CTS
CONNECTION TECHNOLOGY SYSTEMS

www.ctsystem.com

FOS-5128

24 x 100/1000Base-X SFP +

4 x 1/10GBase-R SFP+

Managed Fiber Access Switch

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.

Key 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.

■ Targeted Applications

- FTTX Metro Ethernet Implementations.

Specification

Interface

Fiber Port
- 4 x 10GBase-SR/LR SFP+, compatible with 1000Base-X transceiver
- 24 x 1000/100Base-X SFP

Console Port
- 1 x RS-232 to RJ-45 Serial Port

Terminal Block
- 1 x Digital Input (Dry Contact)

Standards
- IEEE 802.3ae 10GBase-R
- IEEE 802.3z 1000Base-X
- IEEE 802.3u 100Base-FX
- IEEE 802.3x Flow Control
- IEEE 802.3ad LACP
- IEEE 802.3ah OAM
- 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 Switch Fabric: 128 Gbps
- Throughput @ 64Bytes: 95.2 Mpps
- Packet Buffer: 1.5 MB
- Jumbo Frame: 12 KB
- Store and Forward Switching Mechanism

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

Forward/Filter Rate
- 10G Port: 14.88 Mpps (14,880,952 pps)
- 1G Port: 1.488 Mpps (1,488,095 pps)
- 100M Port: 0.1488 Mpps (148,810 pps)

Layer 2 Switch Features

Port Management
- State, Description, Media Type, Port Type, Speed and Flow Control

Network Redundancy
- STP (Spanning Tree Protocol)
- RSTP (Rapid Spanning Tree Protocol)
- Fast Ring v2/Chain Redundancy Protocols
- Static Port Trunking / Dynamic LACP Trunk
  Up to 14 Aggregation Groups, Max 8 Ports per Group

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 based on 802.1p CoS and 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)

Multicast
- IGMP Snooping v1/v2/v3
- MLD Snooping v1/v2
- IGMP/MLD Fast Leave and Querier
- IGMP/MLD Snooping Group: 512/128 Groups
- IP Multicast Filter with Segment and Profile
- Static Multicast Group
- Multicast VLAN Registration (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)
- Neighbour Discovery (RFC 4861)
- DHCPv6 Client

Layer 2 Protocol Tunnelling
- CDP, LLDP, STP, VTP, LACP, PAgP, UDLD

Access Control List
- Physical Port, Ether Type, MAC Address, VID, ToS/Traffic Class, Protocol Type, L4 Port and IP Address
- ACL Entries (IPv4: 64 Entries; IPv6: 32 Entries)

Security
- 802.1x RADIUS Authentication
  802.1x Port Base Access Control
  802.1x MAC Authentication Bypass (MAB)
  RADIUS-Assigned VLAN
- RADIUS/TACACS+ Authentication for login username/password
- DHCP Snooping and DHCP Server Trust Port
- DHCP Snooping Relay Agent
  DHCPv4 Option 82 with configurable Circuit and Remote ID
  DHCPv6 Option 37/18 with configurable Interface and Remote ID
- IP Source Binding
- IP Source Guard
- Port Isolation
- Port Link Flap
- Port Linkup Delay
- Storm Control (Unknown Unicast/Multicast, Broadcast)
- MAC Limiter
- Loop Detection

Management
- SNMP v1, v2c & v3 (Support Traps)
- Web (HTTP/HTTPS)
- CLI (Console/Telnet/SSHv2)
- SNTP with Daylight Saving Time
- Layer 2 Control Protocol Filter
- Static MAC Address Table
- LLDP
- CDP Monitor
- Zabbix Monitoring Template

Upgrade/Restore
- Firmware Upgrade/Downgrade
  HTTP/HTTPS/FTP/TFTP
  DHCP Auto-provision via DHCPv4 Option 60/43 & DHCPv6 Option 16/17
- Configuration Upload/Backup
  HTTP/HTTPS/FTP/TFTP
  DHCP Auto-provision via DHCPv4 Option 60/43 & DHCPv6 Option 16/17
- Auto configure backup
  FTP/TFTP

