

## FOS-5128

### 24 Port 100/1000X + 4 Port 1/10G SFP+ Managed Fiber Switch



24-port 100/1000Base-X SFP + 4-port 1/10GBase-R SFP+ Managed Fiber Access Switch

#### Features

- **Up to 10Gbps Uplink Speed**  
Equipped with four 10G ports to fulfill the demand of higher bandwidth for traditional internet services and over-the-top services.
- **IPv4/IPv6 Dual Stack**  
Support IPv6 management, packet forwarding and MLD v1/v2 snooping
- **Multimedia Streaming Facilitated Functions**  
Support IGMP snooping, IGMP fast leave, IGMP filtering to intelligently transmit multicast traffic and deliver IPTV service.
- **VLAN Translation**  
Allow service providers to implement Metro Ethernet service by translates the original VLAN ID to new VLAN ID with different priority for different customers.
- **IEEE 802.3ad Link Aggregation**  
A cost-efficient way to increase bandwidth and reliability by grouping multiple links into one.
- **Power Supply Redundancy**  
By combining two power sources (2AC or 2DC or 1AC + 1DC), power redundancy can be well achieved.

#### Description

At the course of trends, bandwidth always keeps improving due to heavy workloads. Connection Technology Systems (CTS) FOS-5128 is a Layer 2 access switch equipped with 24 dual-speed SFP slots and 4 x 1/10Gbps SFP+ uplink ports. All SFP slots can accommodate a wide range of SFP transceivers including single-mode, WDM or CWDM transceivers. FOS-5128 is perfect for service providers and enterprises who plan to implement FTTX or Metro Ethernet networks, with further spanning into triple-play service.

FOS-5128 delivers wire-speed throughput for data, voice and IPTV services, using non-blocking 128Gbps switching fabric. 1+1 power supply design can provide seamless power changeover to reach sustainability of power if one of the power supplies failed.

Many services providers are extending their existing data service with triple-play service because it generates higher revenue return by combining data, voice, and IPTV in one box. Advanced features including IGMP snooping, IGMP fast leave, IGMP filtering, various QoS classifications and rate limit control facilitate service providers to deploy and manageable network environment and deliver a successful triple-play service.

In order to provide customers extra security and separation, FOS-5128 has come with Q-in-Q feature. This feature enables service providers to separate different customers at layer 2 level no matter what VLAN setting the end customer has.

With carrier-grade in mind, while keeping user-friendly for administrators, FOS-5128 can be easily managed by web interface, console, telnet CLI, SNMP and DHCP auto-provision.

#### Target Applications

- FTTX Metro Ethernet Implementations.

## Specification

### ■ Interface

- SFP Slot:
  - 24 x 100/1000Base-X SFP
- SFP+ Slot:
  - 4 x 10GBase-SR/LR SFP+
  - Compatible with 1000Base-X transceiver
- Console Port:
  - 1 x RS-232 to RJ-45 serial port
- Terminal Block
  - 1 x Digital Input (Dry contact)

### ■ Standards

- IEEE 802.3u 100Base-FX
- IEEE 802.3z 1000Base-X
- IEEE 802.3 ae 10Gb/s Ethernet
- IEEE 802.3ad Link Aggregation (LACP)
- IEEE 802.1ab LLDP
- IEEE 802.1p Priority
- IEEE 802.1q Tag VLAN
- IEEE 802.1d STP
- IEEE 802.1w RSTP
- IEEE 802.1x Port based Network Access Control

### ■ H/W Specification

- MAC Address table: 16K
- Non-blocking Switching Fabric: 128Gbps
- Throughput @ 64Bytes: 95.2Mpps
- Packet Buffer: 12Mbit
- Jumbo Frame: 9K Bytes
- Store and Forward Switching Mechanism

### ■ LED

- Power A & B, Status, COM, Speed/Link/Act

### ■ Forward/Filter Rate

- 100M: 148,800/148,800pps
- 1000M: 1,488,000/1,488,000pps
- 10G: 14,880,000/14,880,000pps

