



Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for D-LINK DES-3028. You'll find the answers to all your questions on the D-LINK DES-3028 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual D-LINK DES-3028
User guide D-LINK DES-3028
Operating instructions D-LINK DES-3028
Instructions for use D-LINK DES-3028
Instruction manual D-LINK DES-3028



User Manual

PRODUCT MODEL : **DES-3028/DES-3028P/DES-3028G/DES-3052/DES-3052P**
MANAGED 10/100MBPS FAST ETHERNET SWITCH
RELEASE 2

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[You're reading an excerpt. Click here to read official D-LINK DES-3028 user guide](http://yourpdfguides.com/dref/4255601)
<http://yourpdfguides.com/dref/4255601>

Manual abstract:

All rights reserved. @@@@Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. D-Link Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. January 2009 P/N 651ES3028025G ©Copyright 2009. All rights reserved. DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch

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Section 8, CoS - Features information on CoS, including Port Bandwidth, 802.1P Default Priority, 802.

IP User Priority, CoS Scheduling Mechanism, CoS Output Scheduling, Priority Settings, TOS Priority Settings, DSCP Priority Settings, Port Mapping Priority Settings, and MAC Priority. Section 9, ACL - Discussion on the ACL function of the Switch, including Time Range, Access Profile Table and CPU Interface Filtering. Section 10, Security - A discussion on the Security functions on the Switch, including Traffic Control, Port Security, Port Lock Entries, IP-MAC-Port Binding, SSL, SSH, 802.1X, Trusted Host, Access Authentication Control, Traffic Segmentation and DoS Attack Prevention. Section 11, Monitoring - Features information on Monitoring including CPU Utilization, Port Utilization, Packets, Packet Errors, Packet Size, MAC Address, Switch Log, IGMP Snooping Group, Browse Router Port, VLAN Status, MLD Snooping Group, Browse MLD Snooping Router Port, Static ARP Settings, ARP-FDB, Gratuitous ARP Settings, Session Table, and Port Access Control. Appendix A, Technical Specifications - Technical specifications for the DES-3028/DES-3028P/DES-3028G/DES-3052 and the DES-3052P. Appendix B, System Log Entries - Information on the System Log Entries Appendix C, Cable Lengths - Information on cable types and maximum distances. Appendix D, Glossary - Lists definitions for terms and acronyms used in this document. viii DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Intended Readers The DES-3028/DES-3028P/DES-3028G/DES-3052/DES-3052P User Manual contains information for setup and management of the Switch. The term, "the Switch" will be used when referring to all five switches.

This manual is intended for network managers familiar with network management concepts and terminology. *Typographical Conventions* Convention [] Description In a command line, square brackets indicate an optional entry. For example: [copy filename] means that optionally you can type copy followed by the name of the file. Do not type the brackets. Indicates a button, a toolbar icon, menu, or menu item. For example: Open the File menu and choose Cancel. Used for emphasis. May also indicate system messages or prompts appearing on your screen. For example: You have mail. Bold font is also used to represent filenames, program names and commands.

For example: use the copy command. Indicates commands and responses to prompts that must be typed exactly as printed in the manual. Indicates a window name. Names of keys on the keyboard have initial capitals. For example: Click Enter.

Indicates a window name or a field. Also can indicate a variables or parameter that is replaced with an appropriate word or string. For example: type filename means that you should type the actual filename instead of the word shown in italic. Menu Name > Menu Option Indicates the menu structure. Device > Port > Port Properties means the Port Properties menu option under the Port menu option that is located under the Device menu.

Bold font **Boldface** *Typewriter Font* *Initial capital letter* *Italics* Menu Name > Menu Option Notes, Notices, and Cautions A **NOTE** indicates important information that helps you make better use of your device. A **NOTICE** indicates either potential damage to hardware or loss of data and tells you how to avoid the problem. A **CAUTION** indicates a potential for property damage, personal injury, or death. ix DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Safety Instructions Use the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage. Throughout this document, the caution icon () is used to indicate cautions and precautions that you need to review and follow. **Safety Cautions** To reduce the risk of bodily injury, electrical shock, fire, or damage to the equipment, observe the following precautions. Observe and follow service markings. Do not service any product except as explained in your system documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock. Only a trained service technician should service components inside these compartments.

If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider: The power cable, extension cable, or plug is damaged. An object has fallen into the product. The product has been exposed to water. The product has been dropped or damaged. The product does not operate correctly when you follow the operating instructions. Keep your system away from radiators and heat sources. Also, do not block cooling vents. Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide or contact your trained service provider. Do not push any objects into the openings of your system.

