



DIN RAIL



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



4 + 4



The ComNet™ CNGE8FX4TX4MS Managed Ethernet Switch provides transmission of (4) 100/1000 BASE-TX and (4) 10/100/1000FX combo ports. Unlike most Ethernet switches, these environmentally hardened units are designed for deployment in difficult operating environments, and are available for use with either conventional CAT-5e copper or optical transmission media. Ports 1 - 4 support the 10/100/1000 Mbps Ethernet IEEE 802.3 protocol, and auto-negotiating and auto-MDI/MDIX features are provided for simplicity and ease of installation. Ports 5 - 8 are 10/100/1000 configurable for copper or 100/1000 fiber media for use with multimode or single mode optical fiber without need for configuration, selected by optional SFP modules. These network managed layer 2 switches are optically and electrically compatible with any IEEE 802.3 compliant Ethernet devices. Plug-and-play design ensures ease of installation, and no electrical or optical adjustments are ever required.

FEATURES

- › Environmentally hardened for direct deployment in difficult unconditioned out-of-plant and roadside installations
- › Designed to meet full compliance with the environmental requirements (ambient operating temperature, mechanical shock, vibration, humidity with condensation, high-line/low-line voltage conditions and transient voltage protection) of NEMA TS-1/TS-2 and the Caltrans Specification for Traffic Signal Control Equipment.
- › Extended ambient operating temperature range: -40° C to +75° C (Functional to 85°C)
- › 10/100/1000 BASE-TX and 100/1000 BASE-FX compatible
- › Flexible optics configuration via SFP plug-in modules
- › Redundant power supply compatibility reduces possibility of single-point-of-failure for highest possible reliability
- › Fully configurable through web-based or SNMP network management
- › IGMP Snooping V1/V2 for multicast filtering and IGMP Query V1/V2
- › Port based VLAN (IEEE 802.1Q)
- › Rapid Spanning Tree protocol (IEEE 802.1W)
- › Port Based Security
- › Power Supply Included
- › Lifetime Warranty

APPLICATIONS

- › ITS Traffic Signalization & Surveillance/Incident Detection Networks
- › Industrial and Factory Automation
- › Integrated IP-Video and Data Transmission Networks

* Small Form-Factor Pluggable Module. Sold separately.

SPECIFICATIONS, CONT'D

Switch Architecture

Switching Fabric: 16Gbps Packet throughput ability (Full Duplex): 23.8Mpps @64bytes

Transfer Rate 1,488,000pps for Gigabit Ethernet port

Packet Buffer 1Mbits

Mac Address 8K MAC address table

Flash ROM 4Mbytes

DRAM 32Mbytes

EMI FCC Part15 Class A

- EN61000-6-4

- EN61000-6-2

- EN61000-4-2 (ESD)

Contact: ±4KV

Air : ±8KV

- EN61000-4-3 (Radiated RFI)

10V/m, 80 to 1000MHz ; 80% AM

- EN61000-4-4 (Burst)

Signal Ports : ±1KV

D.C. Power Ports : ±2KV

A.C. Power Ports : ±2KV

- EN61000-4-5 (Surge)

Signal Ports: ±1KV; Line-to-Line

D.C. Power Ports: ±0.5KV: Line-to-Earth

A.C Power Ports: ±2KV; Line-to-Earth

EN61000-4-6 (Induced RFI)

Signal Ports: 10Vrms@0.15~80MHz; 80% AM

D.C. Power Ports: 10Vrms@0.15~80MHz; 80% AM

A.C. Power Ports: 10Vrms@0.15~80MHz; 80% AM

- EN61000-4-8 (Magnetic Field)

30A/m@50, 60Hz

- EN61000-4-11 (Voltage Dip)

- EN61000-3-2 (Harmonics Current)

- EN61000-3-3 (Voltage Fluctuation & Flickers)

