



X S T A C K[®]

Hardware Installation Guide

Product Model: **xStack**[®] DGS-3120 Series
Layer 2 Managed Stackable Gigabit Switch
Release 1.02



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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 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。 VCCI-A

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Intended Readers

Typographical Conventions

Notes, Notices, and Cautions

Safety Instructions

General Precautions

Electrostatic Discharge

The **DGS-3120 Series Hardware Installation Guide** contains information for set up and management of the Switch. This manual is intended for network managers familiar with network management concepts and terminology. For all practical reasons the **DGS-3120-24TC**, **DGS-3120-24SC**, **DGS-3120-24SC-DC**, **DGS-3120-24PC**, **DGS-3120-48TC**, and the **DGS-3120-48PC** will be simply referred to as the Switch throughout this manual. All example screenshots are taken from the **DGS-3120-24TC** Switch. In some examples, where we refer to the Power over Ethernet examples, we'll use the **DGS-3120-24PC** Switch.

Typographical Conventions

Convention	Description
[]	In a command line, square brackets indicate an optional entry. For example: [copy filename] means that optionally you can type copy followed by the name of the file. Do not type the brackets.
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 . Bold font is also used to represent filenames, program names and commands. For example: use the copy command .
Boldface Typewriter Font	Indicates commands and responses to prompts that must be typed exactly as printed in the manual.
Initial capital letter	Indicates a window name. Names of keys on the keyboard have initial capitals. For example: Click Enter.
Menu Name > Menu Option	Menu Name > Menu Option Indicates the menu structure. Device > Port > Port Properties means the Port Properties menu option under the Port menu option that is located under the Device menu.

Notes, Notices, and Cautions



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




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



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 cautions and precautions that need to be reviewed and followed.

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 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 spill food or liquids on system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in the troubleshooting guide or contact your trained service provider.
- 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.
- The -48VDC input connector of the DGS-3120-24SC-DC has no protective cage on it. To avoid injury, don't touch the connector when powered.

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, regional 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 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 ready to install the component in the 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.

Chapter 1 Introduction

Switch Description

Features

Ports

Front Panel Components

LED Indicators

Rear Panel Description

Side Panel Description

Switch Description

D-Link's DGS-3120 Series is a high performance member of the D-Link xStack® family. Ranging from 10/100Mbps edge switches to core gigabit switches, the xStack® switch family has been future-proof designed to provide fault tolerance, flexibility, port density, robust security, and maximum throughput, with a user-friendly management interface for the networking professional.

The Switch is the latest member of D-Link's entry level Layer 2 managed switch product line.

The Series features the following list of switches:

- **DGS-3120-24TC:** 24-Port 10/100/1000Base-T with 4 Combo Copper/SFP ports, L2 Stackable Management Switch.
- **DGS-3120-24SC:** 8-Port 10/100/1000Base-T /SFP combo with 16 SFP ports, L2 Stackable Management Switch.
- **DGS-3120-24SC-DC:** 8-Port 10/100/1000Base-T /SFP Combo with 16 SFP ports, L2 Stackable Management Switch.
- **DGS-3120-24PC:** 24-Port 10/100/1000Base-T with 4 Combo Copper/SFP PoE ports, L2 Stackable Management Switch.
- **DGS-3120-48TC:** 48-Port 10/100/1000Base-T with 4 Combo Copper/SFP ports, L2 Stackable Management Switch.
- **DGS-3120-48PC:** 48-Port 10/100/1000Base-T with 4 Combo Copper/SFP PoE ports, L2 Stackable Management Switch.

This cost effective Gigabit Switch provides an affordable solution for administrators to upgrade their networks to high speed Gigabit connections. The dedicated stacking ports offer up to 40G bi-directional bandwidth, which makes the DGS-3120 Series also suitable as a backbone solution for SMBs. The advanced ACL and user authentication functions on the Switch extend the network security coverage from core to the edge. A unique D-Link Safeguard Engine protects the DGS-3120 Series from the threat of worms and viruses, thereby increasing overall reliability, serviceability, and availability

The Switch has a combination of 1000BASE-T ports and SFP ports that may be used in uplinking various network devices to the Switch, including PCs, hubs and other switches to provide a gigabit Ethernet uplink in full-duplex mode. The SFP (Small Form Factor Portable) combo ports are used with fiber-optical transceiver cabling in order to uplink various other networking devices for a gigabit link that may span great distances.

These SFP ports support full-duplex transmissions and can be used with the following transceivers:

- DEM-310GT (1000BASE-LX)
- DEM-311GT (1000BASE-SX)
- DEM-312GT2 (1000BASE-SX)
- DEM-314GT (1000BASE-LH)
- DEM-315GT (1000BASE-ZX)
- DEM-210 (Single Mode 100BASE-FX)

- DEM-211 (Multi Mode 100BASE-FX)
- DGS-712 (1G Copper, 1000BASE-T)

WDM transceivers supported include:

- DEM-330T (TX-1550/RX-1310 nm)
- DEM-330R (TX-1310/RX-1550 nm)
- DEM-331T (TX-1550/RX-1310 nm)
- DEM-331R (TX-1310/RX-1550 nm)
- DEM-220T (100BASE-BX-D, TX-1550/RX-1310 nm)
- DEM-220R (100BASE-BX-U, TX-1310/RX-1550 nm)

Features

The list below highlights the significant protocols and features supported by the Switch.

- IEEE 802.3
- IEEE 802.3z
- IEEE 802.3x Flow Control in full-duplex compliant
- IEEE 802.3u
- IEEE 802.3ab
- IEEE 802.1p Priority Queues
- IEEE 802.3ad Link Aggregation Control Protocol for up to 32 groups per device, eight ports per group
- IEEE 802.1X Port-based and Host-based Access Control
- IEEE 802.1Q VLAN
- IEEE 802.1D Spanning Tree, IEEE 802.1w Rapid Spanning Tree and IEEE 802.1s Multiple Spanning Tree support
- Jumbo frame to 13K Bytes
- Access Control List: Ingress ACL up to 768 profiles and 1.5K rules and Egress ACL up to 256 profiles and 512 rules
- ISM VLAN of up to five dedicated ISM VLANs, up to 512 multicast address ranges per ISM VLAN
- DHCP local relay
- Single IP Management
- Access Authentication Control utilizing TACACS, XTACACS, TACACS+, and RADIUS protocols
- Compound Authentication
- Power saving mode
- Simple Network Time Protocol (SNTP)
- System Log
- Maximum packet forwarding rate 65.48 million packets per second
- High performance switching engine performs forwarding and filtering at full wire speed up to 88Gps
- Full- and half-duplex for all ports. Full duplex allows the switch port to simultaneously transmit and receive data. It only works with connections to full-duplex-capable end stations and switches. Connections to a hub must take place at half-duplex.
- Unicast, broadcast, and multicast storm control
- Loopback Detection (LBD) v4.0 Trap
- Efficient self-learning and address recognition mechanism enables forwarding rate at wire speed
- Address table: up to 16 K
- Packet buffer memory of up to 2 MByte
- Two stacking ports in the rear of the switch
- VLAN Trunking
- Private VLAN

- Maximum of 4K VLAN groups
- 802.1Q (2005 edition)
- GVRP for 4K VLAN (255 dynamic) groups
- Voice VLAN by MAC address
- VLAN tagging based on PVID
- Up to 1024 MAC-based VLAN entries
- IGMP Snooping v1/v2/v3
- MLD Snooping v1 and v2
- Up to 1024 IGMP/MLD snooping groups
- SNMP v1/v2/v3
- SNMP over IPv6
- Secure Sockets Layer (SSL) v1/v2/v3
- Secure Shell (SSH) v2
- Port Mirroring
- LLDP
- NLB
- Traffic segmentation
- D-Link Safeguard Engine
- Web-based Access Control (WAC)
- MAC-based Access Control (MAC)
- Guest VLAN
- Microsoft® NAP--IPv4 and IPv6, 802.1X NAP, and DHCP NAP
- Database Failover
- RADIUS accounting
- RADIUS authentication for management access
- TACACS+ authentication for management access
- User account privilege for management access—four levels of user accounts
- DHCP server screening
- ARP spoofing prevention
- MIB support for:
 - RFC 1213 MIB II
 - RFC 4188 Bridge MIB
 - RFC 1907 SNMPv2 MIB
 - RFC 2819 RMON MIB
 - RFC 2021 RMONv2 MIB
 - RFC 2571 SNMP MIB, RFC 2572 SNMP MIB, RFC 2573 SNMP MIB
 - RFC 2574 SNMPv3 MIB
 - RFC 2575 VACM for SNMP MIB
 - RFC 2576 SNMPv1, v2 & v3 MIB
 - RFC 2665 Ether-like MIB
 - RFC 4363 P-Bridge MIB and Q-Bridge MIB
 - RFC 2863 IF MIB
 - RFC 2618 RADIUS Authentication Client MIB
 - RFC 2620 RADIUS Accounting Client MIB
 - RFC 2925 Ping and Traceroute MIB
 - Private MIB
 - RFC 4293 IPv6 MIB
 - RFC 4022 TCP MIB
 - LLDP MIB

- LLDP-DOT1-MIB, LLDP-DOT3-MIB
- Provides parallel LED display for port status such as link/act, speed, etc.
- Web-based GUI compatible with most major browsers, including Internet Explorer (version 5.5 and later), Netscape (version 8.0 and later), Mozilla Firefox (version 2.0 and later), Safari (version 4.0 and later), and Google Chrome (version 6.0 and later).

Ports

DGS-3120-24TC:	Twenty-four 10/100/1000BASE-T ports. Four 1000BASE-T/SFP Combo Copper/SFP ports. Two dedicated, high speed stacking ports.
DGS-3120-24SC:	Eight 10/100/1000BASE-T/SFP Combo Copper/SFP ports. Sixteen SFP ports. Two dedicated, high speed stacking ports.
DGS-3120-24SC-DC:	Eight 10/100/1000BASE-T/SFP Combo Copper/SFP ports. Sixteen SFP ports. Two dedicated, high speed stacking ports.
DGS-3120-24PC	Twenty-four 10/100/1000BASE-T PoE ports. Four 1000BASE-T/SFP Combo Copper/SFP PoE ports. Two dedicated, high speed stacking ports.
DGS-3120-48TC:	Fourty-eight 10/100/1000BASE-T ports. Four 1000BASE-T/SFP Combo Copper/SFP ports. Two dedicated, high speed stacking ports.
DGS-3120-48PC	Fourty-eight 10/100/1000BASE-T PoE ports. Four 1000BASE-T/SFP Combo Copper/SFP PoE ports. Two dedicated, high speed stacking ports.

- All the switches are equipt with one RJ-45 Console port (a special console cable with a DB9 interface is provided to connect the Switch to a PC)
- All the switches, except for the DGS-3120-24SC-DC, are equipt with one Redundant Power Supply (RPS) outlet for optional external RPS



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.

Front Panel Components

The front panel of the Switch consists of LED indicators for Power, Console, RPS, Master, S1, S2, Fan, SD, Stack ID, and for Link/Act for each port on the Switch including SFP port LEDs. A separate table below describes LED indicators in more detail. The DGS-3120-24PC and DGS-3120-48PC switches are equipped with an additional PoE light, to indication whether the ports are running in Power over Ethernet mode.

