# L2+ Gigabit Stack
## Enhanced Access Layer Switch

- **24 or 48 Gigabit Ports Per Switch**
- **4 Combo SFP Fiber Gigabit**
- **2 or 3 Open Slots for Optional 10-Gigabit Uplinks**
- **Virtual Stack or Physical High-Speed Stacking**
- **Enhanced L2+ With Static Routing, Multi-Layer ACL and QoS**
- **Malicious Traffic and Performance Degradation Prevention**

## FEATURES

**Flexible Choices**
- 24 or 48 10/100/1000BASE-T Ports
- 4 Combo SFP for Fiber Gigabit
- 2 or 3 Open Slots for Optional 10-Gigabit Uplinks
- Stackable Through Optional 10-Gigabit Coaxial Ports
- Optional External Redundant Power Supply

**xStack Integration**
- Virtual Stack of Up to 32 Units
- Single IP Management for Integration With L3 Core Switches
- Physical Stackable to 12 Units, 576 Gigabit Ports [2]

**Enhanced L2+ Features**
- IP v.4/v.6 Static Routing
- IP v.6 Tunneling [1]

**Security**
- L2/L3/L4 Multi-Layer Access Control
- D-Link Safeguard Engine
- 802.1x Authentication, External RADIUS/TACACS+ Support
- SSH/SSL Support
- Health Check [3]

**Quality of Service**
- 802.1p Priority Queues/Multi-Layer CoS
- 8 Hardware Queues

**Traffic Monitoring/Bandwidth Control**
- Traffic Segmentation
- Bandwidth Control Down to 64Kbps
- Per Flow Bandwidth Control
- Broadcast Storm Control Down to 1pps
- 802.3ad Link Aggregation (Port Trunks)
- Port Mirroring

**Configuration/Management**
- Web-Based
- Command Line Interface (CLI)
- SNMP v.1, v.2c, v3
- D-Link Single IP Management (SIM) v.1.5
- Telnet Server
- Dual Images/Configurations

[1] Star stacking available in future; other functions available in future firmware upgrade.
[2] Calculation based on 12 units of DGS-3450 stacked in the Ring Topology.
[3] Health Check ZoneDefense operates in conjunction with D-Link NetDefend firewalls.

The xStack DGS-3400 series of next generation switches delivers performance, flexibility, security, multi-layer Quality of Service (QoS) and redundant power option for the SMB and enterprises. With high Gigabit port densities for desktop connections, SFP fiber connectivity, 10-Gigabit uplink options and enhanced Layer 2+ functions, these switches comprise the workgroup access-layer stack for seamless integration with L3 core switches to form part of a multi-level network structured with high-speed backbone and centralized servers.

*Unparalleled Flexibility.* Any switch in the DGS-3400 series can operate as a stand-alone device or part of a scalable stack. Embedded with Single IP Management capability, a stand-alone switch can form part of a virtual stack, where intra-stack traffic flows through the usual network wires, doing away with the costly stacking cables. Without stacking cables, cable distance barriers and physical stacking limitations, a virtual stack can comprise units that are located anywhere on the network that minimizes the impact of any single point of failure.

*Ring or Star [1] Stacking.* Alternatively, optional 10-Gigabit modules can be installed in the open slots to create a physical stack. Up to 12 units or 576 Gigabit ports can be configured for a stack.[2] Users can install one or two single-port modules, depending on whether the fault-tolerant Ring or Star [1] stacking is implemented. With each of these ports providing 20Gbps full duplex transmission on the cost-effective coaxial cable, the DGS-3400 series provides not only high-bandwidth stacking but also cost control capability that allows users to add ports strictly on a per need basis. Modules with single 10-Gigabit XFP can also be installed in any of the open slots for uplink to a server or a fiber backbone.