Doing so can cause fire or electric shock by shorting out interior components. Use the product only with approved equipment. Allow the product to cool before removing covers or touching internal components. Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

To help avoid damaging your system, be sure the voltage on the power supply is set to match the power available at your location: 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan 230 V/50 Hz in most of Europe, the Middle East, and the Far East Also, be sure that attached devices are electrically rated to operate with the power available in your location. Use only approved power cable(s). If you have not been provided with a power cable for your system or for any ACpowered 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 you must use an extension cable, use a 3-wire cable with properly grounded plugs. Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.



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x DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS). Position system cables and power cables carefully; route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables. Do not modify power cables or plugs.

Consult a licensed electrician or your power company for site modifications. Always follow your local/national wiring rules. When connecting or disconnecting power to hot-pluggable power supplies, if offered with your system, observe the following guidelines: Install the power supply before connecting the power cable to the power supply. Unplug the power cable before removing the power supply. If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supplies. Move products with care; ensure that all casters and/or stabilizers are firmly connected to the system. Avoid sudden stops and uneven surfaces. General Precautions for Rack-Mountable Products Observe the following precautions for rack stability and safety. Also, refer to the rack installation documentation accompanying the system and the rack for specific caution statements and procedures. Systems are considered to be components in a rack.

Thus, "component" refers to any system as well as to various peripherals or supporting hardware. Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack. Always load the rack from the bottom up, and load the heaviest item in the rack first. Make sure that the rack is level and stable before extending a component from the rack.

Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers. After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack. Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating. Ensure that proper airflow is provided to components in the rack.

Do not step on or stand on any component when servicing other components in a rack. NOTE: A qualified electrician must perform all connections to DC power and to safety grounds. All electrical wiring must comply with applicable local, regional or national codes and practices. CAUTION: Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. xi DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch CAUTION: The system chassis must be positively grounded to the rack cabinet frame. Do not attempt to connect power to the system until grounding cables are connected. A qualified electrical inspector must inspect completed power and safety ground wiring. An energy hazard will exist if the safety ground cable is omitted or disconnected. CAUTION: Do not replace the battery with an incorrect type.

The risk of explosion exists if the replacement battery is not the correct lithium battery type. Dispose of used batteries according to the instructions. Protecting Against Electrostatic Discharge Static electricity can harm delicate components inside your system. To prevent static damage, discharge static electricity from your body before you touch any of the electronic components, such as the microprocessor. You can do so by periodically touching an unpainted metal surface on the chassis. You can also take the following steps to prevent damage from electrostatic discharge (ESD): 1. When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your system. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body. When transporting a sensitive component, first place it in an antistatic container or packaging. Handle all sensitive components in a static-safe area.

If possible, use antistatic floor pads, workbench pads and an antistatic grounding strap. 2. 3. xii DES-3028 DES-3028P DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Section 1 Introduction DES-3028/28P/28G/52/52P Switch Description Features Ports LED Indicators Front-Panel Description Rear Panel Description Side Panel Description Installing SFP ports DES-3028/28P/28G/52/52P The DES-3028, DES-3028P, DES-3028G, DES-3052, and the DES-3052P are all members of the D-Link Switch family. These Switches provide unsurpassed performance, fault tolerance, scalable flexibility, robust security, standard-based interoperability and impressive technology to future-proof departmental and enterprise network deployments with an easy migration path.

The following manual describes the installation, maintenance, and configurations concerning the DES-3028, DES-3028P, DES3028G, DES-3052, and DES-3052P. These five Switches are identical in configuration and very similar in basic hardware and consequentially, most of the information in this manual will be universal to the total group of switches. Corresponding screen pictures of the web manager may be taken from any one of these switches but the configuration will be identical, except for varying port counts. For the remainder of this document, we will use the DES-3028G as the Switch in question for examples, screen shots, configurations, and explanations. Features IEEE 802.

3ad Link Aggregation Control Protocol support IEEE 802.1X Port-based and Host-based Access Control IEEE 802.1Q VLAN IEEE 802.1D Spanning Tree, IEEE 802.1w Rapid Spanning Tree and IEEE 802.1s Multiple Spanning Tree support Access Control List (ACL) support Single IP Management support Access Authentication Control utilizing TACACS, XTACACS and TACACS+ Internal Flash Drive for saving configurations and firmware Simple Network Time Protocol support MAC Notification support System and Port Utilization support System Log Support Support port-based enable and disable Address table: Supports up to 8K MAC addresses per device Supports a packet buffer of up to 512K bytes Supports Port-based VLAN Groups Port Trunking with flexible load distribution and fail-over function IGMP Snooping support SNMP support Secure Sockets Layer (SSL) and Secure Shell (SSH) support Port Mirroring support MIB support for: RFC1213 MIB II 1 DES-3028 DES-3028P DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch RFC1493 Bridge RFC2819 RMON RFC2665 Ether-like MIB RFC2863 Interface MIB Private MIB RFC2674 for 802.