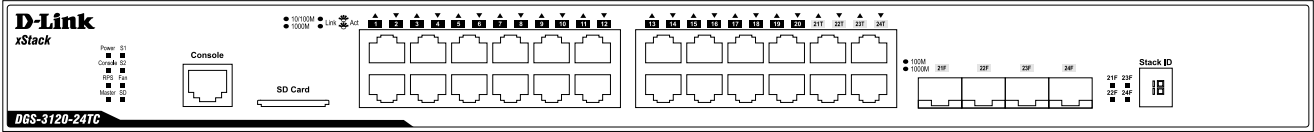


Figure 1- 1. Front panel view of the DGS-3120-24TC

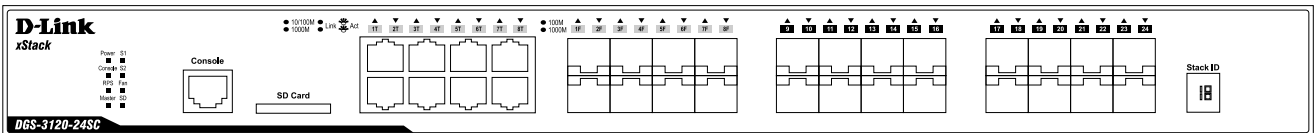


Figure 1- 2. Front panel view of the DGS-3120-24SC

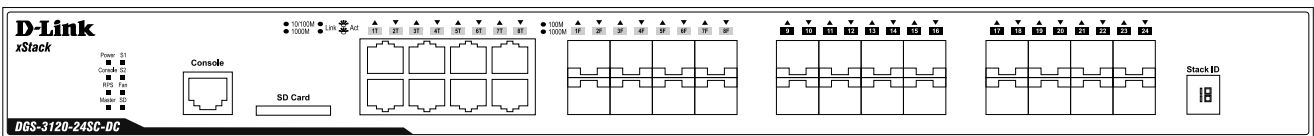


Figure 1- 3. Front panel view of the DGS-3120-24SC-DC

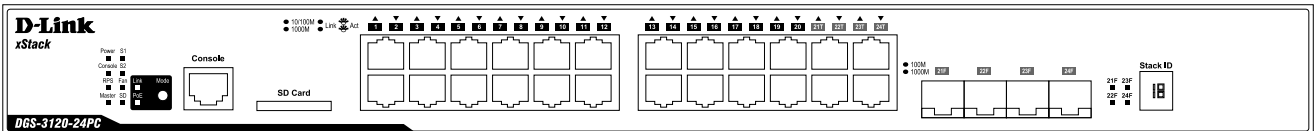


Figure 1- 4. Front panel view of the DGS-3120-24PC

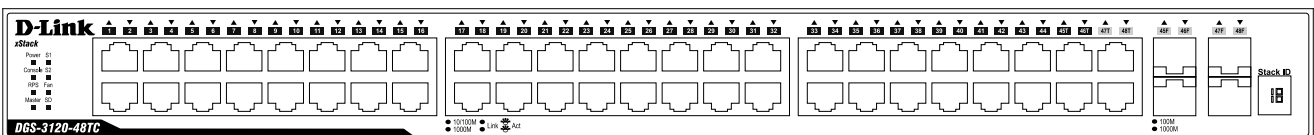


Figure 1- 5. Front panel view of the DGS-3120-48TC

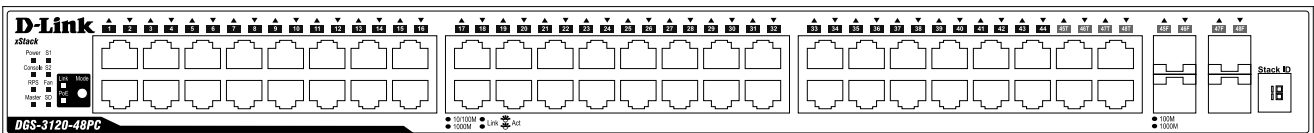


Figure 1- 6. Front panel view of the DGS-3120-48PC

LED Indicators

The Switch front panel presents LED indicators for Power, Console, RPS, Master (stack control), S1, S2, Fan, SD, Stack ID and Link/Act indicators for all ports including the Gigabit Ethernet ports. The DGS-3120-24PC and DGS-3120-48PC switches are equip with an additional PoE light, to indication whether the ports are running in Power over Ethernet mode.

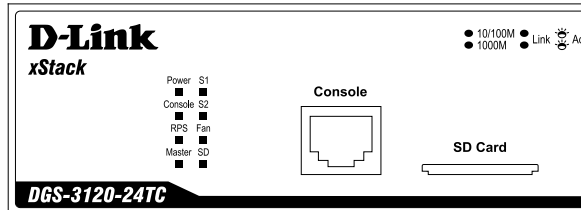


Figure 1- 7. LED indicators for the DGS-3120-24TC

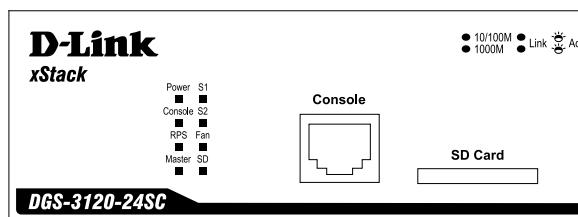


Figure 1- 8. LED indicators for the DGS-3120-24SC

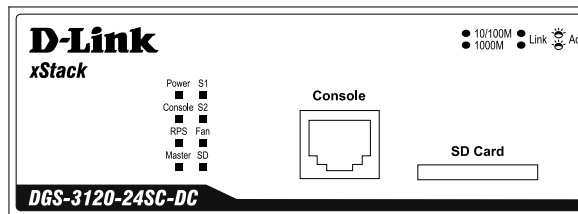


Figure 1- 9. LED indicators for the DGS-3120-24SC-DC

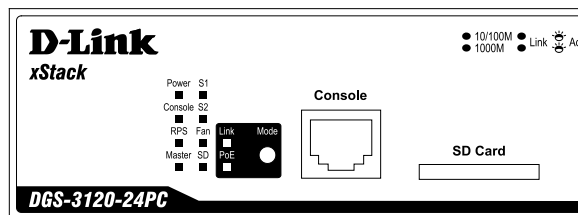


Figure 1- 10. LED indicators for the DGS-3120-24PC

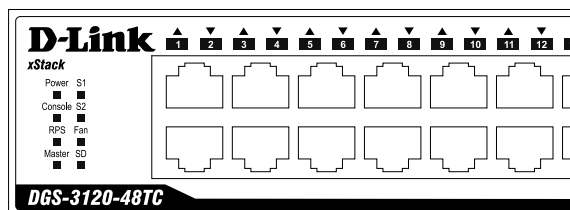


Figure 1- 11. LED indicators for the DGS-3120-48TC

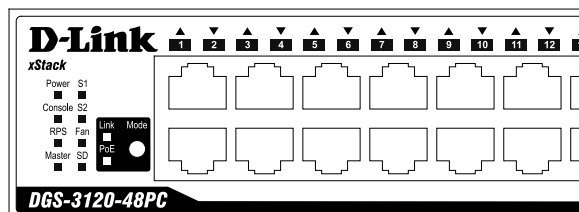


Figure 1- 12. LED indicators for the DGS-3120-48PC

LED	Description
Power	This LED will light green after powering the Switch on to indicate the ready state of the device. The indicator is dark when the Switch is no longer receiving power (i.e. powered off).
Console	This LED will blink green during the Power-On Self Test (POST). When the POST is finished, the LED goes dark. The indicator will light steady green when a user is logged in through the console port.
RPS	This LED will light green if the Redundant Powers Supply is in use. If the indicator is off, the RPS is not in use. When the switch detects that the RPS is connected, the light will be blinking. This LED is not available on the DGS-3120-24SC-DC switch.
Master	For standalone Switches, this will light green. For stacked Switches, a solid Green light indicates this unit is the Master of the stack.
S1	A solid green stacking port 1 LED indicates there is a secure connection (or link) to an Ethernet device at any of the ports. The LED blinks green where there is reception or transmission of data occurring at a port. A darkened LED indicates no link on this stacking module.
S2	A solid green stacking port 2 LED indicates there is a secure connection (or link) to an Ethernet device at any of the ports. The LED blinks green where there is reception or transmission of data occurring at a port. A darkened LED indicates no link on this stacking module.
Fan	This LED blinks red when a fan fails. No light indicates all fans are working normally.
SD	This LED will light green if a Secure Digital (SD) card is plugged in. When the Switch is reading or writing, the indicator will blink green. No light LED means there is no link. A solid red LED indicates SD card failure.
Stack ID	For standalone Switches, this will display number "1". For stacked Switches, this indicates the position in the stacking box ID. The box ID is assigned either by the user (static mode) or by the system (automatic mode). When "1" to "6" is displayed, this indicates the stacking position of the switch. An "H" indicates the device was assigned as the stacking Master. "h" means the device was selected to be the Backup Master. A "G" is displayed when the Safeguard Engine feature enters the exhausted mode.
Link/Act LEDs	The Switch has LED indicators for Link and Activity. The LED will light steady green when there is a secure connection (or link) to a 1000Mbps Ethernet device at any of the ports, or steady orange when there is a secure connection (or link) to a 10/100Mbps Ethernet device at any of the 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 dark when there is no link or activity.
PoE	Only the DGS-3120-24PC and the DGS-3120-48PC switches are equipped with a PoE LED. When this light is on with a solid green light, it means that the corresponding ports are feeding power to the PoE devices plugged in. When this light is on with a solid orange light, it means that the port is in an error condition state. When this light is off, it means that the ports are not supplying power to the devices plugged into the ports.

Rear Panel Description

The rear panel contains an AC power connector, an outlet for an external redundant power supply, and two stacking ports.



Figure 1- 13. Rear panel view of the DGS-3120-24TC



Figure 1- 14. Rear panel view of the DGS-3120-24SC



Figure 1- 15. Rear panel view of the DGS-3120-24SC-DC

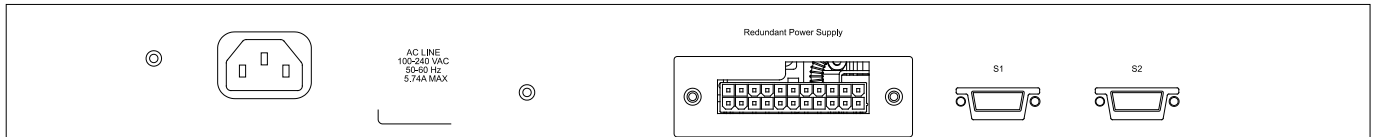


Figure 1- 16. Rear panel view of the DGS-3120-24PC

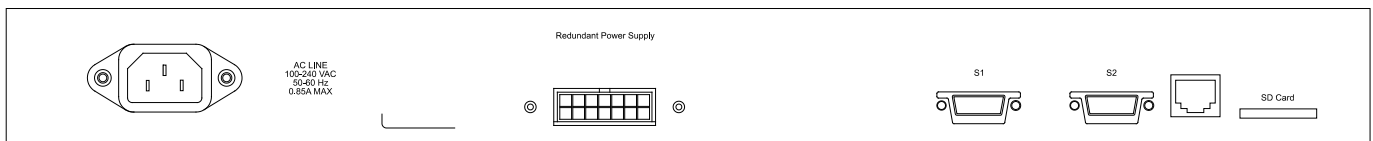


Figure 1- 17. Rear panel view of the DGS-3120-48TC

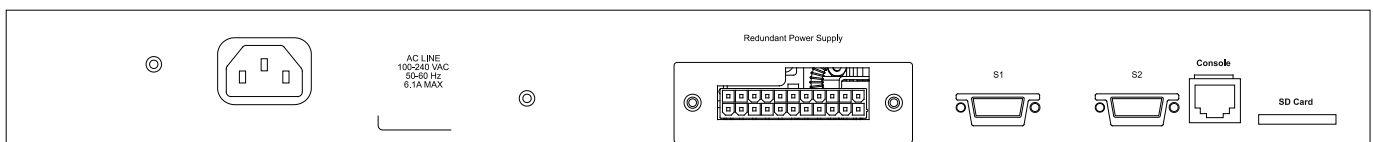


Figure 1- 18. Rear panel view of the DGS-3120-48PC

The AC power connector 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 ~ 240 VAC at 50 ~ 60 Hz. An optional external Redundant Power Supply (DPS-200 for DGS-3120-24TC/SC, DPS-500/DPS-500DC for DGS-3120-48TC, and DPS-700 for DGS-3120-24PC/48PC) can be plugged into the RPS outlet displayed above. When the internal power fails, this optional external RPS will take over all the power immediately and automatically. There are also two stacking ports on the rear panel. These dedicated stacking ports are specially designed for high speed switch stacking. The Switch supports a stacking cable length of up to 3 meters.

Side Panel Description

The system heat vents located on each side dissipate heat. Do not block these openings. Leave at least 6 inches of space at the rear and sides of the Switch for proper ventilation. Be reminded that without proper heat dissipation and air circulation, system components might overheat, which could lead to system failure or even severely damage components.

