D-Link®
Building Networks for People

DGS-3000-28SC

Layer 2 Gigabit Stackable Managed Switch

Features

Designed for Gigabit Metro/Campus Access

- 20-Port 100/1000 SFP ports and 4 Combo 10/100/1000BASE-T/SFP ports with 4 10G SFP+ uplink ports

High Bandwidth Physical Stacking

- Up to 40 Gbps Full-Duplex Stacking Bandwidth
- Up to 6 units per stack

Reliable Hardware and Software Features

- 6 kV surge protection for Ethernet ports
- Redundant Power Supply (RPS) support
- 50 ms Ethernet recovery mechanism for various network topologies
- Protocol-less loop detection protect network from uncontrolled grey area

Outstanding Triple Play Support

- Multiple Set-Top Box (STB) per leased line
- Easy channel and service package management
- Strict STB authentication

Data Leakage Prevention

- Several user/device authentication methods
- Clientless user/device authentication, easy to deploy
- Strict address binding to prevent malicious attack

The DGS-3000-28SC is part of the Layer 2 family of D-Link's managed switch product line that provides wired Gigabit speed access for metro and campus networks. The four embedded 10G SFP+ ports guarantee performance during aggregation of numerous Gigabit connections. The DGS-3000-28SC is designed as a 1U rackmount case suitable for desktops and telecom cabinets.

Reliable Networking

All of the Ethernet ports of the DGS-3000-28SC support 6kV surge/lightning protection. This feature protects the switch from power surges due to lightning or improper electrical wiring when the Ethernet cables are exposed in open spaces, such as in old buildings. The switch also provides an additional power connector for connection to D-Link's DPS-200A/500A and DPS-500DC/B1 Redundant Power Supply, or a stable, protected 12VDC backup power source in case of a main power failure. For Ethernet link fail-over, the DGS-3000-28SC supports 802.1D Spanning Tree Protocol (STP), 802.1w Rapid Spanning Tree Protocol (RSTP), and 802.1s Multiple Spanning Tree Protocol (MSTP), to allow automatic backup of bridge paths. Using these features, the transmission and reception of frames can be guaranteed even during a network failure. For mission critical environments, the switches also support ITU-I G.8032 Ethernet Ring Protection Switching (ERPS); traffic can be rerouted around the ring within 50 milliseconds, minimizing disruption to service. D-Link Loopback Detection (LBD) is a protocol-less loop detection function that prevent loop events from causing congestion in uncontrolled network segments such as unmanaged switches or customer networks. The DGS-3000-28SC also support 802.1AX Link Aggregation, which allows grouping of multiple ports in parallel to increase bandwidth and redundancy for high availability and load sharing in a multi-client environment.

Deliver Triple Play Services

The DGS-3000-28SC features full L2 multicast functions, including IGMP/MLD snooping, fast leave, and filtering. With L2 multicast support, the switches can handle the increasingly popular IPTV service. Host-based IGMP/MLD Snooping provide service to multiple IPTV subscribers per physical interface and ISM VLAN registers multicast streams in a multicast VLAN to save bandwidth on the network backbone. The ISM VLAN profiles allow users to bind or replace the channel profiles of subscription ports quickly and easily. The DGS-3000-28SC also supports IGMP authentication, which can prevent rogue IPTV subscriptions by authenticating Set Top Boxes as well as channel switching to secure Internet Service Provider (ISP) revenues.

The DGS-3000-28SC also supports advanced Quality of Service (QoS) functions to help ISPs reliably deliver high-quality triple play services. Flexible packet classification can be based on various header fields or user-defined packet content to help administrators prioritize network traffic. Two-rate and single-rate Three Color Marker (trTCM/srTCM) help classify traffic streams into conforming and nonconforming groups to guarantee the minimum bandwidth for prioritized packets. The Bandwidth Control feature allows ISPs to define the upstream/downstream throughput levels for each port with granularity down to 64 kbps.

