Hardware Installation Guide

Layer 3 Stackable Managed Switch

DXS-3130-28P

Table of Contents

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.

BSMI Notice

此為甲類資訊技術設備,於居住環境中使用時,可能會造成射頻擾動,在此種情況下,使用者會被要求採取某些適當的對策。

Safety Compliance

Warning: Class 1 Laser Product:
Product shall be used with Class 1 laser device modules certified by CDRH.
Le produit peut être utilisé avec des modules de dispositifs laser de classe 1 certifiés par le CDRH.

- **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 (Tramsmission) 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 should meet the following regulatory requirements:

- Class 1.

- IEC/EN60825-1:2007 2nd Edition or later, European Standard

- FCC 21 CFR Chapter 1, Subchapter J in accordance with FDA and CDRH requirements.

- Application of CE Mark in accordance with 2004/108/EEC EMC Directive and the 2006/95/EC Low Voltage Directives.

- UL and/or CSA registered component for North America.

- 47 CFR Part 15, Class A when installed into products.

Warning

Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

Avertissement

Équipement de classe I. Ce matériel doit être relié à la terre. La fiche d'alimentation doit être raccordée à une prise de terre correctement câblée. Une prise de courant mal câblée pourrait induire des tensions dangereuses sur des parties métalliques accessibles.

The machine can only be used in a restricted access location and has installation instructions by a skilled person.

Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.

Product shall be used with Class 1 laser device modules certified by CDRH.

Le produit peut être utilisé avec des modules de dispositifs laser de classe 1 certifiés par le CDRH.

62368-1 Clause equipment for installation:

"Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75."

Équipement conforme à la clause 62368-1 pour l'installation :

« Convient pour une installation dans les salles informatiques conformément à l'article 645 du National Electrical Code et à la norme NFPA 75 ».

The device can only be used in a fixed location such as a lab or a machine room. When you install the device, ensure that the protective earthing connection of the socket-outlet is verified by a skilled person.

Lithium battery Caution:

There is a danger of explosion if the battery is incorrectly replaced.

Replace only with same or equivalent type of battery.

Dispose of the batteries according to the instructions of the manufacturer.

PoE Load Condition:

- For AC or DC input: 30W/60W per each PoE port, total: 790W (1440W when two PSU are connected) maximum (for DXS-3130-28P)

To reduce potential safety issues, only the AC adapter purchased as an accessory from "D-Link", or "agency" should be used with the product for further information.

Pour réduire les problèmes de sécurité potentiels, seul l'adaptateur secteur acheté comme accessoire chez « D-Link », ou « agency », doit être utilisé avec le produit pour plus d'informations.

Intended Readers

The DXS-3130-28P Layer 3 Stackable Managed Switch Hardware Installation Guide contains detailed information about the hardware specifications of the switches in this series. It also contains brief information on how to configure and manage this switch. This manual is intended for advanced level users who are familiar with network management concepts and terminology.

Typographical Conventions

Convention	Description
Boldface Font	This convention is used to place emphasis on keywords. It also indicates a button, toolbar icon, menu, menu item, system message, or a prompt appearing on the screen. For example, click the **Apply** button.
Initial capital letter	This convention is used to indicate a window name or keyboard key. For example, press the Enter key.
Blue Courier Font	This convention is used to represent a Command Line Interface (CLI) example.

Notes and Cautions

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

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

Safety/Sécurité

Safety Instructions

Please pay careful attention to the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage.

Safety Cautions

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

Observe the following service markings.

- Do not attempt to service any product, except otherwise explained in the system's documentation.
- Opening or removing covers marked with a high voltage sign 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.

General safety cautions:

- Keep the system away from radiators and heat sources. Also, do not block its 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, 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.
- Only use this product with approved equipment.
- Allow the product to cool before removing the cover or touching its internal components.
- Operate the product only with 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.
- Make 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 the 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 and 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 or national wiring rules.

When connecting or disconnecting power to and from hot-pluggable power supplies, 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 and ensure that all casters and stabilizers are firmly connected to the system. Avoid sudden stops and uneven surfaces.
- This equipment is only to be connected to PoE networks without routing to outside plants.

To help avoid damage to the system, be sure that the voltage selection switch, on the power supply, is set to match the power available at the Switch's location:

- 115V/60Hz is used mostly in North and South America as well as Far Eastern countries like as South Korea and Taiwan.
- 100V/50Hz is used mostly in Eastern Japan and 100V/60Hz in Western Japan.
- 230V/50Hz is used mostly in Europe, the Middle East, Africa, and the Far East.

CAUTION: Risk of Explosion if Battery is replaced by an Incorrect 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。

CAUTION: Shock hazard

This product is intended to be used with a UL Listed Optical Transceiver product, Rated DC3.3V, Laser Class I.

ATTENTION: Risque d'électrocution

Ce produit est destiné à être utilisé avec un produit émetteur-récepteur optique répertorié UL, évalué DC3.3V, classe laser I.

Consignes de sécurité

Veuillez prêter une attention particulière aux consignes de sécurité suivantes pour assurer votre sécurité personnelle et protéger votre système des dommages potentiels.

Précautions de sécurité

Pour réduire considérablement les risques de blessure physique, de choc électrique, d'incendie et de détérioration du matériel, observez les précautions suivantes.

Observez et respectez les marquages relatifs à l'entretien et/ou aux réparations.

- N'essayez pas de réparer un produit, sauf si cela est expliqué dans la documentation du système.
- L'ouverture ou le retrait des capots, signalés par un symbole de haute tension, peut exposer l'utilisateur à un choc électrique.
- Seul un technicien de maintenance qualifié est habilité à réparer les composants à l'intérieur de ces compartiments.

Si l'un des cas suivants se produit, débranchez l'appareil du secteur et remplacez la pièce concernée ou contactez votre prestataire de services agréé.

- Endommagement du câble d'alimentation, du câble de rallonge ou de la fiche.
- Un objet est tombé dans le produit.
- Le produit a été exposé à l'eau.
- Le produit est tombé ou a été endommagé.
- Le produit ne fonctionne pas correctement lorsque les instructions d'utilisation sont correctement suivies.

Précautions générales de sécurité :

- Danger électrique : Seul le personnel qualifié doit effectuer les procédures d'installation.
- Avant de procéder à l'entretien, débranchez tous les cordons d'alimentation pour mettre le périphérique hors tension.
- Eloignez le système des radiateurs et des sources de chaleur. Par ailleurs, n'obturez pas les fentes d'aération.
- Ne versez pas de liquide sur les composants du système et n'introduisez pas de nourriture à l'intérieur. Ne faites jamais fonctionner l'appareil dans un environnement humide. Si le système est mouillé, contactez votre prestataire de services qualifié.
- N'insérez aucun objet dans les fentes de l'appareil. Vous risqueriez de provoquer un incendie ou un choc electrique en court-circuitant les composants internes.
- Utilisez ce produit uniquement avec un équipement approuvé.
- Laissez l'appareil refroidir avant de déposer le capot ou de toucher les composants internes.
- Faites fonctionner le produit uniquement avec la source d'alimentation indiquée sur l'étiquette signalétique où figurent les caractéristiques électriques nominales. Si vous ne savez pas avec certitude quel type de source d'alimentation est requis, consultez votre prestataire de services ou votre compagnie d'électricité.
- Assurez-vous que les caractéristiques nominales des appareils branchés correspondant à la tension du réseau électrique.
- Utilisez uniquement des câbles d'alimentation homologués. Si un câble d'alimentation n'est pas fourni pour le système ou pour un composant/accessoire alimenté par CA destiné au système, procurez-vous un câble d'alimentation homologué pour une utilisation dans votre pays. Le câble d'alimentation doit être adapté à l'appareil et ses caractéristiques nominales doivent correspondre à celles figurant sur l'étiquette du produit. La tension et le courant nominaux du câble doivent être supérieurs aux valeurs nominales indiquées sur l'appareil.

- Pour éviter tout risque de choc électrique, branchez les câbles d'alimentation du système et des périphériques à des prises électriques correctement mises à la masse. Ces câbles sont équipés de fiches à trois broches pour garantir une mise à la masse appropriée. N'utilisez pas d'adaptateur de prise, et n'éliminez pas la broche de mise à la masse du câble. Si un câble de rallonge est nécessaire, utilisez un câble à 3 fils avec des fiches correctement mises à la terre.
- Respectez les caractéristiques nominales de la rallonge ou du bloc multiprise. Assurez-vous que l'intensité nominale totale de tous les produits branchés à la rallonge ou au bloc multiprise ne dépasse pas 80 % de l'intensité nominale limite de la rallonge ou du bloc multiprise.
- Pour protéger le système contre les pics et les chutes de tension transitoires et soudains, utilisez un parasurtenseur, un filtre de secteur ou une alimentation sans interruption (ASI).
- Positionnez les câbles système et les câbles d'alimentation avec soin. Acheminez les câbles de manière à ce qu'ils ne puissent pas être piétinés ou trébuchés. Veillez à ce que rien ne repose sur les câbles.
- Ne modifiez pas les câbles ou les fiches d'alimentation. Contactez un électricien qualifié ou la compagnie d'électricité si des modifications sur site sont nécessaires. Respectez toujours la règlementation locale ou nationale en matière de câblage.

Lors de la connexion ou de la déconnexion de l'alimentation vers et depuis des blocs d'alimentation enfichables à chaud, respectez les consignes suivantes :

- Installez l'alimentation avant d'y brancher le câble d'alimentation.
- Débranchez le câble d'alimentation avant de couper l'alimentation.
- Si le système possède plusieurs sources d'alimentation, mettez-le hors tension en débranchant tous les câbles d'alimentation des prises.
- Déplacez les appareils avec précaution et assurez-vous que les roulettes et/ou que les pieds stabilisateurs sont bien fixés au système. Évitez les arrêts brusques et les surfaces inégales.

Pour éviter d'endommager le système, assurez-vous que le commutateur de sélection de tension de l'alimentation est réglé sur l'alimentation disponible à l'emplacement du commutateur :

- 115 V/60 Hz est principalement utilisé en Amérique du Nord et du Sud, ainsi que dans des pays d'Extrême-Orient tels que la Corée du Sud et Taïwan.
- 100 V/50 Hz est utilisé principalement dans l'est du Japon et 100 V/ 60 Hz dans l'ouest du Japon.
- 230 V/50 Hz est principalement utilisé en Europe, au Moyen-Orient, en Afrique et en Extrême-Orient.

General Precautions for Rack-Mountable Products

Please pay careful attention to the following precautions concerning rack stability and safety. Systems are considered as components in a rack. Thus, a 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.

ATTENTION: Le montage de systèmes sur un rack dépourvu de pieds stabilisateurs avant et latéraux peut faire basculer le rack, pouvant causer des dommages corporels dans certains cas. Par conséquent, installez toujours les pieds stabilisateurs avant de monter des composants sur le rack. Après l'installation d'un système ou de composants dans un rack, ne sortez jamais plus d'un composant à la fois hors du rack sur ses glissières. Le poids de plusieurs composants sur les glissières en extension peut faire basculer le rack, pouvant causer de graves dommages corporels.