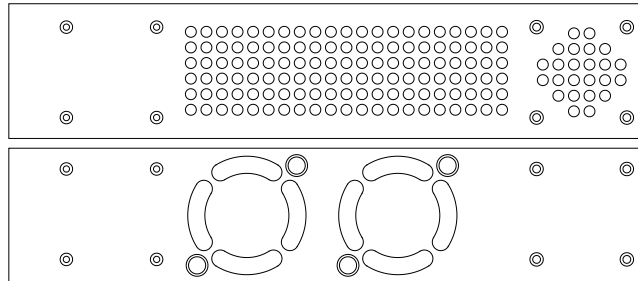


Figure 1- 19. Identical side panels of the DGS-3120-24TC, DGS-3120-24SC, and DGS-3120-24SC-DC

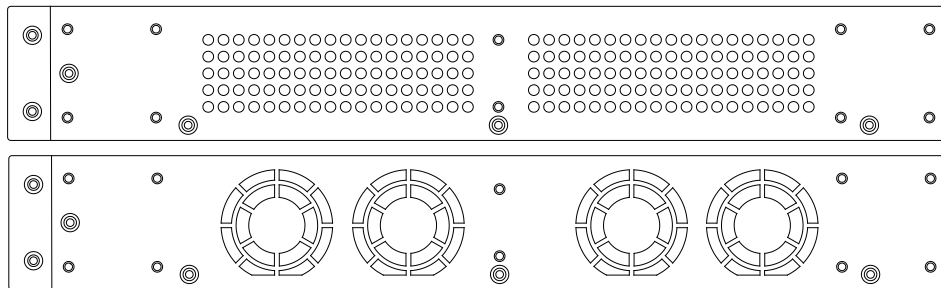


Figure 1- 20. Identical side panels of the DGS-3120-24PC

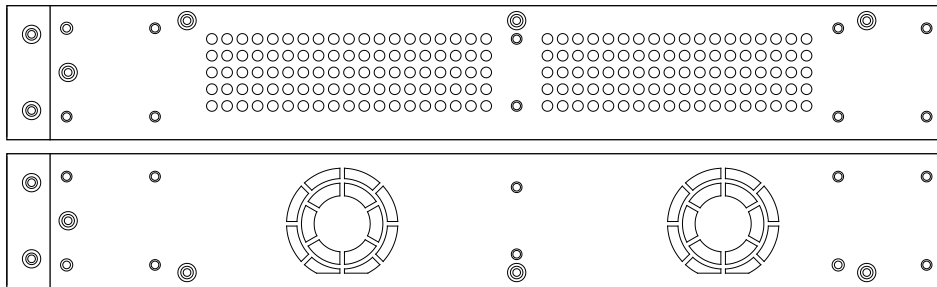


Figure 1- 21. Identical side panels of the DGS-3120-48TC

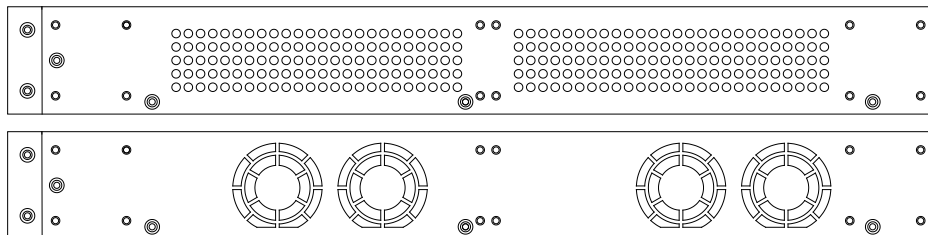


Figure 1- 22. Identical side panels of the DGS-3120-48PC

Chapter 2 Installation

Package Contents

Installation Guidelines

Installing the Switch without a Rack

Rack Installation

Power On

Installing SFP Ports

Package Contents

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

- One DGS-3120 Series Switch
- One Quick Installation Guide
- AC power cord(s)
- One RJ-45 to RS-232 console
- One mounting kit (two brackets and screws)
- Four rubber feet with adhesive backing
- One CD kit for Web UI Reference Guide, CLI Reference Guide, and D-View module

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

Installation Guidelines

Please follow these guidelines for setting up the Switch:

- Install the Switch on a sturdy, level surface that can support at least 13.9 lb. (6.3 kg) 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 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.

Installing the Switch without a Rack

First, attach the rubber feet included with the Switch if installing on a desktop or shelf. Attach these cushioning feet on the bottom at each corner of the device. Allow enough ventilation space between the Switch and any other objects in the vicinity.

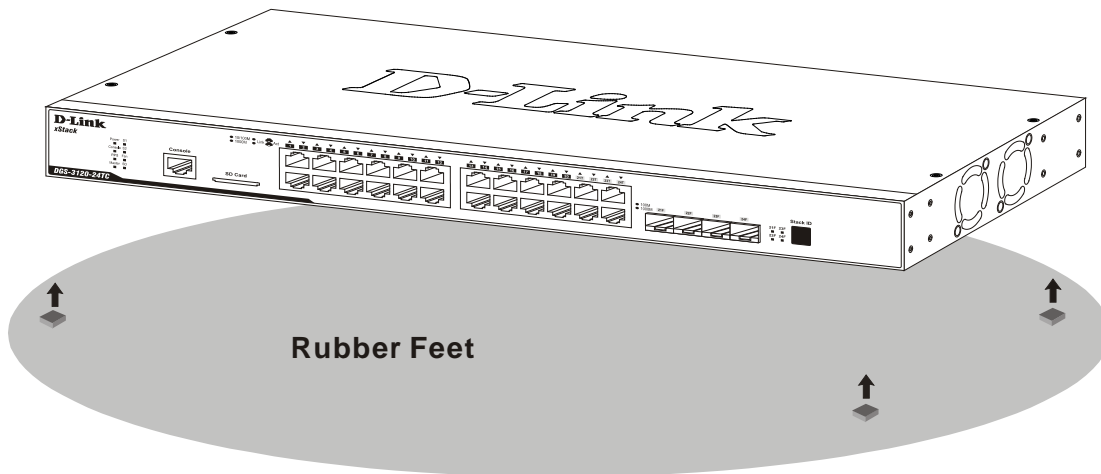


Figure 2- 1. Prepare the Switch for installation on a desktop or shelf

Attaching Brackets to a Switch for Rack Mounting

The Switch can be mounted in a standard 19" rack using the provided mounting brackets. Use the following diagrams as a guide.

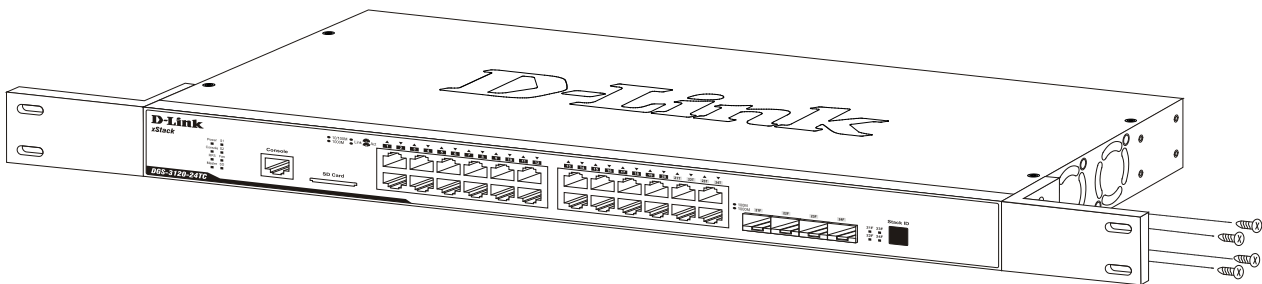


Figure 2- 2. Fasten mounting brackets on the Switch

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



NOTE: Please review the Installation Guidelines above before installing the Switch in a rack. Make sure there is adequate space around the Switch to allow for proper air flow, ventilation, and cooling.

Mounting the Switch in a Standard 19" Rack

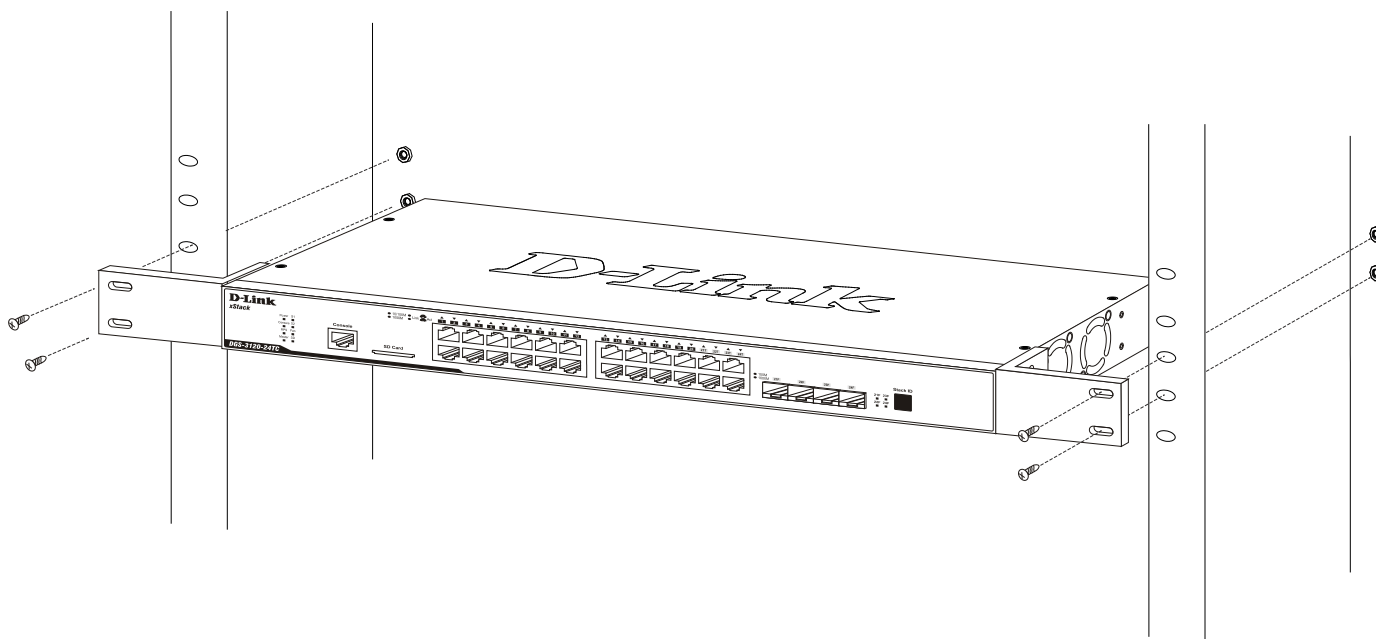


Figure 2- 3. Installing the Switch in a rack

Power On (AC Power)

1. Plug one end of the AC power cord into the power connector of the Switch and the other end into the local power source outlet.
2. After powering on the Switch, the LED indicators will momentarily blink green. This blinking of the LED indicators represents a reset of the system.

Power Failure (AC Power)

For AC power supply units, as a precaution, in the event of a power failure, unplug the Switch. When power has resumed, plug the Switch back in.



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.

Connecting DC Power to the DGS-3120-24SC-DC

Follow the instructions below to connect the DC power supply of the DGS-3120-24SC-DC to the DC power source.

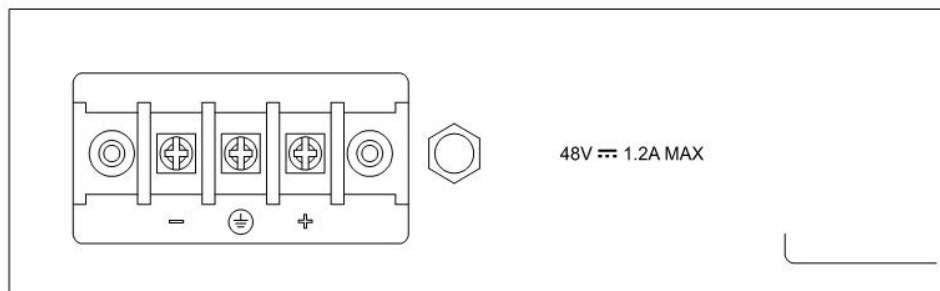


Figure 2 - 1. Close-up view of Power Receptacle

1. The DC power supply has a three-terminal wiring block consisting of a positive (+), a negative (-) and a safety ground terminal.
2. Firmly attach the DC power to the negative and positive contacts on the wiring assembly.
 - a. The negative pole (-) connects to the **-48V** contact.
 - b. The positive pole (+) connects to the **-48V Return** contact.
 - c. If available, an earth ground may be connected to the center contact post.
3. Tighten the contact screws to secure the connection.



NOTE: Use a minimum 18 gauge (AWG) wire. All power connection wiring should conform to the rules and regulations in the National Electrical Code (NEC), as well as any local codes. A branch circuit over current protection must be rated between 2A to 10A.



CAUTION: This equipment must be grounded.



CAUTION: This equipment must be installed and maintained by qualified service personnel only.

Installing SFP Ports

The Switch is equipped with SFP (Small Form Factor Portable) ports, which are to be used with fiber-optical transceiver cabling in order to uplink various other networking devices for a Gigabit link that may span great distances. These SFP ports support full-duplex transmissions, have auto-negotiation and can be used with DEM-310GT (1000BASE-LX), DEM-311GT (1000BASE-SX), DEM-312GT2 (1000BASE-SX), DEM-314GT (1000BASE-LH), DEM-315GT (1000BASE-ZX), and DGS-712 (1G Copper, 1000BASE-T) transceivers. See the figure below for installing the SFP ports in the Switch. In addition, DEM-210 (Single Mode, 100BASE-FX) and DEM-211 (Multi Mode, 100BASE-FX) SFP transceivers are supported. WDM transceivers supported include DEM-330T (TX-1550/RX-1310 nm), DEM-330R (TX-1310/RX-1550 nm), DEM-331T (TX-1550/RX-1310 nm), DEM-331R (TX1310/RX-1550 nm), DEM-220T (100BASE-BX-D, TX-1550/RX-1310 nm), and DEM-220R (100BASE-BX-U, TX-1310/RX-1550 nm).

