DaVinci MR2226-POE L2/4 Power Over Ethernet Stackable Switch

24 - ports 10/100BASE-T (RJ-45) and two Combo Gigabit ports each comprised of a RJ-45 connector and a SFP receptacle for uplink.

Introduction to the DaVinci Family of switches

The DaVinci family of Intelligent Ethernet Switches is a line of enterprise-class, stackable, multilayer switches that provide high availability, security and quality of service (QoS) to enhance the operation of the network. With a range of Fast Ethernet and Gigabit Ethernet configurations. The DaVinci Series can serve as a powerful access layer switch for small medium and large enterprise wiring closets, as well as a backbone switch for networks. Customers can deploy network-wide intelligent services, such as advanced QoS, rate-limiting, MRV's security-access-control lists, multicast management, and high-performance IP routing, while maintaining the simplicity of traditional local area network (LAN) switching. Also embedded in the the DaVinci series of switches is the MRV's Operating and Management Software, which is common to all the switches in the DaVinci series. The DaVinci Series of Switches enhances any network performance by intelligently providing 10, 100, and 1000 Mbps communication over existing Category 5 copper cabling as well as High Speed fiber-optic connectivity to the backbone through Small Form-Factor Pluggable (SFP) optical transceivers. The DaVinci Series Switches are in a 1-RU form factor ideal for wiring closet installation. Members of the DaVinci family are:

- **MR2228-S2C L2/4 Stackable Switch** — A switch comprised of 24 10/100BASE-T(RJ-45) ports, two Gigabit combo ports each comprised of an RJ-45 and an SFP interface for Gigabit uplink, and two 1Gbps ports for stacking
- **MR2252-S2C L2/4 Stackable Switch*** — A switch comprised of 48 10/100BASE-T(RJ-45) ports, two Gigabit combo ports each comprised of an RJ-45 and an SFP interface for Gigabit uplink, and two 1Gbps ports for stacking
- **MR2324E-4C/ MR2324-4C L2/4 Gigabit Managed Switch** — A 24 ports 10/100/1000 Layer 2 Gigabit Ethernet standalone switch comprised of 20 ports 10/100/1000 Base-T, and 4 Gigabit combo ports each comprised of an RJ-45 and an SFP.
- **MR3312-4C Layer 3 Managed Switch** — A 12 Gigabit SFP ports and 4- 10/100/1000 Base-T ports (combo ports) Ethernet Routing standalone Switch.
- **MR3325-S4C Layer 3 With 10G Expansion Switch** — A 24 ports 10/100/1000 Ethernet Routing, Stackable Switch comprised of 20 10/100/1000 Base-T ports, and 4 Gigabit combo ports each comprised of an RJ-45 and an SFP plus 1 optional I/O module for 10G uplink.
- **MR3349-S4C Layer 3 With 10G Expansion Switch** — A 44 ports 10/100/1000 Ethernet Routing Stackable Switch comprised of 40 10/100/1000 Base-T ports, 4 Gigabit combo ports each comprised of an RJ-45 and an SFP, and one optional I/O module for 10G uplink.
- **MR2226-POE L2/4 Stackable Switch** — A switch comprised of 24 10/100BASE-T(RJ-45) ports, two Gigabit combo ports each comprised of an RJ-45 and an SFP interface for Gigabit uplink, two 1Gbps ports for stacking, and Power Over Ethernet provision.

*** Check for availability**

"Simplicity is the ultimate sophistication"

MR2226-POE Product Overview

Part of the successful DaVincy family, the MR2226-POE Power Over Ethernet Switch is a resilient, secure, stackable switch with IEEE 802.af Power Over Ethernet (POE) capabilities to power devices such as IP phones, wireless access points, network cameras, security and lighting devices, and access control devices (badge readers). The MR2226-POE is a high-end switch providing intelligent service features such as VLANs, GVRP and IGMP Snooping. It also delivers QOS and advanced security features like Rate Limiting and Security Filtering to the network edge, while maintaining the simplicity of traditional LAN switching. The MR2226-POE delivers wire-speed performance on all ports with a switching fabric capability of 8.8 Gbps connecting remote stations and users to the local LAN. The MR2226-POE Switch is a stackable, managed Layer 2/4 10/100 Switch designed for Enterprises and workgroups. Built-in stackablity allows stacking of up to 8 units, using a single IP address management.