IETF RFC

RFC768-UDP, RFC783-TFTP, RFC791-IP

RFC792-ICMP, RFC793-TCP, RFC827-ARP,

RFC854-Telnet, RFC894-IP over Ethernet,

RFC1112-IGMP v1, RFC1519-CIDR, RFC1541-DHCP (client),

RFC2030-SNTP,

RFC2068-HTTP, RFC2236-IGMP v2,

RFC2475-Differentiated Services,

RFC2865-Radius, RFC3414-SNMPv3-USM, RFC3415-SNMPv3-

VACM

IETF SNMP MIBS

RFC1493-BRIDGE-MIB, RFC1907-SNMPv2-MIB, RFC2012-TCP-

MIB, RFC2013-UDP-MIB, RFC2578-SNMPv2-SMI, RFC2579-

SNMPv2-TC, RFC2819-RMON-MIB, RFC2863-IF-MIB, draft-ietf-

bridge-rstppmib-03-BRIDGE-MIB, draft-ietf-bridge-bridgemib-

smiv2-03-RSTP-MIB, IANAiftype-MIB

Safety

UL508, UL 508 Class 1, Division 2

Stability Testing

IEC60068-2-32 (Free fall),

IEC60068-2-27 (Shock),

IEC60068-2-6 (Vibration)

System Interface/

Performance:

- RJ-45 port support Auto MDI/MDI-X Function
- SFP supports 100/1000 Dual Mode
- Store-and-Forward Switching Architecture
- Back-plane (Switching Fabric): 16Gbps
- 1Mbits Packet Buffer
- 8K MAC Address Table

Power Supply:

- Wide-range Redundant Power Design
- Power Polarity Reverse Protect
- Overload Current Protection

VLAN

- Port Based VLAN
- Support 802.1 Q Tag VLAN
- GVRP

Port Trunk with LACP

QoS (Quality of Service)

- Support IEEE 802.1p Class of Service
- Per port provides 4 priority queues
- Port Base, Tag Base and Type of Service Priority

Port Mirror: Monitor traffic in switched networks

- TX packet only
- RX packet only
- Both TX and RX packet

Security

- Port Security: MAC address entries/filter
- IP Security: IP address security management to prevent unauthorized intruder
- Login Security: IEEE802.1X/RADIUS

IGMP

- Query mode for Multi Media Application

SFP Support DMI (Digital Monitoring Interface)

- RX Received Optical Power
- TX Output Power
- Laser Bias Current
- Temperature
- Supply Voltage

Spanning Tree

- Support IEEE802.1d Spanning Tree
- Support IEEE802.1w Rapid Spanning Tree

X-Ring

- X-Ring, Dual Homing and Couple Ring Topology
- Provide redundant backup feature

Case/Installation

- IP-30 Protection
- DIN Rail (35 mm Track) or Wall Mount

Bandwidth Control

- Ingress Packet Filter and Egress Rate Limit
- Broadcast/Multicast Packet Filter Control

System Event Log

- System Log Server/Client
- SMTP e-mail Alert
- Relay Alarm Output System Events

SNMP Trap

- Device cold start
- Power Status
- Authentication failure
- X-ring topology change
- Port Link Up/ Link Down

Provides EFT protection 4000 VDC for power line

Supports 8000 VDC Ethernet ESD protection

SPECIFICATIONS, CONT'D

Standard Compliance

- IEEE802.3 10Base-T Ethernet
- IEEE802.3u 100Base-TX
- IEEE802.3ab 1000Base-T
- IEEE802.3z Gigabit fiber
- IEEE802.3x Flow Control and Back Pressure
- IEEE802.3ad Port trunk with LACP
- IEEE802.1d Spanning Tree/ IEEE802.1w Rapid Spanning Tree
- IEEE802.1p Class of Service
- IEEE802.1Q VLAN Tag
- IEEE802.1x User Authentication (Radius)

Management SNMP v1 v2c, v3/ Web/Telnet/CLI/NS-View Management

SNMP MIB

RFC 1215 Trap, RFC1213 MIBII, RFC 1157 SNMP MIB, RFC 1493 Bridge MIB, RFC 2674 VLAN MIB, RFC 1643 , RFC 1757, RSTP MIB, Private MIB

VLAN

Port Based VLAN
IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.) GVRP (256 Groups) Double Tag VLAN (Q in Q) - Optional

