The ComNet™ CNGE28FX4TX24MSPOE+ Layer 2 Managed 28 Port Ethernet Switch supports twenty-four (24) 10/100/1000 BASE-TX ports and four (4) 1000BASE-FX ports of Ethernet data. PoE+ power is available for distribution across all 24 BASE-TX ports. The four 1000BASE-FX combination ports are 1000TX or SFP* configurable for fiber type (multimode or single-mode), connector type and distance. The exclusive C-Ring redundant ring feature protects networks from interruptions or temporary malfunctions with its fast recovery technology. The electrical ports support the 10/100/1000 Mbps Ethernet IEEE 802.3 protocol, and auto-negotiating and auto-MDI/MDIX features are included. The CNGE28FX4TX24MSPOE+ are optically (1000BASE-FX) and electrically compatible with any IEEE 802.3 compliant Ethernet device and are hardened for use in harsh operating environments.

FEATURES

› IEEE 802.3at Compliant for PSE. Up to 30W of PoE+ power available per port. 720W total PoE power available.
› 56 Gbps Backplane
› IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic & Port Trunking for ease of bandwidth management
› Supports 24 Gigabit Ports, and four 1000BASE-FX optical ports with optional ComNet SFPs
› Power supply for switch operation and PoE power sourcing is completely self-contained within the switch
› 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.
› STP/RSTP/MSTP supported
› Windows utility, eConsole, supports centralized management, and is web-based configurable, or by Telnet and console (CLI) ports
› Port lock to prevent access from unauthorized MAC address
› SNMP V1/V2c/V3 for secure network management
› Fastest Redundant Ethernet Ring: C-Ring. Recovery time <30ms over 250 switches within the ring
› Legacy ring allows the switch to be used in an existing ring of ComNet X-Ring enabled switches
› Low-profile 1-RU (1.75-inch) high rack-mountable chassis mounts within any standard 19-inch equipment rack
› Operating Temperature: -40° to +75° C (-40° to +167° F). Functional to +85° C (185º F)
› Lifetime Warranty
› Event notification through Syslog, E-mail, SNMP trap
› RMON for traffic monitoring
› Supports LLDP (Link Layer Discovery Protocol)
› PTP Client (Precision Time Protocol) for clock synchronization

APPLICATIONS

› HD Surveillance
› High-Port Count Ethernet Hub Locations for Industrial Automation, Industrial Security and Transportation Networks

*LIFETIME WARRANTY WWW.COMNET.NET TECH SUPPORT: 1.888.678.9427

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

### Ethernet Ports
- **RJ-45 Ports**: (24) 10/100/1000Base-TX, with Auto MDI/MDIX & PoE
- **SFP Ports**: (4) 1000Base-FX

### Ethernet Standards Supported
- IEEE 802.3 for 10Base-T
- IEEE 802.3u for 100Base-TX and 100Base-FX
- IEEE 802.3z for 1000Base-X
- IEEE 802.3ab for 1000Base-T
- IEEE 802.3at for Power Sourcing Equipment (PSE) and PoE (up to 30 watts per port)
- IEEE 802.3x for Flow control
- IEEE 802.3ad for LACP (Link Aggregation Control Protocol)
- IEEE 802.1D for STP (Spanning Tree Protocol)
- IEEE 802.1p for COS (Class of Service)
- IEEE 802.1Q for VLAN Tagging
- IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol)
- IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol)
- IEEE 802.1x for Authentication
- IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)

### Switch Properties
- **Switching Latency**: 7 μs
- **Switching Bandwidth**: 56 Gbps
- **Max. VLANs Available**: 256
- **IGMP Multicast Groups**: 128 for each VLAN
- **Port Rate Limiting**: User Defined
- **MAC Table**: 8000 MAC addresses available
- **Priority Queues**: 4
- **Processing**: Store-and-Forward
- **Jumbo Frame**: Up to 9000 Bytes

### Security Features
- Device Binding Security
- Enable/Disable Ports, MAC based port security
- Port-Based Network Access Control: 802.1x
- VLAN (802.1Q): To segregate and secure network traffic
- Radius Centralized Password Management
- SNMPv3 Encrypted Authentication and Access Security
- SSH
- TACACS+