MR2226-POE supports comprehensive layer 2 features such as Private VLAN, IEEE 802.3ad (LACP) trunking and Link aggregation; port-based 802.1x, Access Control Lists, HTTPS/SSL and SSH security features and L4 QoS features include 802.1p and DiffServ, rate-limiting, WRR, strict scheduling, 4-level priority in switching to ensure the steadiness of data communication. Furthermore, its unique SMTP function will send alerts for unusual packets to the administrator's email box. The MR2226-POE provides multiple security algorithms such as Port Security, SSL, Web management Encryption, RADIUS, TACACS+ and 802.1x.

MR2226-POE switch Feature Highlights:

- ► IEEE 802.3af Power Over Ethernet compliant, provides power over unused Category 5 cable pairs.
- ► Provides 15.4 Watts of power to each of 24 ports, 370 Watts total
- ► Automatically detects POE devices and provides power to detected devices.
- ► Leading power management features including per port short circuit protection.
- ► Enables remote RESET of hard to reach Wireless access points, for easy troubleshooting.

Cost-effective solution for high-performance LAN environments in 1-RU form factor.

Wire-speed performance, auto-sensing, and auto MDI/MDIX on all ports.

Combination Gigabit Ethernet ports deliver integrated RJ-45 (Copper) or SFP (fiber).

Up to 8 stacked switches contained within one unit enclosure use a single IP address management.

Complete, Layer 2 Standard features including:

- — IEEE 802.1q and 802.1p (Class of Service) with 4 hardware queues per port to enable prioritization of mission-critical applications.
- — Port-base VLAN.
- — Spanning Tree IEEE 802.1D, 802.1W
- — 802.3ad for automatic link aggregation and 802.1x for port security.
- — 802.1w Rapid Spanning Tree Protocol for superior network reliability.
- — Support for Generic VLAN Registration Protocol (GVRP).
- — Internet Group Management Protocol (IGMP) Snooping

Robust Quality-of-Service features, including Class of Service (802.1p) mapping to Type of Service or DiffServ and support for priority queuing algorithm such as Weighted Round Robin and Strict.

Low latency – as low as 10µs, ideal for advanced applications like VoIP and video conferencing over IP.

Extensive management and monitoring features, including an industry-standard CLI, secure web-based GUI, integrated SNMP agent with mini-RMON and Secure Shell for secured and encrypted management access.

IEEE 802.3af Compliance

The MR2226-POE switch is IEEE 802.3af compliant. It can provide Power Over Ethernet to any IEEE 802.3af compliant device such as IP phones, wireless access points, network cameras, security and lighting devices, and access control devices. The benefits of being interoperable with standard-based equipment means that customers are not forced to tie themselves to any one vendor, as the switch has the flexibility to power multiple vendors' devices. It can supply power up to 15.4 Watts per port, which meets the IEEE 802.3af standard. This is more than sufficient to power most devices.

High Performance:

The MR2226-POE switch provides high performance architecture with 12 Gbps total switching fabric capacity. GVRP allows automatic configuration of VLAN. IGMP snooping enables identifying multicast traffic to make an efficient utilization of the switch bandwidth. Link aggregation provides greater bandwidth between devices by supporting IEEE 802.3ad (LACP) and IEEE 802.1p, combined with four queues to help to prioritize time-sensitive applications such as multimedia voice traffic.

Fault-Tolerance

Spanning tree is a link management protocol that provides path redundancy while preventing undesirable loops in the network. The MR2226-POE switch performs the IEEE802.1D (Spanning Tree) protocol, the IEEE802.1s*(Multiple Spanning Tree), and the IEEE802.1w (Rapid Spanning Tree) protocol for Fault-Tolerance. The MR2226-POE also provides redundant power supply hook-ups to enable simultaneous connections to two independent power sources to ensure the system reliability.

Enhanced Security Features

The DaVinci Series switches offer enhanced data security through a wide range of security features that protect network management and administrative traffic, secure the network from

unauthorized users, provide granular levels of network access to users, and track where users are located.

Secure Shell (SSH), Secure Telnet (v1.5/2.0) port based security, Simple Network Management Protocol version 3 (SNMPv3) and network management information, thereby protecting it from tampering or eavesdropping. Terminal Access Controller Access Control System (TACACS+) or Remote Access Dial-In User Service (RADIUS) authentication enables centralized access control of switches and restricts unauthorized users from altering the configurations. Alternatively, a local username and password database can be configured on the switch itself. Multi levels of authorization on the switch console and two levels on the web-based management interface provide the ability to give different levels of configuration capabilities to different administrators.