- Before working on a 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 a 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 a rack, carefully extend the rail to 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 can pass through to components in the rack.
- Do not step on or stand on any component when servicing other components in a rack.

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.

ATTENTION: Ne neutralisez jamais le conducteur de masse et ne faites jamais fonctionner le matériel en l'absence de conducteur de masse dûment installé. Contactez l'organisme de contrôle en électricité approprié ou un électricien qualifié si vous n'êtes pas sûr qu'un système de mise à la masse adéquat soit disponible.

CAUTION: The system chassis must be positively grounded to the rack cabinet frame. Do not attempt to connect power to the system unless 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.

ATTENTION: La carcasse du système doit être positivement reliée à la masse du cadre du rack. N'essayez pas de mettre le système sous tension si les câbles de mise à la masse ne sont pas raccordés. Le câblage de l'alimentation et de la mise à la masse de sécurité doit être inspecté par un inspecteur qualifié en électricité. Un risque électrique existe si le câble de mise à la masse de sécurité est omis ou débranché.

Protecting Against Electrostatic Discharge

Static electricity can damage delicate components inside the system. To prevent static electricity 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.

Observe the following steps 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 it is ready to be installed into the system. Before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, place it in an antistatic container or packaging.
- Handle all sensitive components in a static-free area. If possible, use antistatic floor pads, workbench pads and an antistatic grounding strap.

1. Introduction

This chapter introduces the product descriptions and features of and listed the package contents of the D-Link DXS-3130-28P switch.

Switch Description
Package Contents
Features

Switch Description

The D-Link DXS-3130-28P is a high-performance member of the D-Link Layer 3 switch family. Designed to connect end-users in a secure enterprise or metro Ethernet access network, the switch family has been future proof to provide high-performance switching capability with advanced fault tolerance, port density and robust security to suit your modern network environment.

The DXS-3130-28P is a PoE model to support multi-speed Gigabit Ethernet and SFP network connection options. The PoE model supports Perpetual POE which continues to supply power to connected devices even during system booting process and it can be automatically disabled when power consumption exceeds the limit. It provides an affordable solution for administrators to respond to the demand for high-speed Gigabit connections ranging from 2.5GBASE-T to 10GBASE-T to 25G fiber connectivity, which also makes the DXS-3130-28P suitable as an access solution for large enterprises. The comprehensive security functions include advanced ACL and Storm Control and IP-MAC-Port Binding (IMPB) with DHCP Snooping on the Switch to extend the network security coverage from access to edge. The advanced and robust features such as redundant power supply and 6 kV surge protection can increase overall reliability, serviceability, and availability.

This switch has 24 10G ports and 4 10G/25G SFP28 ports. The Small Form-factor Portable Pluggable 28 (SFP28 or optional SFP+) ports are used with fiber-optical transceiver cabling to uplink various other networking devices for a 10 or 25 gigabit link that may span great distances. Furthermore, the SFP28 ports may be used to physically stack the Switch with other switches in this series.

The D-Link DXS-3130-28P switch:
- **DXS-3130-28P** supports twenty four 10G RJ45 PoE ports (100 Megabit/1 Gigabit/2.5 Gigabit) and four SFP28 ports (10/25 Gigabit).

Package Contents

Open the shipping carton of the Switch and carefully unpack its contents. The carton should contain the following items:
- One DXS-3130-28P switch
- One Quick Installation Guide
- One AC power cord
- One console cable (RJ45 to RS-232)
- One rack mounting kit (four brackets and screws)

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

Features

This switch is packed with an abundance of networking features that span inside and outside of the traditional Layer 3 framework. The list below highlights the significant protocols and features supported by this switch.

Features that can be found on this switch are:

Virtual Stacking. D-Link Single IP Management (SIM)

Physical Stacking, using the SFP28 ports with 200G (full-duplex) in Chain or Ring topology

Jumbo Frames (12K Bytes)

Spanning Tree Protocol (STP, RSTP, and MSTP)

Ethernet Ring Protection Switching (ERPS)

Link Aggregation

Mirroring (Port Mirroring, VLAN Mirroring, Flow-based (ACL) Mirroring, and RSPAN)

Loopback Detection (LBD)

L2 Protocol Tunneling

IGMP Snooping (Version 1, 2, and 3)

MLD Snooping (Version 1 and 2)

802.1Q VLAN, Port-based VLAN, 802.1v Protocol-based VLAN, MAC-based VLAN, Voice VLAN, Surveillance VLAN, Private VLAN, Asymmetric VLAN, VLAN Trunking, and GVRP

Double VLAN (Q-in-Q), Selective Q-in-Q, and VLAN Translation

ISM VLAN (Multicast VLAN)

Gratuitous ARP

ARP Proxy

IPv6 Neighbor Discovery (ND)

Virtual Router Redundancy Protocol (VRRPv2/VRRPv3[1])

Equal-Cost Multi-Path Route (ECMP)

Policy-based Route (PBR)

Route Preference Setting

Route Redistribution

Routing Information Protocol (RIPv1/RIPv2), and RIPng

Class of Service (CoS)

Two-rate Three-color Marker (trTCM)

Policy Map (Remark 802.1p priority, Remark ToS/DSCP, Rate Limiting, and Time-based QoS)

Queue Handling: Strict Priority Queue (SPQ), Weighted Round Robin (WRR), and Weight Deficit Round Robin (WDRR)

Congestion Control: Weighted Random Early Detection (WRED), Simple Random Early Detection (SRED), Port-based Bandwidth Control, Flow-based

bandwidth Control, and Queue-based Bandwidth Control

Access Control List (ACL): IP Access List, IPv6 Access List, Time-based ACL, and CPU Interface Filtering

Secure Shell (SSHv2) IPv4/IPv6

Secure Sockets Layer for IPv4/IPv6

Port Security

Broadcast, Multicast, and Unicast Storm Control

Traffic Segmentation

IP-MAC-Port Binding (IMPB)

IP Source Guard (IPv4/IPv6)

DHCP Snooping

IPv6 Snooping

Dynamic ARP Inspection (DAI)

DHCPv6 Guard

IPv6 Route Advertisement (RA) Guard

IPv6 ND Inspection

D-Link Safeguard Engine

Layer 3 Control Packet Filtering

NetBIOS/NetBEUI Filtering

DHCP Server Screening (IPv4/IPv6)

DHCP Client Filtering

ARP Spoofing Prevention

BPDU Attack Protection

DoS Attack Prevention

Authentication, Authorization, and Accounting (AAA)

RADIUS/TACACS+ Accounting (IPv4/IPv6)

802.1X Network Access Control

Web-based Access Control (WAC)

MAC-based Access Control (MAC)

Compound Authentication

Guest VLAN

Microsoft® NAP Support (IPv4/IPv6)

Cable Diagnostics

802.3ah Ethernet Link OAM

802.1ag Connectivity Fault Management (CFM)

Y.1731 OAM

Optical Transceiver Digital Diagnostic Monitoring (DDM)

D-Link Unidirectional Link Detection (DULD)

Network Time Protocol (NTP) IPv4/IPv6

Simple Network Time Protocol (SNTP) IPv4/IPv6

Link Layer Discovery Protocol (LLDP), and LLDP-MED

User Account Privilege for Management Access

Command Line Interface (CLI)

Simple Network Management Protocol (SNMPv1/SNMPv2c/SNMPv3) IPv4/IPv6

Remote Network Monitoring (RMONv1/RMONv2)

SNMP Trap

Web User Interface (Web UI)

D-Link Discover Protocol (DDP)

DHCP Server and Client, and DHCP Auto-configuration (IPv4/IPv6)

DHCP Relay (IPv4/IPv6)

Telnet Server and Client

TFTP Client (IPv4/IPv6)

Secured FTP (SFTP) Server (IPv4/IPv6)

System Log and Command Logging

SMTP (IPv4/IPv6)

Multiple Image and Configuration, and Flash File System (FFS)

Password Recovery and Encryption

Debug Command

CPU and Port Utilization Monitoring, and Packets Counter

Trap and Log Severity Control

Traceroute and Ping (IPv4/IPv6)

Microsoft® Network Load Balancing (NLB)

sFlow (IPv4/IPv6)

2. Hardware Components

This chapter describes the front, rear, and side panel components of the switch.

DXS-3130-28P Switch

Front Panel Components

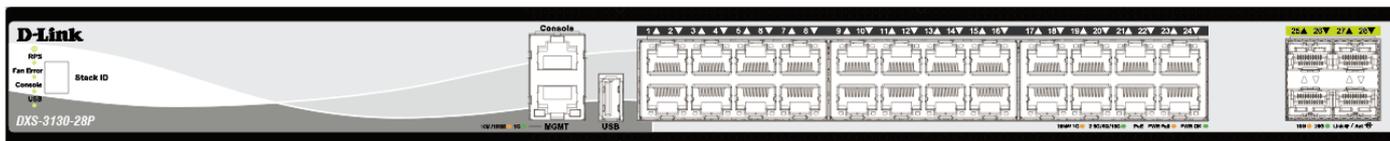The front panel of DXS-3130-28P features a variety of LED indicators and ports.

Figure 2-1 Front panel view of the DXS-3130-28P

Ports on the front panel of this switch

Port	Description
USB	Inserting a flash drive into the USB 2.0 Type-A port provides an additional storage space for portable firmware images and configuration files that can be copied to and from the NVRAM of the Switch.
MGMT	The RJ45 Management (MGMT) port is an IP-based, Out-Of-Band (OOB) port for Telnet, web, or SNMP management that operates at 10/100/1000 Mbps wire-speed. This port can be used to configure the Switch without being connected to the network.
Console (RJ45)	The RJ45 console port can be used to connect to the Command Line Interface (CLI) of the Switch for configuration, management, and monitoring. This port uses a special console cable (included in this package) with a RJ45-to-Serial interface to connect the Switch and the serial port (COM) of a PC.
10GBASE-T RJ45 Ports	The Switch is equipped with 24 RJ45 Ethernet ports. These ports can operate at 100 Mbps, 1 Gbps, 2.5 Gbps, 5 Gbps, or 10 Gbps wire-speed.
25 Gigabit SFP28 Ports	The Switch is equipped with 4 SFP28 (or optional SFP+) ports. These ports can operate at 10 Gbps or 25 Gbps wire-speeds and support a wide collection of SFP+ or SFP28 transceivers.

For a complete list of SFP transceivers that are compatible with this switch, refer to **Port Functions** in **Appendix A - Technical Specifications**.