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1p IEEE 802.1X MIB IEEE 802.3x flow control in full duplex mode IEEE 802.1p Priority Queues IEEE 802.

3u 100BASE-TX compliant RS-232 DCE console port for Switch management Provides parallel LED display for port status such as link/act, speed, etc. IEEE 802.3 10BASE-T compliant High performance switching engine performs forwarding and filtering at wire speed, maximum 14,881 packets/sec on each 10Mbps Ethernet port, maximum 148,810 packet/sec on 100Mbps Fast Ethernet port and 1,488,100 for each Gigabit port Full and half-duplex for both 10Mbps and 100Mbps connections. Full duplex allows the switch port to simultaneously transmit and receive data. It only works with connections to full-duplex-capable end stations and switches. Connections to a hub must take place at half-duplex Support Broadcast/Multicast storm control Non-blocking store and forward switching scheme capability to support rate adaptation and protocol conversion Supports by-port Egress/Ingress rate control Efficient self-learning and address recognition mechanism enables forwarding rate at wire speed 2 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Ports The following table lists the relative ports that are present within each switch: DES-3028 and DES-3028P Twenty-four 10/100BASE-T Two 1000Base-T/SFP Combo Ports Two 1000Base-T Ports One female DCE RS-232 DB-9 console port DES-3028G Twenty-four 10/100BASE-T Four 1000Base-T/SFP Combo Ports One female DCE RS-232 DB-9 console port DES-3052 and DES-3052P Forty-eight 10/100Mbps Ports Two 1000Base-T/SFP Combo Ports Two 1000Base-T Ports One female DCE RS-232 DB-9 console port The following table lists the features and compatibility for each type of port present in the DES-3028/28P/28G/52/52P. 10/100/1000BASE-T IEEE 802.3 compliant IEEE 802.3u compliant IEEE 802.3x flow control support in full-duplex Auto MDI-X/MDI-II cross over supported except for speed 1000M force mode.

SFP Combo SFP Transceivers Supported: DEM-310GT (1000BASE-LX) DEM-311GT (1000BASE-SX) DEM-314GT (1000BASE-LH) DEM-315GT (1000BASE-ZX) DEM-210 (Single Mode 100BASE-FX) DEM-211 (Multi Mode 100BASE-FX) WDM Transceiver Supported: DEM-330T (TX-1550/RX1310nm), up to 10km, SingleMode DEM-330R (TX-1310/RX1550nm), up to 10km, SingleMode DEM-331T (TX-1550/RX1310nm), up to 40km, SingleMode DEM-331R (TX-1310/RX1550nm), up to 40km, SingleMode Compliant to the following standards: 1. IEEE 802.3z compliance 2. IEEE 802.3u compliance 1000BASE-T Combo IEEE 802.

3 compliant IEEE 802.3u compliant IEEE 802.3ab compliant IEEE 802.3z compliant IEEE 802.3x flow control support in full-duplex NOTE: The SFP combo ports on the Switch cannot be used simultaneously with the corresponding 1000BASE-T ports.

If both ports are in use at the same time (ex. port 25 of the SFP and port 25 of the 1000BASE-T), the SFP ports will take priority over the combo ports and render the 1000BASE-T ports inoperable. 2 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch LED Indicators The Switch supports LED indicators for Power, Console, RPS and Port LEDs. The following shows the LED indicators for the DES-3028/28P/28G/52/52P Series switches along with an explanation of each indicator. LEDs and there corresponding meanings are displayed below. Figure 1- 1. LED Indicators on DES-3028 Switch Figure 1- 2. LED Indicators on DES-3028P Switch Figure 1- 3. LED Indicators on DES-3028G Switch Figure 1- 4. LED Indicators on DES-3052/DES-3052P Switch Location LED Indicative Power Per Device Console Green Color Green Status Solid Light Light off Solid Light Blinking Light off "Mode Select Link/Act/ Speed Button"(only for DES3028P/DES- PoE 3052P) Green Green Solid Light Solid Light Description Power On Power Off Console on POST is in progress/ POST is failure.

Console off Link/Act/Speed Mode PoE Mode 3 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Link/Act/Speed LED Per 10/100 Mbps Port When there is a secure 100Mbps Fast Ethernet Solid Green connection (or link) at any of the ports. When there is reception or transmission (i.e. Activity-- Blinking Green Act) of data occurring at a Fast Ethernet connected port. Green/Amber When there is a secure Solid Amber 10Mbps Ethernet connection (or link) at any of the ports. When there is reception or transmission (i.e. Activity-- Blinking Amber Act) of data occurring at an Ethernet connected port. Light off No link Solid Green Powered connected. device is PoE (only for DES-3028P/DES3052P) Green Blinking Port has detected a error condition Powered Device may receive power from an AC power source or no 802.