### Software Features
- STP/RSTP/MSTP (IEEE 802.1D/w/s)
- C-Ring Redundant Ring: Recovery time <30ms over 250 switches in a network
- TOS/Diffserv Supported
- Quality of Service (802.1p) for Real-Time Traffic
- VLAN (802.1Q) with VLAN Tagging and GVRP Supported
- IGMP Snooping for Multicast Filtering
- Port Configuration, Status, Statistics, Monitoring, & Security
- DHCP Server / Client support
- IP-Based Bandwidth Management
- Application-Based QoS Management
- DOS/DDOS Auto Prevention

### Network Redundancy
- C-Ring
- Legacy Ring
- RSTP
- STP
- MSTP

### Alarms & Monitoring Systems
- **Relay Output**: For fault event alarming
- **Syslog Server / Client**: To record and view events
- **SMTP**: For event warning notifications via email
- **Event Selection Support**: RS-232 Serial
- **Console DB-9 Port**: RS-232 @ 115,200 bps, with console cable (included).

### Indicating LEDs
- **Power**: For AC operating power
- **System Ready**: Indicates switch is in the “ready” mode, or switch is upgrading firmware
- **Ring Master**: Indicates switch is operating in the C-Ring Master mode
- **C-Ring (Ring)**: Indicates switch is operating in the C-Ring mode.
  A flashing LED in this mode indicates the network ring has broken or faulty.
- **System Running**: Switch is operating continuously
- **Supervisor Log-In**: Switch is being accessed remotely
- **Reset to Default (DEF)**: Switch is reset to the default configuration
- **Ping Command to the Switch**: Switch is processing a Ping request
- **PoE**: PSE (Power Sourcing Equipment) power output
- **RJ-45 Port**: Bi-color LED indicates 1000 Mbps or 10/100 Mbps port/link activity
- **SFP Port**: Port/link activity

### Regulatory Approvals
- **EMI**: FCC Part 15, CISPR (EN55022) Class A
- **EMS**: EN61000-4-2
- **ESD**: EN61000-4-3
- **RS**: EN61000-4-4
- **EFT**: EN61000-4-5
- **Electrical Surge**: EN61000-4-6
- **CS**: EN61000-4-8, EN61000-4-11
- **Mechanical Shock**: IEC60068-2-27
- **Free Fall**: IEC60068-2-32
- **Vibration**: IEC60068-2-6

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**LIFETIME WARRANTY**

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**SPECIFICATIONS**

**PoE pin assignment**
- RJ45 port #1 - #24 support IEEE802.3at End-point, Alternative A mode.
- Positive (VCC+): RJ45 pin 1, 2
- Negative (VCC-): RJ45 pin 3, 6

**Power**
- Operating Voltage Range: 100 to 240 VAC, 50-60 Hz.
- Power Consumption, Typical: 36 W. 720 W with 24 ports loaded with PoE+.
- at a maximum ambient operating temperature of +50°C. De-rate to any combination of PoE or PoE+ at a maximum PD demand of 400 W total with 24 ports loaded, at a maximum ambient operating temperature of 75°C.

**Electrical & Mechanical**
- Current Protection: Overload Current Protected
- Enclosure: 1-RU high, 19-inch rack-mountable
- Size (LxWxH): 13.46 × 16.97 × 1.73 in (34.2 × 43.1 × 4.4 cm)
- Shipping Weight: <13 lbs / 6 kg

**Environmental**
- MTBF: >100,000 hours
- Operating Temp: -40° to +75°C (40° to +167°F)
- Storage Temp: -40° to +85°C (40 to 185°F)
- Relative Humidity: 5% to 95% (non-condensing)

**Compliance**
- 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.

[1] May be extended to humidity with condensation conditions by adding suffix '/C'.

## ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>CNGE28FX4TX24MSPOE+</td>
<td>(24) 10/100/1000 BASE-TX + (4) 1000BASE-FX Managed Switch with Power over Ethernet (PoE+)</td>
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**Options/Accessories**
- Add suffix '/C' for Conformally Coated Circuit Boards (Extra charge, consult factory)
- Rack-mount installation kit (Included)
- Console cable (Included)
- AC Power cable (Included)

**NOTE:** This product requires a fiber installation with a minimum 30 dB connector return loss. The use of Super Polish Connectors is recommended. 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.