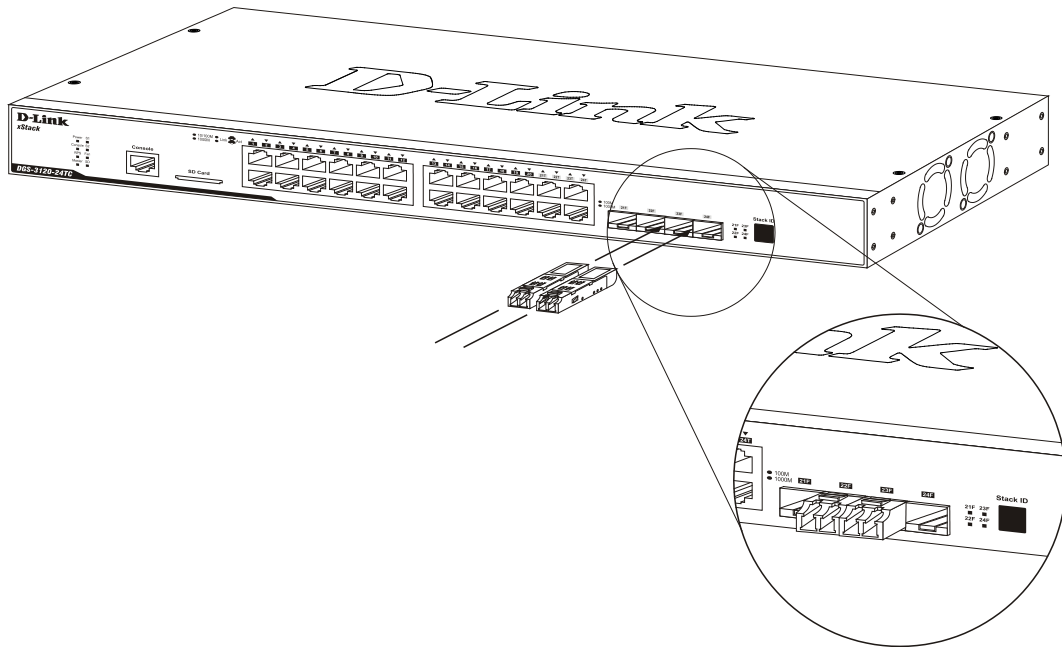


Figure 2- 4. Inserting fiber-optic transceivers into the Switch

Connect to a Redundant Power Supply

The DPS-200 or DPS-500 is connected to the Master Switch using a 14-pin DC power cable. A standard, three-pronged AC power cable connects the redundant power supply to the main power source.

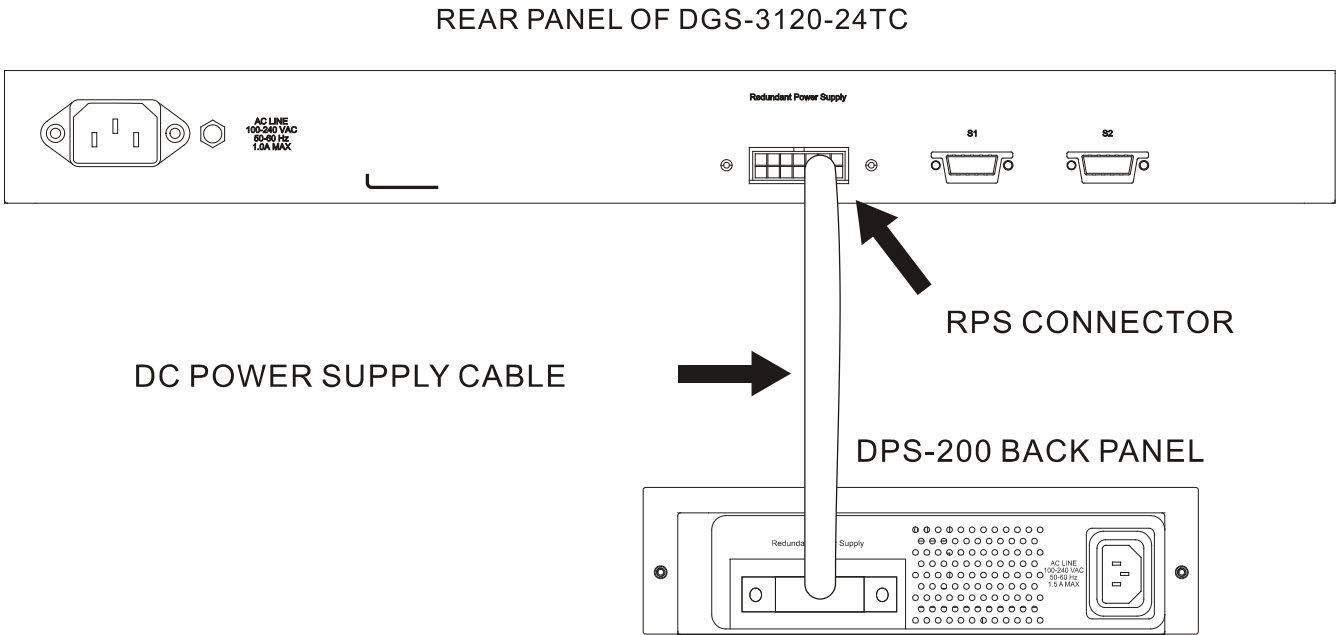


Figure 2- 5. Connecting the DGS-3120-24TC to the DPS-200

1. Insert one end of the 14-pin DC power cable into the receptacle on the switch and the other end into the redundant power supply.
2. Using a standard AC power cable, connect the redundant power supply to the main AC power source. A green LED on the front of the DPS-200 or DPS-500 will glow to indicate a successful connection.
3. Re-connect the Switch to the AC power source. The LED indicator will show that a redundant power supply is now in operation.
4. No change in switch configuration is necessary for this installation.



NOTE: See the RPS Quick Installation Guide for more information.



CAUTION: DO NOT use the DGS-3120-24TC/24SC switch with any redundant power system other than the DPS-200.



CAUTION: DO NOT use the DGS-3120-48TC switch with any redundant power system other than the DPS-500 and the DPS-500DC.



CAUTION: DO NOT use the DGS-3120-24PC and the DGS-3120-48PC switch with any redundant power system other than the DPS-700.

External Redundant Power System

The DPS-200 and DPS-500 are redundant power supply units designed to conform to the voltage requirements of the switches being supported. The DPS-200 and DPS-500 can both be installed into a DPS-900, or DPS-800 rack mount unit.

The DPS-200 can only be used with the DGS-3120-24TC and the DGS-3120-24SC.

The DPS-500 can only be used with the DGS-3120-48TC.

The DPS-700 can only be used with the DGS-3120-24PC and the DGS-312048PC.



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

DPS-700

The DPS-700 is connected to the Master Switch using a 22-pin DC power cable. A standard, three-pronged AC power cable connects the redundant power supply to the main power source.

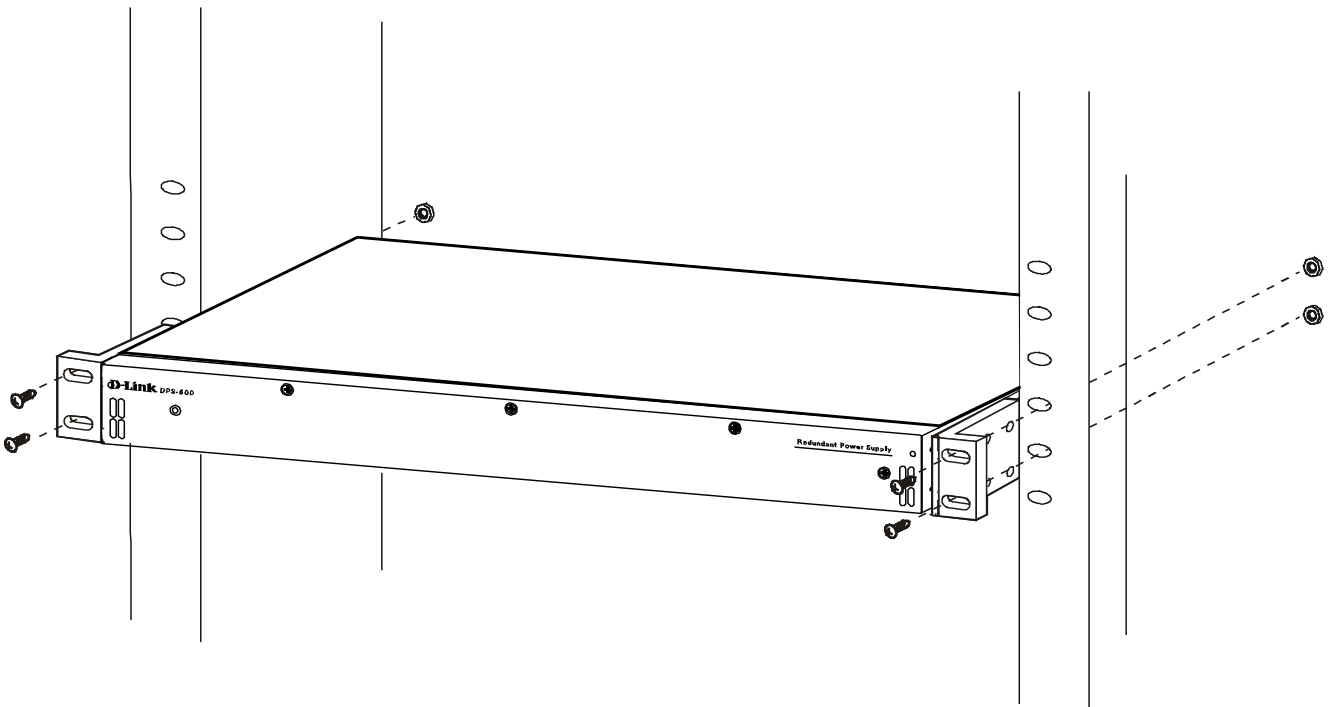


Figure 2- 6. Front view of the DPS-700

1. Insert one end of the 22-pin DC power cable into the receptacle on the Switch and the other end into the Redundant Power Supply unit.
2. Using a standard AC power cable, connect the redundant power supply to the main AC power source. A green LED on the front of the DPS-700 will glow to indicate a successful connection.
3. Re-connect the Switch to the AC power source. The LED indicator will show that a redundant power supply is now in operation.
4. No configuration in the Switch's firmware is needed for this installation.



NOTE: See the RPS Quick Installation Guide for more information.

REAR PANEL OF DGS-3120-24PC

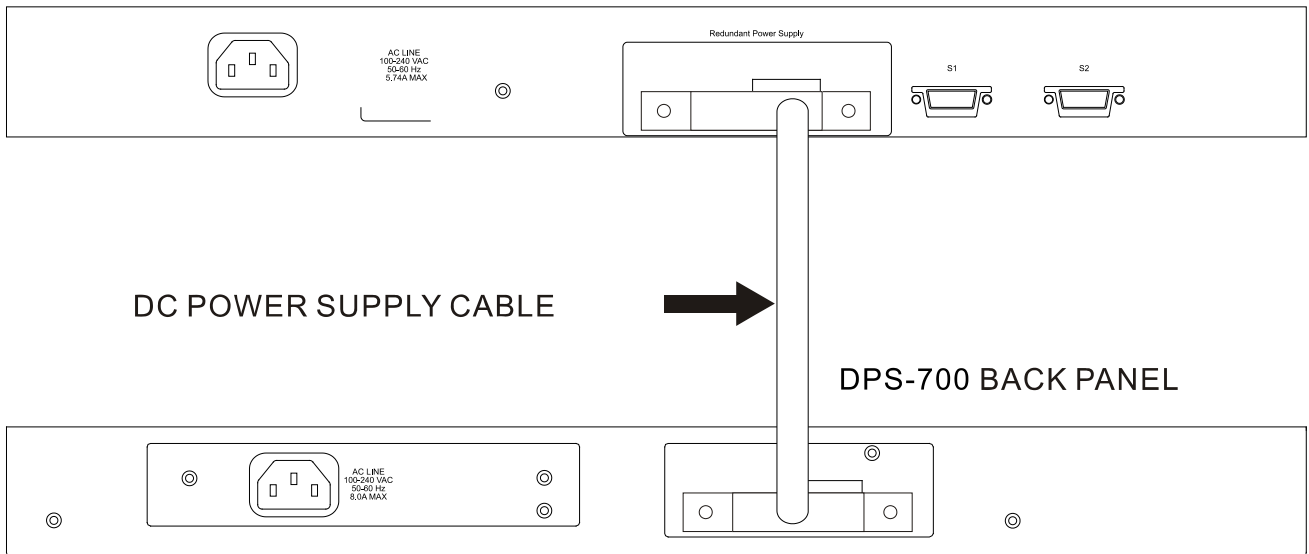


Figure 2- 7. Rear view of the DPS-700 connected to a DGS-3120-24PC



CAUTION: Do not connect the DPS-700 to the DGS-3120-24PC/48PC by using the 14-pin DC power cable. It may cause damage when using the wrong DC power cable. ONLY use the 22-pin DC power cable.

DPS-800

The DPS-800 is a standard-size rack mount (1 standard unit in height) designed to hold up to two DPS-200 or DPS-500 redundant power supplies.