LED Indicators

Located on the front panel of this switch are LED indicators: Power, Console, RPS, Fan Err, USB, Link/Act indicators for all the ports, and Stack ID.
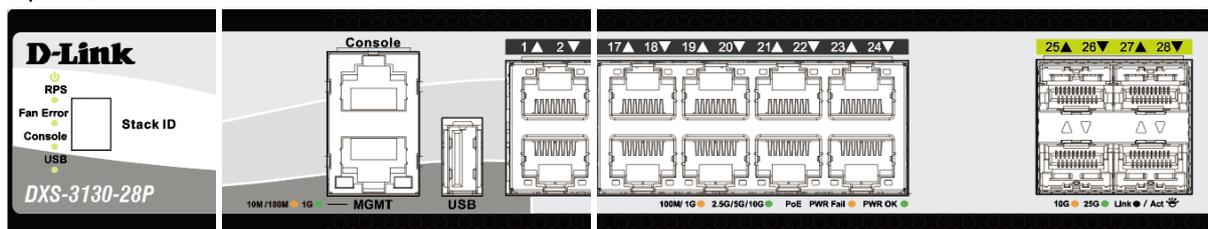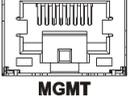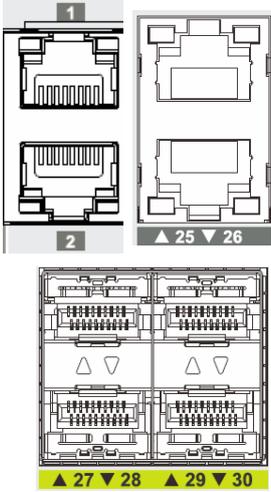

Figure 2-2 LED indicators for the DXS-3130-28P

LED status indicator behavior

LED	Description
Power	This LED will light solid green after the Switch has been powered on successfully. This LED will be off when the Switch is no longer receiving power (i.e. powered off).
Console	This LED will light solid green when the console port is active. This LED will be off when the console port is not active.
MGMT	The LED at the left side indicates the status of MGMT port. This LED will light solid green (1000 Mbps) or amber (10/100Mbps) after a link to the MGMT port was successfully established. This LED will blink when activity on this port is taking place. This LED will be off when MGMT port is not active. The LED at the right side has no LED notification.
RPS	This LED will light green when the Redundant Powers Supply is in use. This LED will be off when the RPS is not in use.
Fan Error	This LED will light solid red when the fan fails. This LED will be off when the fan is in normal operation.
USB	This LED will light solid green if a USB flash drive is plugged in. This LED will blink green when the Switch is reading or writing data to and from the USB drive. This LED will be off when no USB drive is plugged into the USB port.
Link/Act/Speed LEDs & PoE LEDs	The Switch has LED indicators for Link and Activity. **PoE LED (No. 1~24):** The right LEDs of the above ports indicate power supply status. This LED will light solid green when there is a PoE device connected to the port and is receiving power from the port. This LED will light amber to indicate an error state in power supply. The LED is off when there is no power device connected to the port. **10G RJ45 Ports (No. 1~24):** The left LED will light solid green when there is a connection (or link) to a 2.5/5/10 Gbps Ethernet device; the right LED will light solid amber when there is a connection (or link) to a 100/1000 Mbps Ethernet device on any of the RJ45 ports. The left LED will blink green when a 2.5/5/10 Gbps port is active; the right LED will blink amber when a 100/1000 Mbps port is active. The LED will be off when there is no link or activity. **SFP28 Ports (N0. 25~28):** The triangle LED indicates the Link/Act/Speed status of 25G SFP28 ports. This LED will light solid green when there is a connection (or link) to a 25 Gbps Ethernet device or solid amber when there is a connection (or link) to a 10 Gbps Ethernet device on any of the SFP28 ports. The LED will blink green when a 25 Gbps port is active or blink amber when a 10 Gbps port is active. The LED will be off when there is no link or activity.
Stack ID	This 7-segment LED can display numbers from 1 to 9 and the following letters H, h, E, and G. The stacking ID (1 to 9) can be assigned manually by the user or automatically by the system. The letter '**H**' will be displayed if this switch is the **master switch** in the stack. The letter '**h**' will be displayed if this switch is the **backup master switch** in the stack. The letter '**E**' will be displayed if there was an error in the system's self-test. The letter '**G**' will be displayed when the **Safeguard** engine entered the **exhausted mode**.

Please refer to the "**LED Indicators**" section in the **Appendix A** - Technical Specifications for more LED information.

Rear Panel Components

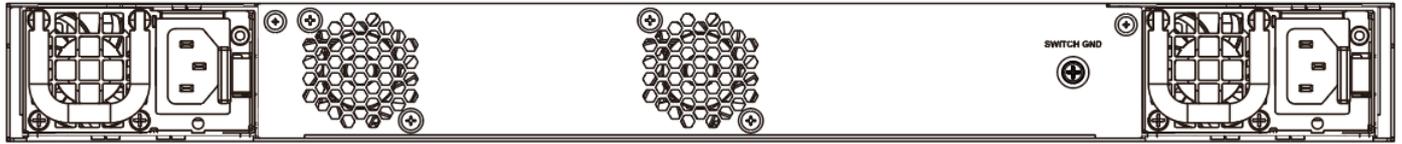The rear panel of this switch features a GND and two hot-pluggable power supplies.

Figure 2-3 Rear panel view of the DXS-3130-28P

Components on the rear panel of this switch

Component	Description
Switch GND	Use an electrical grounding wire and connect one end of the wire to the Switch GND and the other end of the wire to an electrical grounding point most found on the Switch mounting rack itself.
Redundant Power Supply	A hot-pluggable RPS can be plugged into the RPS port found on the rear panel of the Switch. When one of the two RPS units fails, the other one will supply power to the Switch immediately and automatically.
RPS LED	**RPS LED:** The hot-pluggable RPS carries a LED which stays green or red. When it is solid green, it shows that the power unit is working. When it is flashing green, it indicates the power is at 12Vsb. When it is solid amber, it indicates that RPS stops working due to lost of power input. It can also indicate critical events such as fan failure or over-current protection. When it is flashing amber, it shows that RPS is still working but requires maintenance due to high temperature, high current, or slow fan speed.
AC Power Connector	AC Power Connector: The AC power cord with a three-pronged AC power connector can be plugged into this receptacle of the RPS to supply the Switch with 100-240 VAC power at 47-63 Hz.

Side Panel Components

The side panels of this switch 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 4 inches of space at the sides of the Switch for proper ventilation. Without proper heat dissipation and air circulation, system components might overheat and lead to system failure or even severe damage.
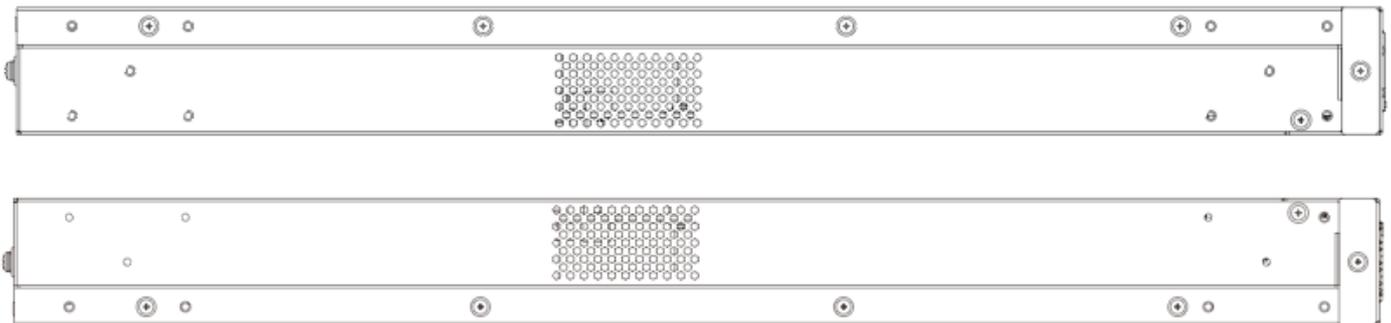

Figure 2-4 Side panels of the DXS-3130-28P

3. Installation

This chapter covers the installation guidelines and steps and procedures of D-Link DXS-3130-28P switches.

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)
Connecting PoE BT to the switch

Installation Guidelines

This section will discuss the hardware installation guidelines that the user must follow to install this switch properly and safely into the appropriate environment.

Visually inspect the power cord and check if it is fully secured to both the power connector, on the Switch, and the electrical outlet that supplies power.

Install the Switch in a cool and dry place within the acceptable operating temperature and humidity ranges. For more information about the acceptable operating temperature and humidity ranges, refer to the Physical and Environmental section.

Install the Switch in a site free from strong electromagnetic field generators such as motors, vibration, dust, and direct exposure to sunlight.

Installing the Switch without a Rack

This section is intended to guide the user through installing the Switch in an area other than a switch rack. Firstly, attach the included rubber feet to the bottom of the Switch. Then, look for the marked blocks on the bottom of the Switch for attaching the rubber feet. These markings are usually found at each corner on the bottom of the device. The rubber feet help cushion the Switch, further protecting the casing from scratches and also preventing it from scratching other surfaces.
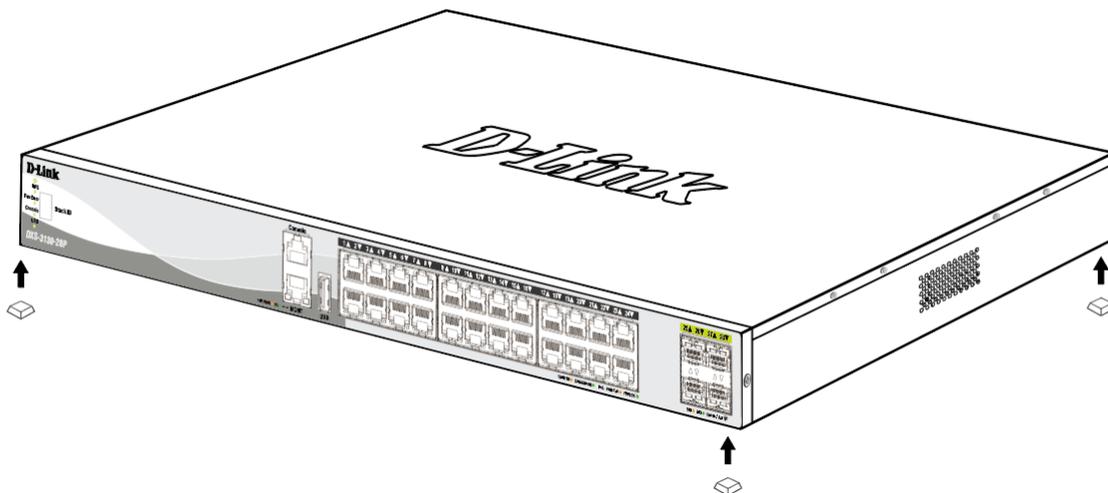
Figure 3-1 Attaching rubber feet to the Switch

Install the Switch on a sturdy, level surface that can support the weight of the Switch (see the **Weight** section in **Appendix A - Technical Specifications**.). Do not place any heavy objects on the Switch. The power outlet should be within 1.82 meters (6 feet) distance to the Switch. Make sure that there is proper and adequate heat dissipation and ventilation from and around the Switch. Leave at least 10 cm (4 inches) of space at the front, sides, and rear of the Switch for ventilation.

Installing the Switch in a Standard 19" Rack

This section is intended to guide the user through installing the Switch into a switch rack. The Switch can be mounted in a standard 19"(1U) rack using the provided mounting brackets.

