D-Link®

10/100Mbps L2 Stackable Switch

DES-3226S with 24 10/100Mbps ports.
A DES-332GS stack module installed in the open slot provides a GBIC port and switch stacking capability.

24-Port Layer 2 Fast Ethernet Stackable Switch

The DES-3226S is a Stackable 10/100Mbps Layer 2 Switch designed for departmental connection. It provides 24 10/100Mbps ports, 1 GBIC port for server or fiber backbone connection, and scalable expansion through switch stacking of up to 6 units. Advanced features such as port trunking, VLANs and priority queues are also provided, allowing a department to effectively deploy a bottleneck-free switching network for easy integration with a larger enterprise or campus network.

24 10/100Mbps Ports for Workstation Connection

The switch provides 24 10/100Mbps ports supporting auto-sensing and auto-negotiation of network speeds and full/half duplex. These ports can connect to workstations and print servers, giving each a dedicated bandwidth. All ports support auto MDI-II/MDI-X uplink, allowing you to connect to workstations, servers, or other switches from any port without the need to change your usual straight-through twisted-pair cables.

Switch Stacking & GBIC Port

The switch provides an open slot for installation of a DES-332GS stack module, which is equipped with a stacking port and a GBIC port. The stacking port is for switch stacking. The GBIC port provides for flexible deployment of multi-mode or extended cable-length single-mode fiber. At 2000Mbps full duplex, this port gives you Gigabit server connection or attachment to a fiber backbone.

Scalable Expansion

Up to 6 DES-3226S can be stacked together. You can add units to reach maximum 144 10/100Mbps ports and 6 GBIC ports per stack. The switches are stacked together through high-speed stack cables that provide multi-gigabit per second backplane, allowing the entire stack to perform as a single entity.

Flow Control to Prevent Packet Loss

The switch supports standard IEEE 802.3x Flow Control. Working in conjunction with buffer overrun auto-detection, this full-duplex data transfer mode provides protection against possible data loss for 802.3x supported servers directly connected to the switch.

Port Trunks for Aggregated Bandwidths

With low cost per port, port trunking provides an easy and economical alternative solution for server connection to attain Gigabit bandwidth. Up to 8 10/100Mbps ports or 6 Gigabit ports can be combined together to create a multi-link load-sharing aggregated bandwidth to a server. Trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center. Up to 6 multi-link trunks can be configured for a stack.

VLANs for Enhanced Security & Performance

VLANs improve security and bandwidth utilization by limiting the broadcast domains and confining intra-group traffic within their segments. To segment up the network, workstations supporting IEEE 802.1Q VLAN Tagging connected to the switch can be grouped into different Virtual LANs (VLANs). The switch also supports GVRP (GARP VLAN Registration Protocol) for automatic VLAN configuration distribution.

Priority Queues for QoS

The switch supports Layer 2 802.1p Priority Queue control. Each packet going through the switch can be assigned a queue priority number (in the priority bit). Packets with a higher priority number are allowed to pass first. This function support allows you to attach IP telephony devices or video servers to the switch to run delay-sensitive applications like video conference and voice over the Internet.

Flexible Transmission Scheduling

The switch supports 2 methods of packet transmission scheduling: Strict Round-Robin (SRR) and Weighted Round-

Robin (WRR). You can select to use SRR to strictly enforce your priority queues, or WRR to address bandwidth limitations at peak time. WRR allows each queue to be assigned a different percentage of the output port's bandwidth, so that lower-priority queues are not denied access to buffer space and port bandwidth.

IGMP Snooping for Broadcast Control

The switch listens to IGMP (Internet Group Management Protocol) messages to build mapping table and associate forwarding filters. It dynamically configures the switch ports to forward IP multicast traffic only to those ports associated with multicast hosts.

Broadcast Storm Control

To limit too many broadcast/multicast flooding in the network, broadcast/multicast storm control is configured to screen excessive traffic. 5 threshold values are available to control the rate limit for each port. Packets are discarded if the respective count exceeds the configured upper threshold in a given time interval. The possible range of upper threshold is from 0 to 255k packets per second.

Port Mirroring

This function allows you to mirror adjacent ports for the purpose of analyzing incoming and outgoing packets where packet patterns can be studied.

Spanning Tree Protocol

For mission critical environments with multiple switches supporting STP, you can configure the stack of switches with a redundant backup bridge path, so transmission and reception of packets can be guaranteed in event of any fail-over switch on the network.

SNMP & Web-based Management

The switch stack can be managed from within the LAN from an SNMP management station, and via an Internet from any workstation. Standard-based MIBs are built-in, allowing for monitoring and management from third-party management platforms. Web-based management program is built into the switch. RMON monitoring is through built-in RMON MIBs.