Port security and 802.1x provide the ability to keep unauthorized users from accessing the network. Port security limits access on an Ethernet port based on the MAC address of the device that is connected to it. It can also be used to limit the total number of devices plugged into a switch port, thereby reducing the risks of rogue wireless access points or hubs. 802.1x can be used to authenticate users based on username and password (or other credentials) via a centralized RADIUS server. This is particularly useful for a mobile workforce because the authentication will be executed regardless of where the user connects to the network.

ACLs restrict access to sensitive portions of the network by denying packets based on source and destination MAC addresses, IP addresses, or TCP/UDP ports. ACL lookups are done in hardware; therefore, forwarding performance is not compromised when implementing ACL-based security in the network. The *DaVinci* Series switches offer VLAN and port-based ACLs.

Network Control through Advanced QOS and Rate Limiting

The MR2226-POE switch prioritizes each packet based on the required level of service, using four priority queues with strict or Weighted Round Robin Queuing. It uses IEEE 802.1p and 802.1Q tags to prioritize incoming traffic based on input from the end-station application. These functions can be used to provide independent priorities for delay-sensitive data and best-effort data.

The MR2226-POE switch also supports several common methods of prioritizing layer 3/4 traffic to meet application requirements. Traffic can be prioritized based on the priority bits in the IP frame's Type of Service (ToS) octet. When these services are enabled, the priorities are mapped to a Class of Service value by the switch, and the traffic then sent to the corresponding output queue.

The Rate Limiting feature controls the maximum rate for traffic transmitted or received on an interface. Rate limiting is configured on interfaces at the edge of a network to limit traffic into or out of the network. Traffic that falls within the rate limit is transmitted, while packets that exceed the acceptable amount of traffic are dropped.

Network Availability

The MR2226-POE provides efficient use of resources in bandwidth-hungry applications. It supports the Internet Group Management Protocol (IGMPv1/2) snooping, to identify multicast traffic and to ensure an efficient utilization of the bandwidth. The MR2226-POE is ideal for server-to-server backups. Advanced Stacking features of the MR2226-POE includes support for stack-wide VLAN's, trunking and packet priority. The loop-stacking configuration provides automatic traffic load balancing to optimize the utilization of network bandwidth.

Full Range of Interface Options using SFP

The MR2226-POE switch offers 2 combination ports , each comprised of an SFP interface for fiber-optic hookup and an RJ-45 connector for category 5 copper cable connection. The SFP interface supports both single mode and multi mode Gigabit fiber-optic communication, allowing network managers the flexibility to upgrade their networks connecting the distribution back to the enterprise backbone using SX, LX, or EZX optics. Fiber-optic transmission enables distances of 300m, 5Km,or up to 120Km, respectively. This solution delivers a cost-effective and efficient aggregation of wiring closets within an enterprise network.

Network Management

The MR2226-POE switch supports the SNMPprotocol, and the Telnet interface delivers comprehensive in-band management. The system can be managed and monitored using the SNMP/RMON protocol through computers equipped with network management software or via an Internet web browser. LED indicators are located on the front panel to assist network administrators in troubleshooting. A Port Mirroring feature provides a non-intrusive mechanism for traffic inspection across the entire switch,

MR2226-POE switch properties

Feature Summary

Layer 2 Features

- Supports 24 RJ-45 10/100Base-T IEEE 802.3af compliant ports, and 2 Gigabit combo ports with RJ-45 connectors and associated SFP slots.
  - Supports half and full duplex mode 10/100M bps speed for all ports
  - Supports full duplex mode on port 25 and 26 when work in the Gigabit speed.
  - Supports auto MDI/MDIX on all 10/100Base-TX ports
  - Supports up to 8K MAC address entries.
  - Provides flow control mechanism: backpressure for half duplex; IEEE802.3x for full duplex operation.
  - Provides store-and-forward forwarding scheme
  - Provides HOL (Head of Line) blocking prevention
  - Provides Link Aggregation
- 2/3/4 ports per trunk
- Up to 6 trunk groups
- Supports 802.3ad (LACP)
- Supports Cisco Ether-channel (static truck)
- Support Load Balance for both Unicast and Multicast traffics
  - Supports VLAN
- IEEE 802.1Q tagging VLAN.
- Port-based VLAN
- Up to 255 VLANs
- GVRP protocol for VLAN management. (255 VLANs)
  - Supports IGMP (v1/v2) Snooping and Query function
  - Supports Broadcast Storm control.
  - Supports Spanning Tree protocol
- Supports IEEE 802.1D Spanning Tree protocol
- Supports IEEE 802.1w Rapid Spanning Tree
- Supports IEEE 802.1s Multiple Spanning Tree
- Support Proprietary per port based Fast Forwarding mode