1. Fasten the mounting brackets to the sides of the Switch using the provided screws.
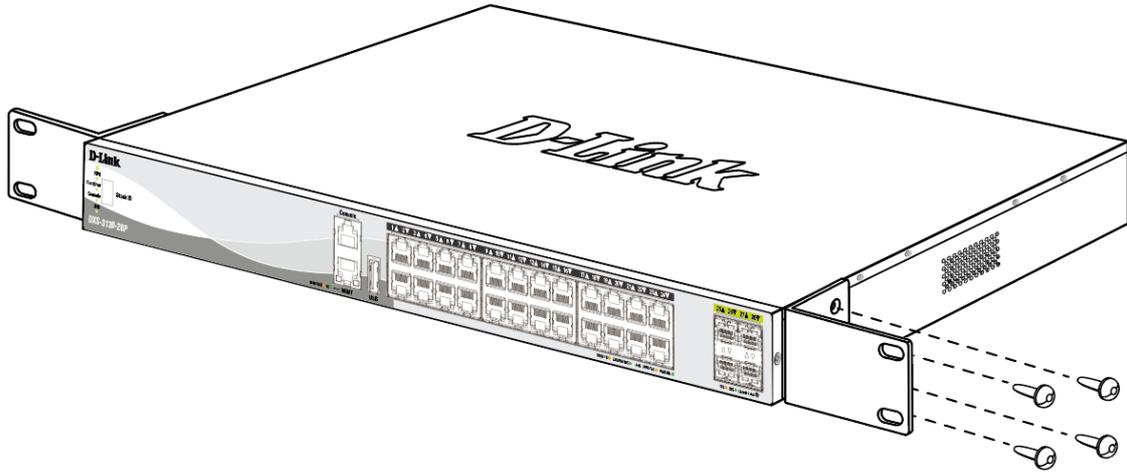
Figure 3-2 Attaching rack-mount brackets to the Switch

2. Fasten the mounting brackets in any available open space in the rack using the provided screws.
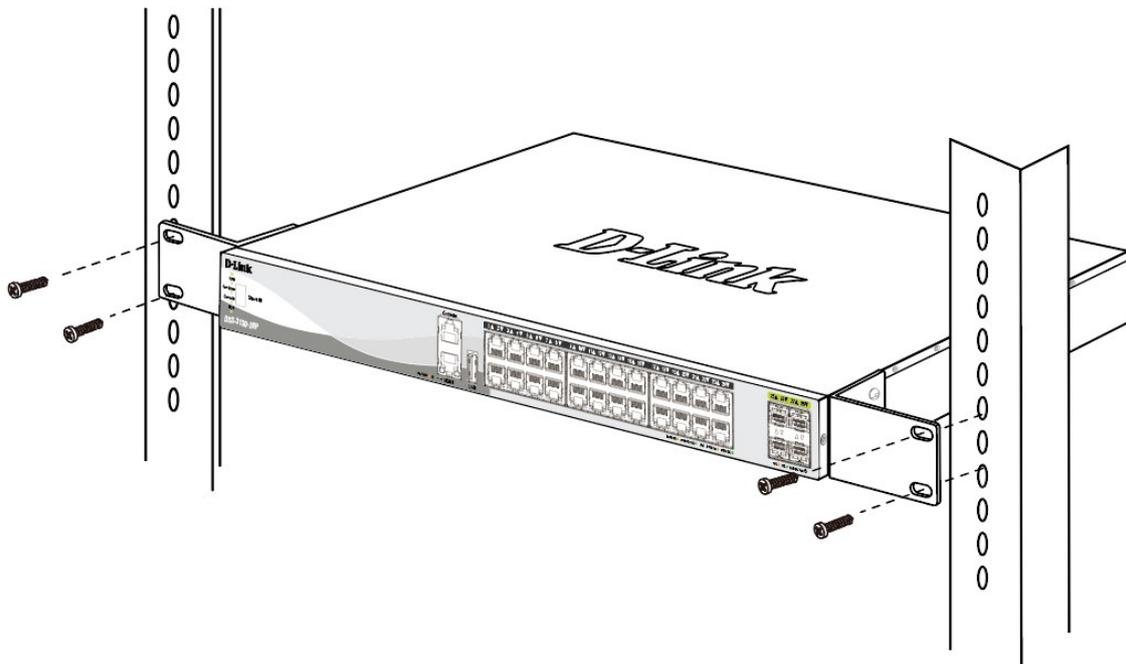
Figure 3-3 Installing the Switch in a Rack

Make sure that there is adequate space around the Switch to allow for proper air flow, ventilation, and cooling.

Installing Transceivers into the Transceiver Ports

The Switch is equipped with Small Form-factor Pluggable (SFP28/SFP+) ports that can be used to connect various other networking devices to this switch that do not support the standard RJ45 wiring connection. These ports are generally used to connect this switch to optical fiber connections and can be used to connect devices to the Switch over great distances. The maximum distance that the RJ45 wiring connection can reach is 100 meters. Fiber optic connections, however, can span several kilometers.

The figure below illustrates how to properly insert SFP28 transceivers into the Switch's SFP28 ports.
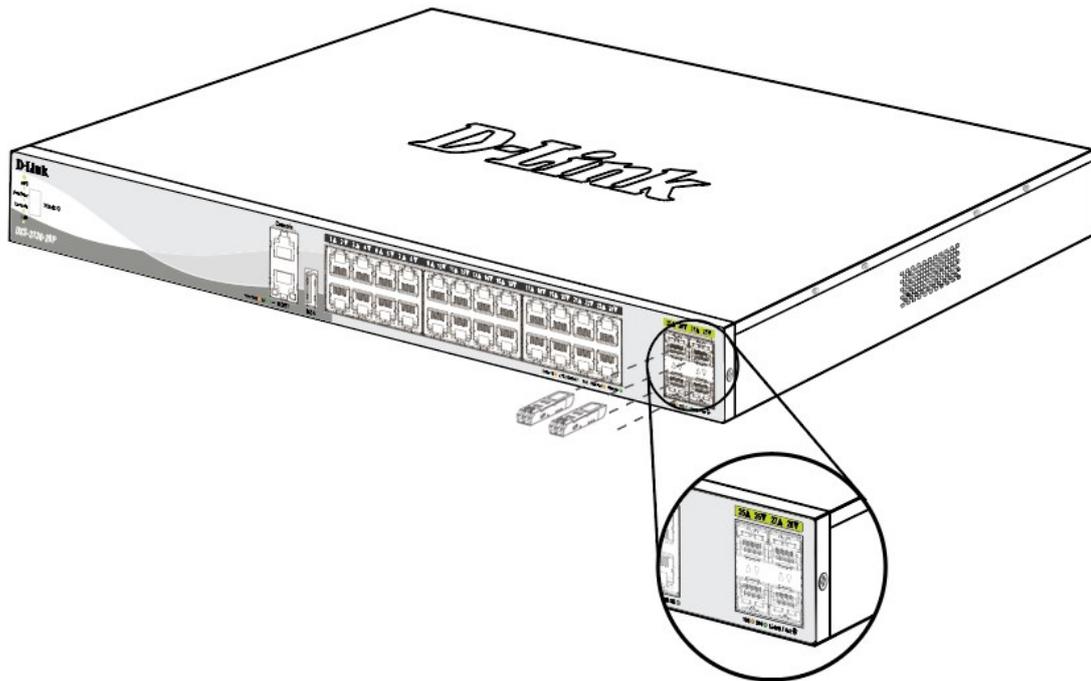
Figure 3-4 Inserting transceivers into the transceiver ports

The SFP28 ports support transceiver form factors: **SFP28** and **SFP+**. A complete list of SFP transceivers compatible with this switch, can be found in **Port Functions** in **Appendix A - Technical Specifications** at the end of this document.

Installing PSU Modules into the PSU Module Slots

Located on the rear panel of the switch, D-Link DXS-3130-28P PSU module slots support the following two PSU modules.

AC Power Supply Module:

- **DPS-PWR1200AC**: An AC Hot-Swappable Internal Redundant Power Supply.

DC Power Supply Module:

- **DPS-PWR1200DC**: A DC Hot-Swappable Internal Redundant Power Supply.

Installing AC PSU Modules

D-Link DXS-3130-28P switches support hot-swappable AC PSU modules that you can remove and insert a PSU module when your switch is powered on and in operation. This feature is designed to further ensure and enhance the reliability of your switch.

When an existing AC PSU module needs to be replaced or an additional AC PSU module needs to be installed, it is important to know the proper installation of the AC PSU module.
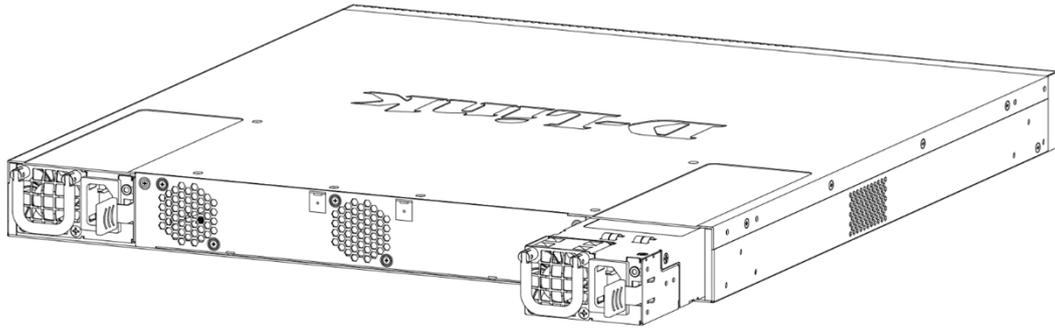
Figure 3-5 Installing an AC Power Supply Module

1. Remove the AC power cord and then press the release clip inwards to remove an existing AC PSU module.

2. Gently pull the AC PSU module out of the PSU module slot.

3. Insert a new AC PSU module into the PSU module slot until its release clip securely clicks into place.

4. Plug one end of the AC power cord into the AC power socket on the AC PSU module and the other end into a properly grounded AC power source outlet.

The Switch will automatically receive power and adjust its power settings to adapt to a voltage supply within the 100~240VAC range at 47~63Hz.

Figure 3-6 Installed AC Power Supply Module

You can install another AC PSU module to the other PSU module slot. When one AC PSU fails, the other AC PSU will immediately and automatically provide AC power to the Switch.

Installing DC PSU Modules

D-Link DXS-3130-28P switches support hot-swappable DC PSU modules that you can remove and insert a PSU module when your switch is powered on and in operation. This feature is designed to further ensure and enhance the reliability of your switch.

