



## ES3528M-SFP

### L2/L4 SFP Metro Access Switch



#### Product Overview

The Edge-Core ES3528M-SFP features with a 1U form factor consisting of 24 100Base-X SFP ports, two 10/100/1000 RJ-45 ports and two Gigabit combo ports. The 24 SFP ports accept industry standard 100Base-X optical transceivers.. The ES3528M-SFP is one product of the Edge-Core ES3528 Metro Access Switch Series. The Edge-Core ES3528 is Metro Access Switch Series include different types of subscriber ports to fit different provider needs from Copper, SFP, VDSL2 to WDM. The ES3528 Metro Access Switch Series also includes Metro specific security, QoS, and Management software features to enable service providers to deliver a secure triple play service while checking end to end connectivity for customers. The ES3528 Metro Access Switch is a series of next generation switches designed by Edge-Core to provide service providers to fulfill the needs of metro access network demands for the future

#### Key Features and Benefits

##### Flexible Uplink Options

The dual Combo Gigabit Ethernet ports allow copper or fiber connections depend on different network environment needs. The fiber connection uses SFP and can accommodate a wide range of transceivers, from 1000BASE-SX, 1000BASE-LX, to 1000BASE-LH.

##### Metro Ethernet Specific Software

The ES3528 Metro Access Switch Series was designed to fit within the Metro Ethernet, feature enhancement such as 802.3ah, Q in Q, Carrier Class Rate-Limit, QoS, and subscriber isolation was added to help service providers deploy, manage, and secure their services.

##### Built to Offer Triple Services

The ES3528 Metro Access Switch Series is built to help service provider offer data, voice, video within one network. With enhance multicast and QoS features service can offer services such as IPTV, VoIP, and Internet access within the same network and without interference from each other.

##### Single IP Management for 36 Switches

The ES3528M-SFP is managed as a single object and has a single IP address. Up to 36 of ES3528M-SFP can be virtual stacked as a single object.

##### Enhance Security Features

The ES3528 Metro Access Switch Series was designed to provide enhance security at the Metro Access and was built with Subscriber Security, Switch Security, and Network Security features to help secure the Metro Ethernet Network. Subscriber is where service provider delivers their service to, but usually many subscriber shares a common device. To prevent each subscriber network traffic from effecting each other the ES3528 Metro Access Series Switch provides Private VLAN, DHCP Snooping, IP Source Guard to help protect the subscriber from affecting each other and unwanted attacks.

To prevent the switch from unwanted attacks from CPU, the ES3528 Metro Access Switch Series also provided several features for Switch Security. The protection of CPU is crucial for the switch, if CPU is attacked control packets could be dropped resulting in network down. The ES3528 includes features such as Storm Control Protection, Port Security to help prevent CPU down.

To ensure only valid traffic is allowed through the switch the ES3528 Metro Access Series Switch includes IEEE802.1x, L2/L3/L4 ACL to control traffic and validate traffic going through the switch.

##### Operation Administration Maintenance (OAM) for Ethernet\*

The services provider network is complex and large with huge user base, to help service provider isolate, maintain, and manage network traffic the ES3528 Metro Access Switch Series comes with OAM features to address the needs of the service provider and help maintain their network services..

Access Network



## Features

### Physical Ports

- 24 100 BASE-X SFP ports
- 2 10/100/1000 BASE-T Ports
- 2 Combo Gigabit Ethernet (RJ-45/SFP) ports
- 1 RJ-45 Console port

### Performance

- Switching Capacity: 12.8Gbps
- Forwarding Rate: 9.5Mpps
- MAC Address Table Size: 8K
- Packet Buffer Size: 1Mbits
- Jumbo Frame: 10K (in Gigabit ports)

### L2 Features

- Auto-negotiation for port speed and duplex mode
- Flow Control: IEEE 802.3x & Back-Pressure
- 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)
- Loop Back Detection
- BPDU Filtering
- BPDU Guard
- Auto Edge Port
- Root Guard
- VLANs:
  - 256 VLAN with 4K VLAN ID IEEE 802.1Q VLANs
  - Port-based VLAN
  - Mac-based VLAN
  - IP Subnet VLAN
  - Private VAN
  - Voice VLAN
  - VLAN Trunking
  - GVRP
  - Q-in-Q
- Link Aggregation:
  - Static Trunk,
  - IEEE 802.3ad LACP
  - Load Balancing
  - Trunk groups: 8
  - Trunk links: 2~8 for Ethernet port
  - Trunk links: 2~4 for Combo Gigabit Ethernet port
- IGMP:
  - IGMP v1, v2, v3
  - IGMP Snooping
  - IGMP Immediate leave
  - IGMP Throttling
  - IGMP Filtering
  - IGMP Leave Proxy
  - MVR
  - LLDP 802.1ab
  - LLDP MED\*

