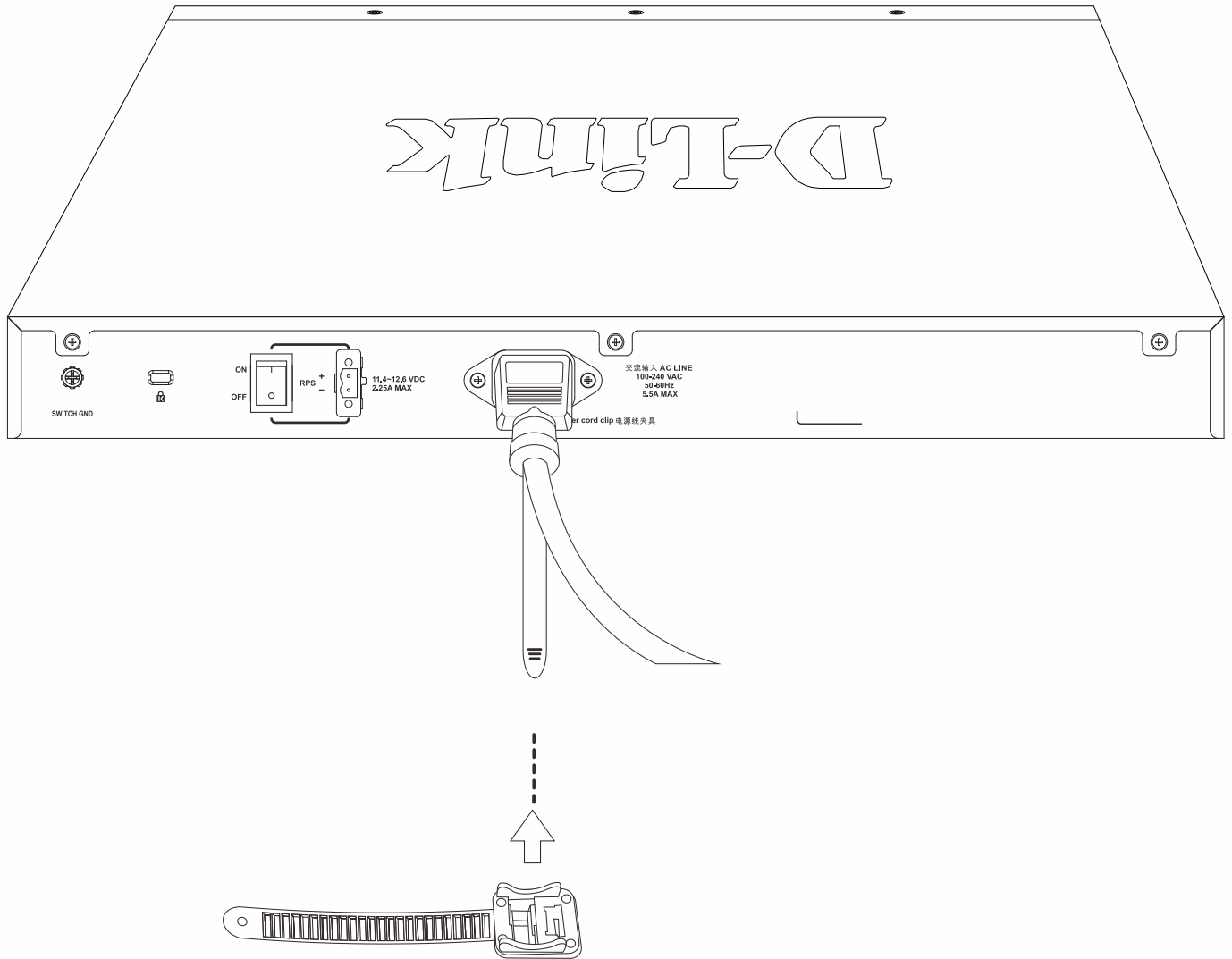


Figure 2-7 Sliding the retainer through the tie wrap

4. Circle the tie of the Retainer around the power cord and into the locker of the Retainer.

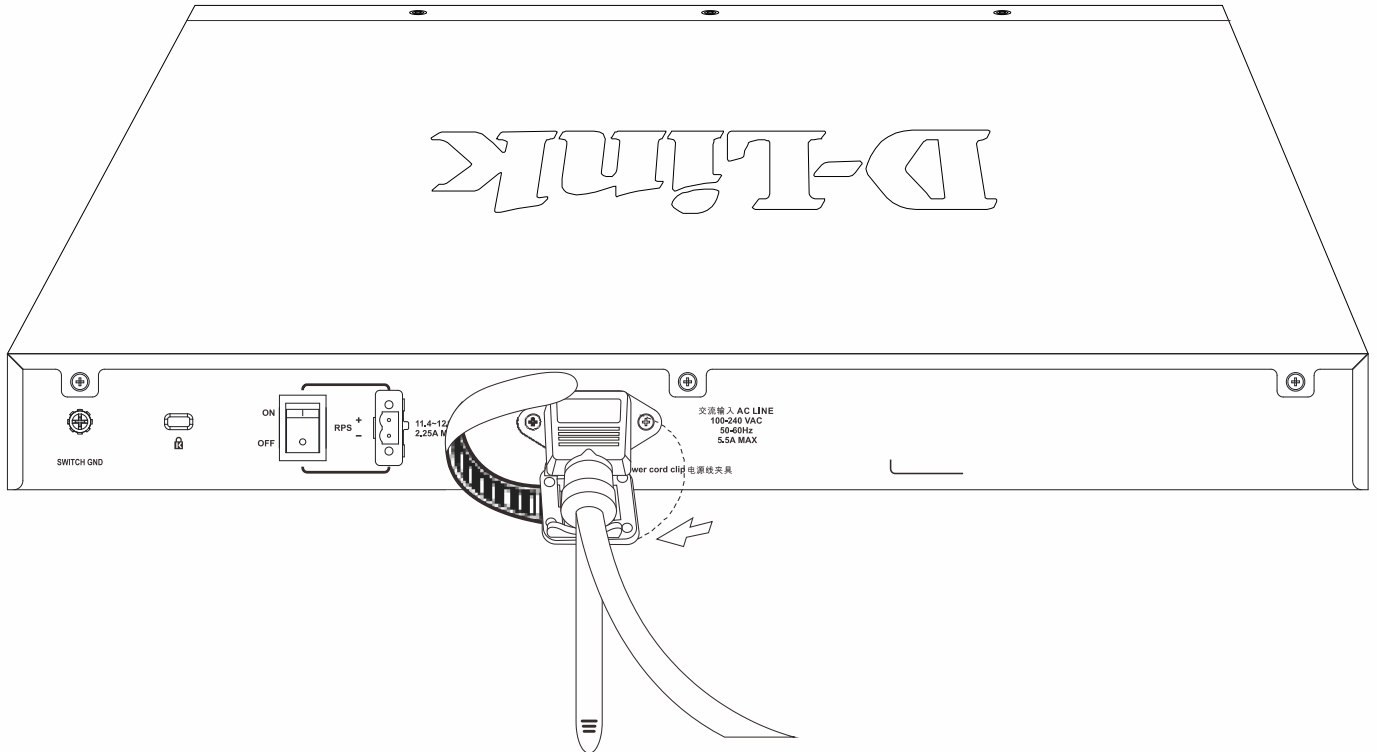


Figure 2-8 Circling around the power cord

5. Fasten the tie of the Retainer until the power cord is secured.

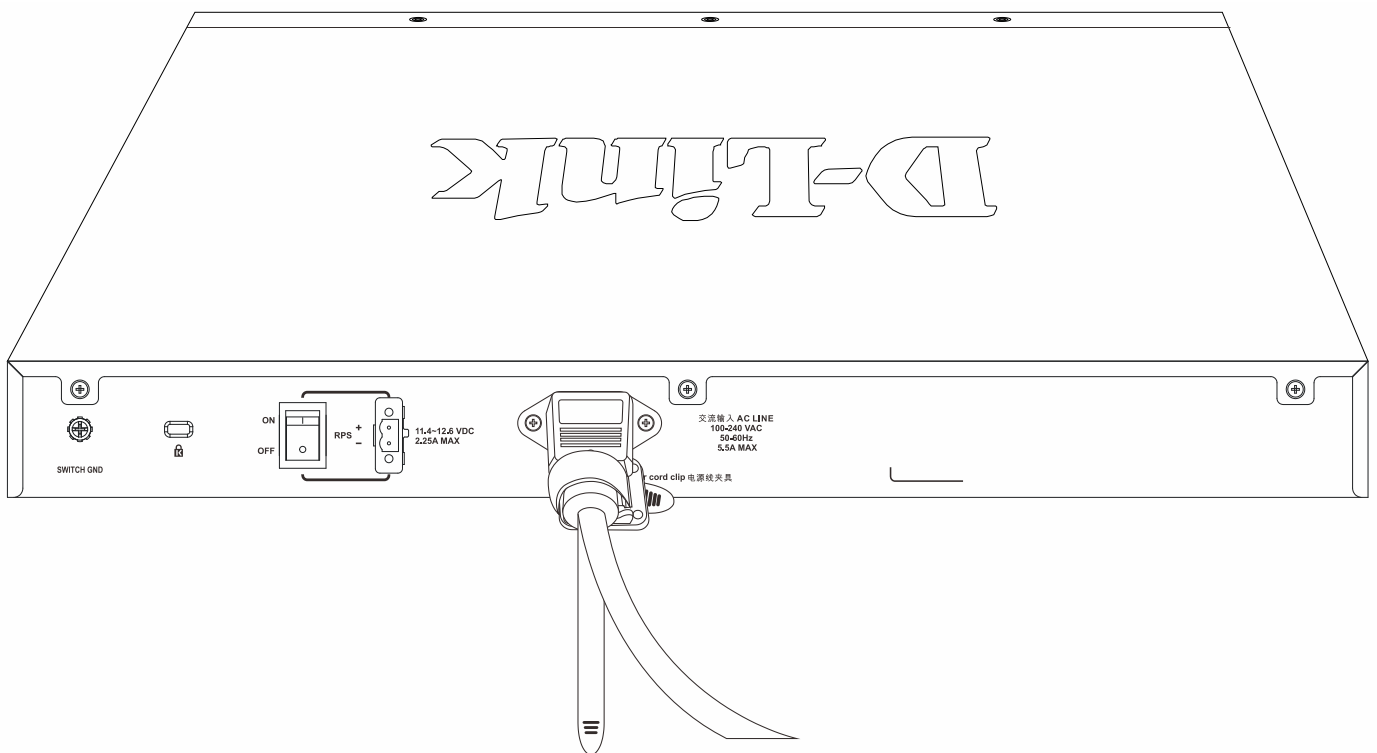


Figure 2-9 Securing the power cord

Power On (DC Power)

The Switch provides a DC power port to connect to any DC power source. The DC power source must meet the following requirements:

- The DC power source's output voltage must be between 11.4V and 12.6V.

- The DC power source's output current rate must be higher than or equal to 2.5A.
- Voltage protection must be applied when the voltage is higher than or equal to 15V.
- Current protection must be applied when the current is higher than or equal to 6A.

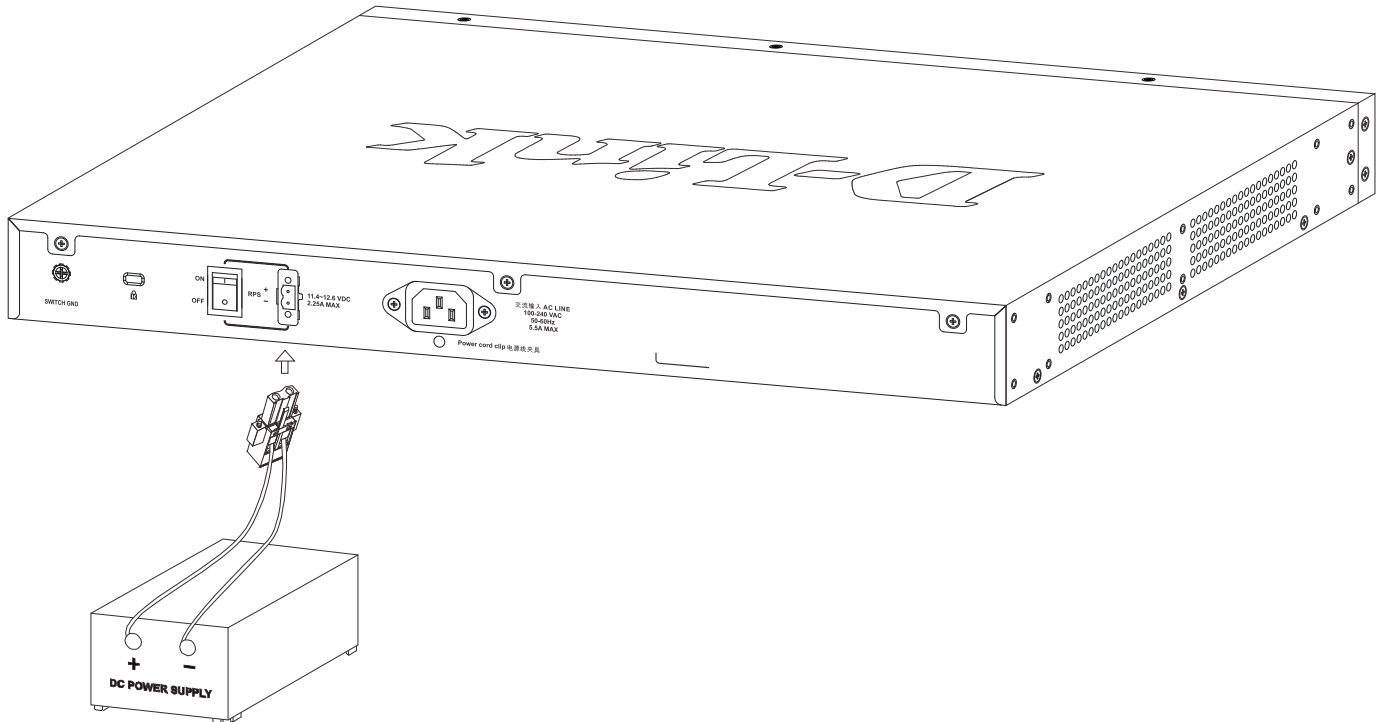


Figure 2-10 Connecting a DC power source to the Switch

1. Make sure that the ON/OFF toggle switch on the rear panel of the Switch is turned off.
2. Connect one end of the DC power cord to the DC power source. Make sure that connection polarity (positive and negative) is correct at both sides before using this feature to avoid any damaged. Connect the other end of the DC power cord to the DC power cord's connector. Insert the DC power cord's connector into the DC power port on the rear panel of the Switch.
3. Turn the ON/OFF toggle switch on.

Installing the Redundant Power Supply (RPS)

The RPS is designed to conform to the wattage requirements of D-Link's Ethernet and Gigabit switches. It is an external RPS unit enclosed in solid metal case with sockets to AC or DC power sources on one end, and connect to a switch's internal power supply on the other end. The RPS provides a low-cost, simple solution to the problem of an

inadvertent failure of the internal power-supply of an Ethernet switch, which can result in the shutdown of that switch, the devices attached to its ports, or an entire network.



CAUTION: Do not connect the RPS to AC power before the DC power cable is connected. This might damage the internal power supply.

Connecting the RPS to the RPS Port

The D-Link RPS can be connected to the RPS port of the Switch using the DC power supply cord, called the DPS-CB150-2PS (HW: B1). It is important to notice that the RPS can supply power to one or two DGS-3000-28X Switches at the same time.