When an existing DC PSU module needs to be replaced or an additional DC PSU module needs to be installed, it is important to know the proper installation of the DC PSU module.
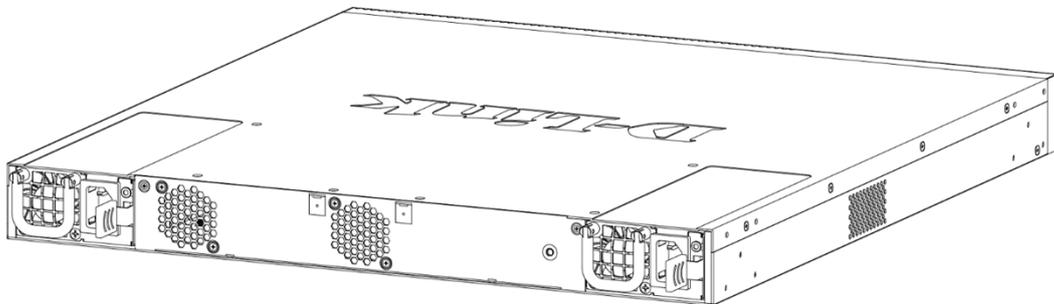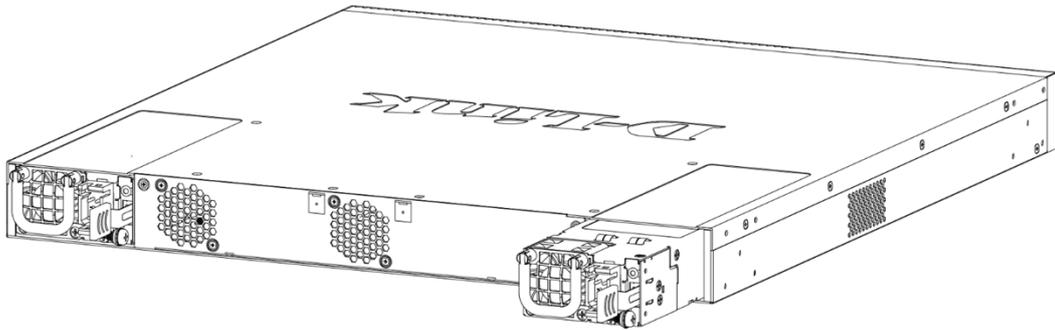
Figure 3-7 Installing a DC Power Supply Module

1. Remove the DC power cord and then press the release clip inwards to remove an existing DC PSU module.

2. Gently pull the DC PSU module out of the PSU module slot.

3. Insert a new DC PSU module into the PSU module slot until its release clip securely clicks into place.

4. **Plug one end of the DC power cord** into the DC power socket on the DC PSU module **and the other end into a properly grounded DC power source outlet.**
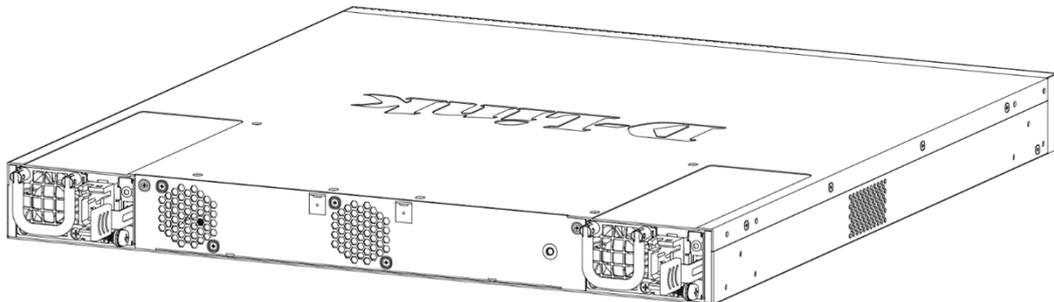
Figure 3-8 Installed DC Power Supply Module

There is no power switch/button on the Switch. The DC PSU module will receive power automatically.

> ⚠ CAUTION: Before connecting the DC power cable to the DC power input socket on the switch, the DC power cable must be properly connected to a DC source, at your facility, by a qualified, licensed electrician.

> ⚠ CAUTION: When installing a DC-powered switch, ground the chassis and follow the following instructions before connecting the switch to the DC power source:

Use a minimum of 18 AWG stranded copper wire for grounding. The wire should be long enough to reach from the installed switch to the facility ground point.
Torque screwdriver with a 1/4-inch flat blade.
Ground additional hardware appropriately to the earth ground connection at your site.

You can also install the other PSU module slot with an AC or DC PSU module. When the DC PSU module fails, the other AC or DC PSU module will immediately and automatically provide power to the Switch.

Power On (AC Power)

Plug one end of the AC power cord into the power socket of the Switch and the other end into the local power source outlet. After the system is powered on, the power LED will light up green to indicate that the system has been powered 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 socket of the Switch.

Connecting PoE BT to the Switch

When AC power is not available, you can power on the Switch using PoE BT through the MGMT port. The Switch receives to 90 Watts of DC power from Power Sourcing Equipment (PSE) over a Category 5e/6a LAN cable.

When AC power is on, you can use the PoE BT connection through the MGMT port as a backup power supply for the Switch. When AC power fails, the PoE BT power through the MGMT port will keep the Switch powered on till your AC power returns.

NOTE: Only the **DXS-3130-28P** features a MGMT PSE-capable port.

NOTE: The PSE cable for **DXS-3130-28P**'s MGMT port cannot exceed 3 meters length.

Switch Connections

This chapter covers how D-Link DXS-3130-28P switches can switch to different devices such as an end node, another switch, a server, etc.

> ***Switch to an End Node***
> ***Switch to Another Switch***
> ***Switch Stacking***
> ***Switch to a Server***

Switch to an End Node

An end node is a generic name for edge networking devices that will be connected to this switch. Typical examples of end nodes are Personal Computers (PCs), Notebooks, Access Points, Print Servers, VoIP Phones and more. Each end node should be fitted with a RJ45 networking port. Normally, end nodes will connect to this switch by using a standard twisted-pair UTP/STP network cable. When a successful connection is established, the corresponding port light will illuminate and blink to indicate that network activity is taking place on that port.

The diagram below displays a typical end node connected to the Switch.

RJ-45 Connector
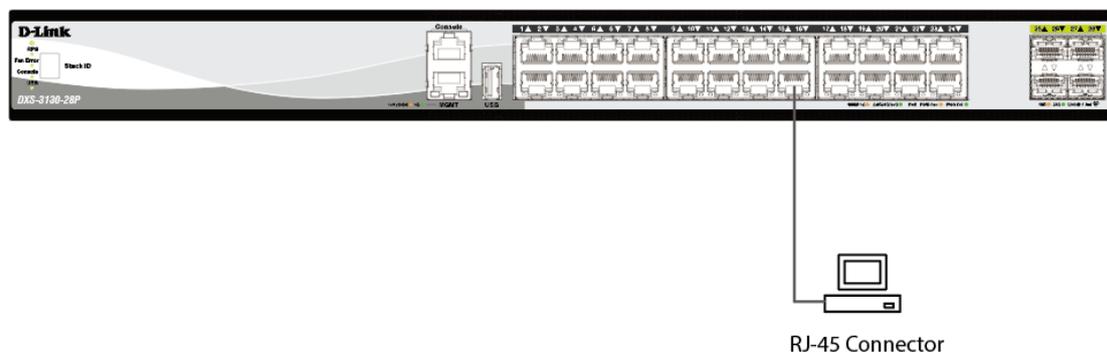
Figure 0-1 Connecting the Switch to an End Node

Switch to Another Switch

The Switch can be used to connect to any other switch or hub in the network. This network topology is used when the Switch does not have enough ports to cater for all the end nodes in the network.

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

- Connect a 100BASE-TX switch port to the Switch via a twisted-pair Category 5 UTP/STP cable.
- Connect a 1000BASE-T switch port to the Switch via a twisted pair Category 5e UTP/STP cable.
- Connect a 2.5GBASE-T/5GBASE-T/10GBASE-T switch port to the Switch via a twisted pair Category 6/6a/7 UTP/STP cable.
- Connect a fiber, uplink, switch port supporting an optical fiber uplink to the Switch's SFP28 ports via fiber optical cabling.
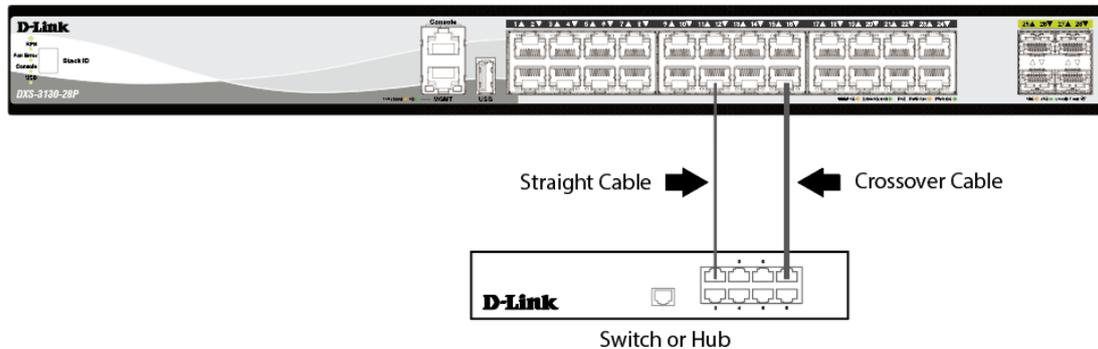
Figure 0-2 Connecting the Switch to another switch/hub

Switch Stacking

The DXS-3130-28P supports stacking up to 9 switches together while being managed through one console connection on the master switch, or by an IP address through the MGMT port, or by multiple IP addresses through any one of the ports using Telnet, the Web UI, and SNMP. This cost-effective switch provides an affordable solution for administrators to upgrade their networks using the SFP28 ports to scale and stack the Switches. This increases overall reliability, serviceability, and availability.

Duplex Chain – The Duplex Chain topology stacks switches together in a chain-link format. This method only allows for one-direction data transfer. If a break occurs in the chain, the data transfer will be affected.
Duplex Ring – The Duplex Ring stacks switches in a ring or circle format where data can be transferred in two directions. This topology is very resilient as, even if a break occurs in the ring, data can still be transferred through the stacking cables between switches in the stack using the alternate path.

Switches in the series can be physically stacked using optical fiber cables or Direct Attached Cables (DAC) connected to SFP28 transceivers. Only the last 4 ports on the Switch can be used for physical stacking.

Physical stacking needs to be enabled and can be configured to support **4-port** stacking configuration. When the stacking configuration is used through the 25G SFP28 ports, a full-duplex speed of up to 200 Gbps will be used between two switches.

Stacking Limit – The physical stacking number for a stack is dependent on the maximum number of stacking devices. For DXS-3130-28P, the maximum number of stacking devices is 9.

   Notes:
   1. Modules with 10G SFP+ transceivers such as 10GBASE-SR/10GBASE-LRM Multi-mode and 10GBASE-LR/10GBASE-ER/10GBASE-ZR Single-mode cannot be used for stacking.
   2. The last four SFP28 ports can be used for either stacking or as an uplink to another network device, but not at the same time.

The figures below illustrate how switches can be stacked in a **Duplex Chain** formation with the last 4 ports of the Switches using optical fiber cables connected to SFP28 transceivers or DAC with SFP28 connectors.

