MICROSENS

Data Sheet

28 Port Gigabit Ethernet Switch with 4x 10G Uplink

Overview

The MS400860M, the next generation L2+ Carrier Ethernet Access Fiber switches from MICROSENS, is a 20port GBE SFP, 4port Combo GBE (RJ-45/SFP) and 4-port 10GBE (SFP+) Ethernet L2+ Carrier Ethernet Switch portfolio of affordable carrier switches and a standard switch that meets all IEEE 802.3/u/x/z/ab/ae standards. It provides the ideal combination of affordability and capabilities for Carrier Access networking including IEEE802.3ah MAC Layer OAM, IEEE802.1ag Ethernet CFM, ITU-T Y.1731 Ethernet OAM Performance Monitoring, ITU-T G.8031 Ethernet Linear Protection, ITU-T G.8032v2 Ethernet Ring Protection Switching, Sync-Ethernet(by request) and IEEE1588v2 PTP for Carrier Ethernet management requirement.

It is suitable for Fiber To The Office (FTTO) and Carrier Ethernet applications and helps you create a more efficient, better-connected workforce. This switch can be managed through RS-232 serial port, or through Ethernet port using CLI or Web-based management. With the SNMP agent, the network administrator can manage the switch, configure and control in a friendly way. It supports AC and DC dual power input (100..240 VAC / 48 VDC) for power redundancy requirement.

Highlights

- L2+ features provide better manageability, security, QoS, and performance
- IEEE 802.3ah MAC Layer OAM and IEEE802.1ag Ethernet CFM
- ITU-T Y.1731 Ethernet OAM Performance monitoring
- 802.3az Energy Efficient Ethernet standard
- IPv6 and s-Flow supports
- ITU-T G.8031 Ethernet Linear Protection and ITU-T G.8032v2 Ethernet Ring Protection Switching
- AC (100..240 VAC) and DC (48 VDC) dual power input for power redundancy requirement

Specifications

Gigabit Ethernet Switch

- 1G / 10G Ethernet Switch
- Low power consumption switch-chipset, Energy-Efficient Ethernet
- Layer-2+ store-and-forward
- Max. 32k MAC-addresses, automatic Learning and aging
- Jumbo-Frames (max. 9k Bytes)

Energy-Efficient Ethernet

- EEE according to IEEE 802.3az
- Reduced power consumption for each RJ-45 port up to 80% depending on the actual requirement

Network Management

- Supports all common management standards
- Web Manager (HTTP/HTTPS)
- Telnet/SSH/Console, incl. standard-commands (ping etc.)
- SNMP v1/v2c/v3 with User-based Security Model (USM)
- IPv4/IPv6 Dual Stack

Connectors

Up-/Downlinks
- 4x SFP+ Slot 1000Base/10GBase-X
- 4x RJ-45 10/100/1000Base-T or SFP 100/1000Base-X (Dual media ports)

Local Ports
- 20x 100/1000Base-T (SFP)

Power Supply
- 100..240 VAC 50/60 Hz, internal, universal, 48VDC redundant power input

RS-232 Console Port
- Serial terminal port for CLI access (outband management)

Mounting

- Mounting into 19” racks requiring 1U space

Feature Overview

Feature	Description		
Performance			
Switching capacity and forwarding rate	Model Name	Capacity in Millions of Packets per Second (mpps) (64-byte packets)	Switching Capacity in Gigabits per Second (Gbps)
	MS400860M	95.23	128
Layer 2 Switching			
Spanning Tree Protocol (STP)	Standard Spanning Tree 802.1d Rapid Spanning Tree (RSTP) 802.1w Multiple Spanning Tree (MSTP) 802.1s		
Trunking	Link Aggregation Control Protocol (LACP) IEEE 802.3ad • Up to 14 groups • Up to 8 ports per group		

Feature Overview (continued)