### ■ Layer 2 Switch Features

#### VLAN

- IEEE 802.1q VLAN
  - VLAN ID: 4094 IDs
  - VLAN Concurrent Groups: 4K VLAN Groups
- Port Based VLAN
- VLAN Translation
- Q-in-Q Double tag with Configurable Ether Type
- Selective Q-in-Q

#### QoS

- QoS 802.1p CoS / DSCP
- Scheduling Algorithm
  - Weighted Round Robin (WRR)
  - Strict Priority Queuing (SPQ)
- QoS Priority Queues: 8 Queues
- 802.1p P-bit & DSCP Remarking
- Port based rate limit (ingress/egress)

#### Network Redundancy

- IEEE 802.1d Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad Link Aggregation (LACP)
- Static Port Trunking
- Up to 14 Aggregation Groups, 8 Ports per Group

#### Multicast

- IGMP Snooping v1/v2/v3
- IGMP Fast Leave and Querier
- MLD v1/v2 Snooping
- MLD Querier
- IGMP/MLD Snooping Group: 512/128 Groups
- IP Multicast Filter with Segment and Profile
- Static Multicast Group
- MVR (Multicast VLAN Registration)

#### IPv6 Feature

- IPv6 over Ethernet (RFC 2464)
- IPv6 Addressing Architecture (RFC 4291)
- IPv6 Dual Stack (RFC4213)
- ICMPv6 (RFC4884)
- Path MTU Discovery for IPv6 (RFC 1981)
- Neighbor Discovery (RFC4861)
- DHCPv6 Client

#### Layer 2 Protocol Tunneling

- CDP, LLDP, STP, VTP, LACP, PAGP & UDLD

#### Access Control List

- Physical port, Ether Type, MAC address, VID, ToS/DSCP, Protocol Type, L4 Port and IP address
- 96 ACL entries

### ■ Security

- 802.1x Port Base Access Control
- 802.1x RADIUS Authentication
- 802.1x MAC Authentication Bypass
- RADIUS Based VLAN Assignment
- DHCP Option 82 Relay Agent
- DHCP Option 82 with configurable circuit and Remote ID
- DHCP Snooping and DHCP server trust port
- IP Source Guard
- Port Isolation
- Storm Control
  - Unknown Unicast/Unknown Multicast/Broadcast
- MAC Limiter
- Loop Detection

### ■ Management

- SNMP v1,v2c & v3/Web/Telnet/HTTPS/SSHv2/CLI
- Text Base CLI Configure file
- Port Configuration
  - Speed/duplex/flow control/Description
- NTP with Daylight Saving Time
- Layer 2 Control Protocol filter
- Static MAC address Table
- LLDP

### ■ Maintenance

#### Diagnostic

- Port Mirror
- ICMP Ping
- Event log
- Syslog
- SFP SFF-8472 DDMI monitor
- CPU

Temperature/Utilization

-Memory Statistics

#### Upgrade/Restore

- Firmware Upgrade/Downgrade
  - HTTP/HTTPS/FTP/TFTP
  - DHCP Auto-provision via DHCP option 60/43
- Configuration Upload/Backup
  - HTTP/HTTPS/FTP/TFTP
  - DHCP Auto-provision via DHCP option 60/43

### ■ Power Requirement

- Input AC: 100V ~ 240V 50/60Hz
- Input DC: 48V (Range: 44 ~ 52V)
- Power Consumption (Max.): 40W

### ■ Environmental Condition

- Operation: 0°C ~ 50°C
- Storage: -20°C ~ 60°C
- Humidity: 5% ~ 90%, Non-condensing