Figure 0-3 Duplex Chain stacking topology (SFP28 ports)

The figures below illustrate how switches can be stacked in a **Duplex Ring** formation with the last 4 ports of the Switches using optical fiber cables connected to SFP28 transceivers or DAC with SFP28 connectors.
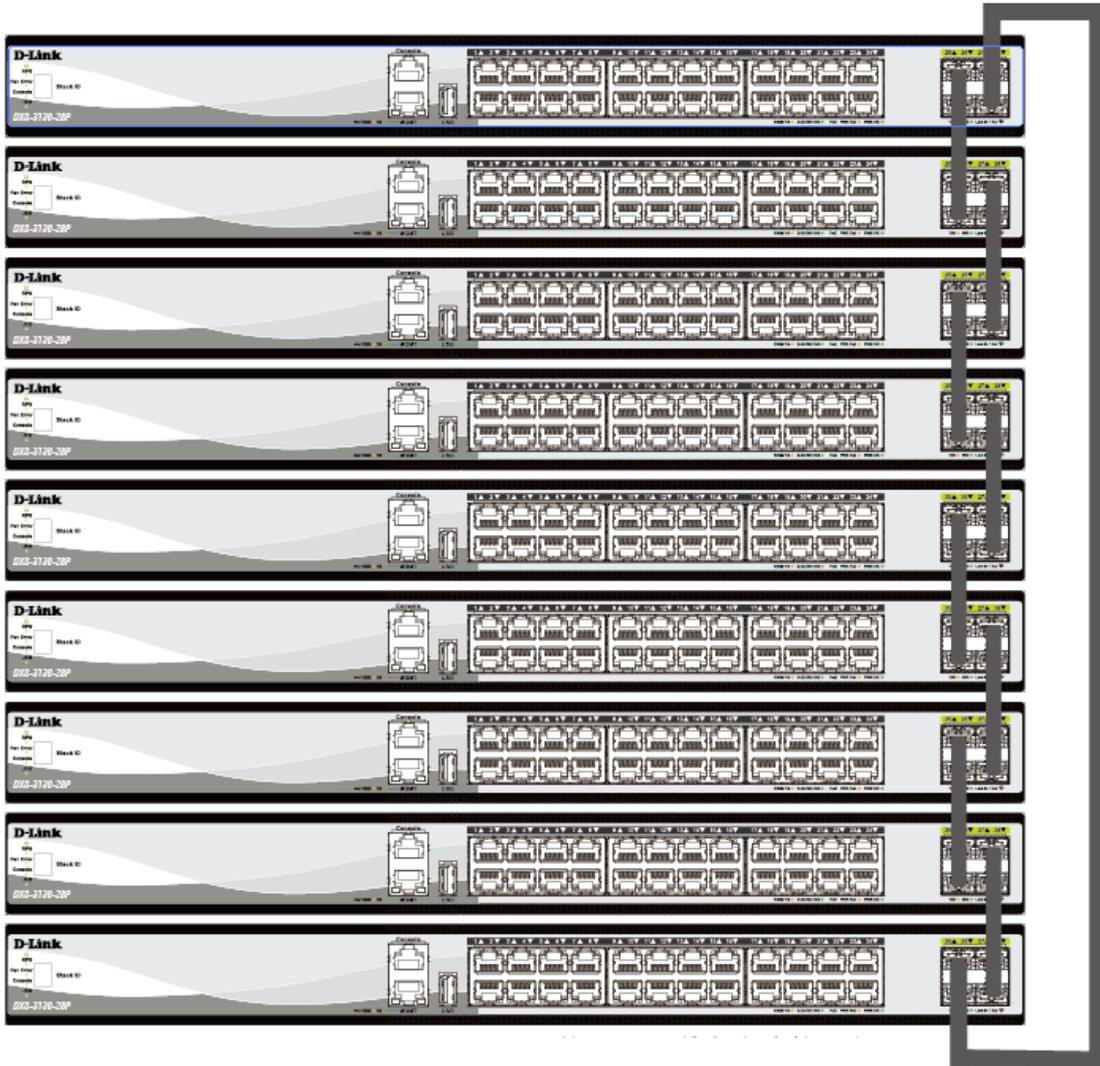

Figure 0-4 Duplex Ring stacking topology (SFP28 ports)

Switch to a Server

The Switch is ideal for connecting to a network backbone, server, or server farm. The RJ45 ports operate at a speed of 100/1000 Mbps up to 2.5, 5, or 10 Gbps depending on the model. The SFP28/SFP+ ports operate at a speed of 10 or 25 Gbps.
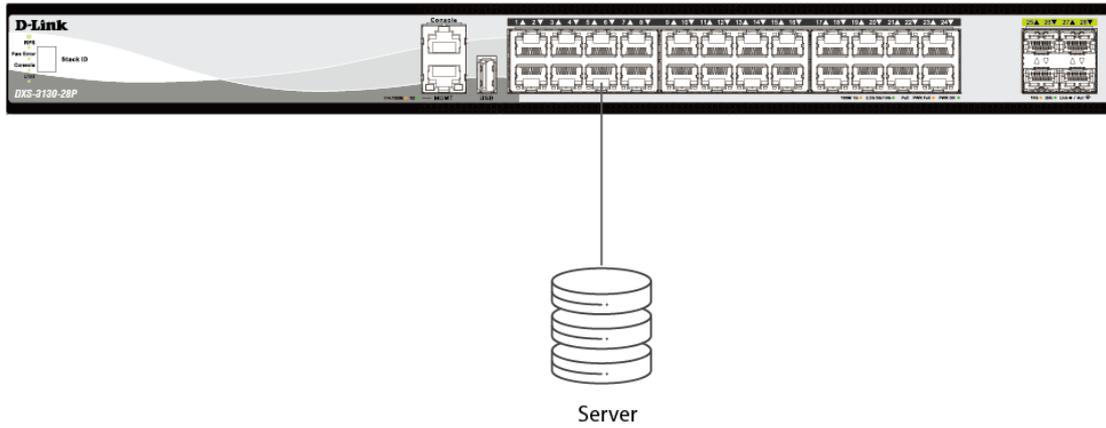

Figure 0-5 Connecting the Switch to a server

4. Switch Management

This chapter covers D-Link DXS-3130-28P switches management platform options and how to connect to the different ports respectively.

Management Options
Connecting to the RJ45 Console
Connecting to the Console Port
Connecting to the MGMT Port
Connecting using SNMP

Management Options

This switch provides multiple access platforms for configuring, managing, and monitoring networking features available on this switch. Currently, three management platforms are available and described below.

Command Line Interface (CLI)

This switch can be managed, out-of-band, by using the console port or the MGMT port on the front/rear panel of the Switch. Alternatively, the Switch can also be managed, in-band, by using a Telnet connection to any of the LAN ports on the Switch. The command line interface provides complete access to all switch management features.

For more detailed information about the CLI, refer to the *DXS-3130-28P CLI Reference Guide*.

SNMP-based Management

The Switch can be managed with a SNMP-compatible console program. The Switch supports SNMP v1, 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 for generation of statistics and counters.

Web User Interface (Web UI)

The Web UI of the Switch can be accessed from any computer running web browsing software from its MGMT port, or LAN port when it is connected to any of the RJ45 or SFP28 ports. The Web UI of the Switch can also be accessed using an HTTPS (SSL) connection.

This management interface of the Switch renders a more graphical representation of the features that can be viewed and configured. Most of the features available through the CLI can be accessed through the Web UI as well. You can use Microsoft's Internet Explorer, Mozilla Firefox, or Google Chrome as your Web browsers.

For more detailed information about the Web UI, refer to the *DXS-3130-28P Web UI Reference Guide*.

Connecting to the Console Port

The front panel of the Switch provides an RJ45 console port to connect a remote system for monitoring and configuring the Switch. This port requires an RJ45-to-DB9 cable included with the Switch, to establish a physical connection.

Connecting to the RJ45 Console Port

To use the RJ45 console port, you need the following equipment:
- A terminal or a computer with both an RS-232 serial port and terminal emulation software.
- A console cable with a female DB9 connector on one end and an RJ45 connection on the other end. You can find this cable included with the Switch. This cable helps establish physical connection to the console port.

To connect the RJ45 console port on the Switch to a computer:
- Connect the DB9 connector on the console cable to the RS-232 serial port on a computer running terminal emulation software; then insert the RJ45 connector into the RJ45 console port on the front of the Switch.

To configure the terminal emulation software with the following settings:

Select the appropriate serial port (COM1 or COM2).
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.

To be able to view the boot procedure, the Switch needs to be rebooted. The simplest way, at this stage, to reboot the Switch is to unplug and re-insert the power cable from and into the power receptacle on the back of the Switch.

After correctly configuring the terminal settings and re-inserting the power cable, the boot procedure will appear on the terminal.

```
 Boot Procedure                                           V1.00.003
--------------------------------------------------------------------------

 Power On Self Test ........................................ 100 %

 MAC Address    : F0-7D-68-36-30-00
 H/W Version    : A1

 Please Wait, Loading 1.01.006 Runtime Image .............. 100 %
 UART init ................................................. 100 %
 Starting runtime image
 Device Discovery .......................................... 100 %
 Configuration init ........................................ 100 %
```

After the boot sequence has been completed, the console login screen will be displayed.

Connecting to the Switch for the First Time

The Switch supports user-based security that can prevent unauthorized users from accessing the Switch or changing its configuration. This section will explain how to log into the Switch's Command Line Interface via the out-of-band console connection.

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

```
                    DXS-3130-28P Gigabit Ethernet Switch

                            Command Line Interface
                              Firmware: 1.10.004
                Copyright(C) 20248 D-Link Corporation. All rights reserved.
Switch>
```

By default, there is no **Username** and **Password** configured in the account settings of this switch for console connection. This will allow the user to simply connect to this Switch for the first time by pressing the '**Enter**' key. After pressing **Enter**, access will be given to enter commands after the command prompt (**Switch>**) appears.

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

NOTE: It is highly recommended that you create a user account containing a username and a password for the Switch to prevent unauthorized access to the management interface.

Creating a User Account

One of the first and most important tasks is to create a user account. Logging in using a predefined administrator-level username will give a user privileged access to the Switch's management software. Also, such setup will help prevent unauthorized access to the Switch and record your password for future reference.

An example to create an administrator-level account for the Switch called 'NewUser':

```
Switch#enable
Switch#configure terminal
Switch(config)#username NewUser password xxxxxxxx
Switch(config)#username NewUser privilege 15
Switch(config)#line console
Switch(config-line)#login local
Switch(config-line)#end
Switch#
```

In the example above:

1. At the CLI command prompt, we entered the **enable** command to enter the **Privileged EXEC Mode**. **Enter** is pressed.
2. We entered the **configure terminal** command to enter the **Global Configuration Mode**. **Enter** is pressed.
3. We entered the **username NewUser password xxxxxxxx** command. **Enter** is pressed. This created a user account with the username as NewUser and a password as specified.
4. We entered the **username NewUser privilege 15** command. **Enter** is pressed. This user account is configured to be of **Administrative** (**15**) privileges.
5. We entered the **line console** command to enter the **Line Configuration Mode**. **Enter** is pressed.
6. We entered the **login local** command. **Enter** is pressed to specify that the local line requires login credentials.
7. We entered the **end** command to exit back to the **Privileged EXEC Mode**.

NOTE: Usernames and Passwords are case sensitive. Usernames can be up to 32 characters in length. Passwords must contain 8-30 characters and include at least one uppercase and lowercase letter, one number, and one symbol, such as @!&*. It must not be identical to the username and must not contain adjacent identical characters or digits or the default IP address of the Switch.

