DGS-3212SR

DEM-540

DEM-340MG

DEM-340T

# Stacking Master & Modular Gigabit Switch

*Stacking Up 8 DES-3226S Switches*
*12-Port Gigabit Switch With 4 Combo 1000BASE-T/SFP GBIC & 2 Expansion Slots*
*Redundant Power Support*

*The D-Link DGS-3212SR switch is a powerful, function-rich switch that gives the network administrator the flexibility to use it as a Stacking Master Switch, or as an all-Gigabit Modular Switch supporting copper and fiber connections. With 8 dedicated 2Gbps links to 8 stackable switches in the fault tolerant star architecture, redundant power backup, modular configuration and extensive management capability, this highly versatile switch gives you the functions and flexibility needed to set up and run a departmental/enterprise network for mission-critical applications.*

### Modular Architecture

The DGS-3212SR provides 4 10/100/1000BASE-T ports, 4 combo SFP GBIC slots and 2 open expansion slots. The expansion slots allow you to flexibly deploy this switch as a Stacking Master Switch, or as a stand-alone all-Gigabit switch. The expansion slots support the following expansion modules:

- **DEM-540** 4-port stacking module. This module allows you to stack up 4 D-Link DES-3226S stackable switches. With 2 DEM-540 modules installed in the expansion slots, you can stack up to 8 DES-3226S switches.
- **DEM-340MG** 4-port GBIC module. This module provides 4 SFP slots for installation of 4 Gigabit transceivers supporting short, medium and long distance fiber cables.
- **DEM-340T** 4-port copper Gigabit module. This module provides 4 10/100/1000BASE-T ports for 4 copper Gigabit connections.

### Fault Tolerant Switch Stacking

With the DEM-540 stacking modules, the DGS-3212SR Stacking Master can stack up 8 D-Link stackable switches. The stacking scheme uses the star architecture, where packets are switched directly through the Stacking Master. This architecture provides for fault tolerance, as any single broken link between a switch and the Stacking Master will not affect the rest of the links of the stack. This compares favorably with the ring architecture, where a fail over link between any 2 switches can break the link of an entire stack.

### Higher Performance Switch Stacking

Instead of a 2Gbps bandwidth shared by the entire stack in a ring architecture, the DGS-3212SR gives each of the switches on the stack a dedicated 2Gbps bandwidth from a Stacking Master stacking port. This brings the total bandwidth up to 16Gbps when 8 switches are stacked through the Stacking Master.

### Scalable Expansion With 192 10/100BASE-TX & 12 Gigabit Ports

By stacking a DGS-3212SR with 8 DES-3226S switches, you can have as many as 192 10/100BASE-TX ports for departmental user connection, plus 12 Gigabit ports for server and backbone attachment. This architecture allows you to easily add switch units as your need grows, without making changes to your existing network hardware.

### 12-Port Collapsed Backbone

If you opt to use your DGS-3212SR as a stand-alone Gigabit switch, you can install up to 2 Gigabit modules in the expansion slots. This will give you 8 Gigabit ports, in addition to the 4 built-in 1000BASE-T/combo SFP ports, making it a total of 12 Gigabit ports. This type of deployment gives you a small collapsed backbone to which 12 switches and servers can be attached. All ports on the DGS-3212SR support jumbo frames to alleviate heavy network traffic. Copper and fiber cables can be deployed, depending on your selection of the port modules.

# DGS-3212SR

## Technical Specifications

### Redundant Power Support

The DGS-3212SR can be connected to an external power supply for redundant power backup purposes. In case the built-in internal power supply fails, the redundant power supply unit will automatically provide all the required power to ensure continuous operation.

### VLANs for Enhanced Security & Performance

The DGS-3212SR supports 802.1Q and port-based VLANs to improve security and bandwidth utilization. This limits the broadcast domains and confines intra-group traffic within their segments. The switch also supports GVRP (GARP VLAN Registration Protocol) for automatic VLAN configuration distribution.

### Advanced Network Access Management

802.1x features enable user authentication for each network access attempt. Port security features allow you to limit the number of MAC addresses per port in order to control the number of stations for each port. Static MAC addresses can be defined for each port to ensure only registered machines are allowed to access. By enabling both of these features, you can establish an access mechanism based on user and machine identities, as well as control the number of access stations.

