



## Description

Connection Technology Systems (CTS) ESW-5112-2MG is a layer 2 managed Ethernet switch equipped with 8 ports of 10/100/1000Base-T RJ-45, 2 ports of 100M/1G/2.5G/5G/10GBase-T (compliant with NBase-T standard), and 2 ports of 1/10GBase-R SFP+. All SFP+ slots can accommodate a wide range of SFP/SFP+ transceivers including single-mode, multi-mode, and WDM. The compact size of 8.5 inches, smaller than half of a standard 19-inch rack's width, is ideal for the small-form-factor application that entails optimal installation space utilization.

ESW-5112-2MG has rich functionalities for SMBs and enterprises that plan to implement FTTX Ethernet networks, along with the capability of versatile integration into the existing network infrastructure.

Many service providers are extending their existing data service with triple-play service because it generates higher revenue returns. Advanced triple-play features on ESW-5112-2MG include Multicast VLAN Registration, IGMP snooping, IGMP fast leave, IGMP filtering, various QoS classifications, and rate limit control. These greatly benefit the service providers who are to deploy a manageable network environment and deliver a robust triple-play service.

The non-blocking 96Gbps switching fabric feature allows for wire-speed throughput for data, voice, and video services. ESW-5112-2MG also supports one optional AC/DC power module for different installation and application environments.

Besides the CTS' unique Fast Ring v2 that prompts better topology stability, ESW-5112-2MG also comes with the intelligent transceiver diagnostic mechanism which delivers real-time SFP/SFP+ monitoring and therefore identifies possible link failures in advance. It simplifies network maintenance and improves connection reliability. Moreover, in order to provide customers with extra security and separation, ESW-5112-2MG is equipped with Selective Q-in-Q and Q-in-Q features, enabling service providers to separate different customers and services at the Layer 2 level.

ESW-5112-2MG can be easily operated with a web user interface, console, telnet CLI, SNMP, and DHCP auto-provision, optimizing the users' management experience.

## ESW-5112-2MG

8 x 10/100/1000Base-T RJ-45 +

2 x 100M/1G/2.5G/5G/10GBase-T RJ-45 +

2 x 1/10GBase-R SFP+

Managed Ethernet Switch

## ■ 100M/1G/2.5G/5G/10GBase-T Delivering Seamless Speed Boosting and Upgrade

As bandwidth demand soars to new heights, 2 x 100M/1G/2.5G/5G/10GBase-T ports allow users to get up to the speed of 2.5/5Gbps over the same, predominant UTP Cat 5e/6 cabling when coordinated with 802.11ac wireless APs. 10Gbps can be also achieved when the ports go with higher-performance 802.11ax wireless APs or 10Gbps NAS over the UTP Cat 6a/7 cabling. The multi-speed interfaces hence facilitate various network settings and applications, pushing through the bottleneck of 1Gbps over an RJ-45 cable in the most possibly cost-effective approach.

## ■ Low-density with Small-Factor-Form Design

Smaller than half the size of a standard rack in width, ESW-5112 delivers non-blocking 96Gbps switching fabric with low-density interfaces (8 x 1Gbps + 4 x 10Gbps), the best solution for network infrastructure building often hindered by scarce installation space.

## ■ VLAN Translation

Allow service providers to implement Metro Ethernet service by translating the original VLAN ID to a new VLAN ID with different priorities for different customers.

## ■ Intelligent Diagnosis Mechanism

Greatly help network operators to monitor current CPU/memory utilization, power input voltage, system voltage, CPU temperature & whether SFP/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 levels by encapsulating VLAN tags.

## ■ Multicast VLAN Registration

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

## Target Applications

- FTTX Ethernet Implementations for SMBs and Enterprises.

## ■ Interface

- RJ-45 Port:  
8 x 10/100/1000Base-T RJ-45  
2 x 100M/1G/2.5G/5G/10GBase-T RJ-45
- Fiber Port:  
2 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 802.3 10Base-T
- IEEE 802.3u 100Base-TX
- IEEE 802.3z 1000Base-X
- IEEE 802.3ab 1000Base-T
- IEEE 802.3bz 2.5G/5GBase-T (NBase-T)
- IEEE 802.3an 10GBase-T
- IEEE 802.3ae 10GBase-R
- 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
- Auto-Cross Over for MDI/MDIX in TP Ports
- Auto-Negotiation in TP Ports
- Full/Half Duplex Mode Operation

## ■ LED

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

## ■ Forward/Filter Rate

- 10M: 14,880/14,880pps
- 100M: 148,800/148,800pps
- 1000M: 1,488,000/1,488,000pps
- 2.5G: 3,720,000/3,720,000pps
- 5G: 7,440,000/7,440,000pps
- 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 Queueing (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
- Cable Diagnostics

### 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 +/- 10%;  
12V +/- 10%

## ■ 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)

## ■ EMC/Safety

- FCC Class A, CE

\* Under development function

\*\* Future feature

# Order Information

## ESW-5112-2MG

Model	Fiber Port			TP Port		Support Power Source
	Speed	Type	Ports	Speed	Ports	
ESW-5112-2MG-1A	1/10Gbps	SFP+	2	10/100/1000Mbps	8	Fixed 1 Internal AC
				100M/1G/2.5G/5G/10Gbps	2	
ESW-5112-2MG-1D	1/10Gbps	SFP+	2	10/100/1000Mbps	8	Fixed 1 Internal DC 48V
				100M/1G/2.5G/5G/10Gbps	2	
ESW-5112-2MG-1AE	1/10Gbps	SFP+	2	10/100/1000Mbps	8	Fixed 1 Internal AC
				100M/1G/2.5G/5G/10Gbps	2	Fixed 1 External DC 12V
ESW-5112-2MG-1E	1/10Gbps	SFP+	2	10/100/1000Mbps	8	Fixed 1 Internal DC 12V
				100M/1G/2.5G/5G/10Gbps	2	