

NETWORK SWITCH CONSIDERATIONS

[3 R's] AND SELECTION GUIDE



Expert | Security | Advice

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[3 R's] NETWORK SWITCH CONSIDERATIONS



RIGHT APPLICATION

- Outdoor enclosure – non-environmentally controlled
- Outdoor enclosure – environmentally controlled
- Outdoor enclosure – vibration protection required
- Mobile – vibration protection required
- Indoor – edge switch
- Indoor – core switch
- Indoor – vibration protection required
- PT&D / Utility / Sub-station
 - IEEE 1613 or IEC 61850 certification required



Figure 1: Core switch located in data center



Figure 2: Outdoor enclosure

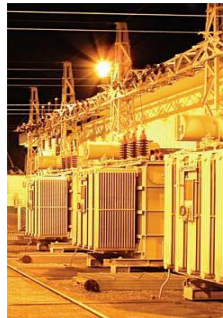


Figure 3: Critical infrastructure application

RIGHT SWITCH

- Copper ports – devices
- Copper ports - uplink
- Fiber ports – devices
- Fiber ports – uplink
- SFP ports
- PoE (802.3af)
- PoE+ (802.3at)
- Inline PoE (high PoE)
- Layer 2
- Layer 3
- Wireless link(s)
- Multicast support
- DIN rail mount



Figure 4: Rack Mount Chassis



Figure 5: 24 devices & 4 uplink ports, 400watts of PoE+



Figure 6: DIN rail mount



Figure 7: SFP module examples

RIGHT POWER

- No PoE
- PoE - some/all ports
- PoE+ - some/all ports
- Hardened/outdoor power supply
- Indoor power supply
- DIN rail mount

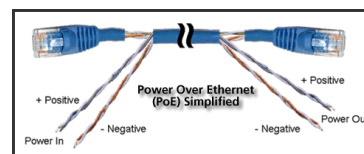
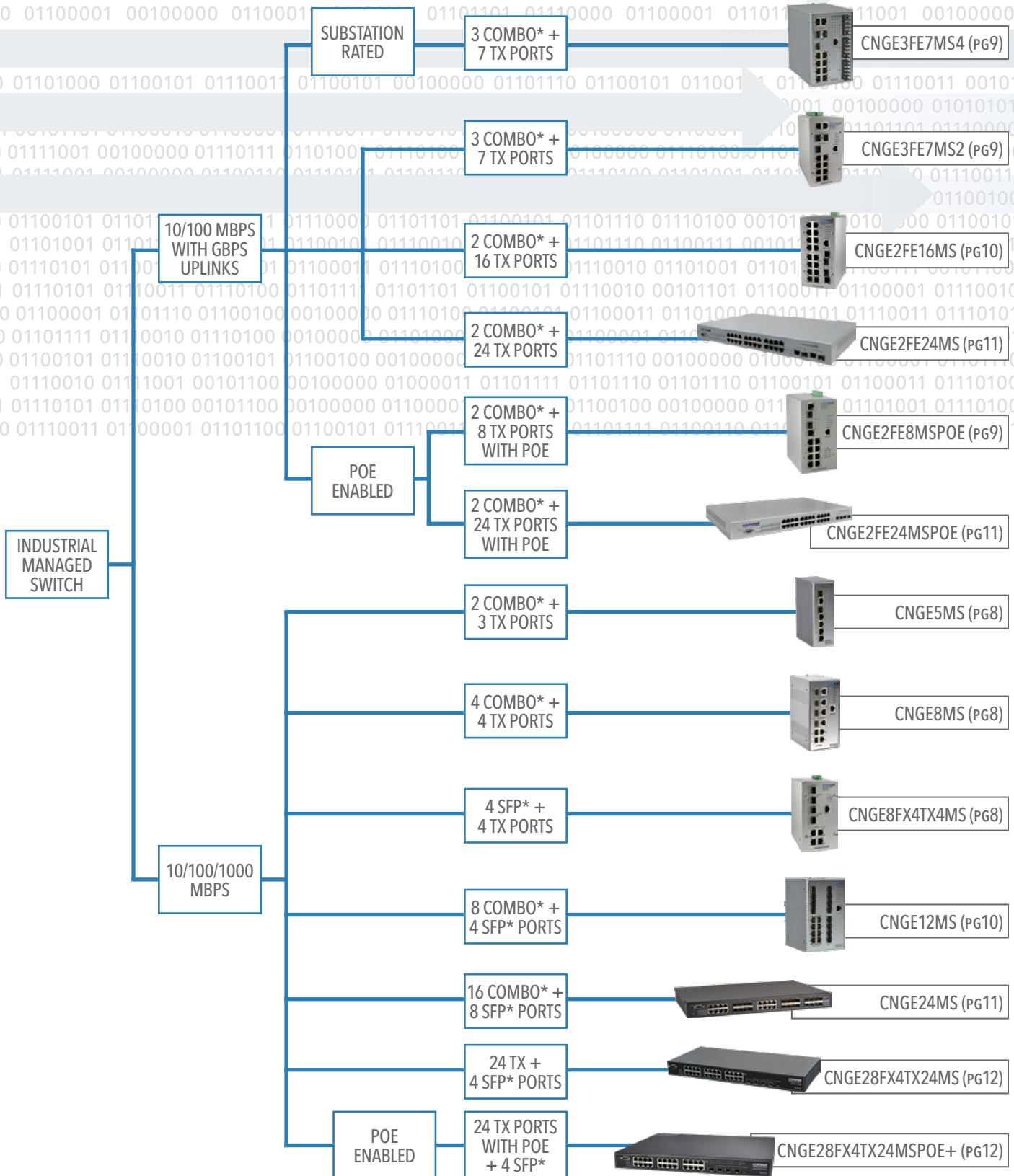