Configuring the IP Address

Each switch must be assigned its own in-band IP Address, which is used for communication with an SNMP network manager or other TCP/IP applications. The Switch's default IP address is 10.90.90.90 with a subnet mask of 255.0.0.0. You can change the IP address of the Switch to meet the specification of your networking address scheme.

The IP address of the Switch must be configured before it can be managed, by a user, via the Web UI.

An example to change the IP address of the Switch to '10.50.50.50', using a subnet mask of '255.0.0.0':

```
Switch>enable
Switch#configure terminal
Switch(config)#interface vlan 1
Switch(config-if)#ip address 10.50.50.50 255.0.0.0
Switch(config-if)#
```

In the above example,

1. We accessed the **Privileged EXEC Mode** by entering the command **enable**.
2. Then we entered the **Global Configuration Mode** by entering the command, **configure terminal**.

3. Then we entered the **VLAN Configuration Mode** of the default VLAN, which is VLAN 1, by entering the command, **interface vlan 1**.
4. Then we changed the IP address of the Switch to 10.50.50.50 and the subnet mask to 255.0.0.0 by entering the command **ip address 10.50.50.50** and **255.0.0.0**.

The Switch can now be accessed and configured through Telnet or the Web UI. The Switch's IP address can also be automatically obtained by using the DHCP protocol.

Connecting to the MGMT Port

The front panel of the Switch features an Out-Of-Band (OOB) RJ45 MGMT port which can be used to connect to a computer using a standard Ethernet cable. A web browser or Telnet client can be used to connect to the Switch using the MGMT port.

Note: By default, the Telnet method requires a password to log in to the CLI. After logging in to the Web UI, go to **Management > Login Method**. Create a password for telnet in the **Login Password** section (refer to the following chapter: **Web-based Switch Configuration** for access through a web browser).

To use the MGMT port, connect one end of an Ethernet cable to a computer and the other end to the Switch. The default IP address of the MGMT port is 192.168.0.1 and the subnet mask is 255.255.255.0. Make sure that the computer being used for the switch management has a non-conflicting IP address in the 192.168.0.0/24 network.

The following screen should be displayed after a successful connection:


```
             DXS-3130-28P Gigabit Ethernet Switch

                  Command Line Interface
                    Firmware: 1.10.004
        Copyright(C) 2024 D-Link Corporation. All rights reserved.

User Verification Access


Password:*****

Switch>
```

To view the IP settings of the MGMT port, use the following command through the console port.:

```
Switch#show ip interface mgmt 0

mgmt_ipif 0 is enabled, Link status is up
  IP address is 192.168.0.1/24
  Gateway is 0.0.0.0

Switch#
```

The IP settings or enabled status of the MGMT port can be changed through the console port. For example, to change the IP address of the MGMT port, use the following commands:

```
Switch#configure terminal
Switch(config)#interface mgmt 0
Switch(config-if)#ip address 192.168.1.1 255.255.255.0
Switch(config-if)#
```

Connecting using SNMP

The Simple Network Management Protocol (SNMP) is an OSI Layer 7 (Application Layer) protocol 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) that runs locally on the device. A defined set of variables (managed objects) is maintained by the SNMP agent and is 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 SNMPv1, SMNPv2c, and SNMPv3. 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 will be 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 and 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 that have been 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 are sent by an SNMP-enabled device to the NMS and can be used to 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 a pre-configured IP address, usually an NMS. Typical traps include trap messages for Authentication Failure and Topology Change.

Management Information Base (MIB)

A 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 and MIB values can be either read-only or read-write.

5. Web-based Switch Configuration

Introduction
Logging into the Web UI
Web User Interface (Web UI)

Introduction

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

The Switch supports the following web browsers:
- Internet Explorer
- Firefox
- Google Chrome
- Safari

Logging into the Web UI

To access the Web UI, open a standard web browser, enter the Switch's IP address into the address bar of the browser, and press the ENTER key. By default, the MGMT port, located just below the RJ45 console port, can be accessed using the IP address of 192.168.0.1. To access the Web UI from normal LAN ports, the default IP address is 10.90.90.90.

NOTE: To configure the IP address of the Switch, refer to the **Configuring the IP Address** section.

After pressing the ENTER key, the following authentication window should appear, as shown below.

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 **Login** since there are no login user accounts created by default on this switch.

NOTE: After a user account is created, login credentials will be required to access the Web UI. During the sending and receiving of the login password to and from the Switch process, this information will be protected using a strong encryption algorithm to prevent attackers from snooping this information for gaining unauthorized access to the Switch.

Web User Interface (Web UI)

The Web UI provides access to various Switch configuration and management windows. It allows a 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 into four distinct areas that are described in more details in the table below.
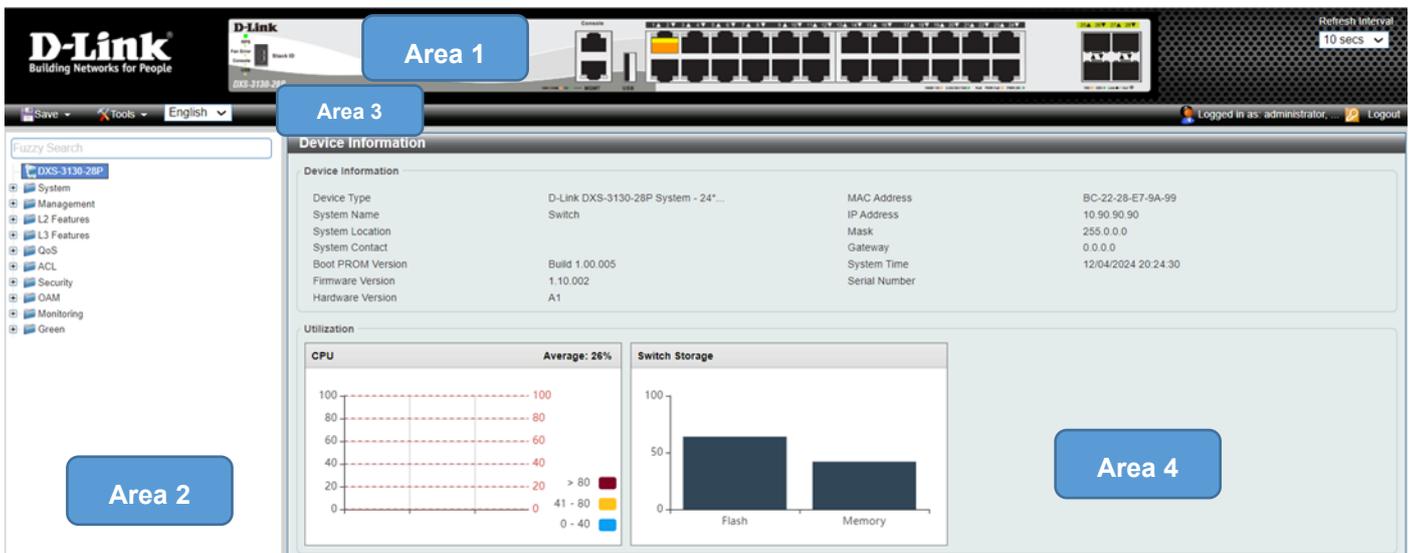
Figure 5-2 Main Web UI Window

The four main areas displayed in the window

Area Number	Function
AREA 1	This area displays a graphical, near real-time image of the front panel of the Switch for the Switch's ports and expansion modules. It also shows port activity based on a specific mode. Some management functions, including port monitoring, are accessible from here. Click the D-Link logo to go to the D-Link website.
AREA 2	This area displays a file explorer-type menu tree with all configurable options. Select the folder or window to display. Open folders and click the hyperlinked window buttons and subfolders contained within them to display information pertaining to that category.
AREA 3	This area displays a toolbar used to access **Save** and **Tools** menus.
AREA 4	This area displays graphical, real-time monitoring gauges of **Device Information**, **CPU Usage**, and **Memory Usage**.

Web Pages

The main folders in area 2 available for selection

Folder Name	Description
System	Features regarding the Switch's configuration can be viewed and configured in this folder.
Management	Features regarding the Switch's management can be viewed and configured in this folder.
L2 Features	Features regarding the Layer 2 functionality of the Switch can be viewed and configured in this folder.
L3 Features	Features regarding the Layer 3 functionality of the Switch can be viewed and configured in this folder.
QoS	Features regarding the Quality of Service functionality of the Switch can be viewed and configured in this folder.
ACL	Features regarding the Access Control List functionality of the Switch can be viewed and configured in this folder.
Security	Features regarding the Switch's security can be viewed and configured in this folder.
OAM	Features regarding the Switch's Operations, Administration and Maintenance (OAM) can be viewed and configured in this folder.
Monitoring	The Switch's configuration and statistics can be viewed and configured in this folder.
Green	Features regarding the D-Link Green Technology can be viewed and configured in this folder.

Appendix A - Technical Specifications

General

Feature	Description	
Data Transfer Rates	Standards	Full-duplex
	Ethernet	20 Mbps
	Fast Ethernet	200 Mbps
	Gigabit Ethernet	2 Gbps
	2.5 Gigabit Ethernet	5 Gbps
	5 Gigabit Ethernet	10 Gbps
	10 Gigabit Ethernet	20 Gbps
	25 Gigabit Ethernet	50 Gbps
Physical Stacking	**Stacking Topology:** Duplex Chain, Duplex Ring	
	Stacking Bandwidth: Up to 200 Gbps (depending on the topology)	
	Stacking Units: Up to 9 switches in a stack	
	Backup Master Support: Yes	
Network Cables	UTP/STP Category 3, 4, 5 for 10BASE-T UTP/STP Category 5, 5e for 100BASE-TX UTP/STP Category 5e for 1000BASE-T UTP/STP Category 7/6/6a for 2.5GBASE-T/5GBASE-T/10GBASE-T EIA/TIA-568 100-ohm screened twisted-pair (STP) (100 m) 10GBASE-SR Multi-mode, 10GBASE-LR Single-mode, 10GBASE-ER Single-mode, 10GBASE-ZR Single-mode, 10GBASE-LRM Multi-Mode, 1 m/3m/7m 10G SFP+ Direct Attach Cable (DAC), 1 m 25G SFP28 Direct Attach Cable (DAC)	

Physical and Environmental

Feature	Description
Internal Power Supply	AC Input: 100~240 VAC, 50~60 Hz
Optional Redundant Power Supply	Available on DMS-3130-30TS only. One connector at the back to install optional external RPS. When internal power fails, the optional external RPS will take over all the power supply immediately and automatically. This product is intended to be supplied by UL Listed Power source.
Hot-swappable Redundant Power Supply	Available on DXS-3130-28P only. Two hot-swappable RPS in the back to back up each other. When one power unit fails, the other will take over the power supply immediately and automatically.
Security Lock	Available on DMS-3130-30TS only. Provides a Kensington-compatible security lock, on the rear panel 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.
Fans	The IC Sensor detects the temperature on the switch automatically and adjusts the speed correspondingly.