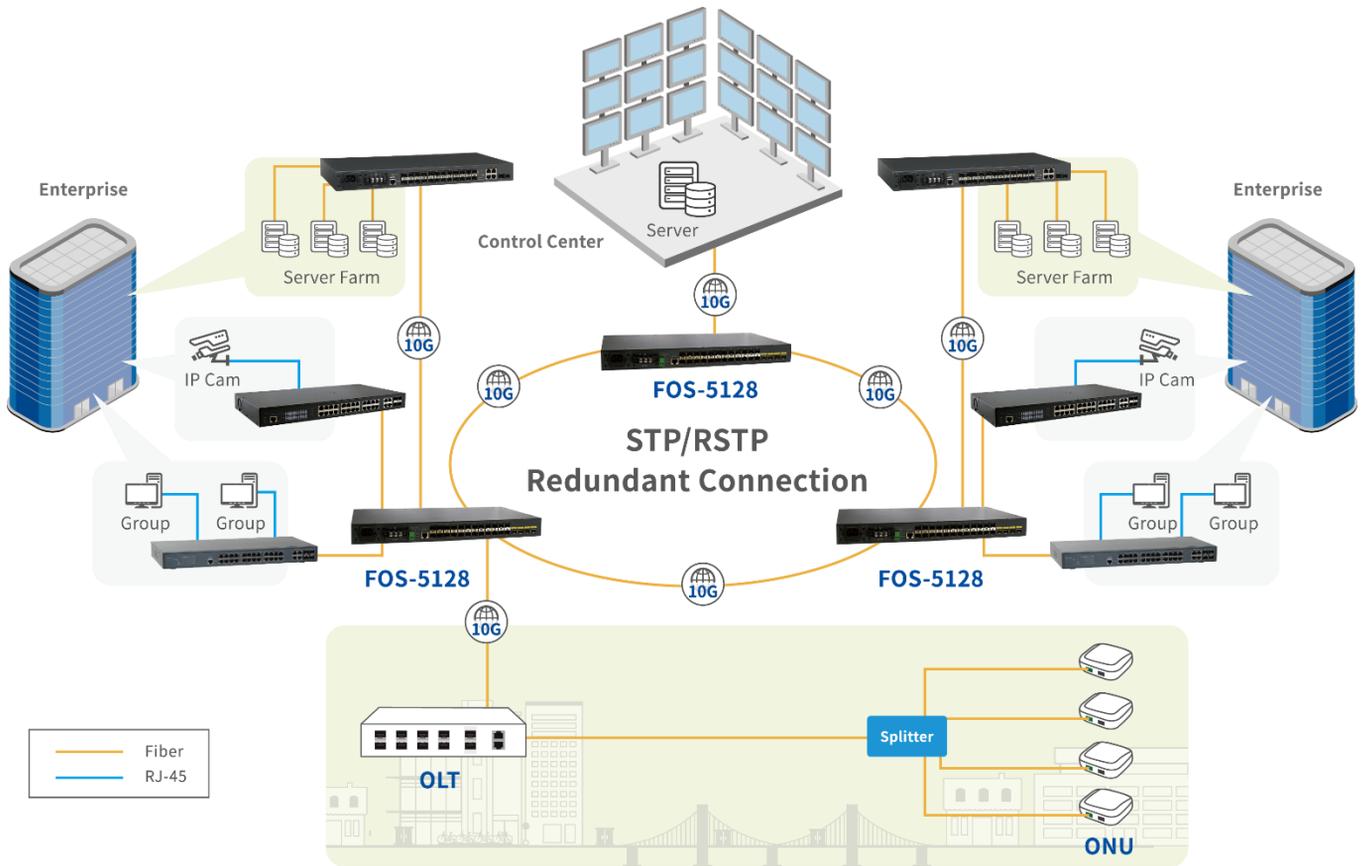
### ■ Dimension & Weight

- Size: 440 x 230 x 44 mm (W x D x H)
- Weight: 3.32kg

### ■ EMC/Safety

- FCC Class A, CE

## Application Diagram



## Order Information

### FOS-5128

| Model        | 1G Fiber Ports |      |       | 10G Fiber Ports |      |       | Support Power Source                  |
|--------------|----------------|------|-------|-----------------|------|-------|---------------------------------------|
|              | Speed          | Type | Ports | Speed           | Type | Ports |                                       |
| FOS-5128-1A  | 100/1000Mbps   | SFP  | 24    | 1/10Gbps        | SFP+ | 4     | Fixed 1 Internal AC                   |
| FOS-5128-2A  | 100/1000Mbps   | SFP  | 24    | 1/10Gbps        | SFP+ | 4     | Fixed 2 Internal AC                   |
| FOS-5128-1D  | 100/1000Mbps   | SFP  | 24    | 1/10Gbps        | SFP+ | 4     | Fixed 1 Internal DC                   |
| FOS-5128-2D  | 100/1000Mbps   | SFP  | 24    | 1/10Gbps        | SFP+ | 4     | Fixed 2 Internal DC                   |
| FOS-5128-1AD | 100/1000Mbps   | SFP  | 24    | 1/10Gbps        | SFP+ | 4     | Fixed 1 Internal AC and 1 Internal DC |

### Accessory

#### SFP-51

| Model               | Fiber Port |      |           |          |                                    |             |
|---------------------|------------|------|-----------|----------|------------------------------------|-------------|
|                     | Speed      | Type | Connector | Distance | Wavelength                         | Temperature |
| SFP-51FC            | 10Gbps     | MM   | LC        | 300M     | 850nm                              | 0°C ~ 70°C  |
| SFP-51FC(SM-10/20)  | 10Gbps     | SM   | LC        | 10/20KM  | 1310/1310nm                        | 0°C ~ 70°C  |
| SFP-51W2A(SM-10/20) | 10Gbps     | WDM  | LC        | 10/20KM  | TX: 1270/1270nm<br>RX: 1330/1330nm | 0°C ~ 70°C  |