3af PD is found When there is a secure 1000Mbps connection (or link) at any of the ports. When there is reception or transmission (i.e. Activity-Act) of data occurring at a 1000Mbps connected port. When there is a secure 10/100Mbps Fast Ethernet connection (or link) at any of the ports.

When there is reception or transmission (i.e. Activity-- Act) of data occurring at a Fast Ethernet connected port. No link When there is a secure 1000Mbps connection (or link) at the ports. When there is reception or transmission (i.

e. Activity-Act) of data occurring at a 1000Mbps connected port. When there is a secure 100Mbps connection (or link) at any of the ports. When there is reception or transmission (i.e. Activity-- Act) of data occurring at the ports. No link Light off Solid Green Blinking Green Link/Act/Speed Green/Amber mode for Solid Amber 1000BASE-T ports Blinking Amber LED Per GE Port Light off Solid Green Blinking Green Link/Act/Speed mode for SFP ports Green/Amber Solid Amber Blinking Amber Light off 4 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Front-Panel

Description DES-3028/DES-3028P Twenty-four 10/100Mbps BASE-T ports Two Combo 1000BASE-T/SFP ports located to the right Two 1000BASE-T ports located to the right One female DCE RS-232 DB-9 console port LEDs for Power, Console, PoE, Link/Act/Speed for each port Figure 1- 5. Front Panel of the

DES-3028/DES-3028P DES-3052P/DES-3052 Forty-eight 10/100Mbps BASE-T ports Two Combo 1000BASE-T/SFP ports located to the right Two 1000BASE-T ports located to the right One female DCE RS -232 DB-9 console port LEDs for Power, Console, PoE, Link/Act/Speed for each port Figure 1- 6.

Front Panel of the DES-3052P/DES-3052 DES-3028G Twenty-four 10/100Mbps BASE-T ports Four Combo 1000BASE-T/SFP ports located to the right One female DCE RS -232 DB-9 console port LEDs for Power, Console, Link/Act/Speed for each port 1 Link Act FE Port Managed Switch Power Console 1 2 3 4 5

6 7 8 9 10 11 12 10M 100M 13 17 14 15 16 18 19 20 GE Port 21 22 23 24 25 26 27 28 10/100M 1000M 3 5 7 9 11 13 15 17 19 21 23 Combo1 25 27 Combo3 Console DES-3028G 2 4 6 8 10 12 14 16 18 20 22 24 Combo2 26 28 Combo4 Figure 1- 7.



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*Front Panel of the DES-3028G 5 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Rear Panel Description
The rear panel of the Switch contains an AC power connector.*

The AC power connector is a standard three-pronged connector that supports the power cord. Plug-in the female connector of the provided power cord into this socket, and the male side of the cord into a power outlet. The Switch automatically adjusts its power setting to any supply voltage in the range from 100 ~ 240 VAC at 50 ~ 60 Hz. The rear panel of the DES-3052/DES-3052P contains one female DCE RS 232 DB-9 console port. Figure 1- 8. Rear panel view of the

DES-3028P AC LINE 100-240 VAC 50-60 Hz 5A MAX Console Figure 1- 9. Rear panel view of the DES-3052P Figure 1- 10. Rear panel view of the DES-3028G/DES-3028 AC LINE 100-240 VAC 50-60 Hz 0.5A MAX Console Figure 1- 11. Rear panel view of the DES-3052 Side Panel Description The left and right-hand panel of the DES-3028G/DES-3028/DES-3052 Switches contain heat vents.

The heat vents are used to dissipate heat. Do not block these openings, and leave at least 6 inches of space at the rear and sides of the Switch for proper ventilation. Be reminded that without proper heat dissipation and air circulation, system components might overheat, which could lead to system failure.

Figure 1- 12. Side panels of the DES-3028G/DES-3028/DES-3052 The sides of the DES-3028P have heat vents to serve to dissipate heat.

Do not block these openings, and leave at least 6 inches of space at the rear and sides of the Switch for proper ventilation. Be reminded that without proper heat dissipation and air circulation, system components might overheat, which could lead to system failure. 6 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Figure 1- 13. Side panels of the DES-3028P The left-hand side panel of the DES-3052P Switch contains a system fan and ventilation along the entire right side. The system fan is used to dissipate heat.

Do not block these openings on either side of the Switch. Leave at least 6 inches of space at the rear and sides of the Switch for proper ventilation. Be reminded that without proper heat dissipation and air circulation, system components might overheat, which could lead to system failure. Figure 1- 14. Side panels of the DES-3052P Gigabit Combo Ports In addition to the 24 (or 48) 10/100 Mbps ports, the Switch features two Gigabit Ethernet Combo ports. These two ports are 1000BASE-T copper ports (provided) and Mini-GBIC ports (optional). See the diagram below to view the two Mini-GBIC port modules being plugged into the Switch. Please note that although these two front panel modules can be used simultaneously, the ports must be different. The GBIC port will always have the highest priority. Figure 1- 15.