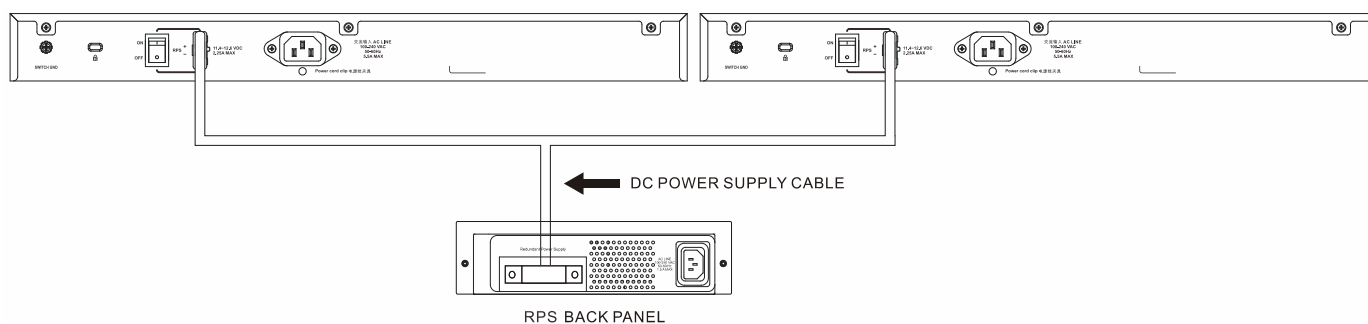


Figure 2-11 Connecting two Switches to the RPS

The following section explains how to connect the RPS to the Switch.

1. Disconnect the Switch from the main AC power source.
2. Insert the 14-pin end of the DC power supply cord into the RPS and the 2-pin end into the receptacle of the RPS port on the Switch.
3. Using a standard AC power cord, connect the RPS to the main AC power source. A green LED on the front panel of the RPS will illuminate to indicate a successful connection.
4. Make sure that the ON/OFF toggle switch on the rear panel of the Switch is turned on.
5. Re-connect the Switch to the AC power source and power on the RPS.

No configuration is needed in the Switch software for this installation.

Installing the RPS into a Rack-mount Chassis

The D-Link RPS can be installed into D-Link RPS rack-mount chassis unit.



CAUTION: Do not connect the RPS to the AC power before the DC power cable is connected. Connecting the AC power before the DC power is connected might damage the internal power supply.

Chapter 3 Connecting the Switch

Switch to End Node
Switch to another Switch
Connecting to a Network Backbone or Server

Switch to End Node

An end node can be any networking device, plugged into any of the networking ports of the Switch, where data transmission ends. Typical end nodes are computers. End nodes are generally outfitted with a 10/100/1000Mbps RJ45 Ethernet Network Interface Card (NIC) that can connect to the Switch using a twisted-pair UTP/STP cable. Connect the end node to any of the copper RJ45 ports of the Switch. The Link/Act LEDs for each Ethernet port turns green or amber when the link is active. A blinking LED indicates packet activity on that port.

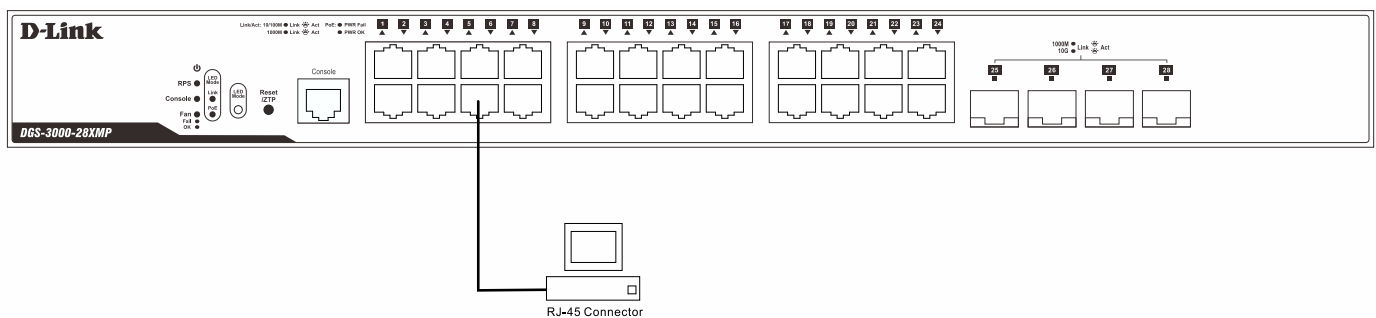


Figure 3–1 Switch to end node connection

Switch to another Switch

There is a great deal of flexibility on how connections are made from the Switch to other switches using the appropriate cabling.

- Connect a 10Mbps switch port to the Switch using a twisted-pair Category 3, 4 or 5 UTP/STP cable.
- Connect a 100Mbps switch port to the Switch using a twisted-pair Category 5 UTP/STP cable.
- Connect a 1000Mbps switch port to the Switch using a twisted pair Category 5e UTP/STP cable.
- Connect a switch supporting a fiber-optic connection to the Switch's SFP/SFP+ ports using SFP/SFP+ transceivers and fiber-optic cabling.

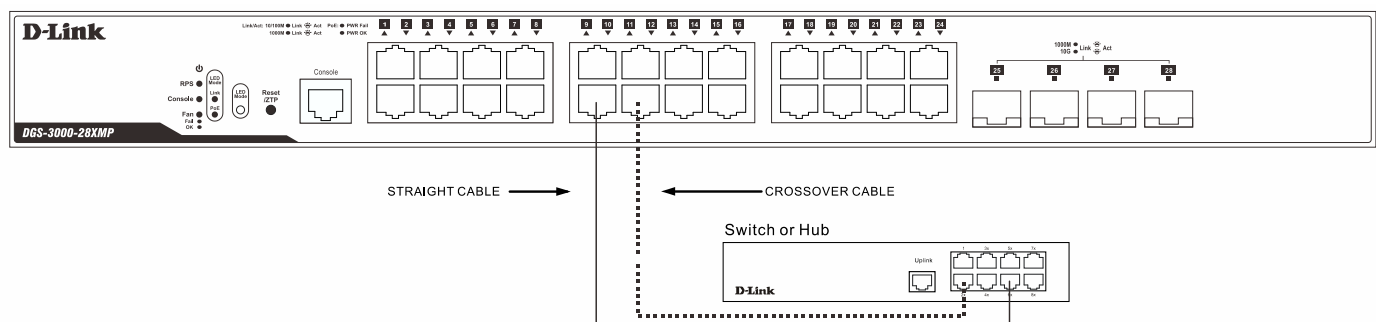


Figure 3–2 Switch to switch connection

Connecting to a Network Backbone or Server

The SFP/SFP+ ports are ideal for connecting a network backbone, server or server farm to the Switch. The SFP/SFP+ ports can operate at speeds of 1/10 Gbps respectively.

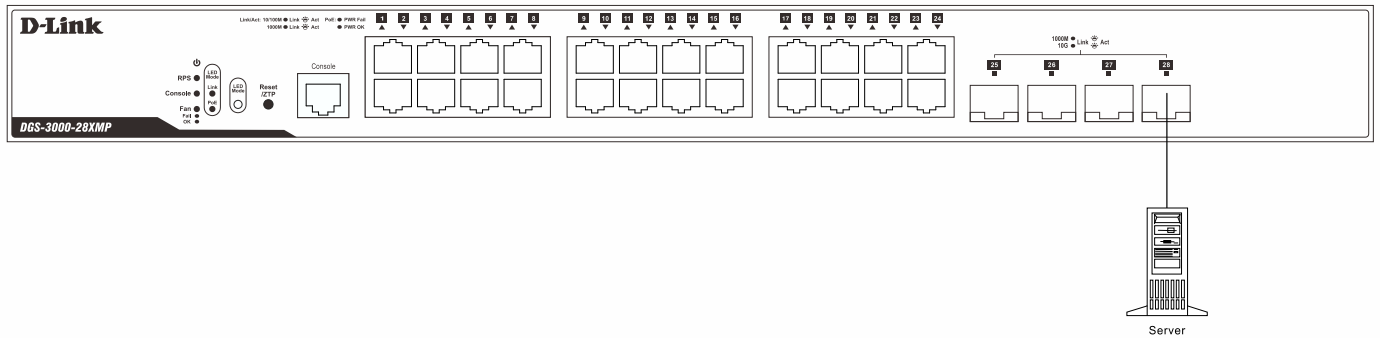


Figure 3-3 Server to Switch Connection

Chapter 4 Introduction to Switch Management

Management Options
Connecting to the Console Port
SNMP Settings

Management Options

This Switch can be managed Out-Of-Band (OOB) through the console port on the front panel of the Switch or in-band using any of the Copper RJ45 or SFP/SFP+ ports on the front panel.

