



DES-3350SR

48 10/100Mbps ports plus 2 combo 1000BASE-T/SFP (Mini GBIC) in a low-profile rack-mountable box.

## 48-port Layer 3 10/100Mbps Switch

### With 2 Combo Copper Gigabit/SFP (Mini GBIC) & Redundant Power Support

The DES-3350SR is a high-performance Layer 3 10/100Mbps switch that provides an ideal solution for high-density enterprise applications. With 48 10/100Mbps ports and 2 combo 1000BASE-T/SFP (Mini GBIC) slots this switch is designed to meet the demanding need of departmental and enterprise applications requiring high density, low-profile solution. The DES-3350SR supports a redundant power option via an external redundant power supply for maximum network reliability.

#### 48 10/100Mbps Ports for Workstation Connection

The switch provides 48 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/MDIX, 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.

#### Copper Gigabit for Servers

The copper Gigabit provides an inexpensive alternative solution to fiber-optic. Using your existing low-cost Cat. 5 copper 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. The ports support 10/100/1000Mbps network speed auto-sensing, full/half duplex and auto MDI/MDIX.

#### 2 Combo SFP (Mini GBIC) for Flexible Fiber Connection

2 SFP (Mini GBIC) slots are provided for flexible fiber connection. You can select to install optional transceiver modules in these slots for 1000BASE-SX short/medium-distance or 1000BASE-LX long-distance fiber backbone attachment. Use of the SFP (Mini GBIC) will disable their corresponding built-in copper 10/100/1000Mbps copper connections.

#### Wire-speed IP Routing

The switch is designed for basic IP routing, with instant support for Windows, Unix and Internet environments. It provides wire-speed non-blocking switch fabrics with hardware-based packet filtering/forwarding. Packet routing is performed by on-board ASICs at speeds many times faster than CPU-based routers.

#### Seamless Integration

The DES-3350SR can be instantly integrated into any existing network for seamless integration of Layer 2 and Layer 3 packet switching. With multi-layer support for every port, you can start with Layer 2 switching, then upgrade to Layer 3 routing anytime by simply re-configuring the ports. You can flexibly segment the network into domains and sub-domains, using (1) subnet IDs and user IP numbers to route traffic, and (2) custom filters based on users' physical MAC addresses to filter extraneous traffic. At Layer 2, the switch uses auto-learned and user-defined MAC addresses to discard and forward packets. At Layer 3, it looks at the user-specified routing table to route packets to their destinations.

#### Ready for Multi-media Applications

With Priority Queues and IP multicast (IGMP snooping) support, Quality of Services (QoS) can be guaranteed for successful execution of delay-sensitive applications like video conference.

#### 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 can be combined together to create a load-sharing aggregated bandwidth to a server.

### **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.

### **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 (TCP/UDP port number).

### **Advanced QoS 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 support allows you to attach IP telephony devices or video servers to the switch to run delay-sensitive applications like video conference.

### **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 packets 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.

### **802.1D Spanning Tree Compatible & 802.1w Rapid Spanning Tree Support**

For mission critical environments with multiple switches supporting Rapid 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.

### **Multiple Management Interfaces**

SNMP v.1, v.2c, 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.

### **Redundant Power Support**

The switch can be connected to a DPS-200 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.

## Features

- 48 10/100Mbps ports
- 2 combo 10/100/1000Mbps/SFP (Mini GBIC) slots
- Redundant power backup support
- Auto MDI/MDIX for all twisted-pair ports
- Port trunks of up to 8 Fast Ethernet ports, supporting 802.3ad LACP
- IP routing supporting RIP-1, RIP-2, OSPF routing protocols, DVMRP, PIM Dense mode
- Supports 802.1Q VLAN, IGMP snooping, 802.1p Priority Queues, port mirroring
- Multi-layer ACL and QoS support
- Administrator-definable port security
- 802.1x port-based/MAC-based access control
- Per-port bandwidth control
- Broadcast storm control
- 802.3x Flow Control
- 802.1D compatible and 802.1w Spanning Tree for redundant backup bridge paths
- SNMP v.1, v.2c, v.3 network management, RMON monitoring