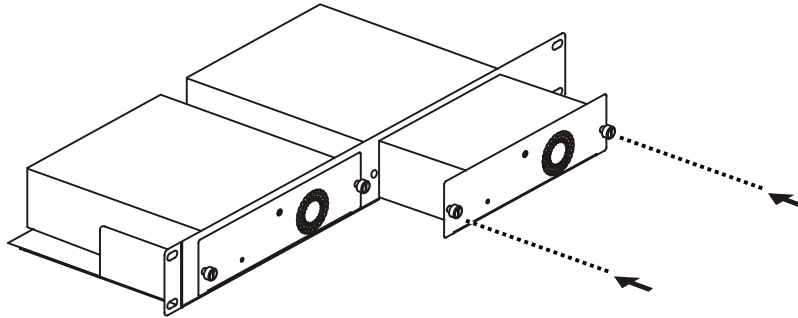


Figure 2- 8. Installing the DPS-200 or DPS-500 in the DPS-800

The RPS can be mounted in a standard 19" rack. Use the following diagram to guide you.

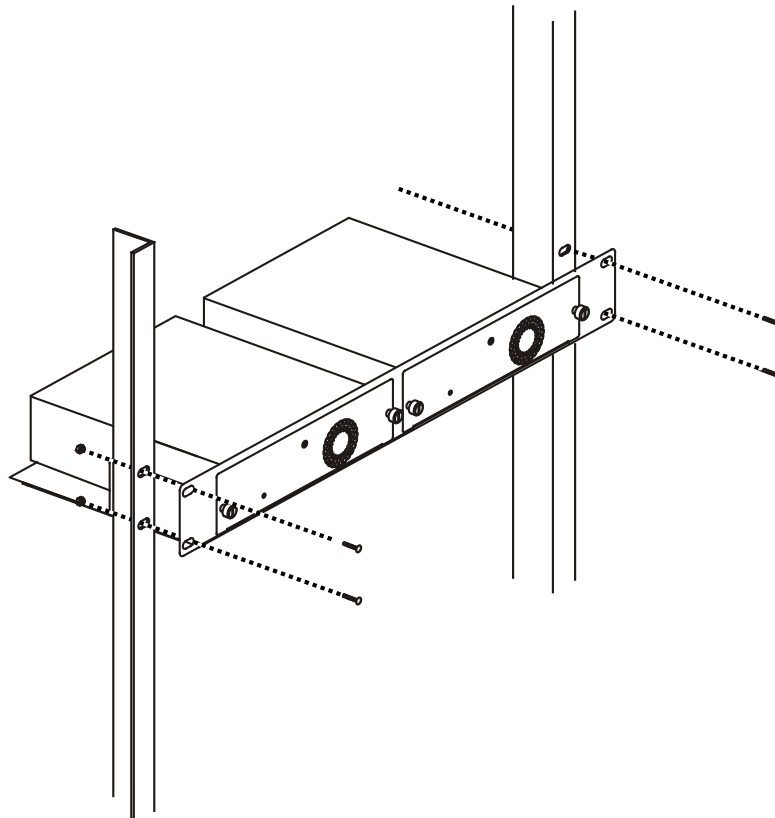


Figure 2- 9. Installing the DPS-800 in an Equipment Rack

DPS-900

The DPS-900 is a standard-size rack mount (5 standard units in height) designed to hold up to eight DPS-200 or DPS-500 redundant power supplies.

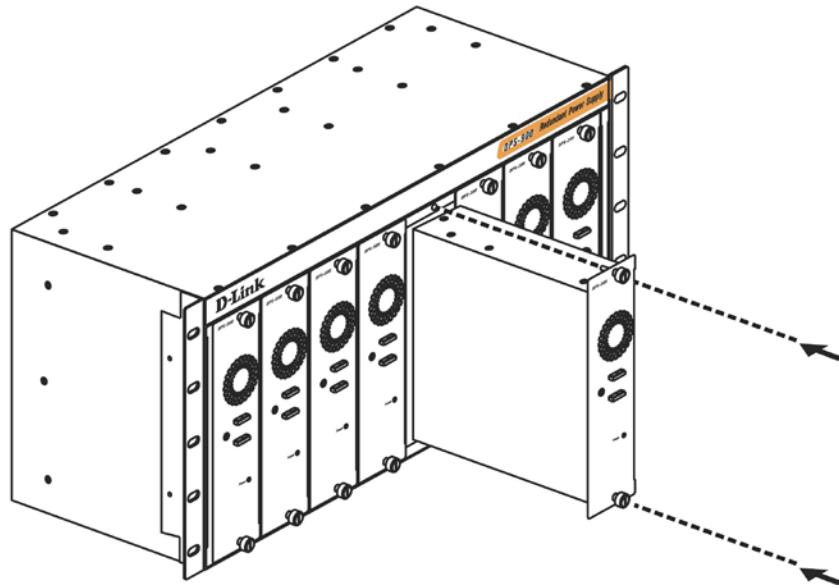


Figure 2- 10. Inserting the DPS-200 or DPS-500 into the DPS-900

The RPS can be mounted in a standard 19" rack. Use the following diagram to guide you.

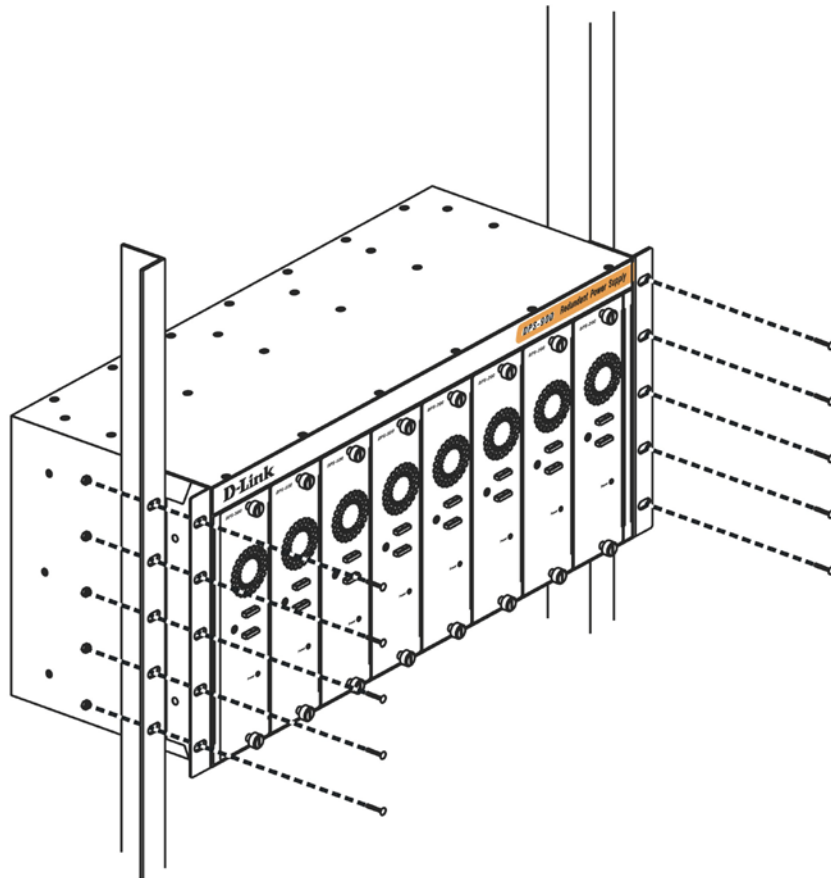


Figure 2- 11. Installing the DPS-900 into the equipment rack



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.

Connecting the Switch

Switch to End Node

Switch to Switch

Connecting To Network Backbone or Server



NOTE: All high-performance N-Way Ethernet ports can support both MDI-II and MDI-X connections.

Switch to End Node

End nodes include PCs outfitted with a 10, 100 or 1000 Mbps RJ-45 Ethernet Network Interface Card (NIC) and routers. An end node connects to the Switch via a twisted-pair UTP/STP cable. Connect the end node to any of the 1000BASE-T ports of the Switch. The Link/Act LEDs for each Ethernet port will light green or amber when the link is valid. A blinking LED indicates packet activity on that port.

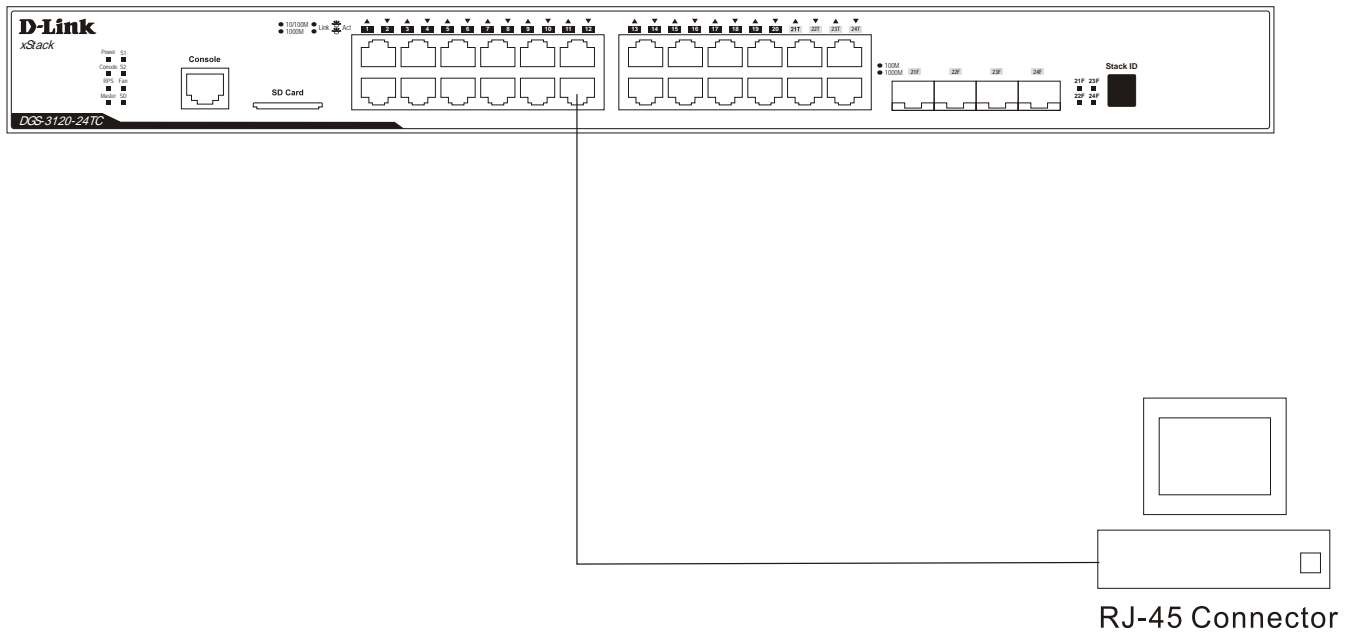


Figure 3- 1. Connecting the Switch to an end node

Switch to Switch

There is a great deal of flexibility on how connections are made using the appropriate cabling.

- Connect a 10BASE-T switch port to the Switch via a twisted-pair Category 3, 4 or 5 UTP/STP cable.
- Connect a 100BASE-TX switch port to the Switch via a twisted-pair Category 5 UTP/STP cable.
- Connect 1000BASE-T switch port to the Switch via a twisted pair Category 5e UTP/STP cable.
- Connect switch supporting a fiber-optic uplink to the Switch's SFP ports via fiber-optic cabling. See cabling guidelines in Appendix B for more information.

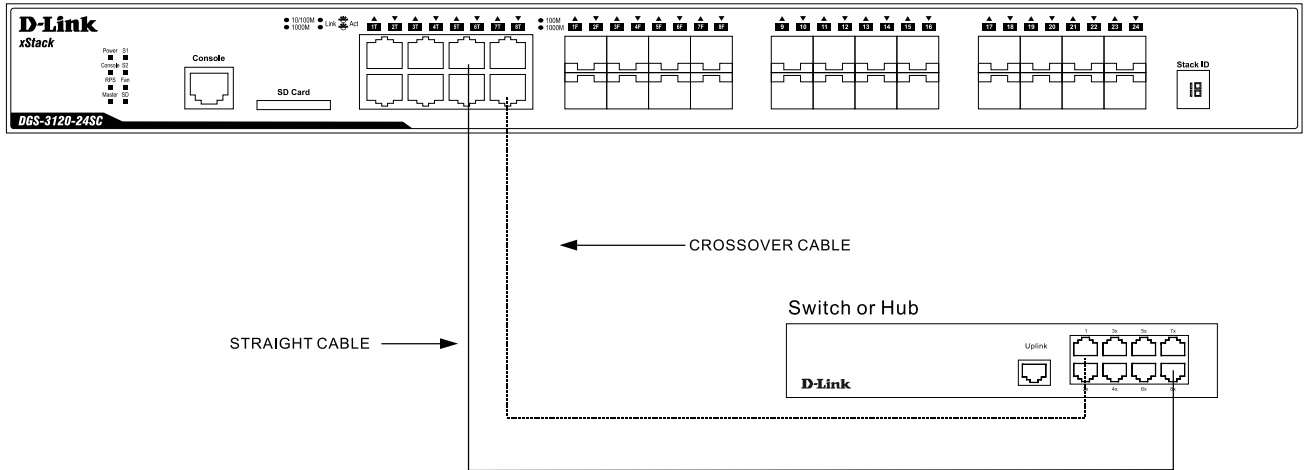


Figure 3- 2. Connecting a Switch to another switch

Connecting to Network Backbone or Server

The combo SFP ports and the 1000BASE-T ports are ideal for uplinking to a network backbone, server or server farm. The copper ports operate at a speed of 1000, 100 or 10Mbps in full or half duplex mode. The fiber-optic ports can operate at both 100Mbps and 1000Mbps in full duplex mode.