| SFP-51W2B(SM-10/20) | 10Gbps     | WDM  | LC        | 10/20KM  | TX: 1330/1330nm<br>RX: 1270/1270nm | 0°C ~ 70°C  |

#### SFP-31-DR

| Model                  | Fiber Port   |      |           |          |                                    |             |
|------------------------|--------------|------|-----------|----------|------------------------------------|-------------|
|                        | Speed        | Type | Connector | Distance | Wavelength                         | Temperature |
| SFP-31FC-DR            | 100/1000Mbps | MM   | LC        | 2KM/550M | 1310nm                             | 0 ~ 70°C    |
| SFP-31FC(SM-10)-DR     | 100/1000Mbps | SM   | LC        | 10KM     | 1310nm                             | 0 ~ 70°C    |
| SFP-31W2A(SM-10/20)-DR | 100/1000Mbps | WDM  | LC        | 10/20KM  | TX: 1310/1310nm<br>RX: 1550/1550nm | 0 ~ 70°C    |
| SFP-31W2B(SM-10/20)-DR | 100/1000Mbps | WDM  | LC        | 10/20KM  | TX: 1550/1550nm<br>RX: 1310/1310nm | 0 ~ 70°C    |

#### SFP-31

| Model               | Fiber Port |      |           |          |                                    |             |
|---------------------|------------|------|-----------|----------|------------------------------------|-------------|
|                     | Speed      | Type | Connector | Distance | Wavelength                         | Temperature |
| SFP-31FC            | 1000Mbps   | MM   | LC        | 550M     | 850nm                              | 0 ~ 70°C    |
| SFP-31FC(SM-10/20)  | 1000Mbps   | SM   | LC        | 10/20KM  | 1310/1310nm                        | 0 ~ 70°C    |
| SFP-31W2A(SM-10/20) | 1000Mbps   | WDM  | LC        | 10/20KM  | TX: 1310/1310nm<br>RX: 1550/1550nm | 0 ~ 70°C    |
| SFP-31W2B(SM-10/20) | 1000Mbps   | WDM  | LC        | 10/20KM  | TX: 1550/1550nm<br>RX: 1310/1310nm | 0 ~ 70°C    |