

# ES3510MA-AC/DC

## L2 Fast Ethernet Standalone Switch



### Product Overview

The Edgecore ES3510MA-AC/DC is a high-performance Fast Ethernet Layer 2/4 switch featuring 10 ports; 8 10/100 Mbps ports and 2 combination Gigabit Ethernet RJ-45/SFP (Small Form Factor Pluggable, dual-speed 100/1000 Mbps) ports. It is ideal for Fast Ethernet desktop connectivity and wiring closet installations. Using IP Clustering in a virtual stack of up to 36 switches, the whole stack can be managed as a single entity with a single IP address. This switch is packed with features and is a cost-effective solution that brings continuous availability, enhanced security, and advanced QoS to the network edge, while maintaining simplicity of management.

### Key Features and Benefits

#### Performance and Scalability

This entry-level managed switch provides 5.6 Gbps wire-speed switching performance across all ports. This enables the switch to fully support existing high-performance PCs and laptops, which significantly improves application response times and the speed of large file transfers.

The two Gigabit Ethernet combination ports enable uplink flexibility, offering copper or fiber uplinks to servers or the network backbone.

#### Continuous Availability

IEEE 802.1w Rapid Spanning Tree Protocol support provides loop-free and redundant links to the core network with rapid convergence, which ensures a faster recovery from failed links and enhances overall network stability and reliability.

The IEEE 802.1s Multiple Spanning Tree Protocol runs STP per VLAN base (up to 32 instances), providing Layer 2 load sharing on redundant links.

Multicast VLAN Registration (MVR) is designed for applications such as Media-on-Demand that stream multicast traffic across an Ethernet network. IGMP snooping prevents the flooding of IP multicast traffic and limits bandwidth-intensive video traffic to only ports connected to subscribers.

The voice VLAN feature enables access ports to carry IP voice traffic from IP phones.

IEEE 802.1Q Tunneling (Q-in-Q) is designed for service providers carrying traffic for multiple customers across their networks.

#### Comprehensive QoS

Traffic is prioritized according to 802.1p, DSCP, IP precedence, and TCP/UDP port number, giving optimal performance to real-time applications such as voice and video.

Asymmetric bidirectional rate-limiting, per-port or per-traffic class, preserves network bandwidth and allows maximum control of network resources.

#### Enhanced Security

Port Security limits the total number of devices that can access a switch port based on MAC address, and protects against MAC flooding attacks.

IEEE 802.1X port-based or MAC-based access control ensures all users are authorized before being granted access to the network. User authentication is carried out using a standard-based RADIUS server and supports dynamic VLAN assignment and a guest VLAN.

Access Control Lists (ACLs) can be used to restrict access to sensitive network resources by denying packets based on source and destination MAC addresses, IP addresses, and TCP/UDP ports. ACLs are hardware supported, so switching performance is not compromised.

Secure Shell (SSH v1.5/v2.0) and Secure Sockets Layer (SSL/HTTPS) encrypts Telnet and web access to the switch, providing secure network management.

TACACS+ 3.0 Authentication for applications such as network access or IP mobility enables centralized control of the switch and prevents unauthorized users from altering switch configuration.

Private VLANs isolate edge ports to ensure user privacy.

#### Simple Management

An industry-standard Command Line Interface (CLI), accessed through the console port or Telnet, provides a convenient way to configure and troubleshoot the switch.

IP Source Guard can be enabled with DHCP snooping on trunk ports with a large number of VLANs to filter and control IP traffic access to the network.

DHCP snooping provides security by filtering un-trusted DHCP messages and by building and maintaining a DHCP snooping binding table.

DHCP Option 82 is feature that adds device information to client TCP/IP configuration requests that are relayed to a DHCP server.

