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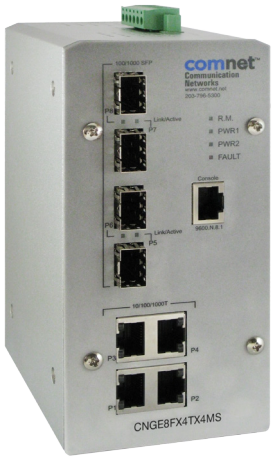
Communication Networks

# Environmentally Hardened Managed Ethernet Switch with (4) 10/100/1000TX + (4) 100/1000FX SFP* Ports

CNGE8FX4TX4MS


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 and Wall Mount Design

**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.

# Environmentally Hardened Managed Ethernet Switch with (4) 10/100/1000TX + (4) 100/1000FX SFP Ports

## 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 Fiber[1]**
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

**LED**
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 |

**MTBF**
>100,000 hours

**Operating Humidity**
5% to 95% (Non-condensing)

**Operating Temperature**
-40˚C to 75˚C (Functional to 85ºC)

**Storage Temperature**
-40˚C to 85˚C

**Case Dimensions**
Metal case. IP-30,
72mm (W) × 105mm (D) × 152mm (H)
2.84" (W) × 4.13" (D) × 5.98" (H)

**Installation**
DIN Rail and Wall Mount Design

*[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*

AGENCY COMPLIANCE
PART 15 COMPLIANT E322911 N24621

## 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.*

Low Power Consumption

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