Easy Maintenance and Troubleshooting

The DGS-3000-28SC features rich Operations, Administration, and Management (OAM) features to help ISPs reduce the burden of maintenance and troubleshooting. Cable diagnostics display the status of Ethernet cables and locate the position of cable errors remotely, helping providers cut on-site support costs. 802.1ag Connectivity Fault Management (CFM) provides administrators with a convenient tool to monitor and troubleshoot end-to-end service networks. This allows service providers to check connectivity, isolate network issues, and identify the affected customers. D-Link Unidirectional Link Detection (DULD) helps detect a broken one-way fiber connection, improving the stability of the fiber infrastructure in a Metropolitan Area Network.

Solid Security with High Availability

The DGS-3000-28SC offers various user/device authentication features including 802.1X, Web-based Access Control (WAC) and MAC-based Access Control (MAC). The clientless WAC and MAC functions provide convenience for IT managers implementing user/device authentication into a network. It permits administrators to control security without installing client software on each network device; this is especially important for devices on which the software cannot be installed. For a greater security level, the DGS-3000-28SC also supports Compound Authentication, letting IT managers choose between multiple authentication methods for any single device. Selectable host-based authentication and authorization provides the option to finely control access by each device in the network. For advanced applications, the switches also provide RADIUS and TACACS accounting information for integration of backend services such as a billing system or advanced user/device control. In mission critical networks, the DGS-3000-28SC supports strict address and interface binding function via IP-MAC-Port Binding and ARP Spoofing Prevention to protect the networks from Man-In-The-Middle or ARP Spoofing attacks.

To maintain a high availability network, the DGS-3000-28SC uses D-Link Safeguard Engine to manage the CPU and ensure that your network stays up even if it is overloaded by malicious traffic caused by worms and viruses. The switches also support DHCP Screening to filter out unauthorized DHCP offerings from rogue DHCP servers or routers. Other security features such as BPDU Attack Protection, DoS Attack Prevention, and L3 Control Packet Filtering help to block leaks caused by protocol or behavioral security intrusions.

IPv6 Features

The DGS-3000-28SC supports various IPv6 functions such as MLD Snooping, WAC, IPv6 ACL/QoS, and IMPBv6 to ensure seamless integration of next generation networks. The DGS-3000-28SC also supports a IPv4/v6 dual stack function that allows the switch to act as a bridge between IPv4 and IPv6 networks.

Technical Specifications	
Interface	
Ports	• 20-Port 100/1000 SFP ports • 4-Port Combo 10/100/1000BASE-T/SFP • 4-Port 10G SFP+
Optional Redundant Power Supply	DPS-200A/500A and DPS-500DC/B1[1]
Console Port	RJ-45
Performance	
Switching Capacity	128 Gbps
64 Byte Packet Forwarding Rate	95.24 Mpps
MAC Address Table	16K Entries
DRAM for CPU	256 MB

Packet Buffer Memory	1.5 MB
Flash Memory	32 MB
Jumbo Frame	13 KBytes
Physical	
MTBF(hours)	567884.3 hrs
Acoustic	49.5 dB
Heat Dissipation	118.69 Btu/h
Power Input	AC Input 100 to 240 V AC, 50 to 60 Hz Internal Universal Power Supply
Max Power Consumption	56.2 W
Dimensions (W x D x H)	440 x 209.9 x 44mm
Weight	2.156 Kg
Ventilation	Smart Fan
Power Surge Protection	All Ethernet ports support IEC61000-4-5 10/700us 6 kV surge protection
Operation Temperature	0 to 50℃ (32 to 122℉)
Storage Temperature	-20 to 70℃ (-4 to 158℉)
Operation Humidity	0% to 95% RH
Storage Humidity	0% to 95% RH
Emission (EMI)	CE
Safety	CE-LVD