QoS Features

- Per port bandwidth management
- Supports L2/L3/L4Traffic Classification/Priority Management
- Supports CoS by IEEE 802.1p 4 priority queues control
- Traffic Classification/Priority Management based on IP Precedence/TOS
- Traffic Classification/Priority Management based on TCP/UDP port number
- IEEE 802.1p priority queue scheme
- Supports WRR for priority queues
- Strict scheduling for priority queue

Management Features

- Provides 1 Male DB9 RS-232C console interface configured as DTE for operation, diagnostics, status, and configuration information.
- Provides Command Line Interface from the console port using a VT-100 terminal, up to 4 sessions
- Supports SNMP v1/v2c and SNMP v3 management functions.
- Supports RMON (group 1,2,3 and 9).
- Supports Web-based management.
- Supports TELNET console interface.
- Supports BOOTP and DHCP client for IP address assignment.
- Support DNS client and proxy
- Supports software upgrade/download via TFTP
- Supports dual Firmware images
- Supports two or more Configuration files
- Supports Configuration file upload/download by TFTP protocol
- Support Event/Error Log
- To Local Flash
- To Remote server via System Log
- SMTP
- Support SNTP
- MegaVision (Windows)
- Syslog (SMTP, RFC3164 Remote log to server)
- Port Mirroring
- Supports MIBs

- RFC 1213 standard MIB-II
- RFC 1215 Trap
- RFC 1493 Bridge MIB
- RFC 1643 Ether-like MIB
- RFC 1757 RMON MIB
- RFC 2618 RADIUS MIB
- RFC 2674 Bridge MIB Extensions (IEEE802.1Q MIB)
- RFC 2737 Entity MIB
- RFC 2819 RMON MIB (groups 1, 2, 3 and 9)
- IEEE 802.1w Rapid Reconfiguration Spanning Tree MIB
- IEEE 802.3ad Link Aggregation MIB
- Private MIB
    - Supports Traps :
- RFC1215 Trap
- RFC 1493 Trap
- RFC 2819 RMON Groups (1, 2, 3 and 9) Traps
- RFC 3248 Traps

Security Features

- SNMP/telent/Web management interface access with IP filtering
- MAC based port security (Proprietary)
- RADIUS client (Authentication)
- TACACS+ Authentication
- SSH (v1.5/2)
- SSL / Web management Encryption (HTTPS)
- Access Control List
- Supports IEEE 802.1x port-based security

Stacking Features

- Provides stacking capability via stacking module with 1G stacking bandwidth (Simplex stacking) and standard USB interface. It can be stacked up to 8 units.
- VLAN Membership across the stack
- Single IP address for management
- Trunking across the stack
- Packet Priority Across the stack
- Port Mirroring across stack

Power over Ethernet Features

- Compliant with IEEE802.3af
- Power feeding of Ethernet limited for fixed 10/100Base-T/TX ports only
- Provides power to the appliance over the Ethernet cable
- Centralized Power Distribution – Multiple access points can be connected to a single switch.
- Automatic Load Sensing – Power control circuitry automatically detects Power Over Ethernet on access point before providing power.
- Power start/stop (remote sense)
- Maximum output power per port up to 15.4W
- Provides power on all 24 ports, 460-Watts total available power.

- Support 10/100Base-TX port on the management agent for the In-band management function such as SNMP, Telnet and Web management function
  - Independent overload and short-circuit protection for each port
  - LED indicators for power status per port
  - Power on/off command for each port
  - Support IEEE802.3af MIB for power over Ethernet function

* Future specification

Ordering Information	
MR2226-POE	L2/4 Stackable Switch 24 - ports 10/100BASE-T (RJ-45) and two Combo Gigabit ports each comprised of a RJ-45 and a SFP for uplink and two 1000BASE-T ports for stacking.
Gigabit Ethernet SFP	
SFP-G-SX	SFP 1000Base-SX, MM, 850nm, 0-550m.
SFP-G-MMX	SFP 1000Base-SX, Extended MM, 1310nm, 0-2km.
SFP-G-LX	SFP 1000Base-LX, SM, 1310nm, 10km.
SFP-GD-ELX	SFP 1000Base-ELX, SM, 1310nm, 25km
SFP-GD-XD	SFP 1000Base-XD, SM, 1550nm, 50km
SFP-GD-ZX	SFP 1000Base-ZX, SM, 1550nm, 80km
SFP-GD-EZX	SFP 1000Base-EZX, SM 1550nm, 120km