FOS-5112

8 x 100/1000Base-X SFP +

4 x 1/10GBase-R SFP+

Managed Fiber Access Switch

Description

Connection Technology Systems (CTS) FOS-5112 is a Layer 2 access switch equipped with 8 x 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 transceivers. FOS-5112 has sufficient functionalities for service providers and enterprises who plan to implement FTTX or Metro Ethernet networks, enabling easy operation and deployment of service.

FOS-5112 delivers wire-speed throughput for data, voice, and IPTV services, using non-blocking 96Gbps switching fabric. FOS-5112 also supports AC power input or DC power input for different environments.

For inspirational design features, FOS-5112 comes with new features of Fast Ring v2 & Intelligent transceiver diagnostic mechanism for better topology recovery, device monitoring, and user troubleshooting.

Many service providers are extending their existing data service with triple-play service because it generates higher revenue returns. Advanced triple-play features on FOS-5112 include Multicast VLAN Registration, IGMP snooping, IGMP fast leave, IGMP filtering, various QoS classifications, and rate limit control. These features greatly benefit the service providers who are to deploy a manageable network environment and deliver a robust triple-play service.

In order to provide customers with extra security and separation, FOS-5112 has come with Selective Q-in-Q and Q-in-Q features, as they enable service providers to separate different customers and services at the Layer 2 level.

CTS has never settled in improving users' management experience, as FOS-5112 can easily be operated with web user interface, console, telnet CLI, SNMP, and DHCP auto-provision.

CTS

■ **High Switching Capacity with Compact Design**

Deliver 96Gbps switching fabric with 4 x 10Gbps + 8 x 1Gbps port in 8.5 inches / 1 rack unit (1U), making it a cost-effective device for switch deployment, more practicability and convenience.

■ **Up to 10Gbps Uplink Speed**

Equipped with four 10G ports to fulfill the demand of higher bandwidth for traditional internet services and premium services.

■ **Fanless Design**

Under the fanless design, FOS-5112 can reduce the speed of dust accumulation and power consumption with zero noise.

■ **Intelligent Diagnosis Mechanism**

Greatly help network operators to monitor current CPU/memory utilization, power input voltage, system voltage, CPU temperature & whether SFP transceiver parameter (e.g. temperature) is beyond or under the threshold.

■ **Selective Q-in-Q**

Enable operators to differentiate various types of users (home/enterprise) & service level by encapsulating VLAN tags.

■ **Multicast VLAN Registration**

Reduce the bandwidth required to distribute IPTV multicast streams by eliminating duplication of multicast streams on different VLANs.

Target Applications

■ **FTTX Metro Ethernet Implementations.**

■ Interface
-SFP Slot:
 8 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 RJ45 serial port
-Terminal Block
 1 x Digital Input (Dry contact)

■ Standards
IEEE 802.3u 100Base-FX
IEEE 802.3z 1000Base-X
IEEE 802.3ae 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: 96Gbps
Throughput @ 64Bytes: 71.4Mpps
Packet Buffer: 12Mbit
Jumbo Frame: 12K Bytes
Store and Forward Switching Mechanism

■ Ventilation
-Fanless Design

■ LED
-Power, 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 6 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
-Multicast VLAN Replication (MVR)

IPv6 Feature
-IPv6 over Ethernet (RFC 2464)
-IPv6 Addressing Architecture (RFC 4291)
-IPv6 Dual Stack (RFC 4213)
-ICMPv6 (RFC 4884)
-Path MTU Discovery for IPv6 (RFC 1981)
-Neighbor Discovery (RFC 4861)
-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
-ACL entries (IPv4: 64 entries; IPv6: 32
 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 & threshold monitor
 Temp/Volt/TX bias/TX power/RX power
-CPU
 Temperature/Utilization
-Memory Statistics
-System Voltage

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)
Max. Power Consumption: 20W (68BTU/h)

■ Environmental Condition
Operation: 0˚C ~ 50˚C
Storage: -20˚C ~ 60˚C
Humidity: 5% ~ 90%, Non-condensing