Command Line Interface (CLI) Management

The Command Line Interface (CLI) can be accessed from any computer running terminal emulation software from its serial port when it is connected to the console port. Alternatively, the CLI can also be accessed using Telnet or SSH client software from a computer to any of the Copper RJ45 or SFP/SFP+ ports.

The CLI provides complete access to all Switch management features. When connecting to the Switch by means of Telnet or SSH, the same CLI can be accessed for Switch management.

For more detailed information about the CLI, refer to the *DGS-3000-28X CLI Reference Guide*.

SNMP-based Management

The Switch can also be managed with an SNMP-compatible client program. The Switch supports SNMPv1, SNMPv2c, and SNMPv3. The SNMP agent decodes the incoming SNMP messages and responds to requests with MIB objects stored in the database. The SNMP agent updates the MIB objects to generate statistics and counters.

Web-based User Interface (Web UI) Management

The Web User Interface (Web UI) can be accessed from any computer running web browsing software from its LAN port when it is connected to any of the Copper RJ45 or SFP/SFP+ ports. This Switch also supports SSL.

This management interface is a more graphically representation of the features that can be viewed and configured on this Switch. Most of the features available from the CLI can be accessed through the Web UI. Web browsers like Microsoft's Internet Explorer, Mozilla Firefox or Google Chrome can be used.

For more detailed information about the Web UI, refer to the *DGS-3000-28X Web UI Reference Guide*.

Connecting to the Console Port

The front panel of the Switch features a console port that provides an Out-Of-Band (OOB) connection from a computer to the Switch to access the Switch's Command Line Interface (CLI). The console port is an RJ45 port and requires a special cable that is included with the Switch, to establish the physical connection.

To connect to the console port, the following equipment is needed:

- A computer or terminal with both an RS-232 serial port and the ability to emulate a terminal connection.
- A console cable with a male DB-9 connector on one end and an RJ45 connection on the other. This cable should be included with the Switch. It establishes the physical connection to the console port.

Connect the male DB-9 connector of the console cable to the RS-232 serial port on the computer and insert the RJ45 connector into the console port on the front panel of the Switch.

Configure the terminal emulation software to use the following settings:

- Select the appropriate serial port (For example, COM 1).
- Set the Bits per second (data rate) to 115200 baud.
- Set the data format to 8 data bits, 1 stop bit, and no parity.
- Set the flow control to none.
- Under Properties > Settings, select VT100 as the Emulation mode.
- Select Terminal keys for Function, Arrow and Ctrl keys. Make sure that Terminal keys (not Windows keys) are selected.

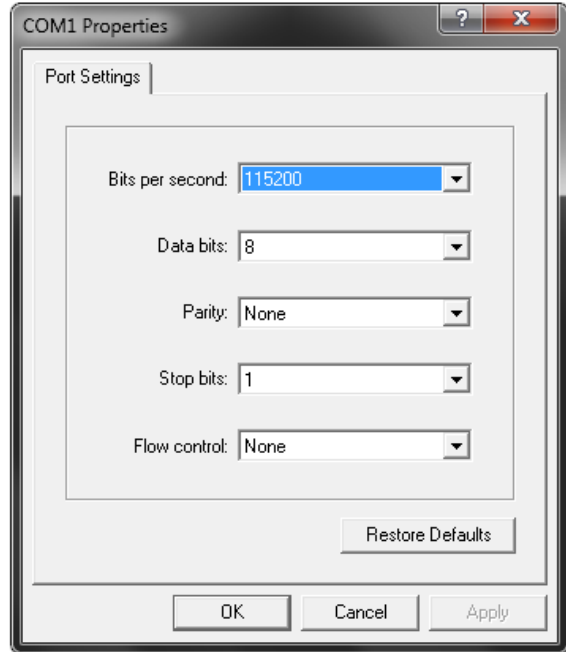


Figure 4-1 HyperTerminal Connection Properties



NOTE: When using HyperTerminal with the Microsoft Windows 2000 operating system, ensure that the Microsoft Windows 2000 Service Pack 2 or later is installed. This service pack allows the use of arrow keys in HyperTerminal's VT100 emulation.



NOTE: Access to the console port can be made at any time while the Switch is on. There is no need to turn the Switch off when plugging the console cable into the console port.

Connecting to the Switch for the First Time

After successfully connecting to the Switch's console port and the Switch was turned on, the boot-up procedure will be displayed, as shown below.

```

Boot Procedure                                     V4.00.001
-----
Power On Self Test ..... 100 %

MAC Address   : F0-7D-68-15-10-00
H/W Version  : B1

Please Wait, Loading V4.00.003 Runtime Image ..... 100 %
UART init ..... 100 %
Starting runtime image
Device Discovery ..... 100 %
Configuration init ..... 100 %

Press any key to login...
    
```

During the boot-up procedure, we can find the PROM version, MAC address, hardware version, and firmware version used by this Switch.

After the Switch was successfully booted up, the username prompt will appear, as shown below.

```
DGS-3000-28X Gigabit Ethernet Switch
Command Line Interface

Firmware: Build 4.00.003
Copyright(C) 2018 D-Link Corporation. All rights reserved.
UserName:
```

By default, there is no login user account configured on this Switch. Simply press the **Enter** key twice and the CLI input cursor (**DGS-3000-28X:admin#**) will be available, as shown below.

```
DGS-3000-28X Gigabit Ethernet Switch
Command Line Interface

Firmware: Build 4.00.003
Copyright(C) 2018 D-Link Corporation. All rights reserved.
UserName:
PassWord:

DGS-3000-28X:admin#
```

Now the switch can be configured.



NOTE: By default, there are no login user accounts configured on this Switch. For security reasons, it is highly recommended to create a login user account for this Switch.

Creating a User Account

This section will discuss how to create a login user account on this Switch. This login details will be applied not only for access to the CLI, but also for access to the Web UI and other interfaces. The same username and password will be used for these connections.

To create a user account, enter the following commands.

```
DGS-3000-28X:admin# create account admin Administrator
Command: create account admin Administrator

Enter a case-sensitive new password:*****
Enter the new password again for confirmation:*****
Success.

DGS-3000-28X:admin#
```

In the above example, the **create account** command was used to create a new user account. An admin account was created with the username of 'Administrator'. Immediately after the command was issued, the new password must be entered and verified. Press **Enter** after every step to continue.

For more information about user account creation and management, refer to the *DGS-3000-28X CLI Reference Guide* and the *DGS-3000-28X Web UI Reference Guide*.

Configuring the IP Address

Each networking node, within a network, must use a unique IP address. This IP address is used to communicate with other networking devices in the network. The IP address of the Switch is also important to be able to access the Web UI of this Switch.

There are two methods in which a Switch can obtain an IP address.

- From a BOOTP or DHCP server located within the local network.
- By manually configuring the IP address of the Switch through the CLI or Web UI.



NOTE: By default, the Switch's IP address is 10.90.90.90 with a subnet mask of 255.0.0.0.

To find out what the IP address of the Switch is, we can issue the **show ipif** command, as shown below.

```
DGS-3000-28X:admin#show ipif
Command: show ipif

IP Interface           : System
VLAN Name              : default
Interface Admin State  : Enabled
DHCPv6 Client State    : Disabled
Link Status            : LinkUp
IPv4 Address           : 10.90.90.90/8 (Manual)
IPv4 State             : Enabled
IPv6 State             : Enabled
IP MTU                 : 1500
DHCP Option12 State    : Disabled
DHCP Option12 Host Name :

Total Entries: 1

DGS-3000-28X:admin#
```

In the above example, the Switch's IP interface information is displayed. The IP address for this switch is 10.90.90.90 and the subnet mask is 255.0.0.0.

To change the IP address of this Switch, we can issue the **config ipif** command, as shown below.

```
DGS-3000-28X:admin# config ipif System ipaddress 192.168.69.2/24
Command: config ipif System ipaddress 192.168.69.2/24

Success.

DGS-3000-28X:admin#
```

In this above example, the Switch's System IP address was changed to 192.168.69.2 and the subnet mask to 255.255.255.0. Note that the CIDR notation method was used to configure the subnet mask. Alternatively, the subnet mask can be typed as per normal if the CIDR notation is unknown. For example, 192.168.69.2/255.255.255.0 would be interpreted the same as 192.168.69.2/24 by the Switch.