VLAN	Supports up to 4K VLANs simultaneously (out of 4096 VLAN IDs) • Port-based VLAN • 802.1Q tag-based VLAN • MAC-based VLAN • Management VLAN • Private VLAN Edge (PVE)
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS
Generic VLAN Registration (GVRP)	Protocols for automatically propagating and configuring VLANs in a bridged domain
DHCP Snooping	DHCP snooping provides security by filtering un-trusted DHCP messages and by building and maintaining a DHCP snooping binding table.
IGMP v1/v2/v3 snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters
IGMP Proxy	Support IGMP Proxy
MLD v1/v2 snooping	Deliver IPv6 multicast packets only to the required receivers

Security

Secure Shell (SSH) Protocol	SSH secures Telnet traffic in or out of the switch SSH v1 and v2 are supported
Secure Sockets Layer (SSL)	SSL encrypts the http traffic, allowing advanced secure access to the browser-based management GUI in the switch
IEEE 802.1X	RADIUS authentication, authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode and single/multiple sessions Supports IGMP-RADIUS based 802.1X Dynamic VLAN assignment
Layer 2 isolation Private VLAN Edge (PVE)	PVE (also known as protected ports) provides L2 isolation between clients in the same VLAN, supports multiple uplinks
Port Security	Locks MAC Addresses to ports and limits the number of learned MAC addresses
IP Source Guard	Prevents datagram with spoofed addresses from being in the network
RADIUS/ TACACS+	Supports RADIUS and TACACS+ authentication. Switch as a client
ARP Inspection	ARP inspection is a security feature that validates ARP packets in a network. ARP inspection determines the validity of packets by performing stored in a trusted database.
Storm control	Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port.
ACLs	Supports up to 256 entries. Drop or rate limitation based on source and destination MAC, VLAN ID or IP address, protocol, port, differentiated services code point (DSCP) / IP precedence, TCP/ UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, TCP flag.

Quality of Service

Hardware Priority Queue	Support 8 hardware queues
Scheduling	Strict priority and weighted round-robin (WRR) Queue assignment based on DSCP and class of service (802.1p/ CoS)

Feature Overview (continued)

Classification	Port based 802.1p VLAN priority based IPv4/IPv6 precedence/ type of service (ToS) / DSCP based Differentiated Services (DiffServ) classification and re-marking ACLs trusted QoS
Rate Limiting	Ingress policer egress shaping and rate control per VLAN, per port and flow based
IPv6 applications	• Web/ SSL, Telnet/ SSH, ping, Simple Network Time Protocol (SNTP), Trivial • File Transfer Protocol (TFTP), SNMP, RADIUS, Syslog, DNS Client, protocol-based • VLANs

Management

Web GUI interface	Built-in switch configuration utility for browser-based device configuration (HTTP/ HTTPs). Supports configuration, system dashboard, maintenance, and monitoring
Dual Image	Dual image provides independent primary and secondary OS files for backup while upgrading
SNMP	SNMP version1, 2c and 3 with support for traps, and SNMP version 3 user-based security model (USM)
Remote Monitoring (RMON)	Embedded RMON software agent supports RMON groups 1,2,3,9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring and analysis
IPv4 and IPv6 dual stack	Coexistence of both protocol stacks to migration
Firmware upgrade	Web browser upgrade (HTTP/ HTTPs) and TFTP Upgrade through console port as well
Port mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to N-1(N is Switch’s Ports) ports can be mirrored to single destination port. A single session is supported.
Other management	• HTTP/HTTPs • SSH • RADIUS • DHCP Client/ DHCPv6 Client • SNTP • cable diagnostics • ping • syslog • Telnet client (SSH secure support)
s-Flow	The industry standard technology for monitoring high speed switched networks. It is enabling performance optimization, accounting/billing for usage, defence against security threats.

Green Ethernet

Energy Detect	Compliant IEEE802.3az Energy Efficient Ethernet Task Force. Automatically turns off power on Gigabit Ethernet RJ-45 port when detecting link down or Idle of client. Active mode is resumed without loss of any packets when the switch detects the link up
Cable length detection	Adjusts the signal strength based on the cable length. Reduces the power consumption for shorter cables.