Connections to the Gigabit Ethernet ports are made using a fiber-optic cable or Category 5e copper cable, depending on the type of port. A valid connection is indicated when the Link LED is lit.

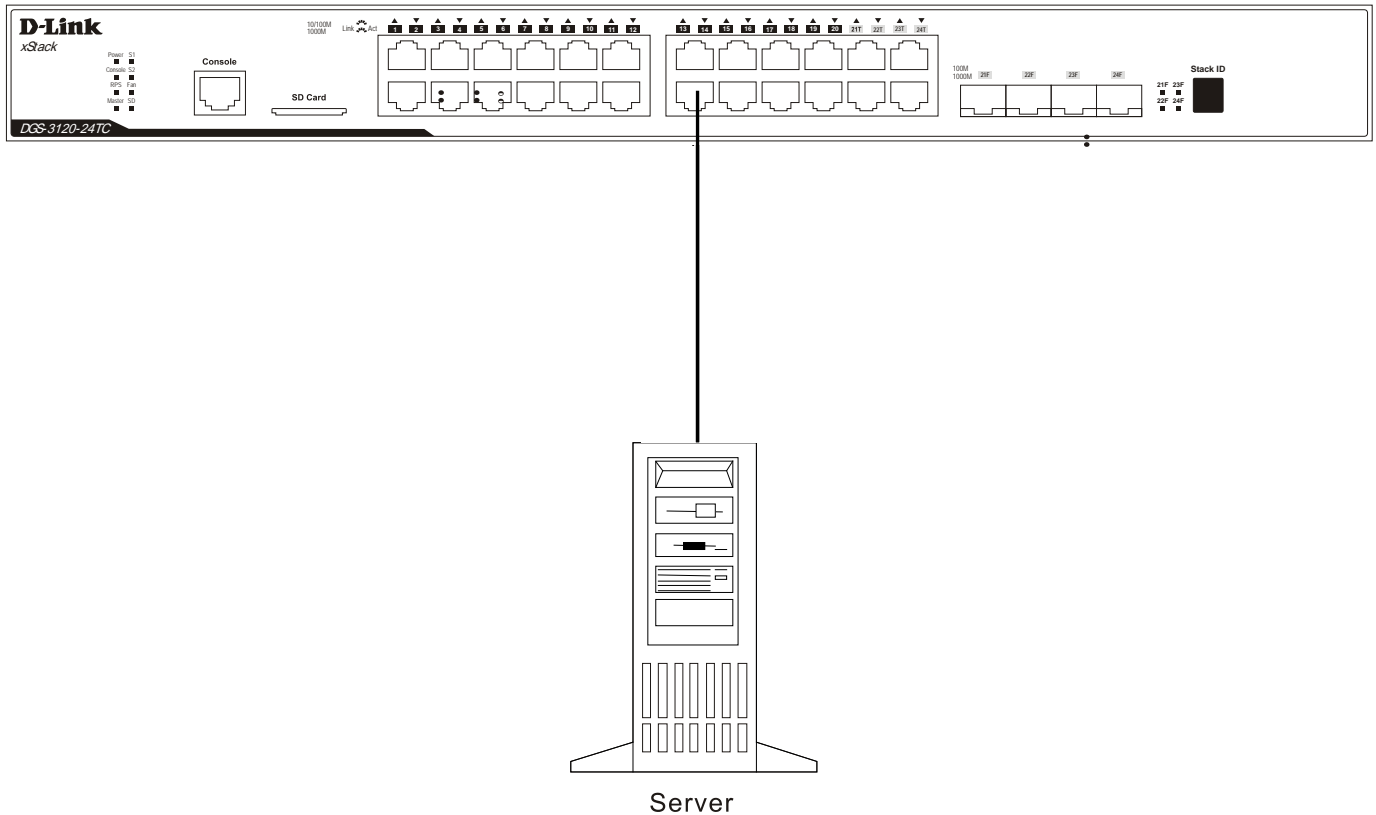


Figure 3- 3. Connecting the Switch to a server

Chapter 3 Introduction to Switch Management

Management Options

Connecting the Console Port (RS-232 DCE/RJ-45)

First Time Connecting to the Switch

Password Protection

SNMP Settings

IP Address Assignment

Management Options

This system may be managed out-of-band through the console port on the front panel or in-band using Telnet. The user may also choose the Web-based management, accessible through a Web browser.

Web-based Management Interface

After successfully installing the Switch, the user can configure the Switch, monitor the LED panel, and display statistics graphically using a Web browser, such as Microsoft® Internet Explorer (version 5.5 and later), Netscape (version 8 and later), Mozilla Firefox (version 2.0 and later), Safari (version 4.0 and later), and Google Chrome (version 6.0 and later).

SNMP-based Management

The Switch can be managed with an SNMP-compatible console program. The Switch supports SNMP version 1.0, version 2.0 and version 3.0. 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.

Command Line Interface through the Serial Port or remote Telnet

The user can also connect a computer or terminal to the serial console port to access the Switch. The command line interface provides complete access to all Switch management features.

Connecting the Console Port

The front panel of the Switch provides a port that enables a connection to a computer monitoring and configuring the Switch. The console port is an RJ-45 port and requires a special cable that is included with the Switch, to establish the physical connection.

To use the console port, the following equipment is needed:

- A terminal or a computer with both an RS-232 serial port and the ability to emulate a terminal.
- A console cable with a male DB-9 connector on one end and an RJ-45 connection on the other. This cable should be included with the Switch. It establishes the physical connection to the console port.

To connect a terminal to the console port:

Connect the male DB-9 connector on the console cable (shipped with the Switch) to the RS-232 serial port on the computer running terminal emulation software then insert the RJ-45 connector into the RJ-45 console port on the front of the Switch. Set the terminal emulation software as follows:

- Select the appropriate serial port (COM port 1 or COM port 2).
- Set the data rate to 115200 baud.
- Set the data format to 8 data bits, 1 stop bit, and no parity.
- Set flow control to None.

- Under Properties, select VT100 for Emulation mode.
- Select Terminal keys for Function, Arrow and Ctrl keys. Make sure to use Terminal keys (not Windows keys) are selected.



NOTE: When using HyperTerminal with the Microsoft® Windows® 2000 operating system, ensure that Windows 2000 Service Pack 2 or later is installed. Windows 2000 Service Pack 2 allows use of arrow keys in HyperTerminal's VT100 emulation. See www.microsoft.com for information on Windows 2000 service packs.

- After you have correctly set up the terminal, plug the power cable into the power receptacle on the back of the Switch. The boot sequence appears in the terminal.
- After the boot sequence completes, the console login screen displays.
- If the user has not logged into the command line interface (CLI) program, press the Enter key at the User name and password prompts. There is no default user name and password for the Switch. The administrator must first create user names and passwords. If user accounts have been previously set up, log in and continue to configure the Switch.
- Enter the commands to complete desired tasks. Many commands require administrator-level access privileges. Read the next section for more information on setting up user accounts. See the **DGS-3120 Series CLI Reference Guide** on the documentation CD for a list of all commands and additional information on using the CLI.
- To end a management session, use the logout command or close the emulator program.

If problems occur in making this connection on a PC, make sure the emulation is set to VT-100. The emulation settings can be configured by clicking on the File menu in the HyperTerminal window by clicking on Properties in the drop-down menu, and then clicking the Settings tab. This is where you will find the Emulation options. If you still do not see anything, try rebooting the Switch by disconnecting its power supply.

Once connected to the console, the screen on the next page will appear on the console. This is where the user will enter commands to perform all the available management functions. The Switch will prompt the user to enter a user name and a password. Upon the initial connection, there is no user name or password and therefore just press Enter twice to access the command line interface.

```

Boot Procedure                                     V1.00.010
-----
Power On Self Test ..... 100 %

MAC Address   : 00-01-02-03-04-00
H/W Version  : A1

Please Wait, Loading V1.02.013 Runtime Image ..... 100 %
UART init ..... 100 %
Starting runtime image
Device Discovery ..... -
    
```

Figure 4- 1. Boot up display in console screen

First Time Connecting to the Switch

The Switch supports user-based security that can allow prevention of unauthorized users from accessing the Switch or changing its settings. This section tells how to log onto the Switch via out-of-band console connection or out-of-band Management port connection.

Upon initial connection to the Switch, the login screen appears (see example below).

```
DGS-3120-24TC Gigabit Ethernet Switch
Command Line Interface

Firmware: Build 1.02.013
Copyright(C) 2010 D-Link Corporation. All rights reserved.

UserName :
```

Figure 4- 2. Initial screen, first time connecting to the Switch

Press **Enter** in both the Username and Password fields. Then access will be given to enter commands after the command prompt **DGS-3120-24TC:admin#**

There is no initial username or password. Leave the Username and Password fields blank.



NOTE: The first user automatically gets Administrator level privileges. At least one Admin-level user account must be created for the Switch.

Password Protection

The Switch does not have a default user name and password. One of the first tasks when settings up the Switch is to create user accounts. Logging in using a predefined administrator-level user name will give the user privileged access to the Switch's management software.

After the initial login, define new passwords for both default user names to prevent unauthorized access to the Switch, and record the passwords for future reference.

To create an administrator-level account for the Switch, do the following:

1. At the CLI login prompt, enter create account admin followed by the *<user name>* and press the **Enter** key.
2. The Switch will then prompt the user to provide a password. Type the *<password>* used for the administrator account being created and press the **Enter** key.
3. Once entered, the Switch will again ask the user to enter the same password again to verify it. Type the same password and press the **Enter** key.
4. A "Success" response by the Switch will verify the creation of the new administrator.



NOTE: Passwords are case sensitive. User names and passwords can be up to 15 characters in length.

IP Address Assignment

An IP address must be assigned to each switch, which is used for communication with an SNMP network manager or other TCP/IP application (for example BOOTP, TFTP). The Switch's default IP address is 10.90.90.90. The user may change the default Switch IP address to meet the specification of your networking address scheme.

The Switch is also assigned a unique MAC address by the factory. This MAC address cannot be changed, and can be found by entering the command "**show switch**" into the command line interface.

The Switch's MAC address also appears in the **Device Information** and **System Information** windows of the Web-based management interface. The IP address for the Switch must be set before using the Web-based manager. The Switch IP address can be automatically set using BOOTP or DHCP protocols, in which case the actual address assigned to the Switch must be known.

SNMP Settings

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 version of SNMP to use to monitor and control the Switch. The three versions of SNMP vary in the level of security provided between the management station and the network device.

In SNMP v1 and v2, 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 SNMP v1 and v2 management access are:

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

SNMP v3 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 SNMP v1 while assigning a higher level of security to another group, granting read/write privileges using SNMP v3.

Using SNMP v3 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 SNMP v3 in that SNMP messages may be encrypted. To read more about how to configure SNMP v3 settings for the Switch read the section entitled Management.

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.

MIBs

The Switch in the Management Information Base (MIB) stores management and counter information. The Switch uses the standard MIB-II Management Information Base 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 Object Identifier. MIB values can be either read-only or read-write.

Chapter 4 Web-based Switch Configuration

Introduction

Logging onto the Web Manager

Web-based User Interface

Introduction

All software functions of the Switch can be managed, configured, and monitored via the embedded Web-based (HTML) interface. Manage the Switch from remote stations anywhere on the network through a standard browser, such as Internet Explorer (version 5.5 and later), Netscape (version 8.0 and later), Mozilla Firefox (version 2.0 and later), Safari (version 4.0 and later), or Google Chrome (version 6.0 and later). The browser acts as a universal access tool and can communicate directly with the Switch using the HTTP protocol.

The Web-based management module and the Console program (and Telnet) are different ways to access the same internal switching software and configure it. Thus, all settings encountered in web-based management are the same as those found in the console program.

Logging onto the Web Manager

To begin managing the Switch, simply run the browser installed on your computer and point it to the IP address you have defined for the device. The URL in the address bar should read something like: `http://123.123.123.123`, where the numbers 123 represent the IP address of the Switch.



NOTE: The factory default IP address is 10.90.90.90.

This opens the management module's user authentication window, as seen below.