Optional Ports (Stand-alone Configuration)

If you configure the DES-3226S as a stand-alone switch, you can install the following modules in the open slot:

- 2-port Fast Ethernet multi-mode fiber module (100BASE-FX)
- 2-port Fast Ethernet single-mode Fiber module (100BASE-FX)
- 2-port Gigabit fiber module (1000BASE-SX)
- 2-port Gigabit fiber module (1000BASE-LX)
- 2-port Gigabit copper module (1000BASE-T)
- GBIC module (2 ports)

Gigabit Over Copper Twisted-pair

The optional Gigabit copper ports provide an inexpensive alternative solution to the fiber. Using your existing low-cost Cat. 5 twisted-pair wires as the transmission media, these ports allow you to instantly upgrade your servers to Gigabit capability without requiring you to install new, expensive fiber cables.

Features

- *24 built-in 10/100Mbps ports*
- *Switch stacking configuration: 6 units per stack + 6 GBIC ports*
- *1 open slot for 2 optional Fast Ethernet fiber or 2 Gigabit ports (stand-alone configuration)*
- *8.8Gbps switching fabric*
- *Auto MDI-II/MDI-X uplink for all twisted-pair ports*
- *Supports 802.1Q VLAN, GMRP multicast, IGMP Snooping, 802.1p Priority Queues, port mirroring*
- *Administrator-definable port security*
- *Port trunking of up to 8 Fast Ethernet ports*
- *Broadcast storm control*
- *802.3x Flow Control*
- *802.1D Spanning Tree for redundant backup bridge Paths*
- *SNMP, web-based management, RMON monitoring*

DES-3226S

Technical Specifications

10/100Mbps L2 Stackable Switch

General

Protocol
CSMA/CD

Data Transfer Rates
- Ethernet:
  10Mbps (half duplex)
  20Mbps (full duplex)
- Fast Ethernet:
  100Mbps (half duplex)
  200Mbps (full duplex)
- Gigabit Ethernet:
  2000Mbps (full duplex)

Topology
Star

Hardware

Basic Configuration
- 24 auto-sensing 10/100Mbps ports (built-in)
- 1 open slot

Switch Fabric
8.8 Gbps

LED (per device)
- Power
- Console

Built-in Ports Supported Functions
- IEEE 802.3 10BASE-T/802.3u 100BASE-TX standards
- Full/half duplex support with ANSI/IEEE 802.3 NWay auto-negotiation
- IEEE 802.3x Flow Control in full-duplex, back pressure in half-duplex
- MDI-II/MDI-X auto-sensing for all twisted-pair ports
- Auto-correction of twisted-pair Rx reverse polarity
- Port trunking: up to 8 ports per trunk, up to 8 trunks per switch
- 10BASE-T cables:
  UTP Cat. 3, 4, 5 (100 m max.)
- 100BASE-TX cables:
  UTP Cat. 5 (100 m max.)
- LED report (per port):
  10/100Mbps speed
  Link/Act

Optional Modules

DES-332GS Stack + GBIC Module
- 1 stacking port
- 1 GBIC port (IEEE 802.3z standard)
- Stackable units: 6 DES-3226S switches per stack
- Stacking method: ring
- Full duplex support for GBIC port
- IEEE 802.3x Flow Control (GBIC port)
- Stacking cable: proprietary IEEE 1394 cable (provided)
- Network cables (GBIC port): single-mode and multi-mode fiber
- LED report (per port): Link/Act (GBIC port)

DES-132F Fast Ethernet Fiber Module
- IEEE 802.3u 100BASE-FX standard
- 2 100Mbps fiber ports (SC connectors)
- Full duplex support
- IEEE 802.3x Flow Control
- Cables: 50, 62.5/125-micron multi-mode fiber (2 km max.)
- LED report (per port): Link/Act

DES-132FL Fast Ethernet Fiber Module
- IEEE 802.3u 100BASE-FX standard
- 2 100Mbps fiber ports (SC connectors)
- Full duplex support
- IEEE 802.3x Flow Control
- Cables: 9-micron single-mode fiber (15 km max.)
- LED report (per port): Link/Act

DES-132G Gigabit Fiber Module
- IEEE 802.3z 1000BASE-SX standard
- 2 Gigabit fiber ports (SC connectors)
- Full duplex support
- IEEE 802.3x Flow Control
- Cables: 50/125 micron multi-mode fiber (525 m max.), 62.5/125 micron multi-mode fiber (275 m max.)
- LED report (per port): Link/Act

DES-132GL Gigabit Fiber Module
- IEEE 802.3z 1000BASE-LX standard
- 2 Gigabit fiber ports (SC connectors)
- Full duplex support
- IEEE 802.3x Flow Control
- Cables: single-mode fiber (5 km max.)
- LED report (per port): Link/Act