Maintenance

Diagnostics
- Port Mirror
- ICMP Ping, Traceroute
- Event Log
- Port Link Flap Log
- Syslog
- SFP SFF-8472 DDMI Monitor
  Temp/Voltage/TX Bias/TX Power/RX Power
- CPU Utilization/Temperature
- Memory Statistics
- System Voltage
- Digital Input (Normal Close/Open)
- Port Loopback Test
- Ethernet OAM

Power Requirement
- AC Input: 100~240V, 50/60Hz
- DC Input: 48V (Range: 44~52V)
- Power Consumption: full-load < 40W (136 BTU/h)

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: 3.32 Kg

Standards and Certifications

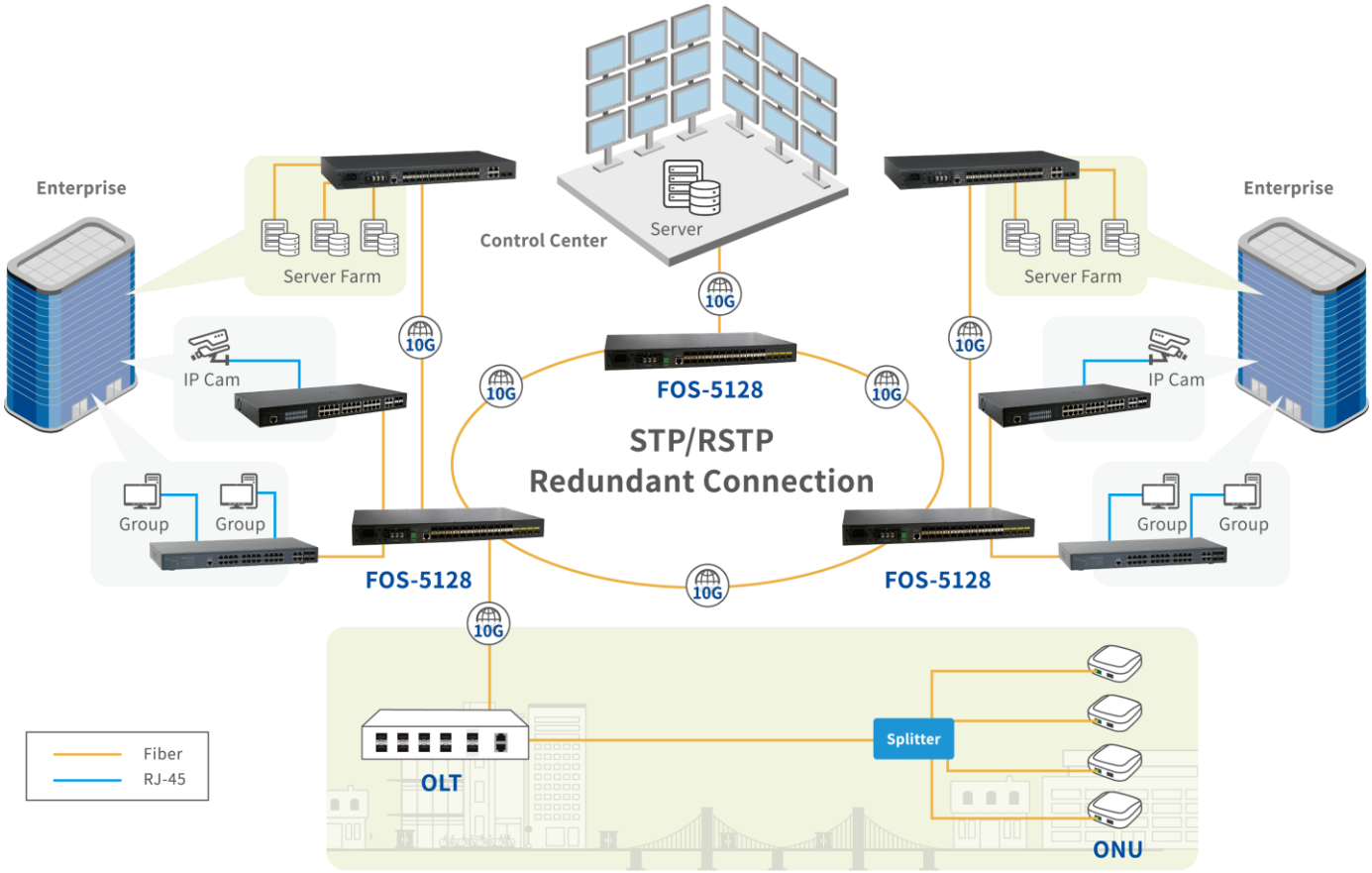
CE/FCC Class A
- Safety: EN/IEC 62368-1
- EMC: EN 55032 / EN 55035
- ESD
  Air Discharge: +/- 8 kV
  Contact Discharge: +/- 4 kV
- EFT
  AC Input: +/- 1 kV
  DC Input: +/- 1 kV
- Surge Protection
  AC Input: +/- 2 kV
  DC Input: +/- 0.5 kV