Figure 8: PoE Diagram

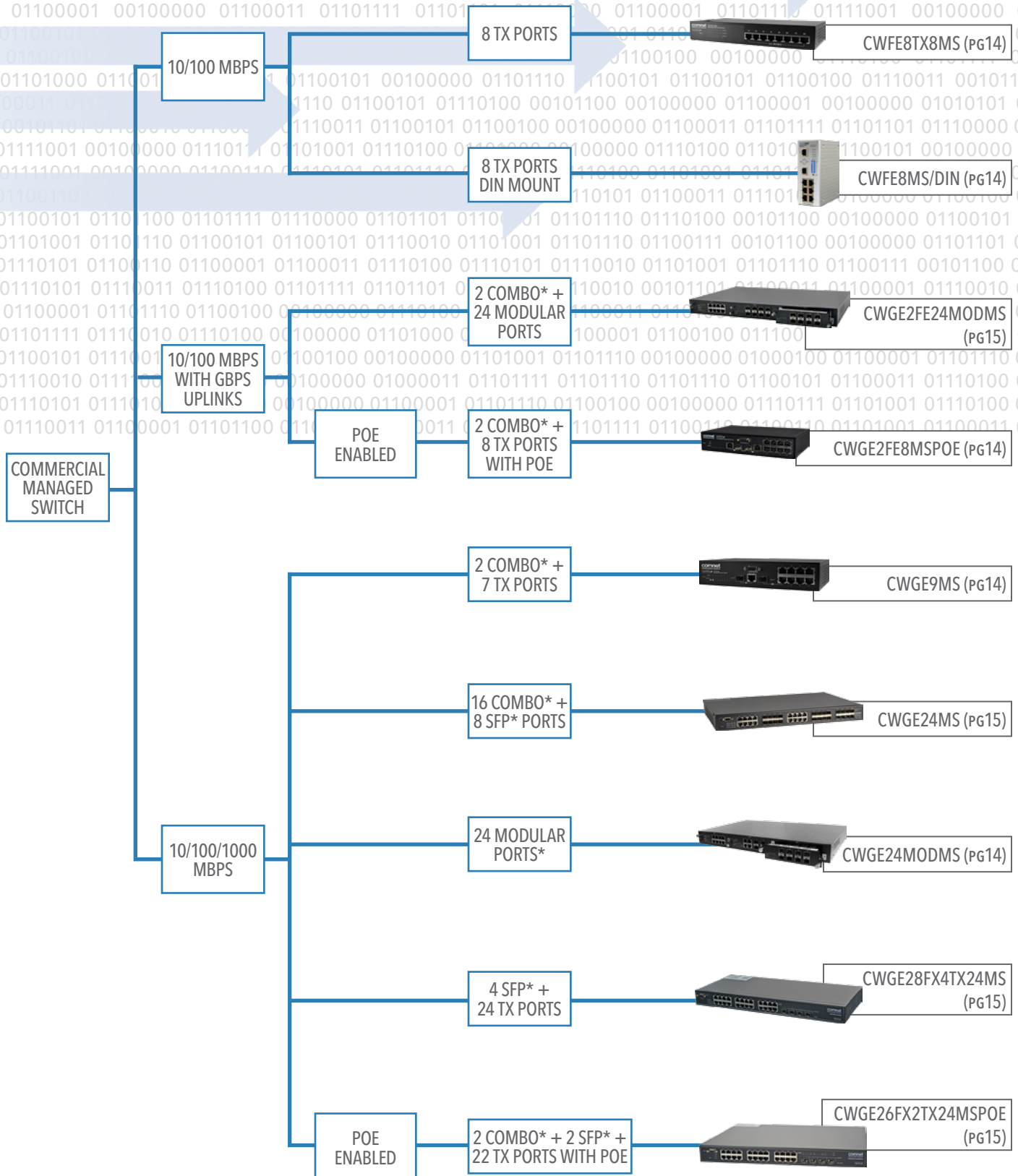
ComNet Ethernet Product Selection Guide

HARDENED MANAGED ETHERNET SWITCH SELECTION GUIDE



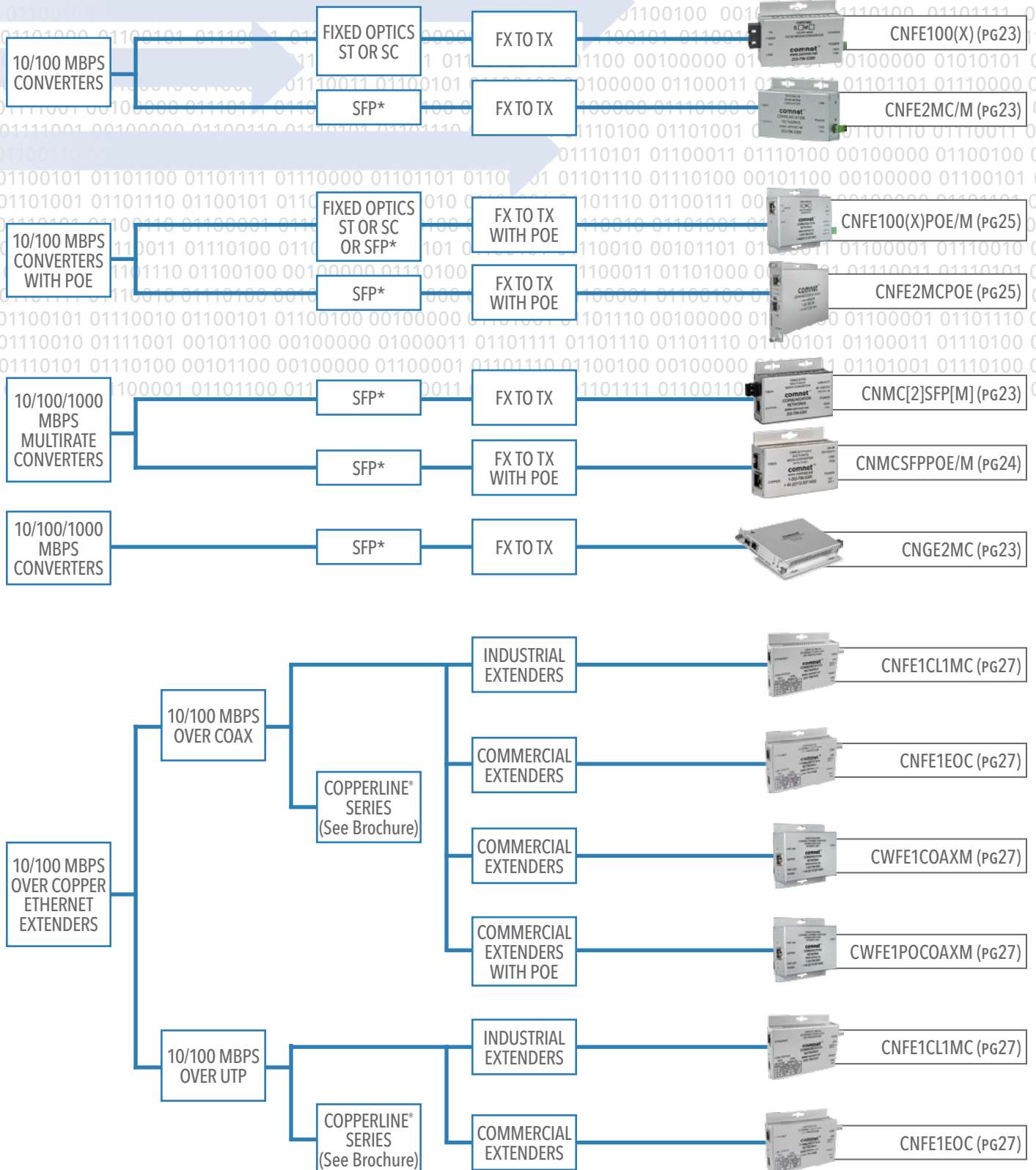
* Requires purchase of SFP modules (sold separately). See Page 29.

COMMERCIAL MANAGED ETHERNET SWITCH SELECTION GUIDE



* Requires purchase of SFP modules (sold separately). See Page 29.

ETHERNET MEDIA CONVERTER AND EXTENDER SELECTION GUIDE



* Requires purchase of SFP modules (sold separately). See Page 29.



netwave®

Wireless Ethernet transmission made easy.

Power, Point and Play. Power up the units, point the antennas and start transmitting.

The ComNet NetWave® line consists of easy, pre-packaged, Point-to-Point kits that contains everything you need - two units, power supplies, and hardware - to connect one camera or client to an access point. Use the comparison chart below to choose the correct kit for your application.