Feature Overview (continued)

General

Jumbo frames	Frame sizes up to 9KB supported on Gigabit interfaces
MAC Table	Up to 32K MAC addresses

Discovery

Link Layer Discovery Protocol (LLDP) (IEEE802.1AB) with LLDP-MED extensions	Used by network devices for advertising their identity, capabilities, and neighbours on an IEEE 802 local area network, principally wired Ethernet.

Carrier Ethernet Protocol and features

IEEE 802.3ah Ethernet OAM	Simple link fault management (LFM) for Ethernet links is defined in IEEE 802.3ah
IEEE 802.1ag Ethernet CFM	IEEE 802.1ag Ethernet CFM function that provides connectivity fault management.
ITU-T Y.1731	ITU-T service OAM standard Y.1731 divides a network into maintenance domains in the form of hierarchy levels.
ITU-T G.8032v2	G.8032v2 provides the standards-based method of delivering high-performance Carrier Ethernet services over a multi-node ring protection switching. This is important as carriers want to move away from SONET/SDH to a native Ethernet based infrastructure.

Minimum Requirements

- Web browser: Mozilla Firefox version 2.5 or later, Microsoft Internet Explorer version 6 or later
- Category 5 Ethernet network cable
- TCP/IP, network adapter, and network operating system (such as Microsoft Windows, Linux, or Mac OS X) installed on each computer in network

Technical Specifications

Type	**19" 28 Port Gigabit Ethernet Switch 4x 10G Uplink**
Device Interfaces	20x GBE SFP Ports (100M/1G) 4x SFP Combo Ports (100/1000T or 1G SFP) 4x SFP+ Ports (1G/10G) 1x RJ-45 Port (Outband Management)
Power Supply	100..240 VAC 50/60 Hz, internal, universal 48 VDC redundant power input
Power Consumption	max. 55 W
Operating Temperature	0…+60 °C
Storage Temperature	-20…+70 °C
Operating Humidity	10…90 % (relative, non-condensing)
Dimensions (W x H x D)	442 x 44 x 211.2 mm
Weight	3.1 Kg
Certification	CE Mark

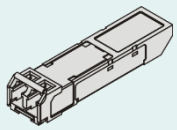
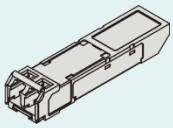
Package Contents

- Switch
- Power Cord
- Mounting Kit
- Console Cable
- CD-ROM with user manual documentation (PDF) included
- QIG (Quick Install Guide)

Order Information

	Description	Article No.:
	**28 Port Gigabit Ethernet Switch with 4x 10G Uplink**	
	28 Port Gigabit Ethernet L2+ Switch, 20x GBE SFP Ports (100M/1G) + 4 Combo Ports (100/1000T or 1G SFP) + 4x 1G/10G SFP+ Ports, 19" 1U, dual power input 230 VAC and 48 VDC	**MS400860M**

Accessories

	Description	Article No.:
	**SFP 1G Transceiver (Fast Ethernet & WDM on request)**	
	SFP Transceiver, Gigabit Ethernet, Digital Diagnostic 850 nm Multimode, 1000Base-SX, LC duplex	**MS100200D**
	SFP Transceiver, Gigabit Ethernet, Digital Diagnostic 1310 nm single mode, 1000Base-LX, LC duplex	**MS100210D**
	**SFP+ 10G Transceiver (xWDM on request)**	
	SFP+ Transceiver,10 Gigabit Ethernet, Digital Diagnostic 850 nm Multimode, 10GBase-SX, LC duplex, 300m	**MS100700D**
	SFP+ Transceiver, 10 Gigabit Ethernet, Digital Diagnostic 1310 nm single mode, 10GBase-LX, LC duplex, 10 km	**MS100702D**