Environmentally Hardened Managed Ethernet Switch with (7) 10/100TX + (3) 10/100/1000TX RJ45 or 100/1000 FX SFP* Ports

CNGE3FE7MS2

HARDENED | FLEXIBILITY | UPLINKS 3 | 7

The ComNet™ CNGE3FE7MS2 Managed Ethernet Switch provides robust transmission of (7) 10/100 BASE-TX and (3) 10/100/1000TX or 100/1000FX combo ports, of gigabit Ethernet data. Unlike most Ethernet switches, these environmentally hardened units are designed for direct deployment in difficult out-of-plant or roadside operating environments, and are available for use with either conventional CAT-5e copper or optical transmission media. Diverse media selection allows for easy implementation of point-to-point, linear add-drop, drop-and-repeat, star, or true self-healing ring and mesh network system architectures. The 7 electrical ports support the 10/100 Mbps Ethernet IEEE 802.3 protocol, and auto-negotiating and auto-MDI/MDIX features are provided for simplicity and ease of installation. 3 ports are 10/100/1000 configurable for copper or fiber media for use with multimode or single mode optical fiber, selected by optional SFP modules. These network managed layer 2 switches are optically (100/1000 BASE-FX) 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. The CNGE3FE7MS2 incorporates LED indicators for monitoring the operating status of the managed switch and network. These units are DIN-rail or wall mountable.

FEATURES

› Environmentally hardened for direct deployment in difficult unconditioned out-of-plant and roadside installations

› Tested and certified by an independent laboratory for 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 CALTRANS Traffic Signal Control Equipment Specifications

› Compliant with EN60950-1 and UL Class 1, Division 2, Groups A, B, C and D for Hazardous Locations

› Extended ambient operating temperature range: -40˚ C to +75˚ C (Functional to 85°C)

› 10/100 BASE-TX and 100/1000 BASE-FX compatible

› Flexible optics configuration via SFP plug-in modules

› DIN rail or wall mountable mounted

› 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)

› Power Supply Included

› Lifetime Warranty

APPLICATIONS

› ITS Traffic Signalization & Surveillance/Incident Detection Networks

› Industrial and Factory Automation

› Integrated IP-Video and Data Transmission Networks

› Industrial Security Access Control Systems

** Small Form-Factor Pluggable Module. Sold separately.*

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BENEFITS

System Interface/Performance:
- RJ45 port support Auto MDI/MDI-X function
- SFP supports 100/1000 Dual Mode
- Store-and-Forward Switching Architecture
- Back-plane (Switching Fabric): 7.4Gbps
- 1Mbits Packet Buffer
- 8K MAC Address Table
- Wide operating temperature (-40˚C - 75˚C)

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
- HTTPS SSH (V1, V2)/SSL 128 Bit Encryption

IGMP
- Query mode for Multi Media Application
- Support multicast filter

Case/Installation
- IP-30 Protection
- DIN Rail and Wall Mount Design

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

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

Support IEEE802.1ab LLDP

Bandwidth Control
- Support Rate-based and Priority-based rate limiting
- 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 changed
- Port Link Up/ Link Down

TFTP Firmware Update and System Configure Restore and Backup

Supports 6000 VDC Ethernet ESD protection

Supports DIDO function

Provides EFT protection 3000 VDC for power line

Standard Compliance
- IEEE802.3 10Base-T Ethernet
- IEEE802.3u 100Base-TX/100
- 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)
- IEEE802.1ab LLDP

SOFTWARE FEATURES

Management	SNMP v1, v2c, v3/ Web/Telnet/CLI/NS-View Management
SNMP MIB	RFC 1215 Trap, RFC 1213 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 IEEE802.1Q Tag VLAN (256 entries)/ VLAN ID (UP to 4K, can be assigned from 1 to 4096) GVRP (256 Groups)
Port Trunk w/ LACP	LACP Port Trunk: 4 Trunk groups/ Maximum 4 Trunk members
LLDP	Support LLDP to allow switch to advise its identification and capability on the LAN
Spanning Tree	Support IEEE802.1w Rapid Spanning Tree
X-Ring	Support X-Ring, Dual Homing and Couple Ring Technology. Provide redundant backup feature and the recovery time below 20ms.
Quality of Service	The quality of service determined by port, Tag and IPv4 Type of Service, IPv4 Different Service
Class of Service	Support IEEE802.1p class of service, per port provides 4 priority queues
Port Security	Support 1000 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