### Multi-Layer Access Control List (ACL)

Access Control Lists (ACL) allow the network administrator to define policies on network traffic control. The switch supports comprehensive and multi-layer ACLs, providing a powerful tool for network management. For example, the switch can be set to block malicious bulk traffic from specific clients based either on MAC or IP addresses. Or during a virus attack, the switch can be set to restrict its flooding based on a virus's unique pattern based on TCP/UDP port number.

### Advanced CoS Support

The switch supports not only Layer 2 802.1p Priority Queue control, but also a variety of ways to prioritize network packets. Multi-layer information from L2 to L4 can be used to classify packet priorities. This function allows you to attach IP telephony devices or video servers to the switch to run delay-sensitive applications like video conference. The DGS-3212SR supports up to 8 CoS (Class of Service) queues in the stand-alone mode, and up to 4 CoS queues in the Stacking Master mode.

### Flexible Transmission Scheduling

The switch supports 2 methods of packet transmission scheduling: Strict Priority Queuing and Weighted Round-Robin (WRR). You can select to use Strict Priority Queuing 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 prevent too many broadcast/multicast from flooding the network, broadcast/multicast storm control is configured to screen excessive traffic. 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 For Redundant Backup Bridge Path

For mission critical environments with multiple switches supporting STP, you can configure the stack 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. The DGS-3212SR supports 802.1D Spanning Tree compatible, 802.1w Rapid Spanning Tree and 802.1s Multiple Spanning Tree.

(*) *Multiple Spanning Tree is supported in the next firmware release.*

### Multiple Management Interfaces

SNMP v.1, v.3 network management is supported, using the built-in MIBs. RMON monitoring and SYSLOG are provided for effective central management. The switch also provides a Command Line Interface (CLI) and a Web-based GUI. CLI enables quick system configuration for administrators familiar with command line operation. The embedded Web-based interface allows you to easily access the switch from anywhere on the network and troubleshoot it in real-time. You can, for example, browse the MAC address table via the Web browser and perform searching to identify the location of any workstation. Port utilization graphs provide real-time traffic monitoring and diagnostic information.

## Features

- *4 built-in 10/100/1000BASE-T ports*
- *4 built-in combo GBIC (SFP) slots ***
- *2 expansion slots for stacking or Gigabit port module installation*
- *Selection of 4-port 1000BASE-T and SFP GBIC modules for expansion slots*
- *Redundant power supply support*
- *Up to 192 10/100BASE-TX ports and 12 Gigabit ports with 24Gbps backplane when stacked with DES-3226S switches*
- *Dedicated 2Gbps bandwidth between Stacking Master and each stackable switch*
- *Jumbo frame support (up to 9,216 bytes)*
- *802.1Q VLAN, GARP/GVRP, Asymmetric VLAN (*) support*
- *IGMP snooping, 802.1p Priority Queues, port mirroring support*

- *Multi-layer (Layer 2 to Layer 4) ACL and CoS support Broadcast storm control*
- *802.1D compatible, 802.1w, 802.1s Spanning Tree (*) for redundant backup bridge paths*
- *SNMP v.1, v.3 network management, 4 groups of RMON*
- *802.1x port-based, MAC-based port access control*
- *Per-port bandwidth control*
- *802.3ad LACP port trunks*
- *Command Line Interface, TFTP firmware upgrade, Web-based management, Web GUI Traffic Monitoring support*
- *SNMP management/MIB support*

\* *Asymmetric VLAN and 802.1s Multiple Spanning Tree functions available in next firmware release.*
\*\* *Use of the SFP GBIC will disable their corresponding built-in 10/100/1000BASE-T connections.*

# DGS-3212SR

## Technical Specifications

### Hardware

**Device Ports**
- 4 built-in 10/100/1000BASE-T ports
- 4 built-in combo GBIC (SFP) slots *
- RS-232 console port

*\* Use of the SFP GBIC will disable their corresponding built-in 10/100/1000BASE-T connections.*

**Number of Expansion Slots**
2

**Port Modules**
(for expansion slots)
- DEM-540: 4 stacking ports supporting DES-3226S switches
- DEM-340MG: 4 SFP GBIC slots
- DEM-340T: 4 10/100/1000BASE-T ports