NETWAVE® WIRELESS ETHERNET POINT-TO-POINT KITS

Product Group	NWK1	NWK3	NWK5		NWK7
			Client	Access Point	
Indoor / Outdoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
Industrial	Yes	No	Yes	No	Yes
Commercial	No	Yes	No	Yes	No
Operating Temp Range	-40° to +75°C	-10° to +65° C	-40° to +75°C	-10° to +65° C	-40° to +75°C
Power	PIM* or PoE	PIM*	PIM* or PoE	PIM*	PIM* or PoE
IP67 Enclosure	Yes	No	Yes	No	Yes
Antenna Alignment LED Feature	Yes	Yes	Yes	Yes	Yes
Distance	2 mi / 3.2 km	2 mi / 3.2 km	2 mi / 3.2 km	2 mi / 3.2 km	2 mi / 3.2 km
Internal Dual Polarized Directional Antenna / Beamwidth	19dBi / 17°	17dBi / 30°	19dBi / 17°	17dBi / 30°	19dBi / 17°
Throughput	95 Mbps	95 Mbps	95 Mbps	95 Mbps	240 Mbps Total Throughput
Application	Hardened Point-to-Point	Point-to-Point	Indoor/Outdoor Point-to-Point		Hardened Point-to-Point
LIFETIME WARRANTY ∞	Yes	Yes	Yes		Yes

This reference chart refers to FCC NetWave models. For ETSI models, please refer to the appropriate data sheets or contact ComNet's International Design Center.

* PIM = Power Injection Module



For more information see the ComNet NetWave® Brochure, available in print or online at <http://www.comnet.net/resources/product-literature/>

Environmentally Hardened Managed Ethernet Switches for Use in the Most Demanding Environments



ComNet switches are engineered to meet virtually any high bandwidth demand your network might require.

In addition, the extra features such as IEEE-compliant PoE and integrated SFP* ports ensure interoperability to other devices and easy to comprehend browser-based interface ensures easy set up and monitoring of your network.

Each ComNet Managed Ethernet Switch features:

- › Optional redundant power supply reduces the possibility of single-point-of-failure
- › Fastest Redundant Ethernet Ring: ComNet C-Ring. Recovery time <30ms
- › Independently tested and certified for full compliance with the environmental requirements of NEMA TS-1/TS-2 and the CALTRANS Specification for Traffic Signal Control Equipment
- › Fully managed, layer 2 switches are optically and electrically compatible with any IEEE 802.3 compliant Ethernet devices
- › Auto-negotiating and auto-MDI/MDIX features are provided for simplicity and ease of installation
- › Flexible optical and copper-based configuration via SFP plug-in modules
- › IGMP Snooping V1/V2 for multicast filtering and IGMP Query V1/V2
- › Rapid Spanning Tree protocol (IEEE 802.1W)
- › Port-based VLAN (IEEE 802.1Q)
- › Environmentally hardened for deployment in difficult, unconditioned out-of-plant and roadside installations, they have an extended ambient operating temperature range of -40° to +75° C
- › Fully configurable through web-based or SNMP network management
- › Port Based Security
- › HD Video Compatible
- › LED indicators for monitoring the operating status of the managed switch and network.
- › Lifetime Warranty

** Requires purchase of SFP modules (sold separately). See Page 29.*



CNGE5MS

5-Port All Gigabit Managed Ethernet Switch

2 Gigabit Combo Ports (SFP/RJ-45)

3 Gigabit Copper (TX) Ports



DIN RAIL



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



3 + 2

The all-gigabit ComNet CNGE5MS managed redundant-ring Ethernet switch provides three 10/100/1000 BASE-T(X) and two gigabit SFP or RJ-45 combo ports. The two combo ports are 10/100/1000 Mbps configurable for either CAT-5e copper, or multimode or single-mode optical fiber by the use of optional ComNet SFPs. The exclusive ComNet C-Ring redundancy feature protects applications from network interruptions or temporary malfunctions with its fast recovery technology.

Additional Features

- › IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic & Port Trunking for ease of bandwidth management
- › STP/RSTP/MSTP supported
- › Fastest Redundant Ethernet Ring: ComNet C-Ring. Recovery time < 20ms
- › ComRing open architecture-based support for non-ComNet switches within the network
- › Compatible with eConsole Windows utility for centralized management



CNGE8MS

8-Port All Gigabit Managed Ethernet Switch

4 Gbps Combo Ports (SFP/RJ-45)

4 Gbps Copper (TX) Ports



DIN RAIL



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



8

The all-gigabit ComNet CNGE8MS managed redundant-ring Ethernet switch provides four 10/100/1000BASE-T(X) and four gigabit SFP or RJ-45 combo ports. The four combo ports are either 10/100/1000Mbps configurable for CAT-5e copper, or 100/1000FX multimode or single-mode optical fiber by the use of optional ComNet SFPs. The exclusive ComNet ComRing redundancy feature protects applications from network interruptions or temporary malfunctions with its fast recovery technology.

Additional Features

- › 16 Gbps Switching bandwidth: 4 Combo Gigabit Ports & 4 10/100/1000TX Ports
- › Port Trunking for ease of bandwidth management
- › STP/RSTP/MSTP supported
- › ComRing open architecture-based support for non-ComNet switches within the network
- › Compatible with eConsole Windows utility for centralized management



CNGE8FX4TX4MS

8-Port All Gigabit Managed Ethernet Switch

4 Copper (TX) Ports

4 SFP (FX) Ports



DIN RAIL



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



4 + 4

The ComNet CNGE8FX4TX4MS gigabit managed Ethernet switch provides four 100/1000TX electrical ports and four 100/1000FX SFP ports. 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 are designated for 10/100/1000T(X) transmission through RJ-45 electrical ports. Ports 5 - 8 are designated for 100/1000FX transmission with multimode or single mode optical fiber selected by optional ComNet MSA compliant SFP modules.

Additional Features

- › Fully configurable through web-based or SNMP network management
- › IGMP Snooping V1/V2 for multicast filtering and IGMP Query V1/V2



CNGE3FE7MS2

10-Port Managed Ethernet Switch

3 Combo Ports (SFP/RJ-45)

7 Copper (TX) Ports



DIN RAIL



INCLUDED



HARDENED



FLEXIBILITY



UPLINKS



3



7

The ComNet CNGE3FE7MS2 managed Ethernet switch transports 10/100BASE-TX data through seven RJ-45 electrical ports and 10/100/1000T(X) or 100/1000FX gigabit Ethernet data through three combo ports. The seven electrical ports support the 10/100Mbps Ethernet IEEE 802.3 protocol. The three combo 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.

Additional Features

- › 10/100BASE-TX and 100/1000BASE-FX compatible
- › Multiple mounting options, DIN rail or wall mount.
- › Redundant power supply reduces possibility of single-point-of-failure



CNGE3FE7MS4

10-Port Managed Ethernet Switch

3 Configurable Gigabit Ports (SFP/RJ-45)

7 Copper (TX) Ports



DIN RAIL



SUBSTATION



HARDENED



FLEXIBILITY



3



7

The ComNet CNGE3FE7MS4 is a substation-rated and industrially hardened fully managed layer 2, gigabit Ethernet switch. It is designed for deployment in environments where high levels of electromagnetic noise and interference (EMI) and severe voltage transients and surges are routinely encountered, such as electrical utility substations and switchyards, heavy manufacturing facilities, trackside and roadside electronic equipment, and other difficult out-of-plant applications.