## Features

### Physical Ports

- 8 10/100BASE-TX ports
- 2 Combination Gigabit (RJ-45/SFP) ports  
(SFP ports support dual-speed 100BASE-FX/BX and 1000BASE-SX/LX/LHX)
- 1 RS-232 RJ-45 console port

### Performance

- Switching Capability: 5.6 Gbps
- Packet Buffer Size: 4 MBit
- MAC Address Table: 8K
- Forwarding Rate : 4.1 Mpps

### L2 Features

- Auto-negotiation for port speed and duplex mode
- Flow Control:
  - IEEE 802.3x for full-duplex mode
  - Back-Pressure for half-duplex mode
- Spanning Tree Protocol:
  - IEEE 802.1D Spanning Tree Protocol (STP)
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
  - Spanning Tree Fast Forwarding
  - Loopback Detection
  - Auto Edge Port
  - BPDU Filter
  - BPDU Guard
  - Root Guard
- VLANs:
  - Supports 4093 IEEE 802.1Q VLANs
  - Port-based VLANs
  - MAC-based VLANs
  - IP-Based
  - IEEE 802.1v protocol-based VLANs
  - Private VLANs
  - Selective Q-in-Q
  - GVRP
  - Q-in-Q
  - Voice VLANs
- Link Aggregation:
  - Static Trunk
  - IEEE 802.3ad Link Aggregation Control Protocol
  - Unicast/Multicast traffic
- Balance over Trunking port
- IGMP Snooping:
  - IGMP Snooping v1/v2
  - IGMP v1/v2 querier
  - IGMP Immediate Leave
  - IGMP Filtering
  - IGMP Throttling
  - IGMP SNP Leave Proxy
  - IGMP v1/v2/v3 Proxy
- Storm Control: Broadcast/Multicast/UnknownUnicast
- MVR (Multicast VLAN Registration)
- Supports jumbo frames up to 10 KB
- G.8032 (ERPS)
- Digital Diagnostic Monitoring (DDM)

### QoS Features

- Priority Queues: 4 hardware queues per port
- 802.1p-based CoS
- IP DSCP-based CoS
- TCP/UDP port-based CoS
- WRR priority scheduling
- Strict priority scheduling
- Hybrid scheduling
- Rate Limiting (ingress and egress, per port base)
  - FE: Resolution 64 Kbps ~ 100 Mbps
  - GE: Resolution 64 Kbps ~ 1000 Mbps
- Diffserv

### IPv6 Features

- IPv4/IPv6 dual protocol stack
- IPv6 address type:
  - Unicast
  - Multicast (internal used)
- ICMPv6
- ICMPv6 Redirect (Host)
- IPv6 Path MTU Discovery
- IPv6 Neighbor Discovery:
  - Router discovery
  - Duplicate Address Detection
  - Parameter discovery
  - Prefix discovery
  - Address resolution
  - Unreachable neighbor detection
- Stateless autoconfiguration
- Manual configuration
- SNMP over IPv6
- HTTP over IPv6
- SSH over IPv6
- IPv6 Telnet support
- IPv6 DNS resolver
- IPv6 Syslog support
- IPv6 SNTP support
- IPv6 TFTP support
- Remote IPv6 Ping
- Ping over IPv6
- Trace route over IPv6
- IPv6 sFlow
- DHCPv6:
  - Client
  - Snooping
- MVR6
- IPv6 Source Guard
- RA Guard
- MLD Snooping v1/v2
- IPv6 ACL

## Features

### Management

Switch Management:  
Web-based management  
CLI-based management  
Telnet: Client, Server  
Software/configuration download/upgrade:  
TFTP  
HTTP  
FTP  
Dual Images  
Auto Upgrade: TFTP, FTP  
SNMP  
v1  
v2c  
v3  
RMON: RMON1 (groups 1, 2, 3, and 9)  
BOOTP: Client  
DHCP:  
Client  
Snooping  
Snooping Option82  
Dynamic Provision (via Option 66, 67)  
IP Source Guard  
Port mirroring  
VLAN mirror  
MAC-based mirror  
Remote port mirror (RSPAN)  
Event/Error Logging:  
Syslog (local flash)  
Remote log  
SMTP (e-mail notification)  
DNS: Client, Proxy  
Remote Ping  
SNTP  
NTP  
IP Clustering  
LLDP (802.1ab)  
Link Layer Discovery Protocol (LLDP)  
LLDP-MED (VoIP related)  
Mac flush  
Dynamic ARP Inspection (DAI)  
Auto Traffic Control (ATC) (SW rate limit)  
Delay reload  
Cable diagnostics/TDR