**Port Standard/Function Support**
- IEEE 802.3 10BASE-T/802.3u 100BASE-TX/802.3ab 1000BASE-T
- ANSI/IEEE 802.3 NWay auto-negotiation
- IEEE 802.3x Flow Control
- Auto MDI/MDIX
- Port mirroring

**GBIC (SFP) Support**
- IEEE 802.3z 1000BASE-LX (DEM-310GT transceiver)
- IEEE 802.3z 1000BASE-SX (DEM-311GT transceiver)
- IEEE 802.3z 1000BASE-LH (DEM-314GT transceiver)
- IEEE 802.3z 1000BASE-ZX (DEM-315GT transceiver)

**Forwarding Rate**
17.8Mpps (max.)

**Switch Fabric**
24Gbps

**Diagnostic LEDs**
**Per device:**
- Power
- Console
- RPS
**Per RJ-45 port:**
- Speed
- Link/Act
**Per SFP port:**
- Link/Act

### Software

**VLAN**
- IEEE 802.1Q Tagged VLAN
- Port-based VLAN (non-overlapping)
- GARP/GVRP
- Asymmetric VLAN (L2 only)
- Maximum number of VLANs: 255

*\* 4 K maximum number of VLANs in stand-alone mode will be supported in next firmware upgrade*

**Priority Queues (CoS)**
- Standard: IEEE 802.1p
- Number of queues: 4 per port (Stacking Master mode), 8 per port (stand-alone mode)

**Traffic Classification (CoS)**
Can be based on user-definable application types:
- TOS
- Diffserv (DSCP)
- Port-based
- MAC address
- IP address
- TCP/UDP port number

**Network Access Security**
- 802.1x user authentication: port-based and MAC-based
- RADIUS client for 802.1x support
- SSH2 *
- SSL *
- TACACS/TACACS+/XTACACS *
- Cisco-like port security
- Multi-layer Access Control List (ACL) based on:
  MAC
  VLAN
  802.1p
  Diffserv (DSCP)
  IP address
  Protocol type
  TCP/UDP destination port number

*\* Functions available in next firmware upgrade*

**Spanning Tree**
- 802.1D compatible
- 802.1w Rapid Spanning Tree
- 802.1s Multiple Spanning Tree *

*\* Multiple Spanning Tree supported in next firmware release*

**Multicast**
- IGMP v.1, v.2
- IGMP Snooping

**Port Trunk**
- Number of ports per trunk: 8 (max.)
- Number of trunk per switch: 6 (max.) (in DGS-3212SR stand-alone mode only)
- Trunking mode: static
- Operation mode: load sharing
- 802.3ad LACP support

### Performance

**Transmission Method**
Store-and-forward

**MAC Address Table**
16K entries per device

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

**Packet Filtering/Forwarding Rates (half duplex)**
1,488,100 pps per port (max.)

**RAM Buffer**
1MB per device

**Jumbo Frame Size**
Up to 9,216bytes

**Broadcast Storm Control**
Rate control of Broadcast, unknown Multicast and Unicast packets

### Configuration & Management

**Management Support**
- SNMP v.1, v.3
- Web-based management
- CLI (command line interface)
- RMON monitoring
- Telnet server
- Telnet remote control console
- SYSLOG
- Web GUI traffic monitoring
- Password enable
- Web MAC address browsing
- SNMP trap on MAC notification
- SNTP
- IP filtering on management interface

**MIBs**
- MIB-II (RFC 1213)
- Bridge MIB (RFC 1493)
- RMON MIB (RFC 1757)
- 802.1Q VLAN/802.1p MIB (RFC 2674)
- IGMP MIB (RFC 2933)
- IF (Interface) MIB (RFC 2233)
- Ethernet-like MIB (RFC 1643)
- 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 client