### QoS Features

- 4 Priority Queues
- Priority Queues Scheduling Scheme
  - WRR
  - Strict Priority
- Traffic classification and priority management
  - IEEE 802.1p
  - IP DSCP
- DiffServ
- Rate Limiting
  - Ingress/Egress
  - 64Kbps~100Mbps for Ethernet port
  - 64Kbps~1000Mbps for Gigabit port
  - Per Port COS

### Security

- Port Security
  - Static
  - Dynamic
- IP Source Guard
- DHCP Snooping
- DHCP Option 82
- IEEE 802.1X
  - Port-based
  - MAC-based Authentication
  - Auto VLAN Assignment
  - Guest VLAN
- RADIUS AAA
  - 5 servers
  - Encryption: MD5, TLS, TTLS
- TACACS AAA, TACACS 3.0
  - 1 Server
- HTTPS/SSH
- Access Control List (ACL)
  - IP-based
  - MAC-based
  - IP/MAC-based
  - VLAN
  - TCP/UDP port
- Storm Control
  - Broadcast
  - Multicast
- Web Authentication
- MAC Authentication
- Link Detection
- MAC Filter

\* Future Release



## Features

### Management

- Switch Management:
- CLI via console port or Telnet
  - Web management
  - SNMP v1, v2c, v3
- Firmware & Configuration:
- Dual firmware configuration files
  - Firmware Configuration upgrade via TFTP/Xmodem server
- RMON (groups 1,2,3 and 9)  
 SNTP (RFC2030), NTP  
 Port Mirroring  
 Event/Error/System Log  
 System monitoring  
 UPnP  
 Banner  
 OAM  
 sFlow  
 Dynamic ARP inspection  
 VLAN mirror  
 AMC based mirror  
 ATC  
 Delay reload

### SNMP Standards

- RFC 1493 Bridge MIB
- RFC 3289 Differentiated Services MIB
- RFC 2665 Ether-like MIB
- RFC 2674 Extended Bridge MIB
- RFC 2742 Extended SNMP Agents MIB
- RFC 2096 Forwarding Table MIB
- RFC 2933 IGMP MIB
- RFC 2233 Interface Group MIB
- RFC 2863 Interface Evolution MIB
- RFC 2668 MAU MIB
- RFC 1213 MIB II
- RFC 2621 RADIUS Authentication Client MIB
- RFC 2819 RMON MIB
- RFC 2021 RMON II Probe Configuration Group
- RFC 2011 SNMPv2 IP MIB
- RFC 3584 SNMP Community MIB
- RFC 3411 SNMP Framework MIB
- RFC 3412 SNMP-MPD MIB
- RFC 3414 SNMP User-based SM MIB
- RFC 3415 SNMP View based ACM MIB
- RFC 2013 TCP MIB
- RFC 1215 Trap
- RFC 2012 UDP MIB
- Private MIB
- Quality of service MIB

### IEEE Standards

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1p Priority tags
- IEEE 802.1Q VLAN
- IEEE 802.1v Protocol-base VLANs
- IEEE 802.1w Rapid Spanning Tree
- IEEE 802.1X Port Authentication
- IEEE 802.3 ac VLAN tagging

### Safety

- UL/CUL(UL60950-1, CSA60950-1)
- CB (IEC60950-1)

### Electromagnetic Compatibility

- CE Mark
- FCC Class A
- VCCI Class A

### Environmental Specifications

- Temperature:
- IEC 68-2-14
  - 0°C to 50°C (Standard Operating)
  - -40°C to 70°C (Non-Operating)
- MTBF
- 25,000hrs (min), at 40°C degree
  - 50,000hrs (min) at 25°C degree

### Mechanical

- Dimensions (H x W x D): 44x 440 x 230 mm (1RU)  
 Weight: 3.5 kg (7.7 lbs)  
 Power Requirement:  
 ■ AC Input: 100~240 V, 50~60 Hz, 2 A  
 Power Consumption: Max. 54W  
 LED Indicators: Power, Port status

### Warranty

Limited lifetime warranty

\* Future Release



## Optional Accessory

Model Number	Product Description
<b>SFP Transceiver</b>	
<b>ET4201-SX</b>	Gigabit SFP MM 850 nm, 500m (SX)
<b>ET4201-LX</b>	Gigabit SFP SM 1310 nm, 10Km (LX)
<b>ET4201-LHX</b>	Gigabit SFP SM 1310 nm, 40Km (LHX)
<b>ET4201-ZX</b>	Gigabit SFP SM 1550 nm, 80Km (ZX)
<b>ET4201-RJ45</b>	Gigabit SFP to Copper cable RJ45
<b>ET3201-FXP</b>	100Base SFP MM 1310nm 2Km
<b>ET3201-FX20</b>	100Base SFP SM 1310nm 20km
<b>ET3201-FX60</b>	100Base SFP SM 1310nm 60km
<b>ET3203-BX20</b>	100Base SFP SM TX1310nm RX1550nm 20km
<b>ET3203-BX20D</b>	100Base SFP SM TX1550nm RX1310nm 20km