Figure 5- 1. Enter Network Password window

As there is no default User name or Password, click **OK** to proceed. This will open the Web-based user interface. The Switch management features available in the Web-based manager are explained below.

Web-based User Interface

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

Areas of the User Interface

The figure below shows the user interface. Three distinct areas divide the user interface, as described in the table.

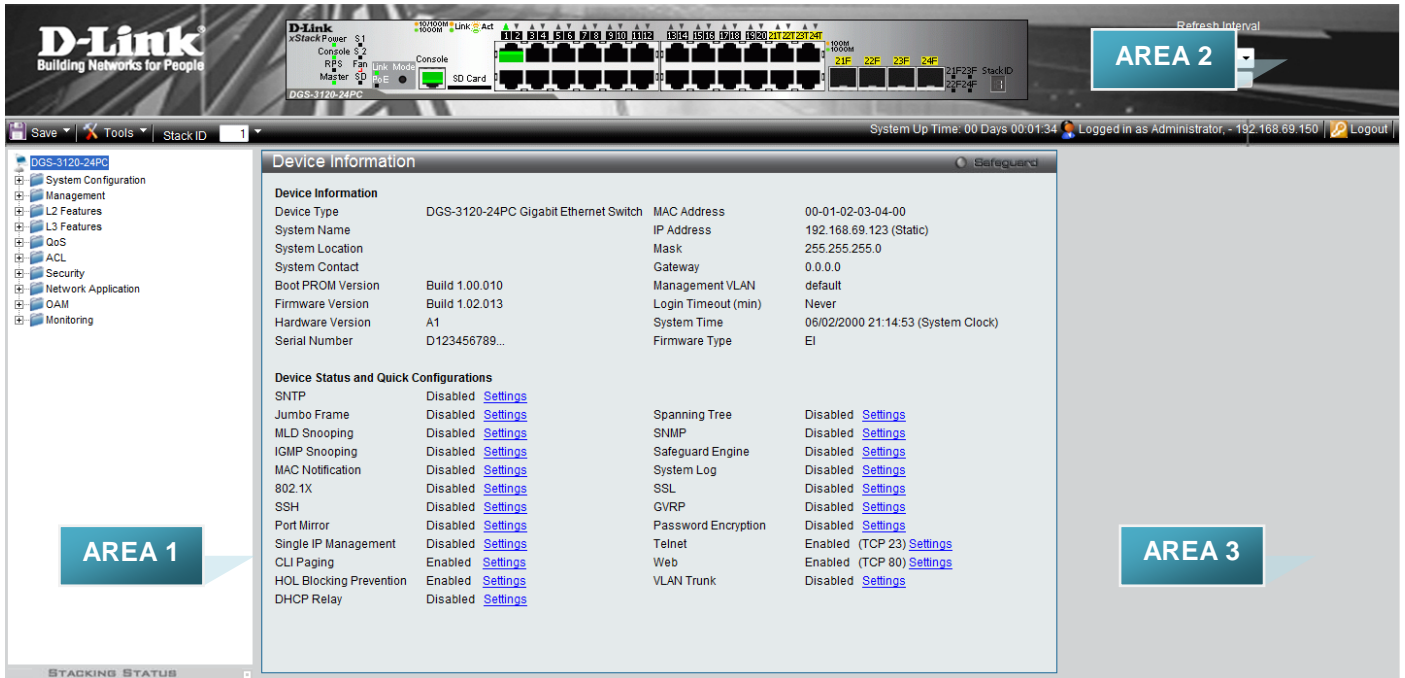


Figure 5- 2. Main Web Manager window

Area Number	Function
Area 1	Select the menu or window to display. Open folders and click the hyperlinked menu buttons and subfolders contained within them to display menus. Click the D-Link logo to go to the D-Link website.
Area 2	Presents a graphical near real-time image of the front panel of the Switch. This area displays the Switch's ports, console and management port, showing port activity. Some management functions, including save, reboot, download and upload are accessible here.
Area 3	Presents single switch information based on user selection and the entry of configuration data.

Web Pages

When connecting to the management mode of the Switch with a Web browser, a login screen is displayed. There is no default user name or password necessary to access the Switch's management mode.



NOTE: Be sure to configure the user name and password in the User Accounts window before connecting the Switch to the greater network.

Chapter 5 Appendix Section

Appendix A – Technical Specifications

General

Feature	Detailed Description								
Standards	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3z 1000BASE-T (SFP “Mini GBIC”) IEEE 802.1D/2004/Spanning Tree (802.1s, 802.1w) IEEE 802.1Q-2005 VLAN IEEE 802.1p Priority Queues IEEE 802.1X Network Access Control IEEE 802.3 Nway Auto-negotiation IEEE 802.3ad Link Aggregation Control IEEE 802.3x Full-duplex Flow Control IEEE 802.1u Fast Ethernet								
Protocols	CSMA/CD								
Data Transfer Rates:	<table border="0"> <tr> <td>Half-duplex</td> <td>Full-duplex</td> </tr> <tr> <td>Ethernet</td> <td>20Mbps</td> </tr> <tr> <td>Fast Ethernet</td> <td>200Mbps</td> </tr> <tr> <td>Gigabit Ethernet</td> <td>2000Mbps</td> </tr> </table>	Half-duplex	Full-duplex	Ethernet	20Mbps	Fast Ethernet	200Mbps	Gigabit Ethernet	2000Mbps
Half-duplex	Full-duplex								
Ethernet	20Mbps								
Fast Ethernet	200Mbps								
Gigabit Ethernet	2000Mbps								
Network Cables	Cat.5 Enhanced for 1000BASE-T UTP Cat.5, Cat. 5 Enhanced for 100BASE-TX UTP Cat.3, 4, 5 for 10BASE-T EIA/TIA-568 100-ohm screened twisted-pair (STP)(100m)								
Number of Ports	DGS-3120-24TC: 24-Port 10/100/1000Base-T, 4 Combo Copper/SFP ports and 2 dedicated stacking ports. DGS-3120-24SC: 8-Port 10/100/1000Base-T/SFP combo ports, 16 SFP ports and 2 dedicated stacking ports. DGS-3120-24SC-DC: 8-Port 10/100/1000Base-T/SFP combo ports, 16 SFP ports and 2 dedicated stacking ports. DGS-3120-24PC: 24-Port PoE 10/100/1000Base-T, 4 Combo PoE Copper/SFP ports and 2 dedicated stacking ports. DGS-3120-48TC: 48-Port 10/100/1000Base-T, 4 Combo Copper/SFP ports and 2 dedicated stacking ports. DGS-3120-48PC: 48-Port PoE 10/100/1000Base-T, 4 Combo PoE Copper/SFP ports and 2 dedicated stacking ports.								

Physical and Environmental

Feature	Detailed Description
Internal Power Supply	AC Input: 100 – 240 VAC, 50-60 Hz
Optional Redundant Power Supply	Provide one connector in rear panel to install optional external RPS to enhance the reliability. When internal power is failed, the optional external RPS will take over all the power immediately and automatically.

	DPS-200: DGS-3120-24TC/24SC DPS-500/DPS-500DC: DGS-3120-48TC DPS-700: DGS-3120-24PC/48PC
Power Consumption	DGS-3210-24TC: 40.5 Watts (Max.) DGS-3210-24SC: 34.1 Watts (Max.) DGS-3210-24SC-DC: 32.4 Watts (Max.) DGS-3120-24PC: 477.7 Watts (Max.) DGS-3210-48TC: 67.1 Watts (Max.) DGS-3120-48PC: 506 Watts (Max.)
Operating Temperature	0~50°C
Storage Temperature	-40~70°C
Humidity	Operation: 10%-90% RH non-condensing Storage: 5% ~ 90% RH non-condensing
Dimensions	DGS-3120-24TC: 440mm (W) x 210mm (D) x 44mm (H) DGS-3120-24SC: 440mm (W) x 210mm (D) x 44mm (H) DGS-3120-24SC-DC: 440mm (W) x 210mm (D) x 44mm (H) DGS-3120-24PC: 440mm (W) x 310mm (D) x 44mm (H) DGS-3120-48TC: 440mm (W) x 310mm (D) x 44mm (H) DGS-3120-48PC: 440mm (W) x 380mm (D) x 44mm (H)
Weight	DGS-3210-24TC: 2.5kg. DGS-3210-24SC: 2.6kg. DGS-3210-24SC-DC: 2.6kg. DGS-3120-24PC: 5.3kg. DGS-3210-48TC: 4.6kg. DGS-3120-48PC: 6.4kg.
EMI	CE Class A, FCC Class A, VCCI Class A, C-Tick Report
Safety	UL, CB Report

Performance

Feature	Detailed Description
Transmission Method	Store-and-forward
Packet Buffer	2 MByte (Max)
Maximum Forwarding Rate	DGS-3120-24TC: 65.48 million packets per second. DGS-3120-24SC: 65.48 million packets per second. DGS-3120-24SC-DC: 65.48 million packets per second. DGS-3120-24PC: 65.48 million packets per second. DGS-3120-48TC: 101.19 million packets per second. DGS-3120-48PC: 101.19 million packets per second.
Switching Capability	DGS-3120-24TC: 88Gbps DGS-3120-24SC: 88Gbps DGS-3120-24SC-DC: 88Gbps DGS-3120-24PC: 88Gbps DGS-3120-48TC: 136Gbps DGS-3120-48PC: 136Gbps
Priority Queues	8 Priority Queues per port

MAC Address Table	Supports 16K MAC addresses
Wire Speed	Full-wire speed (full-duplex) operation on all ports including Gigabit ports.
Physical Stacking	<ol style="list-style-type: none"> Two dedicated stacking ports in the rear panel of the Switch. Note: stacking cable length 3 meter for stacking DGS-3120 Series use only. Provides bi-directional redundant stacking topology. Topologies: Linear and Ring. Bandwidth: Up to 10G. The FCS version supports 6 units per stack. Supports backup master. Support inter stacking trunking and mirroring. Cannot stack EI and SI devices together.
Virtual Stacking / Clustering	<ol style="list-style-type: none"> Support D-Link Single IP Management v1.6 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	
			Light off	Power Off	
	Console	Green	Solid Light	Console on	
			Light off	Console off	
	RPS	Green	Blinking	When switch detects that RPS is connected	
			Solid Light	RPS in using	
			Light off	RPS off	
	Fan Err	Red	Blinking	When any of the fans has failed	
			Light off	When all fans work normally	
	Master	Green	Solid Light	When device is configured or selected to be a stacking master	
			Light off	When device is stacking slave	
	7-Segment LED	Green	Capable 1 – 6, H, h, G	<p>The box ID is assigned either by user (static mode) or by the system (automatic mode). When the box become a primary master, the 7 segment works as bi-function. That is box ID and “H” indicate as primary Master and the display will be shown by turn. That is boxID -> H -> boxID -> H</p> <p>1-6: To indicate the stacking of the switch</p> <p>H: When device was assigned as the stacking Master</p> <p>h: When device was selected to be the Backup Master</p> <p>G: When Safeguard Engine entering the exhausted mode.</p>	
	Port LED Mode Indicator		<p>A LED Mode Select Button to switch two modes in turn for all 10/100/1000Mbps ports on DGS-3120-24PC/48PC:</p> <p>- Link/Act/Speed Mode</p>		

		- PoE Mode				
LED Per 10/100/1000 Mbps Port	Link/Act/Speed Mode	Green	Solid Light	A LED Mode Select Button to switch Link/Act/Speed Mode		
			Solid Light	A LED Mode Select Button to switch PoE Mode		
		Orange	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.		
	PoE Mode	Off	Light off	No link.		
			Green	Solid Light	Power feeding.	
		Orange	Solid Light	Error Condition.		
		Off	Light Off	No Power feeding.		
		LED Per SFP Port	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.
Orange	Solid Light			When there is a secure connection (or link) to 100Mbps Ethernet device at any of the ports.		
	Blinking			When there is reception or transmission of data occurring at 100Mbps.		
LED Per Stacking Port	Link/Act		Green	Solid Light	When there is a secure connection (or link) to Ethernet device at any of the ports.	
				Blinking	When there is reception or transmission (i.e. Activity--Act) of data occurring at a port.	
			Off	Light off	No link	
				Green	Solid Light	SD card plug-in
SD		Green	Blinking	Read/Write		
			Light off	No link		
		Red	Solid Light	SD card failure		