Software Features

Stackability	• Physical Stacking • Up to 40Gbps Full-Duplex Stacking Bandwidth • Up to 6 units per Stack	• Virtual Stacking • D-Link Single IP Management (SIM) • Up to 32 units per Virtual Stack
L2 Features	• 16K MAC Address Table • Flow Control: • 802.3x Flow Control • HOL Blocking Prevention • Jumbo Frames up to 13K bytes • Spanning Tree Protocols: • 802.1D STP • 802.1w RSTP • 802.1s MSTP • Root Restriction	• Loopback Detection • Link Aggregation: • Compliant with 802.1AX • Up to 32 groups, 8 ports per group • Port Mirroring: • Up to 4 Mirroring group • Supports One-to-One, Many-to-One, Flow-based (ACL) Mirroring • Ethernet Ring Protection Switching (ERPS) • L2 Protocol Tunneling (L2PT)
L2 Multicasting	• IGMP Snooping: • IGMP v1/v2/v3 Snooping, v3 awareness • Up to 960 groups • Host-based IGMP Snooping Fast Leave • Report Suppression • IGMP Authentication • IGMP/MLD Proxy Reporting • Limited IP Multicast (IGMP Filtering)	• MLD Snooping: • MLD v1/v2, MLD v2 awareness • Up to 960 groups • Host-based MLD snooping Fast Leave
VLAN	• VLAN Group: • Up to 4094 VLAN • Port-based VLAN • MAC-based VLAN • GVRP: • Up to 4094 dynamic VLANs • 802.1v Protocol VLAN • 802.1Q Tagged VLAN • Double VLAN (Q-in-Q): • Port-based Q-in-Q • Selective Q-in-Q	• ISM VLAN • VLAN Translation • Voice VLAN • VLAN Trunking • Asymmetric VLAN • Auto Surveillance VLAN • Surveillance VLAN • Private VLAN
L3 Features	• Up to 1024 ARP Entries • Gratuitous ARP	• IPv6 Neighbor Discovery (ND) • Default Route
Quality of Service (QoS)	• 8 queues per port • DSCP • 802.1p • Bandwidth Control: • Port-based (Ingress/Egress, min. granularity 64 kbps) • Flow-based (Ingress/Egress, min. granularity 8 kbps) • Per egress queue bandwidth control (min. granularity 64 kbps) • Queue Handling: • Strict Priority Queue (SPQ) • Weighted Round Robin (WRR) • SPQ + WRR • Supports the following actions for flows: • Remark 802.1p Priority Tag • Remark TOS/DSCP Tag	• Time-based QoS • Three Color Marker • trTCM • srTCM • CoS Based on: • 802.1p Priority Queues • VLAN ID • MAC Address • Ether Type • IPv4/v6 Address • IPv6 Traffic Class • IPv6 Flow Label • DSCP • Protocol Type • TCP/UDP Port • User-Defined Packet Content
Access Control List(ACL)	• ACL based on: • Switch Port • 802.1p Priority • VLAN ID • MAC Address • IPv4/v6 Address • Protocol Type • TCP/UDP Port Number • User Defined Packet Content	• Up to 1536 ingress access rules • Up to 768 egress access rules • Time-based ACL • CPU Interface Filtering

Security	• SSH v2
	 • SSL v3
	 • Port Security
	   • Up to 3072 MAC addresses per port
	 • Broadcast/Multicast/Unicast Storm Control
	 • IP-MAC-Port Binding (IMPB):
	   • ARP Inspection
	   • IP Inspection
	   • DHCP Snooping
		• Traffic Segmentation
		 • D-Link Safeguard Engine
		 • NetBIOS/NetBEUI Filtering
		 • DHCP Server Screening
		 • DHCP Client Filtering
		 • ARP Spoofing Prevention
		 • BPDU Attack Protection
		 • DoS Attack Prevention

AAA	• 802.1X
	   • Port-based Access Control
	   • Host-based Access Control
	   • Dynamic VLAN Assignment
	 • MAC-based Access Control (MAC)
	   • Port-based Access Control
	   • Host-based Access Control
	   • Dynamic VLAN Assignment
	 • Web-based Access Control (WAC)
	   • Port-based Access Control
	   • Host-based Access Control
	   • Dynamic VLAN Assignment
	 • Compound Authentication
		• Microsoft® NAP (IPv4/v6)
		   • Supports 802.1x NAP
		   • Supports DHCP NAP
		 • Guest VLAN
		 • RADIUS (IPv4/v6)
		 • TACACS
		 • TACACS+
		 • XTACACS+
		 • Trusted Host
		 • RADIUS Accounting
		 • TACACS+ Accounting
		 • Four-level User Account