DES-132T Gigabit Copper Module
- IEEE 802.3 10BASE-T/802.3u 100BASE-TX/IEEE 802.3ab 1000BASE-T standards
- 2 auto-sensing 10/100/1000Mbps ports
- Full/half duplex support with ANSI/IEEE 802.3 NWay auto-negotiation
- IEEE 802.3x Flow Control in full-duplex, back pressure in half-duplex
- 10BASE-T/100BASE-TX: full/half duplex
- 1000BASE-T: full duplex
- MDI-II/MDI-X auto-sensing for all twisted-pair ports
- Auto-correction of twisted-pair Rx reverse polarity
- 10BASE-T cables:
  UTP Cat. 3, 4, 5 (100 m max.)
- 100BASE-TX/1000BASE-T cables:
  UTP Cat. 5/Cat. 5e (100 m max.)
- LED report (per port):
  100/1000Mbps speed
  Link/Act

DES-132GB GBIC Module
- IEEE 802.3z standard
- 2 GBIC-based ports for installation of 1000BASE-SX and 1000BASE-LX PHY modules
- Full duplex support
- IEEE 802.3x Flow Control
- Cables: single-mode and multi-mode fiber
- LED report (per port): Link/Act

Software

VLAN
- IEEE 802.1Q Tagged VLAN
- Port-based VLAN
- Number of VLANs: 255 per device (max.)

Priority Queues (QoS)
- Standard: IEEE 802.1p
- Number of queues: 4

Spanning Tree
Standard: IEEE 802.1D

Multicast
- IGMP v2
- IGMP Snooping
- DVMRP
- PIM-DM

Access Security
- MAC based: user-specified MAC addresses
- VLAN based: ingress checking enable/disable
- Port based: MAC address learning per port enable/disable
- IEEE 802.1x Port-based Network Access Control *

MultiLink Trunking (MLT)
Enables grouping of links between the switch and another switch or a server to provide higher bandwidth of up to 8 10/100 ports or up to 6 GBIC ports with active redundant links. A multi-link is defined as trunked ports spanning multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center.
- *Number of Fast Ethernet ports per trunk: 8 (max.)*
- *Number of Fast Ethernet ports per multi-link trunk: 8 (max.)*
- *Number of Gigabit ports per multi-link trunk: 6 (max.)*
- *Number of trunks per switch: 6 (max.)*
- *Number of trunks per stack: 36 (max.)*
- *Number of multi-link trunks per stack: 6 (max.)*
- *Operation mode: load sharing*

Gigabit Port Trunks
- Number of ports per trunk: 6 (max.)
- Number of trunks per stack: 6 (max.)
- Operation mode: load sharing

DES-3226S

Technical Specifications

10/100Mbps L2 Stackable Switch

Performance

Transmission Method
Store-and-forward

MAC Address Table
8K entries per device

MAC Address Learning
- Dynamic entries: automatic update
- Static entries: user-defined

Packet Filtering/Forwarding Rates (half duplex)
- Ethernet: 14,880 pps per port
- Fast Ethernet: 148,810 pps per port
- Gigabit Ethernet: 1,488,100 pps per port

RAM Buffer
8MB per device (excluding optional modules)

Configuration & Management

Management Support
- SNMP-based management
- Web-based management
- CLI (command line interface)
- RMON monitoring
- Telnet (up to 8 sessions)

MIBs
- MIB-II (RFC 1213)
- Bridge MIB (RFC 1493)
- RMON MIB (RFC 1757)
- 802.1Q VLAN MIB (RFC 2674)
- IGMP MIB (RFC 2833)
- If MIB (RFC 2233)
- Ethernet-like MIB (RFC 2358) - dot3statsTable
- D-Link enterprise MIB

RMON Groups
1, 2, 3, 9 (Alarm, Statistics, History, Event)

IP Number Self-identification
Through DHCP client, Bootp client

Firmware Upgrade
TFTP

Console Port
DB-9 RS-232 DCE

Physical & Environmental

Power Input
100 - 240 VAC, 50/60 Hz

Internal universal power supply

Power Consumption
29 Watts (max.)