Additional Features

- › Fully compliant with the requirements of IEC 61850-3 and IEEE 1613 Class 2 for electrical utility substations, EN50155 for railway applications, and NEMA TS-1/TS-2 for traffic signal control equipment
- › Compliant with EN60950-1 and UL Class 1, Division 2, Groups A, B, C and D for Hazardous Locations
- › Internal/self-contained 85-264 VAC/88-373 VDC power supply
- › Environmentally hardened for deployment in difficult unconditioned out-of-plant and roadside installations
- › Conformal coated for humidity with condensation or airborne particulate matter conditions



CNGE2FE8MSPOE

10-Port Managed Ethernet Switch with Power over Ethernet

IEEE 802.3af Power over Ethernet (PoE)

2 Combo Ports (SFP/RJ-45)

8 Copper (TX) PoE Ports



DIN RAIL



HARDENED



FLEXIBILITY



UPLINKS



802.3af



2



8

The ComNet CNGE2FE8MSPOE managed Ethernet switch provides eight 10/100BASE-TX Power over Ethernet (PoE) ports and two 10/100/1000T(X) or 100/1000FX combo ports. The two combo ports are 10/100/1000Mbps configurable for copper or fiber media for use with multimode or single mode optical fiber, selected by optional SFP modules. These hardened units are available for use with either CAT-5e copper or optical transmission media. The eight electrical ports support the 10/100Mbps Ethernet IEEE 802.3af PoE protocol.

Additional Features

- › Eight ports support IEEE 802.3af based PoE and provide 15.4 watts per port
- › 10/100BASE-TX and 100/1000BASE-FX compatible
- › Flexible optical configuration via SFP plug-in modules
- › Redundant power supply reduces possibility of single-point-of-failure
- › Fully configurable through CLI, web-based or SNMP network management



DIN RAIL



HARDENED



FLEXIBILITY



UPLINKS



802.3at



2



8

The ComNet CNGE2FE8MSPOE+ provides IEEE 802.3at (30W) PoE+ to eight 10/100BASE-T(X) and has two-gigabit combination SFP or RJ-45 ports. The CNGE2FE8MSPOE+ is a redundant switch offering multiple Ethernet redundancy protocols, C-Ring (recovery time <10ms over 250 units of connection), ComRing, and MSTP/RSTP/STP (IEEE 802.1 s/w/D). This redundancy feature protects your applications from network interruptions or temporary malfunctions by redirecting transmission within the network.

CNGE2FE8MSPOE+

10-Port Managed Ethernet Switch with 30W PoE+

IEEE 802.3at Power over Ethernet (PoE+)

2 Gbps Combo Ports (SFP/RJ-45)

8 10/100 Mbps Copper (TX) PoE Ports

Additional Features

- › Eight electrical ports support IEEE.802.3at (30W) PoE with a total PoE budget of 240 W
- › 10/100BASE-TX and 100/1000BASE-FX compatible
- › Redundant power supply reduces possibility of single-point-of-failure
- › Compatible with eConsole Windows utility for centralized management
- › Fully configurable through CLI, web-based or SNMP network management



DIN RAIL



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



12

The all-gigabit ComNet CNGE12MS managed redundant-ring Ethernet switch provides four 1000BASE-FX and eight 100/1000BASE-FX SFP or RJ-45 combo ports. The eight combo ports are 10/100/1000Mbps configurable for either CAT-5e copper, or multimode or single-mode optical fiber by the use of optional ComNet SFPs. The exclusive ComNet C-Ring redundancy feature protects applications from network interruptions or temporary malfunctions with its fast recovery technology.

CNGE12MS

12-Port All Gigabit Managed Ethernet Switch

8 Gbps Combo Ports (SFP/RJ-45)

4 Gbps SFP Optical (FX) Ports

Additional Features

- › Supports Jumbo Frame up to 9K Bytes for streaming video applications
- › STP/RSTP/MSTP supported
- › Compatible with eConsole Windows utility for centralized management



DIN RAIL



INCLUDED



HARDENED



FLEXIBILITY



UPLINKS



2



16

The ComNet CNGE2FE16MS managed Ethernet switch provides sixteen 10/100BASE-TX and two 10/100/1000T(X) or 100/1000FX (gigabit) combo ports. These environmentally hardened units are available for use with either conventional CAT-5e copper or optical transmission media by user selectable SFPs. The CNGE2FE16MS is approved for use in most industrial control applications.

CNGE2FE16MS

16-Port Managed Ethernet Switch

2 Gbps Combo Ports (SFP/RJ-45)

16 10/100 Mbps Copper (TX) Ports

Additional Features

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



CNGE24MS

24-Port All Gigabit Managed Ethernet Switch

8 Gbps SFP Optical (FX) Ports

16 Combo (FX/TX) Ports



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



8 + 16

The all-gigabit ComNet CNGE24MS provides eight 100/1000Base-FX SFP ports and sixteen Gigabit combo ports that allow for TX or FX transmission. The IEEE802.3-compliant unit offers multiple Ethernet redundancy protocols that protect your applications from network interruptions or temporary malfunctions by redirecting transmission within the network. The unit also provides advanced DOS/DDOS auto prevention. If IP flow becomes too large, too quickly, the switch will lock the source IP address for a set period preventing unauthorized access.

Additional Features

- › Fast Redundancy/Recovery; C-Ring (recovery time <20ms over 250 units of connection) and MSTP/RSTP/STP (IEEE 802.1s/w/D)
- › IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- › Triple Redundant Power Inputs
- › Supports 9K Bytes Jumbo Frame



CNGE2FE24MS

26-Port Managed Ethernet Switch

2 Combo Ports (SFP/RJ-45)

24 Copper (TX) Ports



INCLUDED



HARDENED



FLEXIBILITY



UPLINKS



2



24

The ComNet and CNGE2FE24MS Managed Ethernet Switch is designed for applications where the highest levels of reliability are required. The CNGE2FE24MS provides twenty-four 10/100BASE-TX ports and two 10/100/1000T(X) or 1000FX combo ports.

Additional Features

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



CNGE2FE24MSPOE

26-Port Managed Ethernet Switch with PoE

2 Gbps Combo Ports (SFP/RJ-45)

24 10/100Mbps Copper (TX) PoE Ports



HARDENED



FLEXIBILITY



UPLINKS



802.3af



2



24

The ComNet CNGE2FE24MSPOE managed Ethernet switch is designed for applications where the highest levels of reliability are required. The CNGE2FE24MSPOE provides twenty-four 10/100BASE-TX Power over Ethernet (PoE) ports and two 10/100/1000T(X) or 1000FX combo ports.

Additional Features

- › Twenty-four electrical ports support IEEE.802.3af based POE, and provide 15.4 watts per port.
- › 10/100/1000BASE-TX and 1000BASE-FX compatible



CNGE28FX4TX24MS

28-Port Hardened Managed Ethernet Switch

4 Gbps SFP Optical (FX) Ports

24 Gbps Copper (TX) Ports



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



4 + 24

The ComNet hardened CNGE28FX4TX24MS all-gigabit Layer 2 managed twenty-eight port Ethernet switch supports twenty-four 10/100/1000BASE-T(X) ports and four 1000BASE-FX SFP ports of Ethernet data. The exclusive C-Ring redundant ring feature protects networks from interruptions or temporary malfunctions with its fast recovery technology.

Additional Features

- › Functional to +85°C (185°F) and meets NEMA TS-1/TS-2 Specifications
- › Power supply for operation is completely self-contained within the switch



CNGE28FX4TX24MSPOE+

28-Port Managed PoE+ Ethernet Switch

24 IEEE802.3at Copper (TX) PoE Ports

4 Gbps SFP Optical (FX) Ports



INCLUDED



HARDENED



FLEXIBILITY



ALL GIGABIT



802.3at



4 + 24

The ComNet hardened CNGE28FX4TX24MSPOE+ all-gigabit Layer 2 managed twenty-eight port Ethernet switch supports twenty-four 10/100/1000BASE-T(X) ports with IEEE 802.3at compliant PoE and four 1000BASE-FX ports of Ethernet data. The exclusive C-Ring redundant ring feature protects networks from interruptions or temporary malfunctions with its fast recovery technology.