### Hardware

#### Number of Ports

- 48 auto-sensing 10/100Mbps ports
- 2 combo 10/100/1000Mbps/SFP (Mini GBIC) slots

#### LED

- Power (per device)
- Console (per device)
- RPS (per device)
- Link/Act (per port)

#### Port Functions

- IEEE 802.3 10BASE-T/802.3u 100BASE-TX, 802.3ab 1000BASE-T standards
- Auto-sensing speed with ANSI/IEEE 802.3 NWay auto-negotiation
- Full/half duplex for 10/100Mbps speed
- Full duplex for 1000Mbps speed
- IEEE 802.3x Flow Control in full-duplex, back pressure in half-duplex
- MDI/MDIX auto-sensing per port
- 10BASE-T cables:
  - UTP Cat. 3, 4, 5 (100 m max.)
- 100BASE-TX, 1000BASE-T cables:
  - UTP Cat. 5 (100 m max.)

### Software

#### IP Routing

- IP v4 support
- IP Fragmentation support
- Routing protocols supported:
  - Static routing
  - RIP-1, RIP-2
  - OSPF v.2

#### VLAN

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

#### Spanning Tree

- 802.1D Spanning Tree compatible
- 802.1w Rapid Spanning Tree

#### Multicast

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

#### Priority Queues (CoS)

- Standard: IEEE 802.1p
- Number of queues: 4

#### Traffic Classification (CoS)

Can be based on user-definable application types:

- TOS
- Diffserv (DSCP)
- MAC address
- IP address
- TCP/UDP port number

#### Access Control Security

- Port security
- 802.1x Port-based access control support
- 802.1x MAC-based access control support
- RADIUS client for 802.1x
- Multi-layer ACL (Access Control List) based on:
  - VLAN
  - Protocol type
  - TCP/UDP port number
  - 802.1p
  - Diffserv (DSCP)
  - MAC address
  - IP address

#### Port Trunk

- Number of trunking groups per switch: 6
- Number of Fast Ethernet ports per trunk: 8 (max.)
- Operation mode: load sharing

### Performance

#### Transmission Method

Store-and-forward

#### MAC Address Table

8K entries per device

#### MAC Address Learning

- Dynamic entries: automatic update
- Static entries: user-defined

#### Routing Table

2K entries per device

#### Layer 2 Packet 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

#### Layer 3 Packet Forwarding Rate (half duplex)

10.1Mpps

#### Memory

64 MB SDRAM packet buffer

### Configuration & Management

#### Management Methods & Standards

- SNMP management v.1, v.2c, v.3
- Web-based management (via web browser)
- RMON monitoring
- Telnet (up to 8 sessions)
- CLI (command line interface)

#### Management Security

Password enabled

#### MIBs

- MIB-II (RFC 1213)
- Bridge MIB (RFC 1493)
- RMON MIB (RFC 1757)
- RIP (RFC 1724)
- OSPF (RFC 1850)
- CIDR (RFC 2096)
- 802.1Q VLAN MIB (RFC 2674)
- IGMP MIB (RFC 2833)
- If MIB (RFC 2233)
- Ethernet-like MIB (RFC 2358)
- D-Link enterprise MIB

#### RMON Groups

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

#### IP Number Self-identification

- 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

#### Redundant Power Backup Support

Connector to connect to external redundant power supply

#### Power Consumption

35 watts

#### Ventilation

40 x 40 mm DC fans x 2

# DES-3350SR

## Technical Specifications

## 10/100Mbps L3 Switch

### Operating Temperature

0° to 40 °C

### Storage Temperature

-40° to 70 °C

### Humidity

5% to 95% non-condensing

### Dimensions

440 x 309 x 44 mm

19-inch rack-mount width, 1 U height

### Weight

4.3 kg

### Emission (EMI)

- FCC Class A
- CE Class A
- C-Tick Class A
- VCCI Class A

### Safety

CSA International



## Ordering Information

### 10/100Mbps Layer 3 Switch

#### DES-3350SR

48 10/100Mbps ports, 2 combo  
10/100/1000Mbps/SFP (Mini GBIC) slots,  
redundant power support

### Optional 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

Redundant power supply

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