*More Intelligent Than Simple Layer 2 Switch.* The DGS-3400 series provides a complete set of security features, which includes L2/L3/L4 multi-layer Access Control Lists and 802.1x user authentication via TACACS+ and RADIUS servers. In addition, it offers suppression capabilities, Layer 3 IP v.4/v.6 Static Routing and IP v.6 Tunneling [1] to increase network performance and security. To ensure that not only proper user access is served, but also malicious traffic within the network is prevented, the DGS-3400 series includes a Health Check mechanism that provides proactive network security without the need for manual intervention from the administrator. [3]

*Security, Performance & Availability.* The DGS-3400 series provides extensive VLAN support including GARP/GVRP, 802.1Q and asymmetric VLAN to enhance security and performance. To support converged applications including VoIP, ERP, Intranet and video conference, a robust set of L2/L3/L4 QoS/CoS features ensures that critical network services are served with proper priority. With Multi-layer L2/L3/L4 bandwidth control and D-Link Safeguard Engine, DGS-3400 series can set limits to traffic flows from the edge of the network while automatically prevents broadcast packets and bulk traffic generated by Internet DoS-related activities from utilizing the switch's CPU resources. This prevention of unnecessary and harmful traffic can increase the overall network serviceability, reliability and availability of the stack.

## XSTACK

# Product Specifications

|  |  | DGS-3426 | DGS-3427 | DGS-3450 |
|---|---|---|---|---|
| **Interface** | 10/100/1000BASE-T Ports | 24 | 24 | 48 |
|  | Auto-Negotiation of Network Speed | √ | √ | √ |
|  | Auto-MDI/MDIX | √ | √ | √ |
|  | 802.3x Flow Control | √ | √ | √ |
|  | SFP | 4 | 4 | 4 |
|  | Open Slot for 10Gigabit Uplink Modules | 2 | 3 | 2 |
|  | RS-232 Console Port | 1 | 1 | 1 |
| **Physical Stacking** | Installable Module for Stacking | Single-Port DEM-410CX | Single-Port DEM-410CX | Single-Port DEM-410CX |
|  | Max Number of Stacking Ports Installable | 2 CX4 Ports | 2 CX4 Ports | 2 CX4 Ports |
|  | Stacking Speed (Per Port) | 20Gbps (Full-Duplex) | 20Gbps (Full-Duplex) | 20Gbps (Full-Duplex) |
|  | No. of Units Per Stack (Star Topology) | 8 * | 8 * | 8 * |
|  | No. of Units Per Stack (Ring Topology) | 12 | 12 | 12 |
| **Optional 10-Gigabit Uplink** | Single XFP Slot Module (DEM-410X) | √ | √ | √ |
|  | Single CX4 Port Module (DEM-410CX) | √ | √ | √ |
|  | 10GBASE-SR (300 m Multi-Mode Fiber) Support | √ | √ | √ |
|  | 10GBASE-LR (10 km Single-Mode Fiber) Support | √ | √ | √ |
|  | 10GBASE-ER (40 km Single-Mode Fiber) Support | √ | √ | √ |
|  | Max. Number of 10-Gigabit Uplinks Installable | 2 | 3 | 2 |
| **Performance** | Switch Fabric | 88Gbps | 108Gbps | 136Gbps |
|  | Packet Forwarding Rate | 65.47Mpps | 80.36Mpps | 101.19Mpps |
|  | Packet Buffer | 750KB | 750KB | 750KB |
|  | MAC Address Table | 8K Entries | 8K Entries | 8K Entries |
|  | IP v.4/v.6 Static Routing Table | 128 Entries | 128 Entries | 128 Entries |
|  | IP v.4 Host Table | 2K Entries | 2K Entries | 2K Entries |
|  | IP v.6 Host Table | 1K Entries | 1K Entries | 1K Entries |
| **Power** | Power Supply | 100 to 120VAC, 200 to 240VAC, 50/60Hz, Internal Power Supply | | |
|  | Power Consumption (Max.) | 70.8 Watts | 71.6 Watts | 131.34 Watts |
|  | Optional Redundant Power Supply | DPS-500 | DPS-500 | DPS-500 |
| **Physical/Environmental** | BTU/Hr. | 241.58 | 244 | 448 |
|  | Ventilation | 2 40 x 40 mm DC Fans | 2 40 x 40 mm DC Fans | 2 40 x 40 mm DC Fans |
|  | Dimensions | 441 x 389 x 44 mm | 441 x 389 x 44 mm | 441 x 389 x 44 mm |
|  | Size | 19-Inch Rack-Mount Width, 1U Height | | |
|  | Weight (Without Optional Module) | 5.42 kg | 5.51 kg | 5.74 kg |
|  | Operating Temperature | $0^o$ to $40^o$C | $0^o$ to $40^o$C | $0^o$ to $40^o$C |
|  | Storage Temperature | $-10^o$ to $70^o$C | $-10^o$ to $70^o$C | $-10^o$ to $70^o$C |
|  | Operating Humidity | 10% to 90% RH | 10% to 90% RH | 10% to 90% RH |
|  | Storage Humidity | 5% to 90% RH | 5% to 90% RH | 5% to 90% RH |
|  | EMI | FCC Class A, CE, C-Tick | FCC Class A, CE, C-Tick | FCC Class A, CE, C-Tick |
|  | Safety | CSA International | CSA International | CSA International |