Inserting the Mini-GBIC modules into the DES-3028/28P/28G/52/52P Switch 7 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Figure 1- 16. Installing the Mini-GBIC Module Installing the SFP ports The DES-3028/28P/28G/52/52P Switches are equipped with SFP (Small Form Factor Portable) ports, which are to be used with fiber-optical transceiver cabling in order to uplink various other networking devices for a gigabit link that may span great distances. These SFP ports support full-duplex transmissions, have auto-negotiation and can be used with the DEM-310GT (1000BASE-LX), DEM-311GT (1000BASE-SX), DEM-210 (Single Mode 100BASE-FX), DEM-211 (Multi Mode 100BASEFX), DEM-314GT (1000BASE-LH), DEM-315GT (1000BASE-ZX), DEM-330T/R (WDM) and DEM-331T/R (WDM) transceivers. See the figure below for installing the SFP ports in the Switch. Figure 1- 17. Inserting the fiber-optic transceivers into the DES-3028/28P/28G/52/52P Switch 8 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Section 2 Installation Package Contents Before You Connect to the Network Installing the Switch without the Rack Rack Installation Power On Package Contents Open the shipping carton of the Switch and carefully unpack its contents. The carton should contain the following items: One Stand-alone Switch One AC power cord This Manual on CD Mounting kit (two brackets and screws) Four rubber feet with adhesive backing DCE RS-232 console cable If any item is missing or damaged, please contact your local D-Link Reseller for replacement. Before You Connect to the Network The site where you install the Switch may greatly affect its performance. Please follow these guidelines for setting up the Switch.

Install the Switch on a sturdy, level surface that can support at least 4.

24kg (9.35lbs) of weight. Do not place heavy objects on the Switch. The power outlet should be within 1.82 meters (6 feet) of the Switch.

Visually inspect the power cord and see that it is fully secured to the AC/DC power port. Make sure that there is proper heat dissipation from and adequate ventilation around the Switch. Leave at least 10 cm (4 inches) of space at the front and rear of the Switch for ventilation. Install the Switch in a fairly cool and dry place for the acceptable temperature and humidity operating ranges. Install the Switch in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.

When installing the Switch on a level surface, attach the rubber feet to the bottom of the device. The rubber feet cushion the Switch, protect the casing from scratches and prevent it from scratching other surfaces. 9 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Installing the Switch without the Rack When installing the Switch on a desktop or shelf, the rubber feet included with the Switch should first be attached.

Attach these cushioning feet on the bottom at each corner of the device. Allow enough ventilation space between the Switch and any other objects in the vicinity. Figure 2 - 1. Prepare Switch for installation on a desktop or shelf Installing the Switch in a Rack The Switch can be mounted in a standard 19" rack.

Use the following diagrams to guide you. Figure 2 - 2. Fasten mounting brackets to Switch Fasten the mounting brackets to the Switch using the screws provided.

With the brackets attached securely, users can mount the Switch in a standard rack as shown in the next figure. 10 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Mounting the Switch in a Standard 19" Rack CAUTION: Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack. After installing components in a rack, do not pull more than one component out of the rack on its slide assemblies at one time.



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The weight of more than one extended component could cause the rack to tip over and may result in injury. Figure 2 - 3. Installing Switch in a rack Power on AC Power Plug one end of the AC power cord into the power connector of the Switch and the other end into the local power source outlet. After the Switch is powered on, the LED indicators will momentarily blink. This blinking of the LED indicators represents a reset of the system. Power Failure For AC power supply units, as a precaution, in the event of a power failure, unplug the Switch.

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

. 11 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Section 3 Connecting the Switch Switch to End Node Switch to Hub or Switch Connecting to Network Backbone or Server NOTE: All 10/100/1000Mbps NWay Ethernet ports can support both MDII and MDI-X connections. Switch to End Node End nodes include PCs outfitted with a 10, 100 or 1000 Mbps RJ 45 Ethernet/Fast Ethernet Network Interface Card (NIC) and most routers. An end node can be connected to the Switch via a twisted-pair Category 3, 4, or 5 UTP/STP cable. The end node should be connected to any of the ports of the Switch.

Figure 3- 1. Switch connected to an end node The Link/Act LEDs for each UTP port will light green or amber when the link is valid. A blinking LED indicates packet activity on that port. 12 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Switch to Hub or Switch These connections can be accomplished in a number of ways using a normal cable. A 10BASE-T hub or switch can be connected to the Switch via a twisted-pair Category 3, 4 or 5 UTP/STP cable. A 100BASE-TX hub or switch can be connected to the Switch via a twisted-pair Category 5 UTP/STP cable. A 1000BASE-T switch can be connected to the Switch via a twisted pair Category 5e UTP/STP cable. A switch supporting a fiber-optic uplink can be connected to the Switch's SFP ports via fiber-optic cabling. Figure 3- 2. Switch connected to a normal (non-Uplink) port on a hub or switch using a straight or crossover cable NOTICE: When the SFP transceiver acquires a link, the associated integrated 10/100/1000BASE-T port is disabled.