For more information about IP address configuration and management, refer to the *DGS-3000-28X CLI Reference Guide* and the *DGS-3000-28X Web UI Reference Guide*.

SNMP Settings

The Simple Network Management Protocol (SNMP) is an OSI Layer 7 (Application Layer) designed specifically for managing and monitoring network devices. SNMP enables network management stations to read and modify the settings of gateways, routers, switches and other network devices. Use SNMP to configure system features for proper operation, monitor performance and detect potential problems in the Switch, switch group or network.

Managed devices that support SNMP include software (referred to as an agent), which runs locally on the device. A defined set of variables (managed objects) is maintained by the SNMP agent and used to manage the device. These objects are defined in a Management Information Base (MIB), which provides a standard presentation of the information controlled by the on-board SNMP agent. SNMP defines both the format of the MIB specifications and the protocol used to access this information over the network.

The Switch supports SNMP versions 1, 2c, and 3. The administrator may specify which SNMP version to use to monitor and control the Switch. The three SNMP versions vary in the level of security provided between the management station and the network device.

In SNMPv1 and SNMPv2c, user authentication is accomplished using 'community strings', which function like passwords. The remote user SNMP application and the Switch SNMP must use the same community string. SNMP packets from any station that has not been authenticated are ignored (dropped).

The default community strings for the Switch used for SNMPv1 and SNMPv2c management access are:

- **public** - Allows authorized management stations to retrieve MIB objects.
- **private** - Allows authorized management stations to retrieve and modify MIB objects.

SNMPv3 uses a more sophisticated authentication process that is separated into two parts. The first part is to maintain a list of users and their attributes that are allowed to act as SNMP managers. The second part describes what each user on that list can do as an SNMP manager.

The Switch allows groups of users to be listed and configured with a shared set of privileges. The SNMP version may also be set for a listed group of SNMP managers. Thus, a group of SNMP managers can be created to view read-only information or receive traps using SNMPv1 while assigning a higher level of security to another group, granting read/write privileges using SNMPv3.

Using SNMPv3 individual users or groups of SNMP managers can be allowed to perform or be restricted from performing specific SNMP management functions. The functions allowed or restricted are defined using the Object Identifier (OID) associated with a specific MIB. An additional layer of security is available for SNMPv3 in that SNMP messages may be encrypted.

Traps

Traps are messages that alert network personnel of events that occur on the Switch. The events can be as serious as a reboot (someone accidentally turned OFF the Switch), or less serious like a port status change. The Switch generates traps and sends them to the trap recipient (or network manager). Typical traps include trap messages for Authentication Failure, Topology Change and Broadcast\Multicast Storm.

Management Information Base (MIB)

The Switch in the Management Information Base (MIB) stores management and counter information. The Switch uses the standard MIB-II module. Consequently, values for MIB objects can be retrieved from any SNMP-based network management software. In addition to the standard MIB-II, the Switch also supports its own proprietary enterprise MIB

as an extended Management Information Base. The proprietary MIB may also be retrieved by specifying the MIB's Object Identifier. MIB values can be either read-only or read-write.



NOTE: For customers interested in D-View, D-Link Corporation's proprietary SNMP management software, go to <http://dview.dlink.com.tw/> and download the software and manual.

Chapter 5 Web-based Switch Configuration

Introduction

Logging into the Web UI

Web-based User Interface (Web UI)

Introduction

Most software functions of the Switch can be managed, configured, and monitored via the embedded HTML Web-based User Interface (Web UI). Management can be done on the Switch from remote stations anywhere on the network through a standard web browser. The web browser acts as a universal access tool and can communicate directly with the Switch using the HTTP or HTTPS (SSL) protocol.

The following web browsers are supported:

- Internet Explorer (version 7 and later)
- Firefox
- Google Chrome
- Safari

Logging into the Web UI

To begin managing the Switch, simply run the web browser installed on the computer and enter the IP address of the Switch in the web browser's address bar and press **Enter**. The web browser should translate this to an HTTP request, for example, `http://10.90.90.90`.

After pressing **Enter**, the following authentication window should appear, as shown below.



The screenshot shows a web browser window titled "Connect to 10.90.90.90". The window has a blue header bar with a key icon on the left. Below the header, there are three input fields: "User Name", "Password", and "Language" (set to "English"). At the bottom, there are two buttons: "Login" and "Reset".

Figure 5–1 Web UI Login Window

When connecting to the Web UI of the Switch for the first time, leave the User name and Password fields blank and click **OK** since there are no login user accounts created by default on this switch. This will open the Web UI.

Web-based User Interface (Web UI)

The Web UI provides access to various Switch configuration and management windows. It allows the user to view performance statistics, and permits graphical monitoring of the system's status.

Areas of the Web UI

After logging into the Switch's Web UI, the following page will be displayed. The Web UI can be divided up into three distinct areas, and they are described in more detail in the table below.

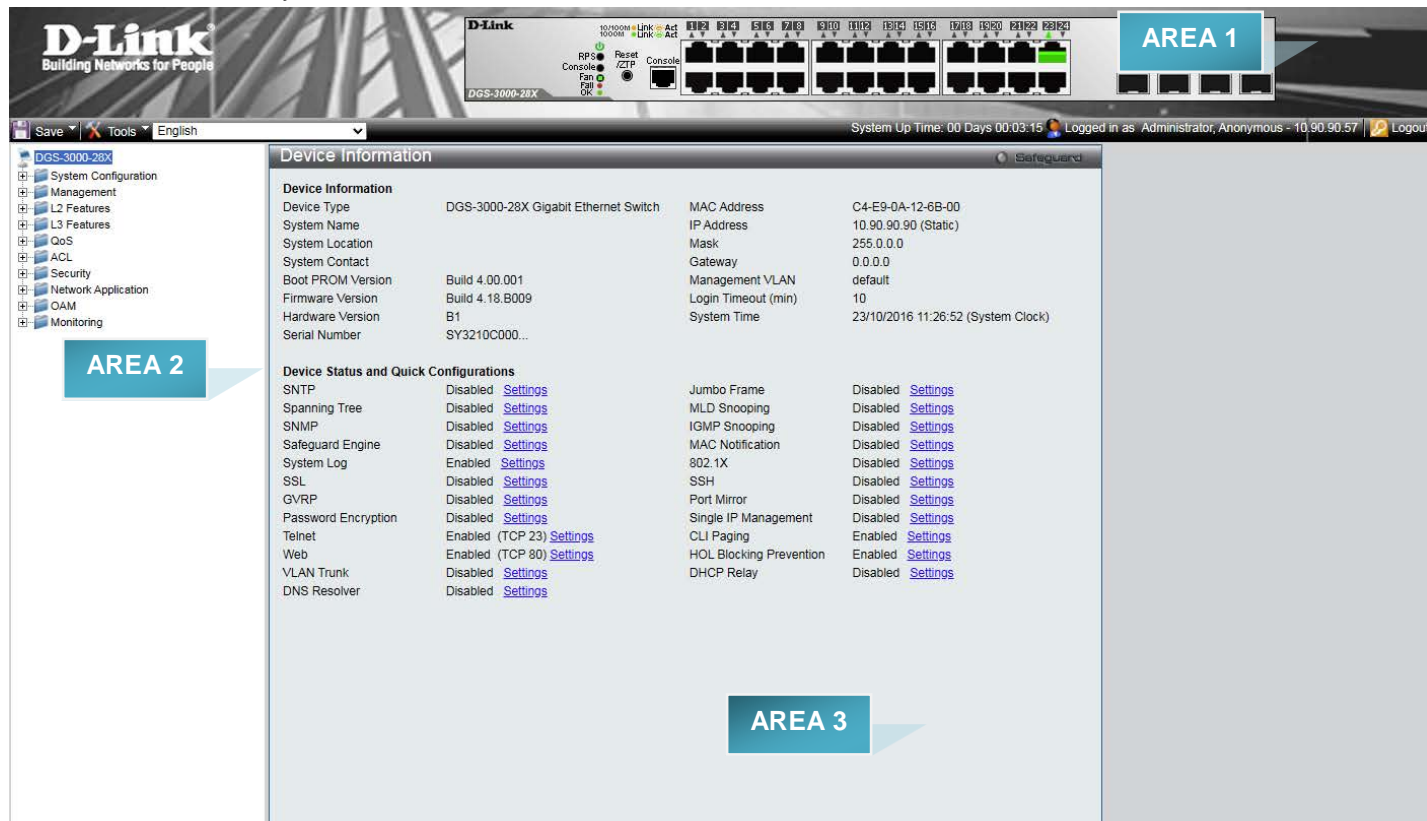


Figure 5–2 Main Web UI Window

Area	Function
AREA 1	In this area a graphical near real-time image of the front panel of the Switch is displayed. This area displays the Switch's ports and expansion modules and shows port activity, depending on the specified mode. Some management functions, including port monitoring are accessible here. Click the D-Link logo to go to the D-Link Website.
AREA 2	In this area, folders and window links are available for selection. Software features, that can be configured or monitored on this Switch, are grouped together in folders based on protocol and feature categories. Selecting a window link in this area, will change the display window of area 3.
AREA 3	In this area physical configuration, management, and monitoring can be done to software features available in the Web UI of this Switch.