■ Dimension & Weight
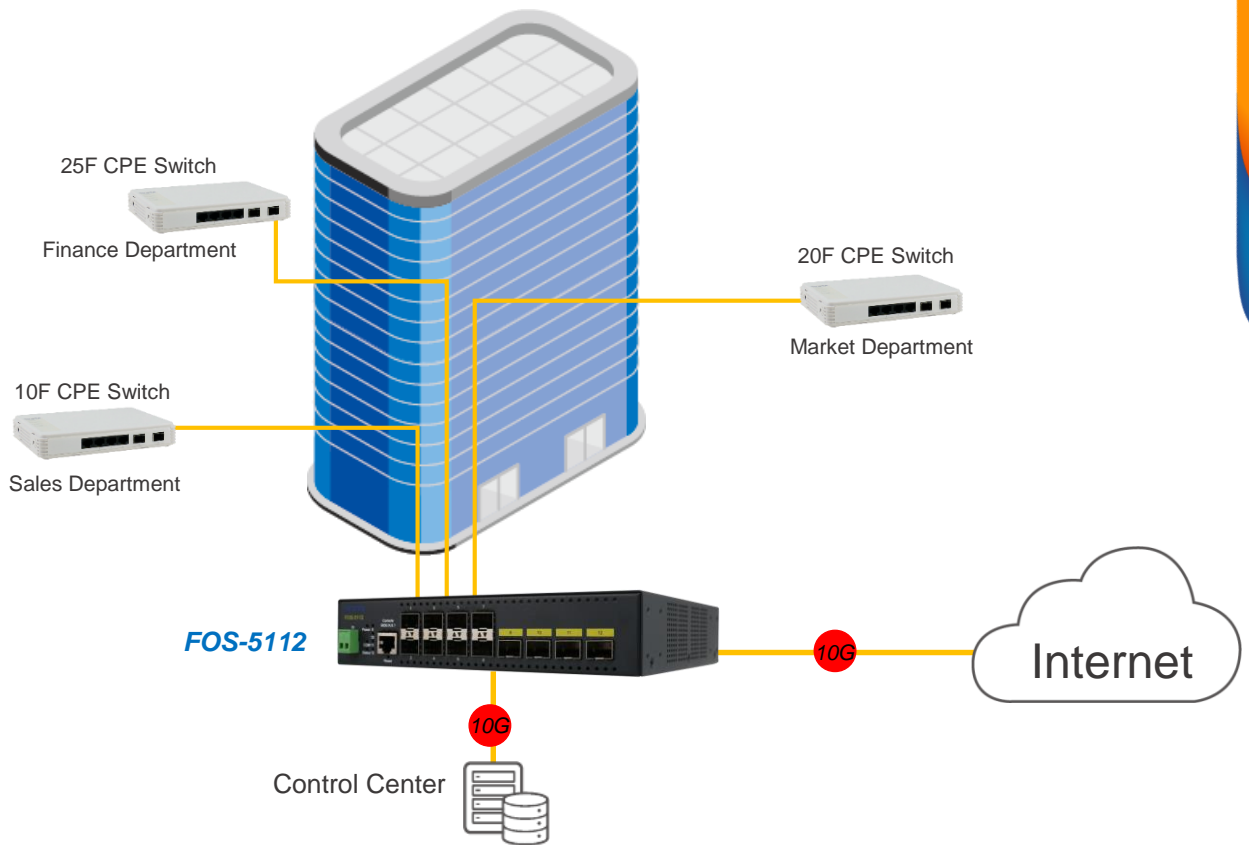Size: 210 x 235 x 44mm (W x D x H)
Weight: 1.8kg (with Rack ear)

■ EMC/Safety
FCC Class A, CE

* Under development function
** Future feature

Application Diagram

25F CPE Switch

Finance Department

20F CPE Switch

Market Department

10F CPE Switch

Sales Department

FOS-5112

10G

Internet

10G

Control Center

Order Information

FOS-5112

Model	1G Fiber Port			10G Fiber Port			Support Power Source
	Speed	Type	Ports	Speed	Type	Ports	
FOS-5112-1A	100/1000Mbps	SFP	8	1/10Gbps	SFP+	4	Fixed 1 Internal AC
FOS-5112-1D	100/1000Mbps	SFP	8	1/10Gbps	SFP+	4	Fixed 1 Internal DC

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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 RX: 1330/1330nm	0˚C~70˚C
SFP-51W2B(SM-10/20)	10Gbps	WDM	LC	10/20KM	TX: 1330/1330nm 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	550M/2KM	1310nm	0˚C~70˚C
SFP-31FC(SM-10)-DR	100/1000Mbps	SM	LC	10KM	1310nm	0˚C~70˚C
SFP-31W2A(SM-10/20)-DR	100/1000Mbps	WDM	LC	10/20KM	TX: 1310/1310nm RX: 1550/1550nm	0˚C~70˚C
SFP-31W2B(SM-10/20)-DR	100/1000Mbps	WDM	LC	10/20KM	TX: 1550/1550nm RX: 1310/1310nm	0˚C~70˚C

* SFP-31-DR modules only support 1000Mbps on FOS-5112

SFP-31

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