* Functions available in future.

## Software Functions

### L2 Features
- IGMP snooping
- Spanning Tree: 802.1D STP, 802.1W RSTP, 802.1S MSTP
- STP loop back detection
- 8 802.3ad Link Aggregation groups
- Back Pressure Flow Control
- Port mirroring: one-to-one, multiple-to-one, ACL modes *
- Trunking/mirroring across stack *
- Head-of-line blocking prevention

### VLAN
- 802.1Q
- Double VLAN *
- 4K VLAN groups
- GVRP
- Guest VLAN *

### L3 Features
- 128 IP v.4/v.6 Static Routing
- IPv.6 Tunneling *

### QoS
- Per flow bandwidth control
- 802.1p support
- 8 queues per port
- Queue handling methods: WRR, Strict
- CoS based on:
  Switch port
  MAC address
  802.1p priority
  VLAN
  Protocol type
  TOS
  DSCP
  IP v.4/v.6 address
  IP v.6 traffic class
  IP v.6 flow label
  TCP/UDP port

### ACL (Access Control List)
- Maximum 768 rules based on:
  Switch port
  MAC address
  802.1p priority
  VLAN
  Protocol type
  TOS
  DSCP
  IP address
  IP v.4/v.6 address
  IP v.6 traffic class
  IP v.6 flow label
  TCP/UDP port
- Time-based ACL *
- CPU interface filtering

### Security
- RADIUS/TACACS/TACACS+
- SSH v.2
- SSL v.3
- Port security
- 802.1x port-based/MAC-based access control
- Web-based access control *
- Broadcast storm control
- Traffic segmentation
- MAC-IP binding
- D-Link Safeguard Engine

### Management
- D-Link Single IP Management v.1.5
- Web-based GUI
- CLI
- Web GUI traffic monitoring
- Web MAC address browsing
- Telnet server
- TFTP client
- SNMP v.1, v.2c, v.3
- SNMP trap on MAC notification
- RMON v.1
- BootP/DHCP client
- DHCP auto-configuration
- DHCP relay option 82 *
- System log
- Trap/alarm/log severity control
- Dual Images
- Dual Configurations
- CPU Monitoring
- Virtual Interface *

*Functions available in future firmware upgrade.*

# Optional Products

**Optional Management Software**
**DS-510S**    D-View 5.1 SNMP Network Management Program (standard version)
**DS-510P**    D-View 5.1 SNMP Network Management Program (professional version)

**Optional 10Gigabit Uplink Modules**
**DEM-410X**    1-slot 10Gigabit XFP uplink module
**DEM-410CX**    1-port 10Gigabit CX4 uplink module