Web Pages

In area 2, mentioned above, the following main folders will be available for selecting.

Folder Name	Description
System Configuration	In this folder features regarding the Switch's configuration can be viewed and configured.
Management	In this folder features regarding the Switch's management can be viewed and configured.
L2 Features	In this folder features regarding the Layer 2 functionality of the Switch can be viewed and configured.
L3 Features	In this folder features regarding the Layer 3 functionality of the Switch can be viewed and configured.
QoS	In this folder features regarding the Quality of Service functionality of the Switch can be viewed and configured.
ACL	In this folder features regarding the Access Control List functionality of the Switch can be viewed and configured.
Security	In this folder features regarding the Switch's security can be viewed and configured.
Network Application	In this folder features regarding network applications handled by the Switch can be viewed and configured.
OAM	In this folder features regarding the Switch's operations, administration and maintenance (OAM) can be viewed and configured.
Monitoring	In this folder the Switch's configuration and statistics can be viewed and configured.

Appendix A – Technical Specifications

General

Feature	Description		
Standards	IEEE 802.1AB Link Layer Discovery Protocol IEEE 802.1D-2004 Spanning Tree Protocol IEEE 802.1p Priority Queues IEEE 802.1Q-2005 Virtual LAN IEEE 802.1S Multiple Spanning Tree Protocol IEEE 802.1W Rapid Spanning Tree Protocol IEEE 802.1X Port-based Authentication IEEE 802.3i 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3ad Link Aggregation IEEE 802.3ae 10GBASE-X/10GBASE-R/10GBASE-W IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet IEEE 802.1az Energy-Efficient Ethernet IEEE 802.3x Flow Control support for Full-Duplex mode IEEE 802.3z 1000BASE-X Gigabit Ethernet		
Data Transfer Rates		Half-duplex	Full-duplex
	Ethernet	10 Mbps	20 Mbps
	Fast Ethernet	100 Mbps	200 Mbps
	Gigabit Ethernet	-----	2 Gbps
	10 Gigabit Ethernet	-----	20 Gbps
Network Cables	UTP/STP Category 3, 4, 5 for 10BASE-T UTP/STP Category 5 Enhanced for 1000BASE-T UTP/STP Category.5, 5 Enhanced for 100BASE-TX EIA/TIA-568 100Ω screened twisted-pair (STP) (100 m)		

Physical and Environmental

Feature	Description
Internal Power Supply	DGS-3000-28X: 100-240 VAC, 50/60 Hz, 30 Watts

Feature	Description
Fans	The IC Sensor detects the temperature on the switch automatically, and adjusts the speed. The amount of fans that are installed per Switch are listed below: DGS-3000-28X: 1 Fan
Maximum Power Consumption	DGS-3000-28X: 21.4 Watts (100 V), 22.1 Watts (240 V)
Standby Power Consumption	DGS-3000-28X: 13.2 Watts (100 V), 15.2 Watts (240 V)
Optional RPS	Provides one connector in rear panel to install optional external RPS to enhance the reliability. When the internal power fails, the optional external RPS will take over all the power immediately and automatically.
Security Lock	Provides a Kensington-compatible security lock, on the rear of the Switch, to be able to connect to a secure immovable device. Insert the lock into the notch and turn the key to secure the lock. The lock-and-cable apparatus should be purchased separately.
Real Time Clock (RTC)	Be able to maintain the time setting when the device power is off.
Reset/ZTP Pinhole	A button inside a pinhole on the front panel of the Switch for restarting, factory resetting, and the ZTP function.
Temperature	Operating: -5 °C ~ 50 °C (23 °F ~ 122 °F) Storage: -20 °C ~ 70 °C (-4 °F ~ 158 °F)
Humidity	Operating: 0 % ~ 95 % (non-condensing) Storage: 0 % ~ 95 % (non-condensing)
Dimensions	DGS-3000-28X: 441 mm (W) x 210 mm (D) x 44 mm (H)

Feature	Description
Weight	DGS-3000-28X: 2.000 kg
MTBF	DGS-3000-28X: 652062.308 Hours
Surge/Lightning Protection	IEC EN 61000-4-5 2 KV surges between the Line/Single-phase/Hot (L) wire and the Neutral (N) wire 4 KV surges between the L/N wires and Ground (GND) 6 KV surges between the Ethernet ports and Ground (GND)
EMI Certification	CE Class A, FCC Class A, VCCI Class A, C-Tick Class A, BSMI Class A, Anatel Class A
Safety Certification	UL/cUL, CE, CB

Performance

Feature	Description
Transmission Method	Store-and-forward.
Packet Buffer	1.5 Mbytes per device.
Wire Speed	Wire speed operation on all FE/GE/10GE ports.
Switching Capacity	DGS-3000-28X: 128 Gbps

Feature	Description
64 Byte System Packet Forwarding Rate	DGS-3000-28X: 95.24 Mpps (Mega Packets Per Second)
Priority Queues	8 Priority Queues per port.
MAC Address Table	Supports 8K MAC addresses. Supports 512 Static MAC addresses.
Virtual Stacking / Clustering	Supports D-Link Single IP Management version 1.6. Manage up to 32 devices in a virtual stack with a single IP address.

LED Indicators

Location	LED Indicative	Color	Status	Description
Per Device	Power	Green	Solid Light	Power on
			Blinking	Performing System Self-test.
			Light off	Power off
	Console	Green	Solid Light	Console on
			Light off	Console off
	RPS	Green	Solid Light	RPS in use
			Light off	RPS off
	Fan	Green	Solid Light	Diagnostics pass. Normal operation.
Red		Solid Light	Fan failure	
LED per Copper	Link/Act/Speed	Green	Solid Light	When there is a secure connection (or link) to 1000Mbps Ethernet device at

Location	LED Indicative	Color	Status	Description	
RJ45 Port (10/100/1000Mbps)	Mode			any of the ports.	
			Blinking	When there is reception or transmission of data occurring at 1000Mbps.	
			Amber	Solid Light	When there is a secure connection (or link) to 10/100Mbps Ethernet device at any of the ports.
				Blinking	When there is reception or transmission of data occurring at 10/100Mbps.
			Off	Light off	No link
LED per SFP Port (1000Mbps)	Link/Act	Green	Solid Light	When there is a secure connection (or link) to 1000Mbps Ethernet device at any of the ports.	
			Blinking	When there is reception or transmission of data occurring at 1000Mbps.	
			Off	Light off	No link
LED per SFP+ Port (1/10Gbps)	Link/Act	Green	Solid Light	When there is a secure connection (or link) to 10Gbps Ethernet device at any of the ports.	
			Blinking	When there is reception or transmission (i.e. Activity--Act) of data occurring at a 10Gbps port.	
		Amber	Solid Light	When there is a secure connection (or link) to 1Gbps Ethernet device at any of the ports.	
			Blinking	When there is reception or transmission (i.e. Activity--Act) of data occurring at a 1Gbps port.	
		Off	Light off	No link	

Port Functions

Feature	Description
Console Port	RJ45 interface for Out-Of-Band (OOB) CLI configuration.
Copper RJ45 Ports	Compliant with the following standards: <ul style="list-style-type: none"> • IEEE 802.3 compliance • IEEE 802.3u compliance • IEEE 802.3ab compliance • IEEE 802.3az compliance (100/1000Mbps) • Auto-negotiation • Auto MDI/MDIX