Feature	Description
USB Slot	Supports a USB 2.0 Type-A flash drive with a maximum current of 1 A. This slot only supports FAT16 and FAT32 file system architectures.
Power Consumption	**Max:** • CRPS-1: 839 W (PoE On) • CRPS-1 & 2: 1679 W (PoE On) • 95.9 W (PoE Off) **Standby:** 50.18 W
Temperature	**Operating:** 0 °C to 50 °C (32 °F to 122 °F) **Storage:** -40 °C to 70 °C (-40 °F to 158 °F)
Humidity	**Operating:** 10 % to 90 % RH (non-condensing) **Storage:** 5 % to 90 % RH (non-condensing)
Heat Dissipation	3439.64 BTU/Hr. (Max.)
Dimensions	440 mm (W) x 470 mm (D) x 44 mm (H), 19-inch, 1 U Rack-mount size
Weight	6.48Kg (14.29 lbs)
MTBF	286,495.20 Hours
EMC Certifications	CE Class A, FCC Class A, VCCI Class A, RCM, BSMI
Safety Certifications	cUL, CB, BSMI

Performance

Feature	Description
Transmission Method	Store-and-forward
Packet Buffer	4 MB per device
Jumbo Frame Size	12K Bytes (12288 Bytes)
Switching Capacity	680 Gbps
Maximum Packet Forwarding Rate	505.92 Mpps
Priority Queues	8 Priority Queues per port
MAC Address Table	Supports 32K (32,768) MAC addresses
IP Routing Tables	**IPv4 and IPv6:** Max.1024 entries
Virtual Stacking / Clustering	Supports D-Link Single IP Management version 2.01 Manages up to 32 devices in a virtual stack with a single IP address

LED Indicators

Location	LED	Color	Status	Description
Per Device	**Power**	Green	Light on (Solid)	Power on
		Off	Light off	Power off
	Console	Green	Light on (Solid)	RJ45 console port is active
		Off	Light off	Console off
	Fan Err	Red	Light on (Solid)	Fan fail

Location	LED	Color	Status	Description
		Off	Light off	Operating normally
	RPS	Green	Light on (Solid)	RPS in use
			Light off	RPS off
	USB	Green	Light on (Solid)	USB plugged in
			Light blinking	Busy reading/writing
		Off	Light off	No USB plugged in
	Stacking ID (7-segment LED)	Green	Light on (1-9)	Stacking number displayed
			Light on (H)	Stacking Master
			Light on (h)	Stacking Backup Master
			Light on (E)	System self-test error
			Light on (G)	Safeguard Engine in exhausted mode
LED Per 10 Gbps Port	**Link/Act/Speed**	Green	Light on (Solid)	When there is a connection (or link) to a 2.5/5/10 Gbps Ethernet device on any of the ports
			Light blinking	When there is reception or transmission of data occurring at 2.5/5/10 Gbps
		Amber	Light on (Solid)	When there is a connection (or link) to a 100/1000 Mbps Ethernet device on any of the ports
			Light blinking	When there is reception or transmission of data occurring at 100/1000 Mbps
		Off	Light off	Link down or no link
LED per SFP28/SFP+ Port	**Link/Act/Speed**	Green	Light on (Solid)	When there is a connection (or link) to a 25 Gbps Ethernet device on any of the ports
			Light blinking	When there is reception or transmission of data occurring at a 25 Gbps port
		Amber	Light on (Solid)	When there is a connection (or link) to a 10 Gbps Ethernet device on any of the ports
			Light blinking	When there is reception or transmission of data occurring at a 10 Gbps port
		Off	Light off	Link down or no link

Port Functions

Feature	Description
RJ45 Ports	Compliant with the following standards: • IEEE 802.3 compliance • IEEE 802.3u compliance • IEEE 802.3ab compliance • IEEE 802.3an compliance • IEEE 802.3az compliance (Energy Efficient Ethernet) • IEEE 802.3bz compliance • IEEE 802.3af compliance • IEEE 802.3at compliance • IEEE 802.3bt compliance
	Support Full-Duplex operation • IEEE 802.3x Flow Control support for Full-Duplex mode
SFP+ Ports	Compliant with the following standards: • IEEE 802.3ae compliance
	SFP+ Transceivers Supported: • DEM-410T: 10GBASE-T Copper SFP+ Transceiver (w/o DDM), 30 m • DEM-431XT: 10GBASE-SR Multi-mode, OM1:33M/OM2:82M/OM3:300M (w/o DDM) • DEM-432XT: 10GBASE-LR Single-mode, 10 km (w/o DDM) • DEM-433XT: 10GBASE-ER Single-mode, 40 km (w/o DDM) • DEM-434XT: 10GBASE-ZR Single-mode, 80 km (w/o DDM) • DEM-435XT: 10GBASE-LRM Multi-Mode, 200M (w/o DDM) • DEM-436XT-BXD: 10GBASE-LR Single-mode, 20 km (TX-1330/RX-1270 nm) (w/o DDM) • DEM-436XT-BXU: 10GBASE-LR Single-mode, 20 km (TX-1270/RX-1310 nm) (w/o DDM)
	SFP+ Direct Attached Cables (DAC) Supported: • DEM-CB100S: 1 m 10G SFP+ Direct Attach Cable (DAC) • DEM-CB300S: 3 m 10G SFP+ Direct Attach Cable (DAC) • DEM-CB700S: 7 m 10G SFP+ Direct Attach Cable (DAC)
SFP28 Ports	Compliant with the following standards: • IEEE 802.3ae compliance • IEEE 802.3by compliance
	SFP28 Transceivers Supported: • DEM-S2801SR: 25G SFP28 Multi-Mode 100 m transceiver • DEM-S2810LR: 25G SFP28 Single-Mode 10 km transceiver
	SFP28 Direct Attached Cables (DAC) Supported: • DEM-CB100S28: 1 m 25G SFP28 Direct Attach Cable (DAC) • DEM-CB100Q28-4S28: 1 m 100G QSFP28 to 4x 25G SFP28 Direct Attach Cable (DAC)

Appendix B - Cables and Connectors

Ethernet Cable

When connecting the Switch to another switch, a bridge or hub, a straight-through Cat5/5e/6a/7 cable is required. Please refer to these products for matching cable pin assignment.

The following diagrams and tables show the standard RJ45 receptacle/connector and their pin assignments.
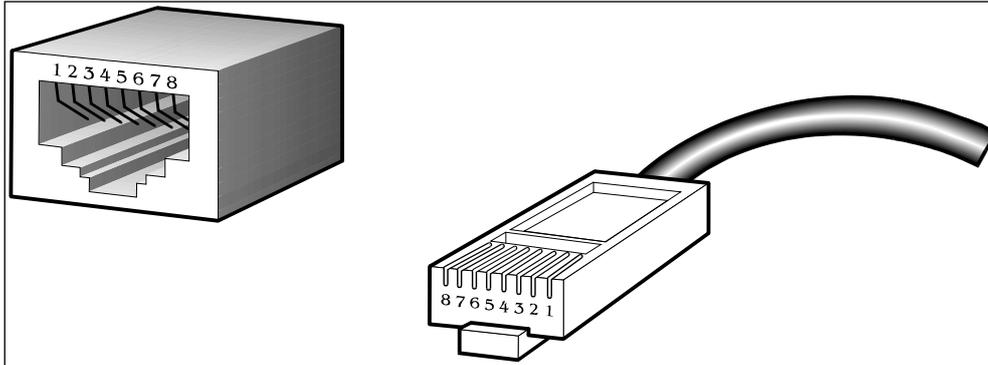
Figure B-1 Standard RJ45 Port and Connector

<u>**RJ45 Pin Assignment**</u>

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 (RJ45 to RS-232)

A console cable is used to connect to the RJ45 console port of the Switch to access the command line interface. The following diagram and table show the standard RJ45 to RS-232 cable and pin assignments.
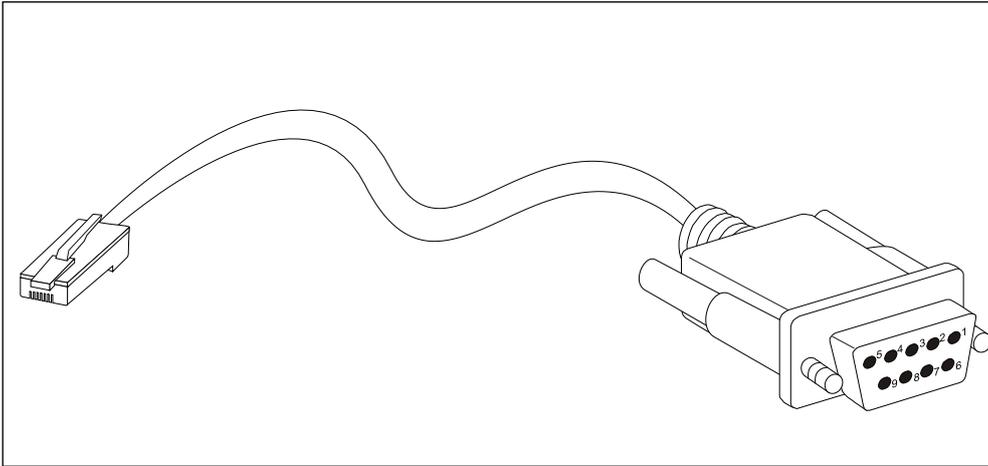
Figure B-2 Console to RJ45 Cable

Contact	Console (DB9/RS232)	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

CE RED Compliance Statement

Hereby, D-Link Corporation declares that the radio equipment type DWP-1010 is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address: http://www.dlink.com/uk/en/support/cedoc

This equipment complies with EU radiation exposure limits set forth for an uncontrolled environment.

Name of manufacturer:	D-Link Corporation
Address:	No.289, Xinhu 3rd Rd, Neihu District
Zip code & City:	Taipei City 114
Country:	Taiwan
Telephone number:	886-2-6600-0123

Additional Notice

This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Appendix C - Warranty & Technical Support

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 nonconforming 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.

What Is Not Covered: The Limited Warranty provided herein by D-Link does not cover: Products that, in D-Link's judgment, have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; Initial installation, installation and removal of the product for repair, and shipping costs; Operational adjustments covered in the operating manual for the product, and normal maintenance; Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; Any hardware, software, firmware or other products or services provided by anyone other than D-Link; and Products that have been purchased from inventory clearance or liquidation sales or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product. While necessary maintenance or repairs on your Product can be performed by any company, we recommend that you use only an Authorized D-Link Service Office. Improper or incorrectly performed maintenance or repair voids this Limited Warranty.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, LOSS OF REVENUE OR PROFIT, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, FAILURE OF OTHER EQUIPMENT OR COMPUTER PROGRAMS TO WHICH D-LINK'S PRODUCT IS CONNECTED WITH, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT. THE MAXIMUM LIABILITY OF DLINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, I MPLIED OR STATUTORY.

Governing Law: This Limited Warranty shall be governed by the laws of the State of California. Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This Limited Warranty provides specific legal rights and you may also have other rights which vary from state to state.

Trademarks: D-Link is a registered trademark of D-Link Systems, Inc. Other trademarks or registered trademarks are the property of their respective owners.

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.