Additional Features

- › Functional to +85°C (185°F) and meets NEMA TS-1/TS-2 Specifications
- › Power supply for switch operation is completely self-contained within the switch
- › IEEE 802.3at 30W PoE+ is available across all 24 TX ports

ValueLine: Feature-Rich, Cost-Effective Managed Ethernet Switches For Commercial Applications

ComNet offers the ValueLine Ethernet transmission products designed for use in commercial operating environments.

These ValueLine switches and media converters offer many of the same operational features as environmentally hardened and are some of the most competitively priced Ethernet equipment currently available.



ValueLine Managed Ethernet Switches feature:

- › Fully managed, layer 2 switches are optically and electrically compatible with any IEEE 802.3 compliant Ethernet devices
- › Auto-negotiating and auto-MDI/MDIX features are provided for simplicity and ease of installation
- › Flexible optical and copper-based configuration via SFP* plug-in modules
- › IGMP Snooping V1/V2 for multicast filtering and IGMP Query V1/V2
- › Rapid Spanning Tree protocol (IEEE 802.1W)
- › Port-based VLAN (IEEE 802.1Q)
- › Fully configurable through web-based or SNMP network management
- › Rack mounting brackets available which allow CW Series switches to be mounted in 19-inch electronics racks
- › Port Based Security
- › HD Video Compatible
- › Five-Year Warranty

** Requires purchase of SFP modules (sold separately). See Page 29.*



CWFE8TX8MS and CWFE8MS/DIN

8-Port 10/100Mbps Managed Ethernet Switches

8 Copper (TX) Ports



CWGE9MS

9-Port Managed Ethernet Switch

2 Combo Ports (SFP/RJ-45)

7 Copper (TX) Ports

Operating temperature range of 0° to +50° C



CWGE2FE8MSPOE

10-Port Managed Ethernet Switch with Power over Ethernet

2 Combo Ports (SFP/RJ-45)

8 Copper (TX) PoE Ports

Operating temperature range of 0° to +50° C



CWGE24MODMS

24-Port Modular Managed Ethernet Switch

User Configurable - All Gbps

Operating temperature range of 0° to +45° C



The CWFE8TX8MS and CWFE8MS/DIN managed Ethernet switches use conventional copper transmission media for connectivity. Up to eight electrical ports are available for easily implementing point-to-point, linear add-drop/drop-and-repeat, star or true self-healing ring, and mesh network system architectures. The CWFE8TX8MS is shelf mounted and the CWFE8MS/DIN is DIN rail mounted.

Additional Features

- › Ambient operating temperature range of the CWFE8TX8MS is 0° to +50° C
- › Ambient operating temperature range of the CWFE8MS/DIN is -10° to +70° C



The CWGE9MS managed Ethernet switch provides seven 10/100/1000T(X) and two 1000FX uplink ports. This switch uses either conventional copper or optical transmission media. Ports 1 through 7 support the 10/100/1000Mbps Ethernet IEEE 802.3 protocol. Ports 8 and 9 are 10/100/1000T(X) configurable for copper or 1000FX fiber media for use with Multimode or Single-mode optical fiber as selected by optional ComNet MSA-compliant SFP modules.

Additional Features

- › Exclusive ComNet X-Ring technology provides network recovery time of <300ms
- › Flexible optical configuration using SFP plug-in modules



The CWGE2FE8MSPOE managed Ethernet switch provides eight 10/100T(X) and two 10/100/1000T(X) or 100/1000FX uplink ports. This switch is for use with either conventional copper or optical transmission media. All eight ports support IEEE 802.3af based PoE with a maximum PoE budget of 77W. The two combo ports are 10/100/1000 configurable for copper or Multimode or Single-mode optical fiber, selected by optional ComNet MSA-compliant SFP modules.

Additional Features

- › Exclusive ComNet X-Ring technology provides network recovery time of <300ms
- › 100/1000FX compatible
- › Flexible optical configuration using SFP plug-in modules



The CWGE24MODMS managed Ethernet switch provides twenty-four gigabit Ethernet ports with the use of three expansion modules featuring eight ports each. This Ethernet switch is easily configurable by selecting any three of the five available eight port modules, sold separately. These modules make this switch suitable for use with either conventional copper or optical transmission media.

Flexible configuration with the following eight-port plug-in modules:

CWGE24MODMS/8TX	8 × 10/100/1000T(X) RJ-45
CWGE24MODMS/8FXSCM1	8 × 1000FX SC, MM 550m
CWGE24MODMS/8FXSCS1	8 × 1000FX SC, SM 10km
CWGE24MODMS/8FXSFP	8 × 1000FX SFP
CWGE24MODMS/8TX4SFP4	4 × 10/100/1000T(X) + 4 1000FX SFP



CWGE2FE24MODMS

26-Port Modular Managed Ethernet Switch

2 Gbps Combo Ports (SFP/RJ-45)
24 100Mbps Copper (TX) or Optical (FX) Ports
Operating temperature range of 0° to +45° C



INCLUDED



FLEXIBILITY



UPLINKS



2



8 + 8 + 8

The CWGE2FE24MODMS managed Ethernet switch chassis provides two 1000Mbps uplink ports and twenty-four ports of 10/100Mbps Ethernet connectivity through the use of three expansion modules featuring eight ports each. This Ethernet switch is easily configurable by selecting any combination of the two available eight port modules, sold separately.

Flexible configuration with the following eight-port plug-in modules:

CWGE2FE24MODMS/8TX	8 × 10/100(TX) RJ-45
CWGE2FE24MODMS/8SFP	8 × 100 Mbps SFP



CWGE24MS

24-Port All-Gigabit Managed Ethernet Switch

16 Gbps Combo ports (SFP/RJ-45)
8 Gbps Optical SFP Ports
Internal Power Supply
Operating temperature range of 0° to +45° C



INCLUDED



FLEXIBILITY



ALL-GIGABIT



8 + 16

The all-gigabit ComNet CWGE24MS provides eight 100/1000Base-FX SFP ports and sixteen Gigabit combo ports that allow for TX or FX transmission. The IEEE802.3-compliant unit offers multiple Ethernet redundancy protocols that protect your applications from network interruptions or temporary malfunctions by redirecting transmission within the network. The unit also provides advanced DOS/DDOS auto prevention. If IP flow becomes too large, too quickly, the switch will lock the source IP address for a set period preventing unauthorized access.

Additional Features

- › Fast Redundancy/Recovery; C-Ring (recovery time <20ms over 250 units of connection) and MSTP/RSTP/STP (IEEE 802.1s/w/D)
- › IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- › Supports 9K Bytes Jumbo Frame



CWGE26FX2TX24MSPOE

26-Port Extended Temperature, All-Gigabit Managed Ethernet Switch with PoE+

22 10/100/1000BASE-T(X) ports
2 Gbps Combo ports (SFP/RJ-45)
2 Optical SFP Ports
Operating temperature range of -10° to +60° C



INCLUDED



FLEXIBILITY



ALL GIGABIT



802.3at



22 + 2 + 2

The ComNet CWGE26FX2TX24MSPOE is an extended temperature, all-gigabit, commercial grade managed Ethernet switch. It provides IEEE 802.3at PoE to twenty-four 10/100/1000BASE-T(X) ports, two of which are also gigabit combo ports supporting 100/1000FX SFP Modules. A further two 100/1000FX SFP ports are also included. Up to 400 watts of PoE power is available for distribution across all twenty-four TX ports. The switch offers multiple Ethernet redundancy protocols to protect your applications from network interruptions or temporary malfunctions by redirecting transmission within the network.