Port Functions

Feature	Detailed Description
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<p>LAN</p>	<p>24/48 x 10/100/1000Base-T ports for the DGS-3120-24TC/48TC 8 x 10/100/1000Base-T ports for the DGS-3120-24SC/24SC-DC 24/48 x 10/100/1000Base-T PoE ports for the DGS-3120-24PC/48PC</p> <p>Compliant to following standards: IEEE 802.3 compliance IEEE 802.3u compliance IEEE 802.3ab compliance Support Half/Full-Duplex operations Auto-negotiation Auto MDI/MDIX IEEE 802.3x Flow Control support for Full-Duplex mode, Back Pressure when Half-Duplex mode, and Head-of-line blocking prevention</p>
<p>Mini-GBIC</p>	<p>16 x SFP ports for DGS-3120-24SC/24SC-DC</p> <p>SFP Transceivers Supported:</p> <ul style="list-style-type: none"> • DEM-310GT (1000Base-LX, Single-mode, 10km) • DEM-311GT (1000Base-SX, Mutli-mode, 500m) • DEM-312GT2 (1000Base-SX, Multi-mode, 2km) • DEM-314GT (1000BASE-LHX, Single-mode, 50km) • DEM-315GT (1000BASE-ZX, Single-mode, 80km) • DEM-330T/R (WDM transceiver, Single-Mode 10km) • DEM-331T/R (WDM transceiver, Single-Mode 40km) • DGS-712 (1G Copper, 1000Base-T, 100m) • DEM-210 (100Base-FX, Single-Mode 15km) • DEM-211 (100Base-FX, Multi-mode, 2km) • DEM-220T/R (100Base-BX, Single-Mode, 20km) <p>Compliant to following standards:</p> <ul style="list-style-type: none"> • IEEE 802.3z compliance • IEEE 802.3x Flow Control support for Full-Duplex mode. • Support Auto-negotiation for Full-Duplex/ flow control operations
<p>Combo ports</p>	<p>Combo 1000BASE-T/SFP ports for DGS-3120-24TC/48TC/24SC/24SC-DC</p> <p>1000Base-T ports compliant to following standards:</p> <ul style="list-style-type: none"> • IEEE 802.3 compliance • IEEE 802.3u compliance • IEEE 802.3ab compliance • Support Full-Duplex operations • IEEE 802.3x Flow Control support for Full-Duplex mode, Back Pressure when Half-Duplex mode, and Head-of-line blocking prevention <p>SFP Transceivers Supported:</p> <ul style="list-style-type: none"> • DEM-310GT (1000Base-LX, Single-mode, 10km) • DEM-311GT (1000Base-SX, Mutli-mode, 500m) • DEM-312GT2 (1000Base-SX, Multi-mode, 2km) • DEM-314GT (1000BASE-LHX, Single-mode, 50km) • DEM-315GT (1000BASE-ZX, Single-mode, 80km) • DEM-330T/R (WDM transceiver, Single-Mode 10km)

- DEM-331T/R (WDM transceiver, Single-Mode 40km)
- DGS-712 (1G Copper, 1000Base-T, 100m)
- DEM-210 (100Base-FX, Single-Mode 15km)
- DEM-211 (100Base-FX, Multi-mode, 2km)
- DEM-220T/R (100Base-BX, Single-Mode, 20km)

Compliant to following standards:

- IEEE 802.3z compliance
- IEEE 802.3x Flow Control support for Full-Duplex mode.
- Support Auto-negotiation for Full-Duplex/ flow control operations

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 RJ-45 receptacle/connector and their pin assignments.

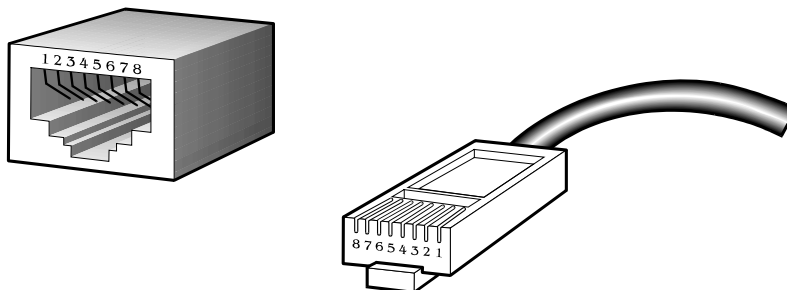


Figure B- 1. The standard RJ-45 port and connector

RJ-45 Pin Assignments		
Contact	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 a PC, a Console cable is necessary. The following diagrams and tables show the standard Console-to-DJ-45 receptacle/connector and their pin assignments.

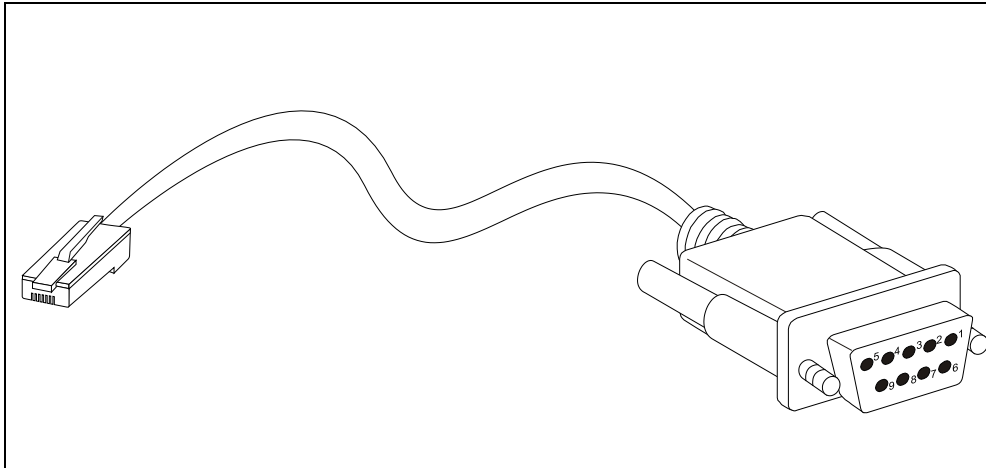


Figure B- 2. Console-to-RJ-45 Cable

Console-RJ-45 Pin Assignments		
Pin	Console (DB9/RS232)	RJ-45
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 a Redundant Power Supply, an RPS cable is necessary. Please review these products for matching cable pin assignment. The following diagrams and tables show the standard RPS receptacle/connector and their pin assignments.

14-pin DC power cable

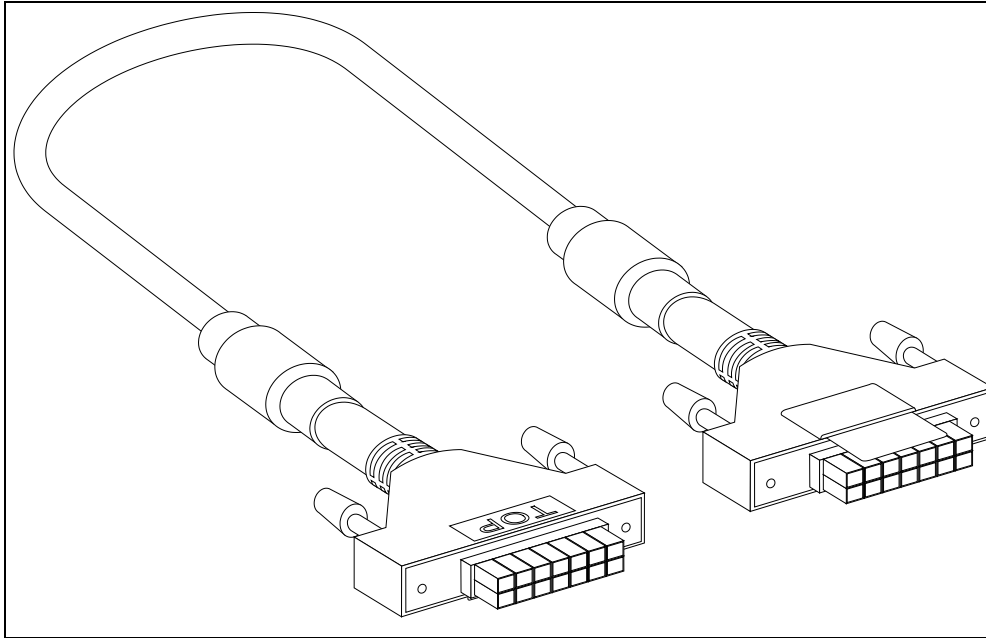


Figure B- 3. Redundant Power Supply (RPS) 14-pin DC Power Cable

RPS 14-pin DC Power Cable Pin Assignments		
Pin	Device	DPS-200
1	GND	GND
2	NC	NC
3	+12V	+12V
4	+12V	+12V
5	+12V	+12V
6	+12V	+12V
7	GND	GND
8	GND	GND
9	NC	Power Good
10	NC	Power Present
11	Power Good	NC
12	Power Present	NC
13	GND	GND
14	GND	GND

22-pin DC power cable

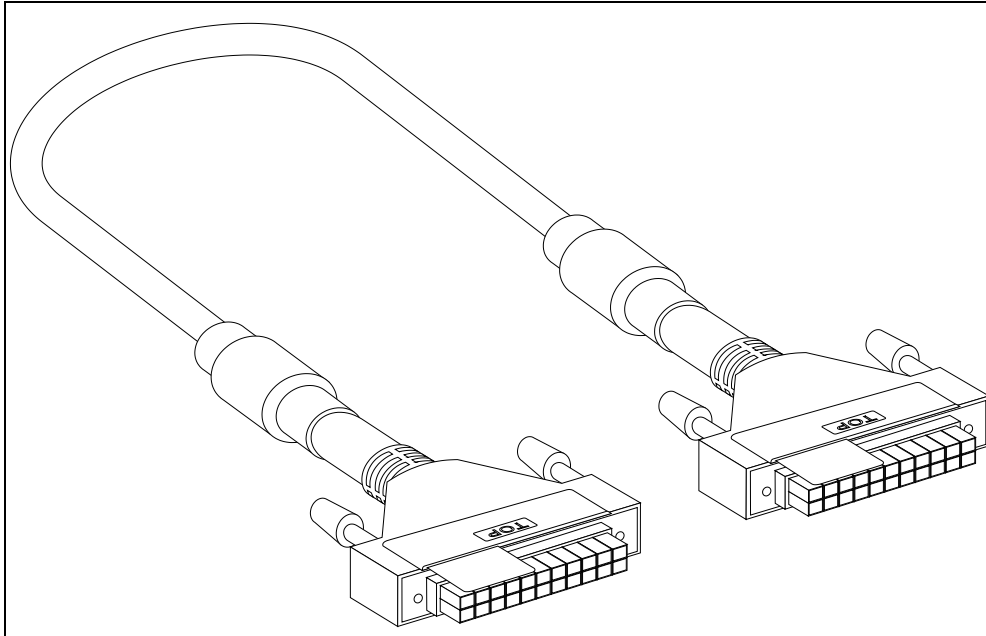


Figure B- 4. Redundant Power Supply (RPS) 22-pin DC Power Cable

RPS 22-pin DC Power Cable Pin Assignments			
Pin	Device	DPS-700	
1	-54Vrtn	-54Vrtn	
2	-54V	-54V	
3	+12V	+12V	
4	+12V	+12V	
5	+12V	+12V	
6	+12V	+12V	
7	NC/GND	GND	
8	+12Ven	+12Ven	
9	LS-54V	LS-54V	
10	-54V	-54V	
11	-54Vrtn	-54Vrtn	
12	GND	NC/GND	
13	GND	GND	
14	RPS Present	Status_2	
15	Status_1	RPS PG	
16	Status_2	RPS Present	
17	RPS PG	Status_1	
18	GND	GND	
19	+12VRTNsen	+12VRTNsen	
20	LS+12V	LS+12V	
21	-54Vsen	-54Vsen	
22	-54VRTNsen	-54VRTNsen	

Appendix C – Module Specs and Cable Lengths

Use the following table to as a guide for the module specs and maximum cable lengths.

Standard	Media Type	Maximum Distance
Mini-GBIC	1000BASE-LX, Single-mode fiber module	10km
	1000BASE-SX, Multi-mode fiber module	550m / 2km
	1000BASE-LH, Single-mode fiber module	50km
	1000BASE-ZX, Single-mode fiber module	80km
1000BASE-T	Category 5e UTP Cable	100m
100BASE-TX	Category 5 UTP Cable (100 Mbps)	100m
10BASE-T	Category 3, 4 or 5 UTP Cable (10 Mbps)	100m
DEM-310GT	1000Base-LX, Single-mode	10km
DEM-311GT	1000ase-SX, Multi-mode	500m
DEM-312GT2	1000Base-SX, Multi-mode	2km
DEM-314GT	1000BASE-LH, Single-mode	50km
DEM-315GT	1000BASE-ZX, Single-mode	80km
DEM-210	100BASE-FX, Single-mode	15km
DEM-211	100BASE-FX, Multi-mode	2km
DEM-220T	100BASE-BX, Single-mode	Up to 20km
DEM-220R	100BASE-BX, Single-mode	Up to 20km
DEM-330T	TX-1550/RX-1310nm, Single-mode	Up to 10km
DEM-330R	TX-1310/RX-1550 nm, Single-mode	Up to 10km
DEM-331T	TX-1550/RX-1310 nm, Single-Mode	Up to 40km
DEM-331R	TX-1310/RX-1550 nm, Single-Mode	Up to 40km
DGS-712	1G Copper, 1000BASE-T	100m

Network 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

Warranties

Technical Support Information