### OAM (Operations Administration Maintenance)

IEEE 802.3ah Link Ethernet Link OAM  
IEEE 802.1ag Connectivity Fault Management  
Connectivity check  
Lookback  
Linktrace  
ITU-T Y.1731 Performance and Throughput Management  
Frame Delay  
Frame Delay variation

### Security

Port security  
IEEE 802.1X:  
Port-based  
MAC-based  
VLAN assignment QoS assignment  
Guest VLAN  
Supplicant support  
EAPOL frames pass-through  
MAC authentication  
WEB authentication  
RADIUS authentication  
RADIUS accounting  
TACACS+ authentication  
TACACS+ authorization  
TACACS+ accounting  
Access Control List:  
L2/L3/L4  
Time-based  
SSH (v1.5/v2.0)  
HTTPS/SSL  
User name password authentication:  
Local authentication  
Remote authentication  
Intrusion Lock (Link Detection)  
MAC filter  
Traffic Segmentation  
PPPoE Intermediate Agent

### Mechanical

Dimensions (W x D x H): 19.5 cm x 11.5 cm x 3.6 cm (small form factor)  
Weight: 0.68 kg (1.5 lb)  
LED Indicators: Port, Uplink, System, Diagnostic

### Safety

UL (CSA 22.2. NO 60950-1 & UL60950-1)  
CB (IEC60950-1)

### Electromagnetic Compatibility

CE Mark  
FCC Class A  
CISPR Class A

### Environmental Specifications

Temperature:  
IEC 68-2-14  
0°C to 45°C (Standard Operating)  
-40°C to 70°C (Non-Operating)  
Humidity: 10% to 90% (Non-condensing)  
Vibration: IEC 68-2-36, IEC 68-2-6  
Shock: IEC 68-2-29  
Drop: IEC 68-2-32

### Power Supply

DC Power Input: 36 to 75 VDC, 0.373 A  
Power Supply Connector: 48 VDC supply circuit  
Power Consumption: 32 Watts maximum

## Features

### Warranty

Please check [www.edge-core.com](http://www.edge-core.com) for the warranty terms in your country.

### For More Information

To find out more about Edgecore Networks Corporation products and solutions, visit [www.edge-core.com](http://www.edge-core.com).

### About Edgecore Networks Corporation

Edgecore Networks Corporation is in the business of providing innovative network solutions. In the service provider network, in the data center or in the cloud, Edgecore Networks Corporation delivers the software and systems that transform the way the world connects. Edgecore Networks Corporation serves customers and partners worldwide. Additional information can be found at [www.edge-core.com](http://www.edge-core.com).

Edgecore Networks Corporation is a subsidiary of Accton Technology Corporation, the leading network ODM company. The Edgecore Data Center switches are developed and manufactured by Accton.

To purchase Edgecore Networks solutions, please contact your Edgecore Networks Corporation representatives at +886 3 563 8888 (HQ) or +1 (949)-336-6801 or authorized resellers.

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## Ordering Information

Optional Accessories	Product Description
ET4201-SX	1Gbps, Small Form Factor Pluggable (Distance: 500 m; Wavelength: 850nm)
ET4201-LX	1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310 nm)
ET4201-LHX	1Gbps, Small Form Factor Pluggable (Distance: 40 km; Wavelength: 1310 nm)
ET4202-SX	1Gbps, Small Form Factor Pluggable (Distance: 550 m; Wavelength: 850 nm, DDM)
ET4202-LX	1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310nm, DDM)
ECView Pro	SNMP Network Management Software