Additional Features

- › IEEE 802.3at PSE compliant. Up to 30W of PoE+ power available per port. 400W total PoE power available.
- › Power supply for switch operation and PoE power sourcing is completely self-contained



CWGE28FX4TX24MS

28-Port Managed Ethernet Switch

24 Gigabit Electrical (TX) ports
4 Gbps SFP Optical (FX) Ports



INCLUDED



FLEXIBILITY



ALL GIGABIT



24 + 4

The ComNet CWGE28FX4TX24MS all-gigabit, Layer 2 managed twenty-eight port Ethernet switch supports twenty-four 10/100/1000BASE-T(X) ports and four 1000BASE-FX ports of Ethernet data. The four 1000BASE-FX ports are 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.

Additional Features

- › 56 Gbps Backplane
- › IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic & Port Trunking for ease of bandwidth management
- › Power supply for switch operation is completely self-contained within the switch

Self-Managed Ethernet Switches

No Programming Required



The ComNet Self-Managed Switch Series are a line of switches that allow incoming Ethernet data to be electrically or optically forwarded to another Ethernet device.

The ComNet self-managed switch series with uplink management functionality is designed to combine data from the electrical ports to the last electrical or optical port and forwards this data to the next network device. There is no programming required to use this product. The ComNet SMS line is pre-programmed, preventing network video flooding with dip switch selection of the last port as an uplink or as an unmanaged switch. PoE models of the SMS series supply up to thirty watts of PoE (Power over Ethernet) and incorporate PoE+ features based on the IEEE802.3at standard.

Self-Managed Ethernet Switches feature:

- › No Programming Required
- › 10/100Mbps or 1Gbps Ethernet available
- › Four or Six 10/100BASE-TX electrical ports supporting PoE+
- › Extended operating temperature range of -40° C to +75° C, for use in virtually any environment.
- › One or Two 100BASE-FX optical ports
- › Multimode or Single-mode Fiber, SC or ST connector types, or SFP* connections on the CNGE2FE4SMS[POE] models
- › Electrical ports support Auto-Negotiation for 10Mbps or 100Mbps, full duplex or half duplex data
- › Optical port model supports 100Mbps full duplex data
- › Pre-programmed Port for uplink

** Requires purchase of SFP modules (sold separately). See Page 29.*



HARDENED



802.3at



UPLINKS



2



4



CNGE2FE4SMS and CNGE2FE4SMSPOE

Gigabit Self-Managed Uplink Switch with Optional PoE+

The ComNet CNGE2FE4SMS[POE] is a six-port self-managed switch with uplink management functionality and provides four copper ports operating at 10/100Mbps and two 1000FX optical SFP ports. It is designed to combine four electrical ports and one 1000FX SFP port into one of two optical SFP ports. The CNGE2FE4SMS[POE] SFP ports forward this data to the next network device or can be configured for drop and insert operation. The CNGE2FE4SMS[POE] uses ComNet SFPs for connector and distance options. Ports 1-4 can supply up to 30 watts of PoE and incorporate PoE+ IEEE 802.3at. Ports 1 and 2 can optionally supply 60 watts.

Available Models

CNGE2FE4SMS	4 10/100Mbps TX, 2 Gbps FX SFP
CNGE2FE4SMSPOE	4 10/100Mbps TX PoE+, 2 Gbps FX SFP

Going the Distance

ComNet Ethernet Extenders

ComNet offers Ethernet extender products that take advantage of existing cable infrastructure or utilize newly installed media.

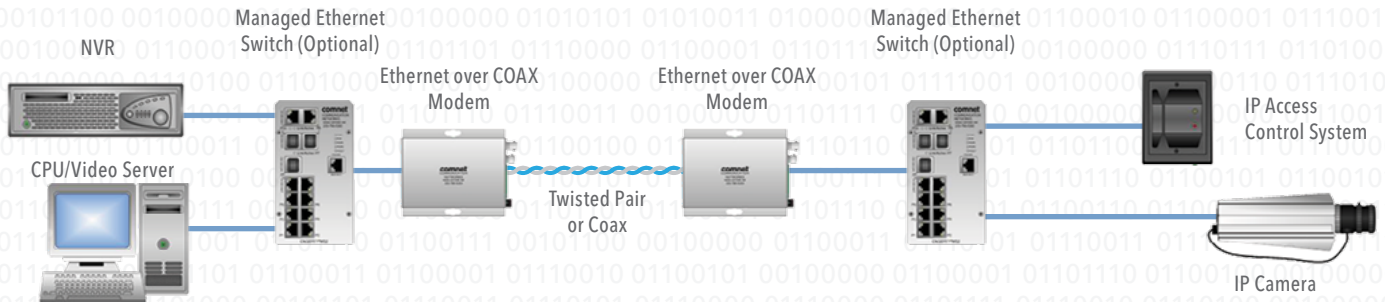


Fiber optic transmission networks offer a major advantage when migrating from an existing fiber optic video/data/audio installation to an IP-based system. The existing fiber optic media can easily support Ethernet simply by changing the transmission equipment.

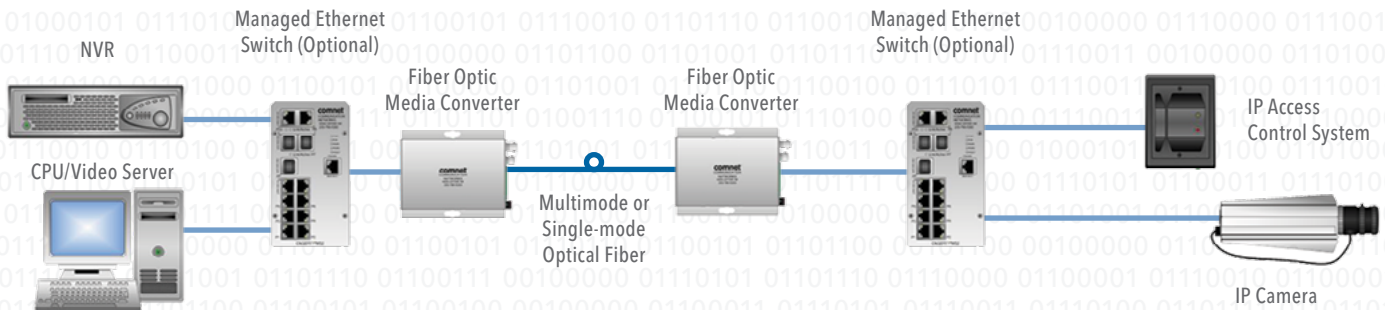
ComNet also offers Ethernet over COAX/Twisted Pair equipment that allows you to use existing coaxial cable and twisted pair copper wire as Ethernet transmission media. ComNet Ethernet over COAX/Twisted Pair equipment is typically used in applications where an existing analog CCTV or access control system is in place currently using twisted pair, un-shielded twisted pair or coaxial cable and a transition to Ethernet-based systems is required.