Console Port
DB-9 RS-232 DCE

# DGS-3212SR
## Technical Specifications

### Physical & Environmental

**Power Input**
100 to 120 VAC, 50/60 Hz or 200 to 240 VAC, 50/60 Hz
Internal universal power supply

**Redundant Power Backup Support**
Connector to connect to external redundant power supply

**Power Consumption**
30 watts (max.) (without expansion modules)

**Ventilation**
60 x 60 mm DC fans x 1

**Operating Temperature**
0° to 40 °C

**Storage Temperature**
-25° to 55 °C

**Humidity**
10% to 95% non-condensing

**Dimensions**
440 (W) x 309 (D) x 44 mm (H) (device only)
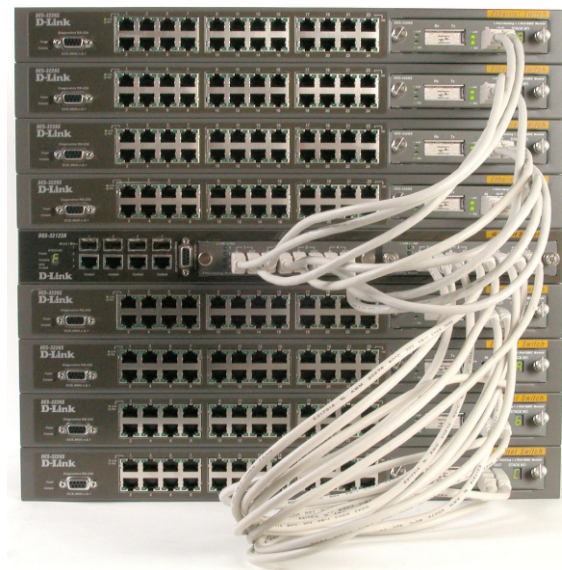19-inch rack-mount width, 1 U height

**Weight**
4.4 kg (device only, without expansion modules)

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

**Safety**
CSA International



FC  ACN 052 202 838  CSA60950 UL60950 IEC60950 EN 60950  C US LR93673  CE

### Ordering Information

**Stacking Master & Modular L2 Gigabit Switch**
| | |
|---|---|
| DGS-3212SR | 4 10/100/1000BASE-T ports, 4 combo GBIC (SFP) slots, 2 expansion slots, redundant power support |

**Optional Expansion Module**
| | |
|---|---|
| DEM-540 | 4 stacking ports (for use with DES-3226S switches) |
| DEM-340MG | 4 SFP GBIC slots |
| DEM-340T | 4 10/100/1000BASE-T ports |

**Optional Mini GBIC SFP Transceiver**
| | |
|---|---|
| DEM-310GT | SFP transceiver for 1000BASE-LX, single-mode fiber, max. distance 10km, 3.3V |
| DEM-311GT | SFP transceiver for 1000BASE-SX, multi-mode fiber, max. distance 550m, 3.3V |
| DEM-314GT | SFP transceiver for 1000BASE-LHX, single-mode fiber, max. distance 40km, 3.3V |
| DEM-315GT | SFP transceiver for 1000BASE-ZX, single-mode fiber, max. distance 80km, 3.3V |

**Optional Redundant Power Supply**
| | |
|---|---|
| DPS-200 | 60 watts redundant power supply |
| DPS-800 | 2-slot redundant power supply chassis |



Stack of 8 DES-3226S switches connected to a DGS-3212SR Stacking Master (in the middle of the stack)

# D-Link®

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| **Denmark** | TEL: 45-43-969040 | FAX: 45-43-424347 |
| **Finland** | TEL: 358-9-2707-5080 | FAX: 358-9-2707-5081 |
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| **Australia** | TEL: 61-2-8899-1800 | FAX: 61-2-8899-1868 |
| **Japan** | TEL: 81-3-5434-9678 | FAX: 81-3-5434-9868 |
| **China** | TEL: 86-10-8518-2533 | FAX: 86-10-8518-2250 |
| **India** | TEL: 91-22-652-6696 | FAX: 91-22-652-8914 |
| **Egypt** | TEL: 202-62-44615 | FAX: 202-62-44583 |
| **UAE** | TEL: 971-4-3916480 | FAX: 971-4-3908881 |
| **Turkey** | TEL: 90-212-335-2525 | FAX: 90-212-335-2500 |
| **Israel** | TEL: 972-9-9715700 | FAX: 972-9-971-5601 |
| **Chile** | TEL: 56-2-232-3185 | FAX: 56-2-232-0923 |
| **Brasil** | TEL: 55-11-3094-2910 | FAX: 55-11-3094-2921 |
| **South Africa** | TEL: 27(0)1266-52165 | FAX: 27(0)1266-52186 |
| **Russia** | TEL: 7-095-737-3389 | FAX: 7-095-737-3390 |
| **Taiwan** | TEL: 886-2-2910-2626 | FAX: 886-2-2910-1515 |
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