LACP Port Trunk LACP Port Trunk: 4 Trunk groups/Maximum 4 trunk members

Spanning Tree Support IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree

X-Ring Support X-Ring, Dual Homing and Couple Ring Topology Provide redundant backup feature and the recovery time below 20ms

QoS The quality of service determined by port, Tag and IPv4 Type of service, IPv4/ IPv6 Different Service

Class of Service Support IEEE802.1p class of service, per port provides 4 priority queues

Port Security Support 100 entries of MAC address for static MAC and another 100 for MAC filter

Port Mirror Support 3 mirroring types: RX, TX and Both packet

IGMP Support IGMP snooping v1,v2 256 multicast groups and IGMP query

IP Security

Supports 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder.
Login Security
Support IEEE802.1X Authentication/RADIUS

Bandwidth Control

Support ingress packet filter and egress packet limit. The egress rate control supports all of packet type and the limit rates are 100K~250Mbps. Ingress filter packet type combination rules are Broadcast/Multicast/Unknown Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all of packet. The packet filter rate can be set from 100k to 250Mbps.

Flow Control

Support Flow Control for Full-duplex and Back Pressure from Half-duplex

System Log

Support System log record and remote system log server

SMTP

Support SMTP Server and 6 e-mail accounts for receiving event alert

Relay Alarm

Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V

DMI

DMI(Digital Monitoring Interface) supports real time monitoring of RX Received Optical Power, TX Output Power, Laser Bias Current, Temperature and Supply Voltage

SNMP Trap

Up to 3 Trap stations. Cold start, Port link up, Port link down, Authentication Failure, Private Trap for power status, Port Alarm configuration, Fault alarm, X-Ring topology change

DHCP

Provide DHCP Client/ DHCP Server functions

DNS

Provide DNS client feature and support Primary and Secondary DNS server

SNTP

Support SNTP to synchronize system clock in Internet

Firmware Update Support TFTP firmware update, TFTP backup and restore.

Configuration upload and download

Support binary configuration file for system quick installation

ifAlias

Each port allows importing 128bit of alphabetic string of word on SNMP and CLI interface.

SPECIFICATIONS

Connector	10/100/1000TX: 4 × RJ45; 4 × 100/1000 SFP sockets; SFP sockets support DMI (Digital Monitoring Interface) Console port: RS-232 connector
Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable. EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5/5E cable. EIA/TIA-568 100-ohm (100m) 1000Base-TX: 2-pair UTP/STP Cat. 5/5e cable. EIA/TIA-568 100-ohm (100m)
Optical Fiber¹	Requires selection of sold-separately SFP Modules. See ComNet data sheet "SFP Small Form-Factor Pluggable Modules" for number and description of SFP modules.
Protocol	CSMA/CD
Indicating LEDs	Per unit: Power (Green), Power 1 (Green), Power 2 (Green), Fault (Red), Master (Green); Per port: Link/Activity (Green), Speed (1000Mbps Green); SFP: Link/Activity (Green)

Power	
Input	12 to 48 VDC or 24 VAC, Redundant power with polarity reverse protect function and removable terminal block (a 12V DC or 24 VDC PSU is included, based on region).
Consumption	17 Watts
Environmental	
MTBF	>100,000 hours
Operating Humidity	5% to 95% (Non-condensing)
Operating Temperature	-40°C to 75°C (Functional to 85°C)
Storage Temperature	-40°C to 85°C
Dimensions (W × D × H)	2.84 × 4.13 × 5.98 in (72 × 105 × 152mm)
Installation	DIN Rail (35 mm Track) or Wall Mount

[1] Multimode fiber needs to meet or exceed fiber standard ITU-T G.651. Single mode fiber needs to meet or exceed fiber standard ITU-T G.652



ORDERING INFORMATION

Part Number	Description
CNGE8FX4TX4MS	4 10/100/1000T + 4 100/1000 SFP w/ X-Ring L2 & Wide Operating Temperature (-40° - 75°C) Managed Industrial Switch
Accessories	DC Plug in Power Supply (12VDC in some regions), 90-264VAC, 50/60Hz (Included)

Complies with FDA Performance Standard for Laser Products, Title 21, Code of Federal Regulations, Subchapter J. In a continuing effort to improve and advance technology, product specifications are subject to change without notice.