Ventilation
40 x 40 mm DC fans x 2

Operating Temperature
0° - 50°C (32° - 122° F)

Storage Temperature
-25° - 55°C (13° - 131° F)

Humidity
5% - 95% non-condensing

Dimensions
441 x 210 x 43 mm (17.36 x 8.27 x 1.69 inches)
19-inch rack-mount width, 1 U height

Weight
2.5 kg (5.51 lb.) (without module installed)

Emission (EMI)
- FCC Class A
- CE Class A
- C-Tick Class A
- VCCI Class A
- BSMI Class A

Safety
CSA International

* Available infuture release

ACN 052 202 838

Ordering Information

10/100Mbps Layer 2 Stackable Switch

DES-3226S	24 10/100Mbps ports + 1 open slot

Optional Modules

DES-332GS	1 stacking port + 1 GBIC port
DES-132F	2 100BASE-FX multi-mode fiber ports (SC connectors)
DES-132FL	2 100BASE-FX single-mode fiber ports (SC connectors)
DES-132G	2 1000BASE-SX Gigabit fiber ports (SC type connectors)
DES-132GL	2 1000BASE-LX Gigabit fiber ports (SC type connectors)
DES-132T	2 10BASE-T/100BASE-TX/1000BASE-T Gigabit copper ports
DES-132GB	2 GBIC-based ports

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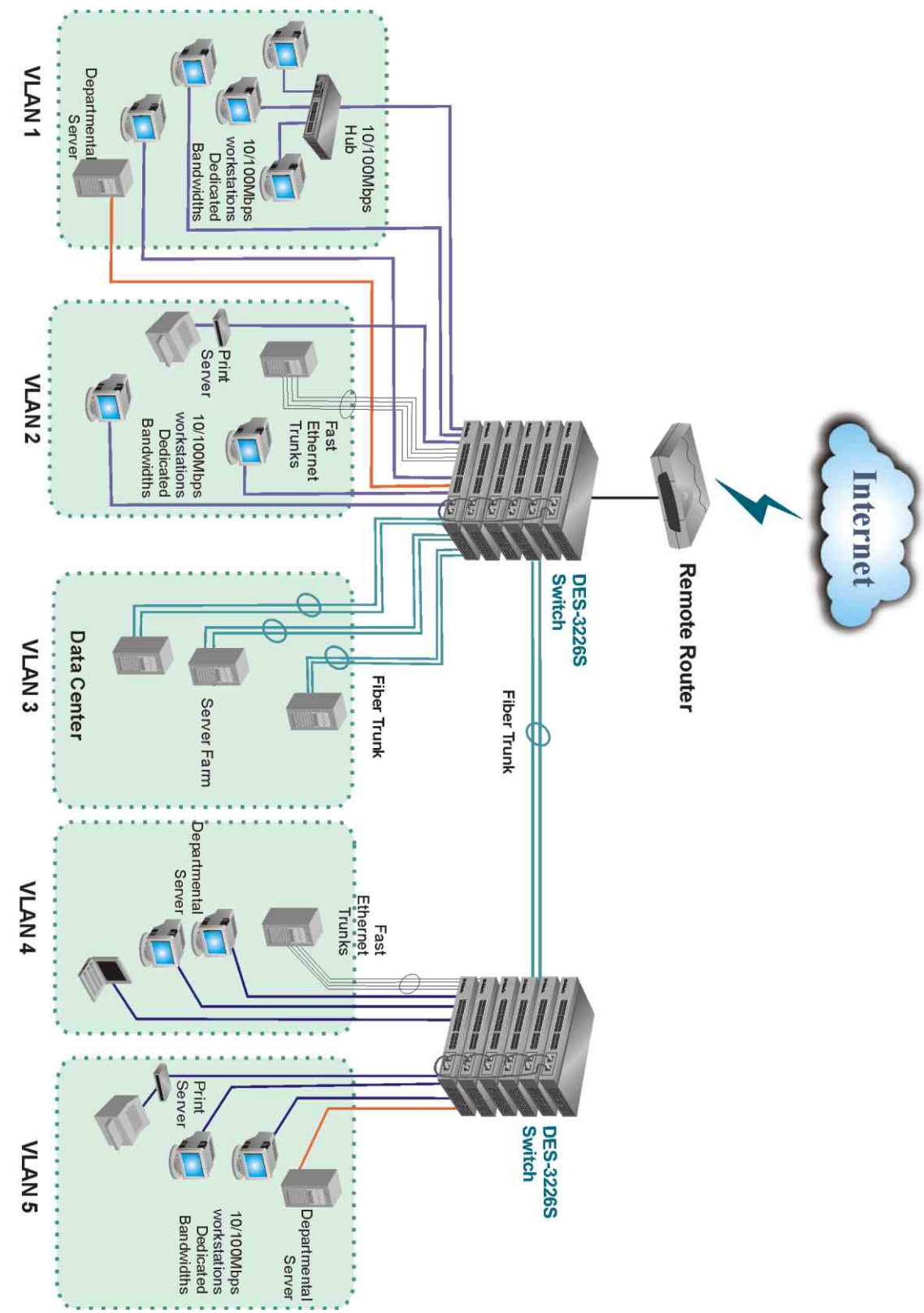

Layer2 Switching

Segmenting a network into VLANS to enhance performance and security.