13 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Section 4 Introduction to Switch Management Management Options Web-based Management Interface SNMP-Based Management Managing User Accounts Command Line Console Interface through the Serial Port Connecting the Console Port (RS-232 DCE) First Time Connecting to the Switch Password Protection SNMP Settings IP Address Assignment Management Options This system may be managed out-of-band through the console port on the front panel or in-band using Telnet. The user may also choose the web-based management, accessible through a web browser. Web-based Management Interface After you have successfully installed the Switch, you can configure the Switch, monitor the LED panel, and display statistics graphically using a web browser, such as Netscape Navigator (version 6.2.3 and higher) or Microsoft® Internet Explorer (version 6.0). SNMP-Based Management You can manage the Switch with an SNMP-compatible console program. The Switch supports SNMP version 1.0, version 2.0 and version 3.

0. The SNMP agent decodes the incoming SNMP messages and responds to requests with MIB objects stored in the database. The SNMP agent updates the MIB objects to generate statistics and counters. Connecting the Console Port (RS-232 DCE) The Switch provides an RS-232 serial port that enables a connection to a computer or terminal for monitoring and configuring the Switch. This port is a female DB-9 connector, implemented as a data terminal equipment (DTE) connection.

To use the console port, you need the following equipment: A terminal or a computer with both a serial port and the ability to emulate a terminal. A null modem or crossover RS-232 cable with a female DB-9 connector for the console port on the Switch. To connect a terminal to the console port: 1. 2. 3.

4. 5. 6. Connect the female connector of the RS-232 cable directly to the console port on the Switch, and tighten the captive retaining screws. Connect the other end of the cable to a terminal or to the serial connector of a computer running terminal emulation software. Set the terminal emulation software as follows: Select the appropriate serial port (COM port 1 or COM port 2). Set the data rate to 9600 baud. Set the data format to 8 data bits, 1 stop bit, and no parity. Set flow control to none. 14 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch 7.

8. Under Properties, select VT100 for Emulation mode. Select Terminal keys for Function, Arrow, and Ctrl keys. Ensure that you select Terminal keys (not Windows keys). NOTE: When you use HyperTerminal with the Microsoft® Windows® 2000 operating system, ensure that you have Windows 2000 Service Pack 2 or later installed. Windows 2000 Service Pack 2 allows you to use arrow keys in HyperTerminal's VT100 emulation. See www.microsoft.com for information on Windows 2000 service packs. 9.

After you have correctly set up the terminal, plug the power cable into the power receptacle on the back of the Switch. The boot sequence appears in the terminal. 10. After the boot sequence completes, the console login screen displays. 11.

If you have not logged into the command line interface (CLI) program, press the Enter key at the User name and password prompts. There is no default user name and password for the Switch. The administrator must first create user names and passwords. If you have previously set up user accounts, log in and continue to configure the Switch. 12.

Enter the commands to complete your desired tasks. Many commands require administrator-level access privileges. Read the next section for more information on setting up user accounts. See the DES-3028/28P/28G/52/52P CLI Manual on the documentation CD for a list of all commands and additional information on using the CLI. 13. When you have completed your tasks, exit the session with the logout command or close the emulator program. 14. Make sure the terminal or PC you are using to make this connection is configured to match these settings. If you are having problems making this connection on a PC, make sure the emulation is set to VT-100. You will be able to set the emulation by clicking on the File menu in your HyperTerminal window, clicking on Properties in the drop-down menu, and then clicking the Settings tab.



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This is where you will find the Emulation options. If you still do not see anything, try rebooting the Switch by disconnecting its power supply. Once connected to the console, the screen below will appear on your console screen. This is where the user will enter commands to perform all the available management functions. The Switch will prompt the user to enter a user name and a password. Upon the initial connection, there is no user name or password and therefore just press enter twice to access the command line interface. DES-3028G Fast Ethernet Switch Command Line Interface Firmware: Build 2.00.B26

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User Name: Figure 4- 1. Initial screen after first connection 15 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch First Time Connecting to the Switch The Switch supports user-based security that can allow you to prevent unauthorized users from accessing the Switch or changing its settings. This section tells how to log onto the Switch. NOTE: The passwords used to access the Switch are case-sensitive; therefore, "S" is not the same as "s." When you first connect to the Switch, you will be presented with the first login screen.