TYPICAL EXTENDED ETHERNET NETWORKS

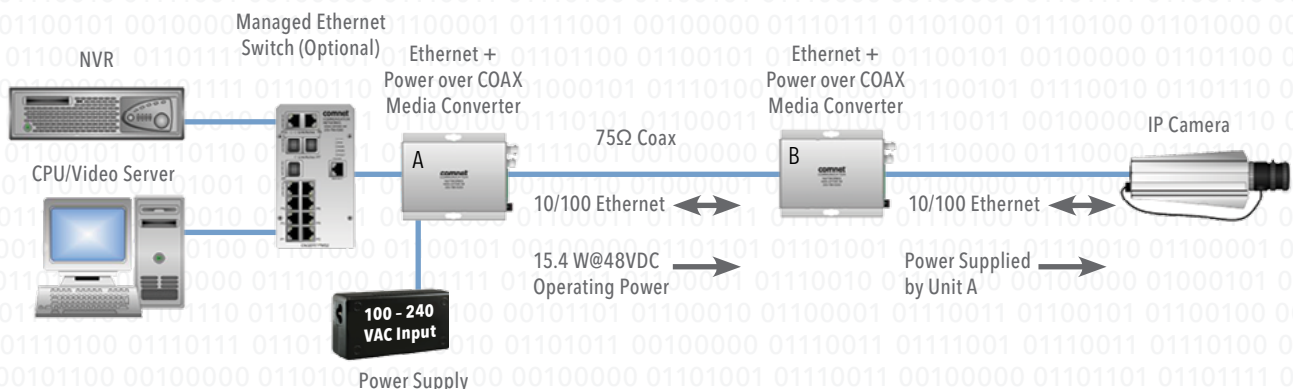
Ethernet over COAX/UTP



Ethernet over Optical Fiber

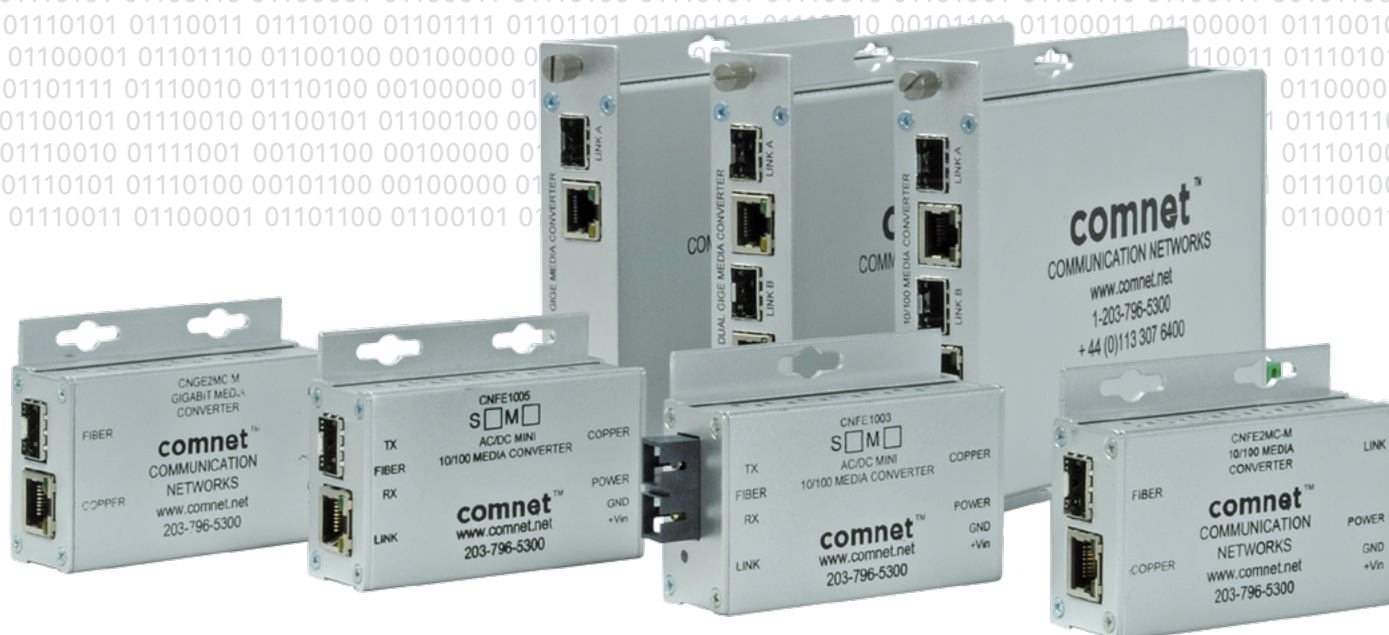


Ethernet and PSE Device Power over COAX



Ethernet Electrical-to-Optical Media Converters

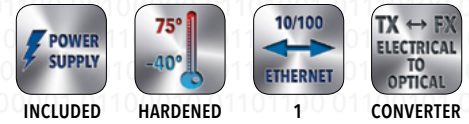
ComNet offers many different variations of simple media converters with numerous optical connector options. The ComNet media converter line consists of one and two fiber fixed SC and ST optical connector models as well as 10/100TX and Gigabit models that utilize MSA-compliant ComNet SFP optical interfaces for maximum configuration versatility with regard to distance, fiber type and optical connector requirements.



ComNet Media Converters feature:

- › 10/100Mbps Ethernet with MDI/MDI-X crossover
- › 10/100/1000TX electrical port and 100/1000FX optical port
- › Electrical port supports Auto-Negotiation for 10Mbps or 100Mbps, full or half duplex data
- › Optical port supports 100Mbps or 1000Mbps full duplex data
- › Distances up to: 3km (2mi) in Multimode or 20km (12mi) in Single Mode (greater distances achievable with SFP* models)
- › Extended ambient operating temperature range: -40° to +75° C
- › ST, SC or LC optical connectors
- › Flexible optical and copper-based configuration via SFP plug-in modules
- › 1 or 2 fiber design
- › AC or DC powered models available
- › Standard size is interchangeable between stand-alone or rack mount use - smaller size available
- › IEEE 802.3 compliant
- › HD Video Compatible

* Requires purchase of SFP modules (sold separately). See Page 29.

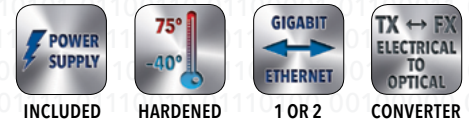
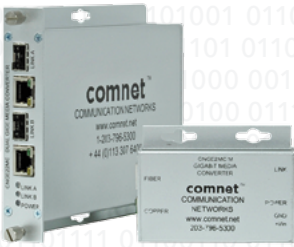


CNFE100(X) Series 10/100Mbps Ethernet 2 Port Media Converters

ComNet two port media converters are designed to transmit and receive 10/100Mbps data over multimode or single mode optical fiber. The electrical interface will Auto-Negotiate to a 10Mbps or 100Mbps Ethernet rate without any adjustments. Also available as an ultra-miniature 5cm x 5cm PCB for space restricted installations and direct-to-fiber In-Dome mounting for Bosch, Pelco and Vicon cameras.

Additional Features

- › Environmentally hardened
- › Made in the USA
- › Lifetime Warranty

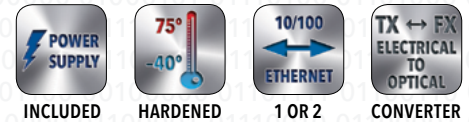


CNGE2MC(-M) and CNGE22MC 10/100/1000Mbps Ethernet 2 Port Media Converters

ComNet CNGE2MC and CNGE22MC two-port and dual two-port media converters provide full-duplex fiber optic transmission of 10/100/1000Mbps Ethernet data (10/100/1000TX) through optical fiber when used with the appropriate ComNet MSA-compliant SFP. The two-port CNGE2MC provides full-duplex transmission of one Ethernet channel through one or two fibers, depending upon the SFP selected. The dual two-port model CNGE22MC supports full-duplex transmission of two separate Ethernet channels over one or two optical fibers, also depending upon the SFP selected, in one compact package, making this unit ideal for those applications where rack density or shelf-space may be limited.

