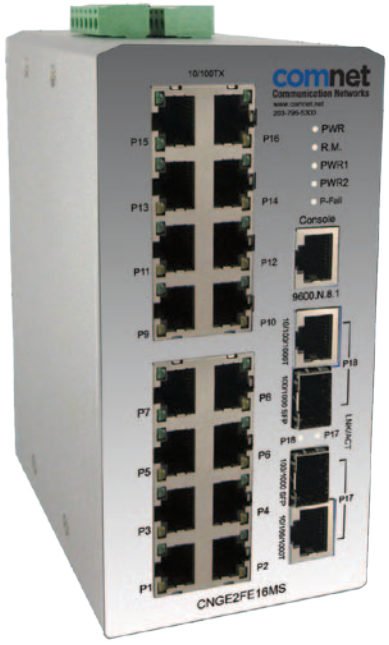
Managed Ethernet Switch With (16) 10/100TX + (2) Configurable 10/100/1000TX / 100/1000FX Ports

CNGE2FE16MS

E
16 + 2

APPEARANCE



DESCRIPTION

The ComNet™ CNGE2FE16MS Managed Ethernet Switch provides robust transmission of (16) 10/100 BASE-TX and (2) 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 16 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. 2 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 CNGE2FE16MS incorporates LED indicators for monitoring the operating status of the managed switch and network. These units are DIN-rail or wall mountable.

APPLICATIONS

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

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
› Extended ambient operating temperature range: -40˚ C to +75˚ C
› 10/100 BASE-TX and 100/1000 BASE-FX compatible
› Flexible optics configuration via SFP plug-in modules
› DIN rail or wall-mountable mounting
› 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

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SPECIFICATIONS

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

X-Ring
- X-Ring, Dual Homing, Couple Ring Topology
- Provide redundant backup feature and the recovery time below 10ms

Support IEEE802.1ab LLDP

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 changed
- Port Link Up/ Link Down

TFTP Firmware Update and System Configure Restore and Backup

Supports Electrostatic Discharge Test (ESD, IEC 61000-4-2)

Air Discharge: 8 KV

Contact Discharge: 6 KV

Provides EFT protection: 3 KV 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

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): 7.2Gbps
- 1Mbits Packet Buffer
- 8K MAC Address Table
- Wide operating temperature range (-40˚C - 75˚C)

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

VLAN

802.1Q Tag VLAN and Double Tag VLAN (Q-in-Q)
Static VLAN groups up to 256, VLAN ID from 1 to 4094
GVRP up to 256 Groups

Port Trunk with LACP

Support 4 trunk groups and 4 trunk members maximum in each group

QoS (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 Mirror: Monitor traffic in switched networks
- TX packet only
- RX packet only
- Both TX and RX packet

Security
- SSH/SSL (128-bit encryption): Support Secure Sockets Layer to protect the data access from WEB browser, compliant with SSL V2, V3 and TLS V1.0; Support Security Shell for Telnet and compliant with SSH-V2 Perform with RFC 4252, RFC 4253 and RFC 4254
- 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
- Support multicast filter

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

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SOFTWARE SPECIFICATIONS

Switch Architecture
Back-plane (Switching Fabric): 7.2Gbps

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, & LLDP MIB

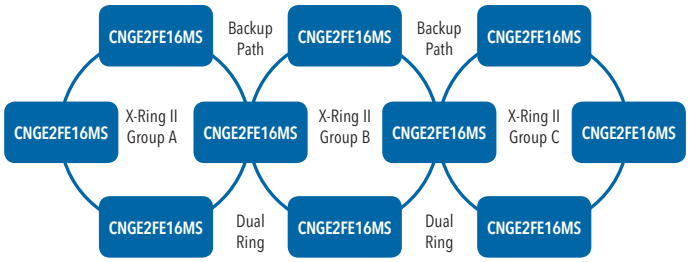
Port Based VLAN
IEEE802.1Q Tag VLAN (256 entries)/ VLAN ID (UP to 4K, can be assigned from 1 to 4096) GVRP (256 Groups)

LLDP
Support LLDP to allow switch to advise its identification and capability on the LAN, and also support LLDP-MED (Media Endpoint Discovery) which is an enhancement of LLDP

IPv6
Support dual stack for IPv4 and IPv6 Support Plug and Play function IPv6 Logo Committee certified Perform with following RFCs:
- RFC 2460 – IPv6 Specification
- RFC 4861 – Neighbor Discovery for IPv6
- RFC 4862 – IPv6 Stateless Address Auto-configuration
- RFC 1981 – Path MTU Discovery for IPv6

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

X-Ring II
Support X-Ring II, Dual Homing, Couple Ring and Multiple Ring Topology. Provide redundant backup feature and the recovery time below 10ms. Multiple Ring can be configured as following topology (up to 250 switches):



Port Security
Support 256 entries of MAC address for static MAC and another 256 for MAC filter

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

IGMP
Support IGMP snooping v1, v2 and MLD snooping v1.
Support 256 multicast groups.
Support IGMP and MLD query.
Static: Support 256 static multicast groups.

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.
Ingress filter packet type combination rules are Broadcast/Multicast/Flooded Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all types of packet.
The packet filter rate can be set an accurate value through the pull-down menu for the ingress packet filter and the egress packet limit.

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

SNMP Trap
Up to 3 trap stations; trap types including:
1. Device cold start
2. Authorization failure
3. Port link up/link down
4. MAC violation

DHCP
Provide DHCP Client/ DHCP Server /Port IP Binding

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

SNTP
Support SNTP to synchronize system clock in Internet, and setting for synchronization interval

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

If Alias
Each port allows an alphabetic string of 128-byte assigned as its own unique name via the SNMP or CLI interface

Configuration Tool
N-Key for configuration backup/restoration (Optional)

DMI
Support administrator to monitor the transceiver's status by ports and set up the action when detecting the exceptional value

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HARDWARE SPECIFICATIONS

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

Connector
10/100TX: 16 × RJ45
10/100/1000TX/ SFP Combo
2 × RJ45 + 2 × 100/1000 SFP sockets

RS232 connector RJ45 type

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*
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
16 x 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

Power Supply 12 - 48VDC, Redundant power with polarity reverse protect function and removable terminal block

Power Consumption 10.6 Watts

MTBF >100,000 hours

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

Operating Temperature -40˚C to 75˚C

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 and Wall Mount Design

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
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, Class1, Division 2, Groups A, B, C, & D Hazardous Locations, UL 508 Class 1, Division 2

Stability Testing
IEC60068-2-32 (Free fall),
IEC60068-2-27 (Shock),
IEC60068-2-6 (Vibration)

* 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
CNGE2FE16MS	Environmentally Hardened Managed Ethernet Switch with (16) 10/100TX + (2) 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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