NOTE: Press Ctrl+R to refresh the screen. This command can be used at any time to force the console program in the Switch to refresh the console screen. Press Enter in both the Username and Password fields. You will be given access to the command prompt DES-3028G:4# shown below: There is no initial username or password. Leave the Username and Password fields blank.

DES-3028G Fast Ethernet Switch Command Line Interface Firmware: Build 2.00.B26 Copyright(C) 2009 D-Link Corporation. All rights reserved.

User Name: Password: DES-3028G:4# Figure 4- 2. Command Prompt NOTE: The first user automatically gets Administrator level privileges. It is recommended to create at least one Admin-level user account for the Switch. Password Protection The Switch does not have a default user name and password. One of the first tasks when settings up the Switch is to create user accounts. Once logged in using a predefined administrator-level user name, users will have privileged access to the Switch's management software.

After your initial login, define new passwords for both default user names to prevent unauthorized access to the Switch, and record the passwords for future reference. To create an administrator-level account for the Switch, follow these steps: At the CLI login prompt, enter create account admin followed by the <user name> and press the Enter key. The switch will then prompt the user for a password. Type the <password> used for the administrator account being created and press the Enter key. Again, the user will be prompted to enter the same password again to verify it. Type the same password and press the Enter key. Successful creation of the new administrator account will be verified by a Success message. 16 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch NOTE: Passwords are case sensitive. User names and passwords can be up to 15 characters in length.

The sample below illustrates a successful creation of a new administrator-level account with the user name "newmanager".

DES-3028G:4# create account admin newmanager Command: create account admin newmanager Enter a case-sensitive new password: ***** Enter the new password again for confirmation: ***** Success. DES-3028G:4# Figure 4- 3. Create account command NOTICE: CLI configuration commands only modify the running configuration file and are not saved when the Switch is rebooted. To save all your configuration changes in nonvolatile storage, you must use the save command to copy the running configuration file to the startup configuration. NOTICE: In case of lost passwords or password corruption, please refer to the Appendix D of this manual entitled "Password Recovery Procedure", which will guide you through the steps necessary to resolve this issue.

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

Managed devices that support SNMP include software (referred to as an agent), which runs locally on the device. A defined set of variables (managed objects) is maintained by the SNMP agent and used to manage the device.

These objects are defined in a Management Information Base (MIB), which provides a standard presentation of the information controlled by the on-board SNMP agent. SNMP defines both the format of the MIB specifications and the protocol used to access this information over the network. The DES-3028/28P/28G/52/52P supports SNMP versions 1, 2c, and 3. You can specify which version of SNMP you want to use to monitor and control the Switch.

The three versions of SNMP vary in the level of security provided between the management station and the network device. In SNMP v.1 and v.2, user authentication is accomplished using 'community strings', which function like passwords. The remote user SNMP application and the Switch SNMP must use the same community string. SNMP packets from any station that has not been authenticated are ignored (dropped).

The default community strings for the Switch used for SNMP v.1 and v.2 management access are: public - Allows authorized management stations to retrieve MIB objects. private - Allows authorized management stations to retrieve and modify MIB objects. SNMP v.3 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, you may create a group of SNMP managers that are allowed to view read-only 17 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch information or receive traps using SNMP v.1 while assigning a higher level of security to another group, granting read/write privileges using SNMP v.3. Using SNMP v.3 individual users or groups of SNMP managers can be allowed to perform or be restricted from performing specific SNMP management functions.

The functions allowed or restricted are defined using the Object Identifier (OID) associated with a specific MIB. An additional layer of security is available for SNMP v.3 in that SNMP messages may be encrypted. To read more about how to configure SNMP v.



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Area 3 Presents switch information based on your selection and the entry of configuration data. Area 2 NOTICE: Any changes made to the Switch configuration during the current session must be saved in the Save Changes web menu (explained below) or use the command line interface (CLI) command save. 23 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Web Pages When you connect to the management mode of the Switch with a web browser, a login window is displayed. Enter a user name and password to access the Switch's management mode. Below is a list and description of the main folders available in the web interface: Administration Contains windows concerning configuring the basic functions of the Switch, including Device Information, IP Address, Port Configuration, DHCP/BOOTP Relay, User Accounts, Cable Diagnostics, Port Mirroring, System Log Settings, Log Settings, SNMP Settings, MAC Notification Settings, TFTP Services, Multiple Image Services, Ping Test, Safeguard Engine, SNMP Manager, PoE System, Single IP Settings, Forwarding & Filtering, and SMTP Service. Layer 2 Features Contains windows concerning Layer 2 features of the Switch, including VLAN, QinQ, Trunking, IGMP Snooping, MLD Snooping, Spanning Tree, Loopback Detection and LLDP. CoS Contains windows concerning Port Bandwidth, 802.1P Default Priority, 802.