**Optional 10Gigabit XFP Transceivers**
**DEM-421XT**    XFP transceiver for 10GBASE-SR, multi-mode fiber, max. distance 300 m, 3.3/5V
**DEM-422XT**    XFP transceiver for 10GBASE-LR, single- mode fiber, max. distance 10 km, 3.3/5V
**DEM-423XT**    XFP transceiver for 10GBASE-ER, single-mode fiber, max. distance 40 km, 3.3/5V

**Optional SFP Transceivers**
**DEM-310GT**    SFP transceiver for 1000BASE-LX, single-mode fiber, max. distance 10 km, 3.3V
**DEM-311GT**    SFP transceiver for 1000BASE-SX, multi-mode fiber, max. distance 550 m, 3.3V
**DEM-312GT2**    SFP transceiver for 1000BASE-SX, multi- mode fiber, max. distance 2 km, 3.3V
**DEM-314GT**    SFP transceiver for 1000BASE-LHX, single- mode fiber, max. distance 50 km, 3.3V
**DEM-315GT**    SFP transceiver for 1000BASE-LX, single-mode fiber, max. distance 80 km, 3.3V
**DEM-330T**    SFP transceiver for 1000BASE-LX, single-mode fiber, max. 10 km, 3.3V, WDM (Tx: 1550 nm, Rx: 1310 nm)
**DEM-330R**    SFP transceiver for 1000BASE-LX, single-mode fiber, max. 10 km, 3.3V, WDM (Tx: 1310 nm, Rx:1550 nm)
**DEM-331T**    SFP transceiver for 1000BASE-LX, single-mode fiber, max. 40 km, 3.3V, WDM (Tx: 1550 nm, Rx: 1310 nm)

**DEM-331R**    SFP transceiver for 1000BASE-LX, single-mode fiber, max. 40 km, 3.3V, WDM (Tx: 1310 nm, Rx:1550 nm)

**Optional Redundant Power Supply**
**DPS-500**    140-watt redundant power supply
**DPS-800**    2-slot redundant power supply chassis
**DPS-900**    8-slot redundant power supply chassis

## D-Link Worldwide Offices

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| **U.S.A.** | TEL: 1-800-326-1688 | FAX: 1-866-743-4905 | **Luxemburg** | TEL: 32-(0)2-517-7111 | FAX: 32-(0)2-517-6500 |
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| **France** | TEL: 33-1-30238688 | FAX: 33-1-30238689 | **Australia** | TEL: 61-2-8899-1800 | FAX: 61-2-8899-1868 |
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| **Belgium** | TEL: 32(0)2-517-7111 | FAX: 32(0)2-517-6500 | **Middle East (Dubai)** | TEL: 971-4-3916480 | FAX: 971-4-3908881 |
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| **Denmark** | TEL: 45-43-969040 | FAX: 45-43-424347 | **Israel** | TEL: 972-9-9715700 | FAX: 972-9-9715601 |
| **Norway** | TEL: 47-99-300-100 | FAX: 47-22-309580 | **LatinAmerica** | TEL: 56-2-232-3185 | FAX: 56-2-232-0923 |
| **Finland** | TEL: 358-9-2707 5080 | FAX: 358-9-2707-5081 | **Brazil** | TEL: 55-11-218-59300 | FAX: 55-11-218-59322 |
| **Spain** | TEL: 34-93-4090770 | FAX: 34-93-4910795 | **South Africa** | TEL: 27-12-665-2165 | FAX: 27-12-665-2186 |
| **Portugal** | TEL: 351-21-8688493 | | **Russia** | TEL: 7-095-744-0099 | FAX: 7-095-744-0099 #350 |
| **Czech Republic** | TEL: 420-(603)-276-589 | | **China** | TEL: 86-10-58635800 | FAX: 86-10-58635799 |
| **Switzerland** | TEL: 41-(0)-1-832-11-00 | FAX: 41(0)-1-832-11-01 | **Taiwan** | TEL: 886-2-6600-0123 | FAX: 886-2-6600-8168 |
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**DGS-3400 Series**