OAM	• Cable Diagnostics • 802.3ah Ethernet Link OAM • 802.1ag Connectivity Fault Management (CFM)	• 802.3ah D-link Unidirectional Link Detection (DULD) • Y.1731 OAM • sFlow

Green Features	• IEEE 802.3az Energy Efficient Ethernet (EEE)
	 • Power-saving function
	   • Link Status
	   • LED Shut-off
	   • Port Shut-off
	   • System Hibernation	

Management	• Web-based GUI (Supports IPv4/v6)
	 • Command Line Interface (CLI)
	 • Telnet Server/Client (Supports IPv4/v6)
	 • TFTP Client (Supports IPv4/v62)
	 • FTP Client (Supports IPv4/v6)
	 • ZModem
	 • Command Logging
	 • SNMP v1/v2c/v3
	 • SNMP Traps
	 • System Log
	 • RMON v1:
	   • Supports 1,2,3,9 groups
	 • RMON v2:
	   • Supports Probe Config group
	 • 802.1AB LLDP
	 • LLDP-MED
	 • BootP/DHCP Client
		• DHCP Auto-Configuration
		 • DHCP Relay
		 • DHCP Relay Option 60, 61, 82, and 125
		 • DHCP Client Option 12
		 • PPPoE Circuit-ID Tag Insertion
		 • Multiple Image
		 • Flash File System
		 • CPU Monitoring
		 • Memory Monitoring
		 • SNTP
		 • Debug Command
		 • Password Recovery
		 • Password Encryption
		 • Ping (Supports IPv4/v6)
		 • Traceroute
		 • Microsoft® NLB (Network Load Balancing) Support

MIB	• RFC1065, 1066, 1155, 1156, 2578 MIB Structure • RFC1212 Concise MIB Definitions • RFC1213 MIB II • RFC1215 MIB Traps Convention • RFC1493, 4188 Bridge MIB • RFC1157, 2571-2576 SNMP MIB • RFC1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB • RFC271,1757, 2819 RMON MIB • RFC2021 RMONv2 MIB • RFC1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB • RFC2668 802.3 MAU MIB • RFC2674, 4363 802.1p MIB • RFC2618 RADIUS Authentication Client MIB	• RFC4022 MIB for TCP • RFC4113 MIB for UDP • RFC2620 RADIUS Accounting Client MIB • RFC 2925 Ping & Traceroute MIB • Running configuration write and backup • TFTP uploads and downloads • Trap MIB • RFC 4293 IPv6 MIB • RFC 4293 ICMPv6 MIB • RFC 2737 Entity MIB • RFC 4293 IPv6 SNMP Mgmt Interface MIB • Private MIB

IETF® Standards	• RFC768 UDP • RFC791 IP • RFC792 ICMPv4 • RFC2463, 4443 ICMPv6 • RFC793 TCP • RFC826 ARP • RFC1338, 1519 CIDR • RFC2474, 3168, 3260 Definition of the DS Field in the IPv4 and IPv6 Header • RFC1321, 2284, 2865, 2716, 1759, 3580, 3748 Extensible Authentication Protocol (EAP) • RFC2571, RFC2572, RFC2573, RFC2574 SNMP
IPv6	• RFC2460 IPv6 • RFC2461, 4861 Neighbor Discovery • RFC2462, 4862 IPv6 Stateless Address Auto-configuration • RFC2464 IPv6 Neighbor over Ethernet and definition • RFC3513, 4291 IPv6 Addressing Architecture • RFC2893, 4213 IPv4/IPv6 dual stack function

Ordering Information

DGS-3000-28SC	20-Port 100/1000 SFP ports + 4-Port Combo 10/100/1000BASE-T/SFP + 4-Port 10G SFP+, L2 Management Switch