Feature	Description
	<ul style="list-style-type: none"> IEEE 802.3x Flow Control support for Full-Duplex mode
SFP Ports	Compliant with the following standards: <ul style="list-style-type: none"> IEEE 802.3u compliance (DGS-3000-28X 1-24 ports) IEEE 802.3z compliance Support Auto-negotiation for full-duplex and flow control operations
	SFP Transceivers Supported: <ul style="list-style-type: none"> DEM-302S-LX (1000BASE-LX, Single-mode, 2km) DEM-310GT (1000BASE-LX, Single-mode, 10km) DEM-311GT (1000BASE-SX, Mutli-mode, 550m) DEM-312GT2 (1000BASE-SX, Multi-mode, 2km) DEM-314GT (1000BASE-LHX, Single-mode, 50km) DEM-315GT (1000BASE-ZX, Single-mode, 80km) DGS-712 (1000BASE-T Copper SFP, 100m)
	WDM Transceivers Supported: <ul style="list-style-type: none"> DEM-302S-BXD/BCU (1000BASE-BX, Single-mode, 2km) DEM-330T/R (1000BASE-BX, Single-Mode, 10km) DEM-331T/R (1000BASE-BX, Single-Mode, 40km)
SFP+ Ports	Compliant with the following standards: <ul style="list-style-type: none"> IEEE 802.3ae compliance IEEE 802.3z compliance
	SFP Transceivers Supported: <ul style="list-style-type: none"> All SFP and WDM transceivers listed in the SFP Ports section (above) will also work in the SFP+ ports.
	SFP+ Transceivers Supported: <ul style="list-style-type: none"> DEM-431XT-DD (10GBASE-SR, 80m: OM1 & OM2 MMF, 300m: OM3 MMF) DEM-431XT (10GBASE-SR (w/o DDM), 80m: OM1 & OM2 MMF, 300m: OM3 MMF) DEM-432XT-DD (10GBASE-LR, 10km) DEM-432XT (10GBASE-LR (w/o DDM), 10km) DEM-433XT-DD (10GBASE-ER, 40km) DEM-433XT (10GBASE-ER (w/o DDM), 40km) DEM-434XT (10GBASE-ZR (w/o DDM), DEM-436XT-BXU (10GBASE-LR BiDi (w/o DDM), 20km, TX: 1270nm, RX: 1330nm) DEM-436XT-BXD (10GBASE-LR BiDi (w/o DDM), 20km, TX: 1330nm, RX: 1270nm)

Feature	Description
	<p>Direct Attached Cables (DAC) with built-in transceivers:</p> <ul style="list-style-type: none"><li data-bbox="639 219 1254 248">• DEM-CB100S (10G, SFP+ to SFP+, DAC, 1m)<li data-bbox="639 271 1254 300">• DEM-CB300S (10G, SFP+ to SFP+, DAC, 3m)<li data-bbox="639 322 1254 351">• DEM-CB700S (10G, SFP+ to SFP+, DAC, 7m)

Appendix B – Cables and Connectors

Ethernet Cable

When connecting the Switch to another switch, a bridge or hub, a normal cable is necessary. Please review these products for matching cable pin assignment. The following diagrams and tables show the standard RJ45 connector and their pin assignments.

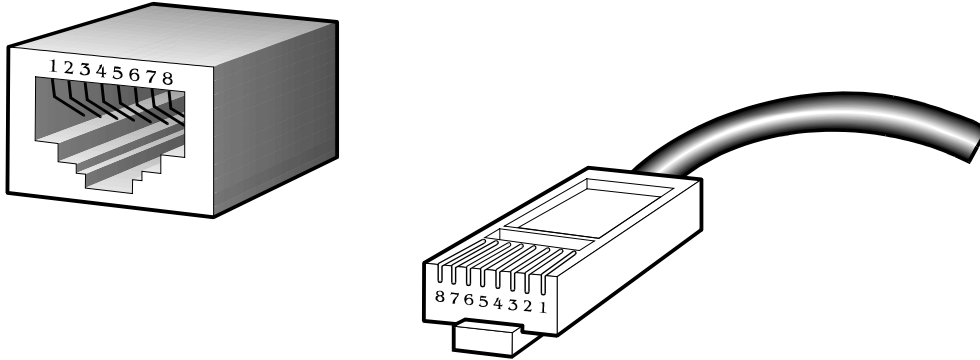


Figure B–1 Standard RJ45 port and connector

RJ45 PIN Assignments:

Pin	MDI-X Port	MDI-II Port
1	RD+ (receive)	TD+ (transmit)
2	RD- (receive)	TD- (transmit)
3	TD+ (transmit)	RD+ (receive)
4	1000BASE-T	1000BASE-T
5	1000BASE-T	1000BASE-T
6	TD- (transmit)	RD- (receive)
7	1000BASE-T	1000BASE-T
8	1000BASE-T	1000BASE-T

Console Cable

When connecting the Switch to a PC, a Console cable is necessary. The following diagrams and tables show the standard Console-to-RJ45 receptacle/connector and their pin assignments.

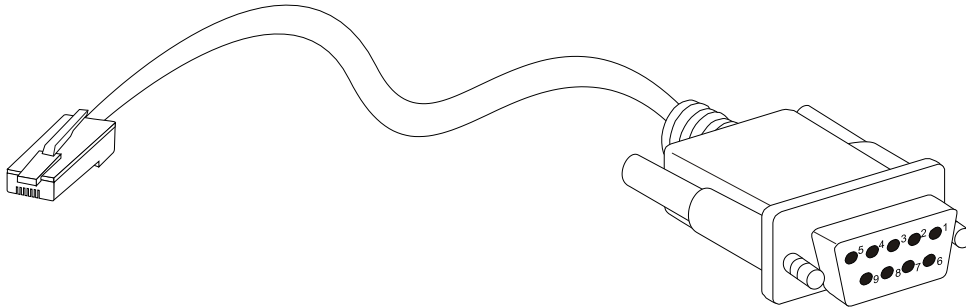


Figure B-2 Console-to-RJ45 Cable

Console-to-RJ45 PIN Assignments:

Pin	Console (DB-9/RS-232)	RJ45
1	Not Used	Not Used
2	RXD	Not Used
3	TXD	TXD
4	Not Used	GND
5	GND (shared)	GND
6	Not Used	RXD
7	Not Used	Not Used
8	Not Used	Not Used

Redundant Power Supply (RPS) Cable

When connecting the Switch to an RPS, an RPS cable is necessary. Please review these products for matching cable pin assignment. The following diagrams and tables show the DPS-CB150-2PS receptacle/connector and their pin assignments.