UKCA/RCM

RoHS 2.0

* Coming soon

Application Diagram



Order Information

Model	1G Fiber Port			10G Fiber Port			Support Power Source
	Speed	Type	Slots	Speed	Type	Slots	
FOS-5128-1A	1000/100Mbps	SFP	24	10/1Gbps	SFP+	4	1 x Fixed Internal 100-240 VAC
FOS-5128-2A	1000/100Mbps	SFP	24	10/1Gbps	SFP+	4	2 x Fixed Internal 100-240 VAC
FOS-5128-1D	1000/100Mbps	SFP	24	10/1Gbps	SFP+	4	1 x Fixed Internal 48 VDC
FOS-5128-2D	1000/100Mbps	SFP	24	10/1Gbps	SFP+	4	2 x Fixed Internal 48 VDC
FOS-5128-1AD	1000/100Mbps	SFP	24	10/1Gbps	SFP+	4	1 x Fixed Internal 100-240 VAC + 1 x Fixed Internal 48 VDC

Accessory

SFP-51

Model	Specification					
	Speed	Type	Connector	Distance	Wavelength	Operating Temperature
SFP-51FC	10Gbps	MM	LC	300M	850nm	0˚C~70˚C
SFP-51FC(SM-02/10/20/40)	10Gbps	SM	LC	2/10/20/40KM	1310/1310/1310/1550nm	0˚C~70˚C
SFP-51W2A(SM-10/20/40)	10Gbps	WDM	LC	10/20/40KM	TX: 1270/1270/1270nm RX: 1330/1330/1330nm	0˚C~70˚C
SFP-51W2B(SM-10/20/40)	10Gbps	WDM	LC	10/20KM	TX: 1330/1330/1330nm RX: 1270/1270/1270nm	0˚C~70˚C

SFP-31

Model	Specification					
	Speed	Type	Connector	Distance	Wavelength	Operating 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-31FC	1000Mbps	MM	LC	550M	850nm	0˚C~70˚C
SFP-31FC(SM-10/20/40)	1000Mbps	SM	LC	10/20/40KM	1310/1310/1310nm	0˚C~70˚C
SFP-31W2A(SM-10/20/40)	1000Mbps	WDM	LC	10/20/40KM	TX: 1310/1310/1310nm RX: 1550/1550/1550nm	0˚C~70˚C
SFP-31W2B(SM-10/20/40)	1000Mbps	WDM	LC	10/20/40KM	TX: 1550/1550/1550nm RX: 1310/1310/1310nm	0˚C~70˚C

Copper SFP

Model	Specification			
	Speed	Connector	Distance	Operating Temperature
SFP-50TP-MG(30M)	10Gbps	RJ-45	30M @ Cat 6A	0˚C~65˚C
	2.5/5Gbps		50M @ Cat 5E	
	1000Mbps		100M @ Cat 5E	
SFP-30TP	1000Mbps	RJ-45	100M	0˚C~70˚C

Connection Technology Systems Inc. (HQ)
Tel.: +886-2-2698-9661
E-mail: cts_esales@ctsystem.com
info@ctsystem.com
Sales Direct Line: +886-2-26989201

Connection Technology Systems NE AB
Tel: +46-31-221980
E-mail: info@ctsystem.se

Connection Technology Systems CE GmbH
Tel: +43 1 343 9553 50
E-mail: cts_ce@ctsystem.com

Connection Technology Systems Japan
Tel: +81-6-6450-8890
E-mail: cts_japan@ctsystem.com

Connection Technology Systems India Private Limited
E-mail: cts_in@ctsystem.com