Redundant Power Supply and Cable

DPS-200A	Redundant Power Supply DPS-200A
DPS-500A	Redundant Power Supply DPS-500A
DPS-500DC v.B1	Redundant Power Supply DPS-500DC
DPS-CB150-2PS v.B1	The RPS cable for DGS-3000 and DPS-200A/500A and DPS-500DC/B1

Optional Management Software

DV-600S	D-View 6.0 Network Management System (Standard Edition)
DV-600P	D-View 6.0 Network Management System (Professional Edition)

Optional Accessories

DEM-CB100S	10-GbE SFP+ 1m Direct Attach Cable
DEM-CB300S	10-GbE SFP+ 3m Direct Attach Cable
DEM-CB700S	10-GbE SFP+ 7m Direct Attach Cable
DEM-CB100QXS-4XS	40G QSFP+ to 4-Port 10G SFP+ 1m Direct Attach Cable

Optional SFP Transceivers

DEM-302S-LX	1000BASE-LX, Single-mode, 2 km
DEM-310GT	1000BASE-LX, Single-mode, 10 km
DEM-311GT	1000BASE-SX, Mutli-mode, 550 m
DEM-312GT2	1000BASE-SX, Multi-mode, 2 km
DEM-314GT	1000BASE-LHX, Single-mode, 50 km
DEM-315GT	1000BASE-ZX, Single-mode, 80 km
DGS-712	1000BASE-T Copper SFP Transceiver
DEM-210	100Mbps Single-Mode SFP Transceiver, 15 km
DEM-211	100Mbps Multi-Mode SFP Transceiver, 2 km

Optional WDM SFP Transceivers	
DEM-302S-BXD	Gigabit WDM(BiDi) Single-Mode 2KM SFP Transceiver (TX-1550/RX-1310 nm)
DEM-302S-BXU	Gigabit WDM(BiDi) Single-Mode 2KM SFP Transceiver (TX-1310/RX-1550 nm)
DEM-330R	Gigabit WDM(BiDi) Single-Mode 10KM SFP Transceiver (TX-1310/ RX-1550 nm)
DEM-330T	Gigabit WDM(BiDi) Single-Mode 10KM SFP Transceiver (TX-1550/ RX-1310 nm)
DEM-331R	Gigabit WDM(BiDi) Single-mode, 40KM SFP transceiver (TX-1310/RX-1550n)
DEM-331T	Gigabit WDM(BiDi) Single-mode, 40KM SFP transceiver (TX-1550/RX-1310nm)
Optional SFP+ Transceivers	
DEM-431XT	10GBASE-SR SFP+ Transceiver (w/o DDM), 80 m: OM1 & OM2 MMF,300 m: OM3 MMF
DEM-431XT-DD	10GBASE-SR SFP+ Transceiver (with DDM), 80 m: OM1 & OM2 MMF, 300 m: OM3 MMF
DEM-432XT	10GBASE-LR SFP+ Transceiver (w/o DDM), 10 km
DEM-432XT-DD	10GBASE-LR SFP+ Transceiver (with DDM), 10 km
DEM-433XT	10GBASE-ER SFP+ Transceiver (w/o DDM), 40 km
DEM-433XT-DD	10GBASE-ER SFP+ Transceiver (with DDM), 40 km
DEM-434XT	10GBASE-ZR SFP+ Transceiver (w/o DDM), 80km
DEM-435XT	10GBASE-LRM SFP+ Transceiver (w/o DDM), 220 m: OM1 & OM2 MMF, 300 m: OM3 MMF
DEM-435XT-DD	10GBASE-LRM SFP+ Transceiver (with DDM), 220 m: OM1 & OM2 MMF, 300 m: OM3 MMF
DEM-436XT-BXU	10GBASE-LR BiDi SFP+ Transceiver (w/o DDM), 20 km; TX: 1270 nm, RX: 1330 nm
DEM-436XT-BXD	10GBASE-LR BiDi SFP+ Transceiver (w/o DDM), 20 km; TX: 1330 nm, RX: 1270 nm

[1] Please use DPS-CB150-2PS v.B1 for connecting DPS-200A/500A and DPS-500DC/B1 to DGS-3000-28SC.

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