IP User Priority, CoS Scheduling Mechanism, CoS Output Scheduling, Priority Settings, TOS Priority Settings, DSCP Priority Settings, Port Mapping Priority Settings, and MAC Priority. ACL Contains the windows for Time Range, Access Profile Table and CPU Interface Filtering. Security Contains windows for Traffic Control, Port Security, Port Lock Entries, IP-MAC-Port Binding, SSL, SSH, 802.1X, Trusted Host, Access Authentication Control, Traffic Segmentation and DoS Attack Prevention. Monitoring Contains windows for including CPU Utilization, Port Utilization, Packets, Packet Errors, Packet Size, MAC Address, Switch Log, IGMP Snooping Group, Browse Router Port, VLAN Status, MLD Snooping Group, Browse MLD Snooping Router Port, Static ARP Settings, ARP-FDB, Gratuitous ARP Settings, Session Table, and Port Access Control.

Switch Maintenance Contains information regarding Reset, Reboot System, Save Changes, and Logout. NOTE: Be sure to configure the user name and password in the User Accounts window before connecting the Switch to the greater network. 24 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Section 6 Administration IP Address Port Configuration DHCP/BOOTP Relay User Accounts Cable Diagnostics Port Mirroring System Log Settings Log Settings SNMP Settings MAC Notification Settings TFTP Services Multiple Image Services Ping Test Safeguard Engine SNMP Manager PoE System Single IP Settings Forwarding & Filtering SMTP Service 25 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch Device Information This window contains the main settings for all major functions of the Switch and appears automatically when you log on. To return to the Device Information window, click the DES-30xx Web Management Tool folder. The Device Information window shows the Switch's MAC Address (assigned by the factory and unchangeable), the Boot PROM, Firmware Version, Hardware Version and Serial Number.

This information is helpful to keep track of PROM and firmware updates and to obtain the Switch's MAC address for entry into another network device's address table, if necessary. The user may also enter a System Name, System Location and System Contact to aid in defining the Switch. In addition, this window displays the status of functions on the Switch to quickly assess their current global status. Some functions are hyper-linked to their configuration window for easy access from the Device Information window. Figure 6- 1. Device Information window 26 DES-3028 DES-3028P DES-3028G DES-3052 DES-3052P Layer 2 Fast Ethernet Managed Switch The fields that can be configured are described below: Parameter System Name System Location System Contact Serial Port Auto Logout Time Serial Port Baud Rate Description Enter a system name for the Switch, if so desired. This name will identify it in the Switch network. Enter the location of the Switch, if so desired. Enter a contact name for the Switch, if so desired. Select the logout time used for the console interface.

This automatically logs the user out after an idle period of time, as defined. Choose from the following options: 2 Minutes, 5 Minutes, 10 Minutes, 15 Minutes or Never. The default setting is 10 minutes. This field specifies the baud rate for the serial port on the Switch. there are four possible baud rates to choose from, 9600, 19200, 38400 and 115200. For a connection to the Switch using the CLI interface, the baud rate must be set to 9600, which is the default setting.

This field specifies the length of time a learned MAC Address will remain in the forwarding table without being accessed (that is, how long a learned MAC Address is allowed to remain idle). To change this, type in a different value representing the MAC address age-out time in seconds. The MAC Address Aging Time can be set to any value between 10 and 1,000,000 seconds. The default setting is 300 seconds.

To enable system-wide IGMP Snooping capability select Enabled. IGMP snooping is Disabled by default. Enabling IGMP snooping allows you to specify use of a multicast router only (see below). To configure IGMP Snooping for individual VLANs, use the IGMP Snooping window located in the IGMP Snooping folder contained in the L2 Features folder. This field specifies that the Switch should only forward all multicast traffic to a multicasted router, if enabled.

Otherwise, the Switch will forward all multicast traffic to any IP router. The default is Disabled. This field specifies the status of MLD Snooping on the Switch. MLD Snooping is used to discover ports on a VLAN that are requesting multicast data instead of flooding all ports on a selected VLAN with multicast traffic. The default is Disabled.

Telnet configuration is Enabled by default. If you do not want to allow configuration of the system through Telnet choose Disabled. The TCP port number. TCP ports are numbered between 1 and 65535. The "well-known" TCP port for the Telnet protocol is 23. Web-based management is Enabled by default. If you choose to disable this by selecting Disabled, you will lose the ability to configure the system through the web interface as soon as these settings are applied. The TCP port number. TCP ports are numbered between 1 and 65535. The "well-known" TCP port for the Web is 80.

Remote monitoring (RMON) of the Switch is Enabled or Disabled here. The algorithm that the Switch uses to balance the load across the ports that make up the port trunk group is defined by this definition. Choose MAC Source, MAC Destination, MAC Src & Dest, (See the Link Aggregation section of this manual).



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