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Bandwidth Control Support ingress packet filter and egress packet limit. The egress rate control all of the packet types 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-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. Alarm Relay current carry ability:
1A @ DC24V

DIDO DO: When disconnection of the specific port was detected, DO will activate the signal LED to alarm.

DI: Integrate critical sensors: 2 groups of digital inputs. DI can integrate the sensors into the auto alarm system and transfer the alarm information to IP network with email and SNMP.

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 and IP Relay

DNS Provide DNS client feature and support Primary and Secondary DNS server

SNTP Support SNTP to synchronize system clock in Internet

Firmware Update, configuration backup and restore
Support TFTP firmware update, system configure backup and restore

If Alias Each port allows importing 128 bit of alphabetic string of words on SNMP and CLI interface.

HARDWARE SPECIFICATIONS

Switch Architecture Back-plane (Switching Fabric): 7.4Gbps
Packet throughput ability (Full Duplex): 11 Mpps @64bytes

Transfer Rate 14,880pps for Ethernet port
148,800pps for Fast Ethernet port
1,488,000pps for Gigabit Fiber Ethernet port

Packet Buffer 1Mbits

Mac Address 8K MAC address table

Flash ROM 4Mbytes

DRAM 32Mbytes

Connector1 10/100TX: 7 × RJ45
10/100/1000T/Mini-GBIC Combo:
3 × RJ45 + 3 × 100/1000 SFP sockets
RS232 connector: RJ45 type

DI/DO 2 Digital Input (DI):
Level 0: -30–2V
Level 1: 10–30V
Max. input current 8mA
2 Digital Output (DO):
Open collector to 40 VDC, 200mA

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. 5e or 6 cable. EIA/TIA-568 100-ohm (100m)

Optical Fiber[1] Multimode: 50/125μm - 62.5/125μm
Single Mode: 9/125μm
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 10/100TX: Link/Activity (Green)
Full Duplex/Collision (Yellow)
Giga Copper: Link/Activity (Green)
Speed: 1000Mbps (Green)
SFP: Link/Activity (Green)
Power (Green), Power 1 (Green),
Power 2 (Green), Fault (Red),
Master (Green)

Reserve Polarity Protection Present

Overload Current Protection Present

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HARDWARE SPECIFICATIONS

IETF RFC Compliance	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	UL, cUL, CE/EN60950-1, UL 508 Class 1, Division 2, Groups A, B, C and D for Hazardous Locations
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)

[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

Power Supply	12 - 48VDC, Redundant power with polarity reverse protect function and removable terminal block
Power Consumption	10.2 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 – 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 (35 mm Track) or Wall Mount
EMI	FCC Class A, CE EN61000-4-2 (ESD), CE EN61000-4-3 (RS), CE EN61000-4-4 (EFT), CE EN61000-4-5 (Surge), CE EN55022, CE EN61000-4-6 (CS), CE EN61000-4-8, CE EN61000-6-2, CE EN61000-6-4

AGENCY COMPLIANCE

PART 15 COMPLIANT E322911 N24621

ORDERING INFORMATION

Part Number	Description
CNGE3FE7MS2	Environmentally Hardened Managed Ethernet Switch with (7) 10/100TX + (3) 10/100/1000TX / 100/1000FX Ports
Accessories	24VDC Plug in Power Supply (12VDC in some regions), 90-264VAC, 50/60Hz (Included) PS24-1A – 24VDC DIN Rail Power supply (sold separately)

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.

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Low Power Consumption

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