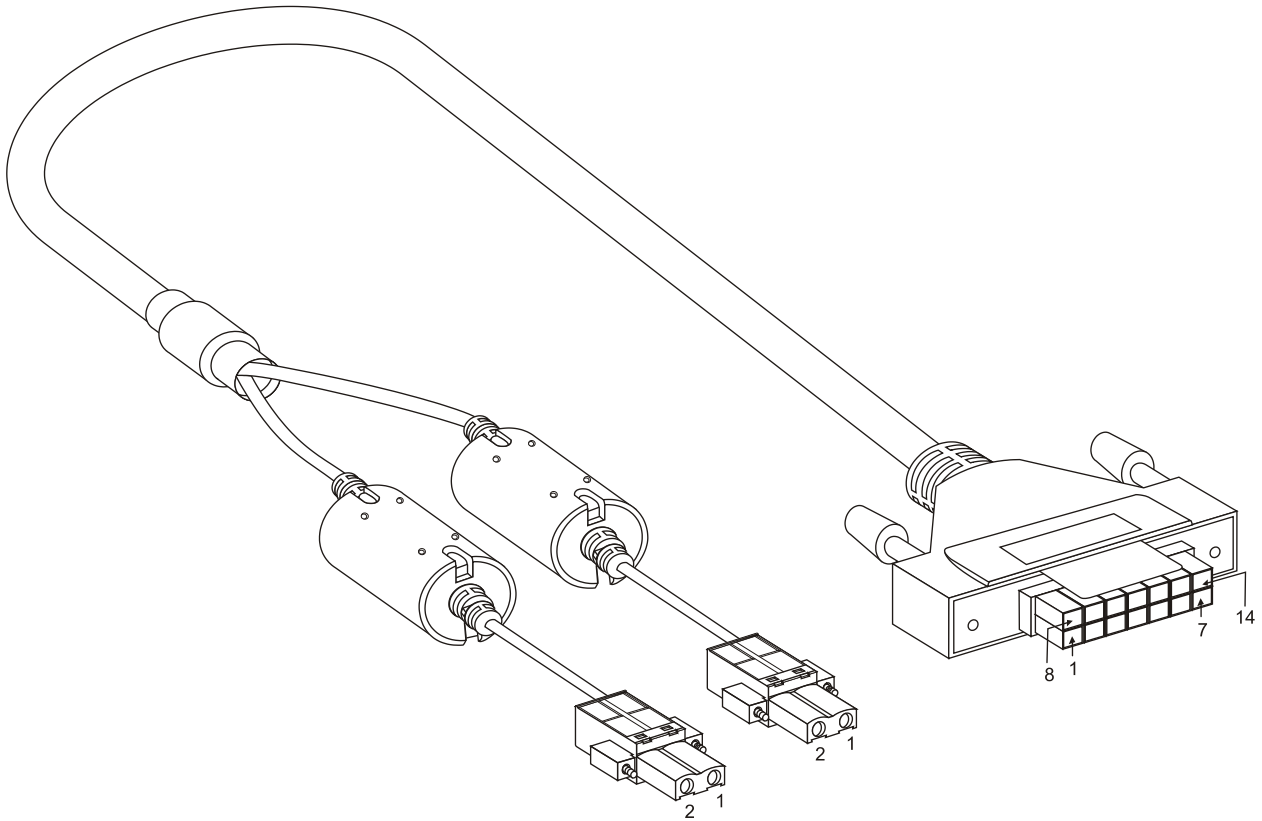


Figure B-3 DPS-CB150-2PS Cable

RPS Cable PIN Assignments:

RPS 14-pin to two 2-pin DC Power Cable Pin Assignments		
Pin	2-pin	14-pin
1	GND	GND
2	+12V	NC
3	-	+12V
4	-	+12V
5	-	+12V
6	-	+12V
7	-	GND
8	-	GND
9	-	Power Good
10	-	Power Present
11	-	NC
12	-	NC
13	-	GND
14	-	GND

Appendix C – ERPS Information

The following switch ports support the ERPS Fast Link Drop Interrupt feature with a recovery time of less than 50 ms:

Model Name	Port 1 to 8
DGS-3000-28X	V

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. ("D-Link") provides this Limited Warranty:

- Only to the person or entity that originally purchased the product from D-Link or its authorized reseller or distributor, and
- Only for products purchased and delivered within the fifty states of the United States, the District of Columbia, U.S. Possessions or Protectorates, U.S. Military Installations, or addresses with an APO or FPO.

Limited Warranty: D-Link warrants that the hardware portion of the D-Link product described below ("Hardware") will be free from material defects in workmanship and materials under normal use from the date of original retail purchase of the product, for the period set forth below ("Warranty Period"), except as otherwise stated herein.

Limited Lifetime Warranty for the product is defined as follows:

- Hardware: For as long as the original customer/end user owns the product, or five (5) years after product discontinuance, whichever occurs first (excluding power supplies and fans)
- Power supplies and fans: Three (3) Year
- Spare parts and spare kits: Ninety (90) days

The customer's sole and exclusive remedy and the entire liability of D-Link and its suppliers under this Limited Warranty will be, at D-Link's option, to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund the actual purchase price paid. Any repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement hardware need not be new or have an identical make, model or part. D-Link may, at its option, replace the defective Hardware or any part thereof with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement hardware will be warranted for the remainder of the original Warranty Period or ninety (90) days, whichever is longer, and is subject to the same limitations and exclusions. If a material defect is incapable of correction, or if D-Link determines that it is not practical to repair or replace the defective Hardware, the actual price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware or part thereof that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product ("Software") will substantially conform to D-Link's then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original retail purchase of the Software for a period of ninety (90) days ("Software Warranty Period"), provided that the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Software Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. The customer's sole and exclusive remedy and the entire liability of D-Link and its suppliers under this Limited Warranty will be, at D-Link's option, to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link's functional specifications for the Software or to refund the portion of the actual purchase price paid that is attributable to the Software. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. Replacement Software will be warranted for the remainder of the original Warranty Period and is subject to the same limitations and exclusions. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

Non-Applicability of Warranty: The Limited Warranty provided hereunder for Hardware and Software portions of D-Link's products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

Submitting A Claim: The customer shall return the product to the original purchase point based on its return policy. In case the return policy period has expired and the product is within warranty, the customer shall submit a claim to D-Link as outlined below:

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same, along with proof of purchase of the product (such as a copy of the dated purchase invoice for the product) if the product is not registered.
- The customer must obtain a Case ID Number from D-Link Technical Support at 1-877-453-5465, who will attempt to assist the customer in resolving any suspected defects with the product. If the product is considered defective, the customer must obtain a Return Material Authorization ("RMA") number by completing the RMA form and entering the assigned Case ID Number at <https://rma.dlink.com/>.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer and shipped to **D-Link Systems, Inc., 17595 Mt. Herrmann, Fountain Valley, CA 92708**. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link. Return shipping charges shall be prepaid by D-Link if you use an address in the United States, otherwise we will ship the product to you freight collect. Expedited shipping is available upon request and provided shipping charges are prepaid by the customer.

D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link's reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

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CE Mark Warning: This is a Class A product. In a residential environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Statement: 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 in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. Operation of this equipment in a residential environment is likely to cause harmful interference to radio or television reception. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For detailed warranty information applicable to products purchased outside the United States, please contact the corresponding local D-Link office.

Product Registration

Register your D-Link product online at <http://support.dlink.com/register/>

Product registration is entirely voluntary and failure to complete or return this form will not diminish your warranty rights.

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Клиенты могут обратиться в группу технической поддержки D-Link по телефону или через Интернет.

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e-mail: support@dlink.ru

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Horario de atención Soporte Técnico en www.dlinkla.com

e-mail: soporte@dlinkla.com & consultas@dlinkla.com

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Caso tenha dúvidas na instalação do produto, entre em contato com o Suporte Técnico D-Link.

Acesse o site: **www.dlink.com.br/suporte**

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台灣手機付費電話 (02) 6600-0123#8715

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週六日及國定假日(不含農曆春節) 10:00~19:00

台灣網站：<http://www.dlink.com.tw>

台灣電子郵件：dssqa_service@dlink.com.tw

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香港電子郵件：service@cn.synnex-grp.com

香港、澳門維修據點查詢請參考<http://www.dlink.com.hk/contact.html> 網頁說明

如果您在其他地區的用戶，請參考D-Link網站www.dlink.com 查詢全球各地分公司的聯絡資訊以取得相關支援服務。

Pelanggan Indonesia

Update perangkat lunak dan dokumentasi pengguna dapat diperoleh pada situs web D-Link.

Dukungan Teknis untuk pelanggan:

Tel: 0800-14014-97 (Layanan Bebas Pulsa)

Dukungan Teknis D-Link melalui Internet:

Pertanyaan Umum: sales@id.dlink.com

Bantuan Teknis: support@id.dlink.com

Website : <http://www.dlink.co.id>

日本のお客様

この度は弊社製品をお買い上げいただき、誠にありがとうございます。

製品に同梱されている保証書の購入元にお問い合わせください。

中国客户

技术支持中心电话：400-629-6688

技术支持中心邮箱：dlink400@cn.dlink.com

各地维修中心地址请登录官方网站查询

网址：<http://www.dlink.com.cn>

400电话工作时间：工作日9:00-19:00；节假日9:00-18:00

Registration Card

All Countries and Regions Excluding USA

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	* Product installed in computer serial No.

(* Applies to adapters only)

Product was purchased from:

Reseller's name: _____

Telephone: _____

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 Cisco Network
Banyan Vines DECnet Pathwork Windows NT Windows 98 Windows 2000/ME Windows XP
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 1000BASE-T Wireless 802.11b and 802.11g wireless 802.11a 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/Chain store/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?

PLEASE
PLACE STAMP
HERE

TO:

D-Link®