Additional Features

- › Environmentally hardened
- › Made in the USA
- › Distances up to 120 km
- › Lifetime Warranty



CNFE2MC(-M) and CNFE22MC 10/100Mbps Media Converters SFP modules as Optical Interfaces

ComNet CNFE2MC and CNFE2MCM Ethernet two-port media converter and CNFE22MC dual two-port transport 10/100Mbps data over optical fiber through user selectable MSA-compliant ComNet SFP optical interfaces for maximum configuration versatility with regard to distance, fiber type and optical connector requirements. The CNFE2MC transmits and receives a single channel of Ethernet data and the CNFE22MC transmits and receives two independent channels in one unit.

Additional Features

- › Environmentally hardened
- › Made in the USA
- › Distances up to 80km
- › Lifetime Warranty



CNMC[2]SFP[M] User-Selectable 100FX or 1000FX Single Media Converter

The ComNet CNMC[2]SFP[M] series are multi-rate media converters that accept a 10/100 or 1000Mbps electrical input and convert this to a 100 or 1000Mbps optical output, selected by a dip switch. These devices use either one or two optical fibers, depending upon the selection of sold-separately SFP optical module.

Additional Features

- › User Selectable 100FX or 1000FX Transmission Rate
- › Uses ComNet SFPs for Fiber and Connector Type and Distance
- › Environmentally Hardened

Ethernet Electrical-to-Optical Media Converters with Power over Ethernet (PoE)

Many applications require power for the Power Sourcing Equipment (PSE) device be supplied through the Ethernet cable including those where an Electrical-to-Optical media converter is being used to extend distances. Typical applications can include IP CCTV cameras, access control equipment, VoIP telephony and more.



ComNet Media Converters with Power over Ethernet (PoE) feature:

- › Meets the requirements of the latest PoE standard (IEEE 802.3at)
- › Power Sourcing Equipment (PSE): Provides 30 watts or up to 60 watts (PoE+) in A and B modes for high power demand applications of remote powered devices
- › SC or ST fixed optical connectors
- › SFP* models available

Applications:

- PoE+ Operating Power for IP Cameras, with pan-tilt-zoom capability
- PoE+ Operating Power for IP cameras with heated/cooled housings
- PoE+ Operating Power for remote telemetry and sensing devices for industrial/SCADA networks
- PoE+ Operating Power for transportation-specific/ITS field equipment

* Requires purchase of SFP modules (sold separately). See Page 29.



CNMCSFPPOE/M

10/100/1000Mbps Ethernet Media Converter with PoE+



INCLUDED



HARDENED



FLEXIBILITY



802.3at



1



1



CONVERTER

The ComNet CNMCSFP/M is a multi-rate media converter that accepts a 10/100 or 1000Mbps electrical input and converts this to a 100 or 1000Mbps optical output, selected by a dip switch. The CNFESFPPOE/M meets the IEEE 802.3at standard and provides 30 watts of PoE+ power.

Additional Features

- › User Selectable 100FX or 1000FX Transmission Rate
- › Uses ComNet SFPs for Fiber and Connector Type and Distance
- › Environmentally Hardened



CNFE2MCPOE

10/100Mbps Ethernet to Optical Media Converter

Power over Ethernet (PoE)

Powered by 12 or 24 VDC



HARDENED



FLEXIBILITY



802.3at



1



CONVERTER

ComNet CNFE2MCPOE Ethernet two-port media converters are designed to transmit and receive 10/100Mbps data over optical fiber through user selectable SFP options. These media converters transmit and receive a single channel of Ethernet data, and also support the IEEE 802.3at standard for power sourcing equipment (PSE) at up to 30 Watts (PoE+).

Additional Features

- › Made in the USA
- › Lifetime Warranty



CNGE2MCPOE/M

10/100/1000Mbps Ethernet to Optical Media Converter

Power over Ethernet (PoE)



HARDENED



FLEXIBILITY



802.3at



1



CONVERTER

ComNet CNGE2MCPOE Ethernet two-port media converters are designed to transmit and receive 10/100/1000Mbps data over optical fiber through user selectable SFP options. These models transmit and receive a single channel of Ethernet data, and support the IEEE 802.3at standard for power sourcing equipment (PSE) up to 30 Watts (PoE+).

Additional Features

- › Made in the USA
- › Lifetime Warranty



CNFE100(X)POE/M Series

10/100Mbps Ethernet Media Converters

Electrical to ST/SC/SFP Optical with PoE+

Lifetime Warranty



HARDENED



FLEXIBILITY



802.3at



1



CONVERTER

The CNFE100(X)POE/M Series hardened media converters provide full-duplex fiber optic transmission of a single channel of 10/100Mbps data over multimode or single mode optical fiber. Type ST, SC or SFP optical connectors are available. They provide full compliance with IEEE 802.3at as Power Sourcing Equipment (PSE) with a maximum power of 30 watts, making them ideal for those applications where the remote equipment draws significant power. A higher output 60 watt model is available.

Additional Features

- › Provides 30 watts in two modes at 48 VDC, for high output demand applications
- › 60 watt higher output version available
- › SC, ST or SFP optical connectors available
- › Made in the USA



Power over Ethernet (PoE) Mid-Span Injection Modules

Five Year Warranty

Features

- › Supply 48 VDC operating power for PSE devices
- › PoE and Ethernet Data
- › Fully Compliant with IEEE Standards for Power Sourcing Equipment
- › Provides Short Circuit Protection for PDs

Available Models

CWPOEIPS-15	15W Commercial PoE midspan injector, IEEE 802.3af compliant PSE
CNGE1IPS	30W Industrial Gigabit PoE+ midspan injector, IEEE 802.3at compliant PSE

Ethernet over COAX/Copper Twisted Pair Media Converters



There are many retrofit applications where systems are migrating from analog systems to IP networks and can benefit from using the already installed coaxial cable or twisted pair wiring. ComNet offers you a cost-saving alternative by eliminating all the costs that come with installing new media. The ComNet Ethernet over Coax/Unshielded Twisted Pair line consists of three series of Ethernet over existing copper media transmission products.

Ethernet over Coax/UTP Media Converters feature:

- › Supports transmission distances of up to 3km (10,000 ft) over twisted copper, or up to 500m (1500 ft) over coaxial cable
- › Up to 91Mbps throughput using EoVDSL2 technology
- › Automatically sets fastest possible data rate vs. cable quality and transmission distance
- › User-configurable master/remote, forward error correction, asymmetrical/symmetrical data, and long-reach/short-reach selection
- › IEEE 802.3 Compliant - 10/100TX Ethernet port with automatic MDI/MDI-X crossover
- › Made in the USA



CNFE1CL1MC-M and CNFE2CL2MC

Hardened Ethernet to COAX/UTP Media Converters

EoVDSL2 Technology
Lifetime Warranty



HARDENED



EXTENDER



1 OR 2

The CNFE1CL1MC series media converters accept common 10/100TX Ethernet data and transport it over common 75Ω coaxial cable or twisted pair telephone wire. The CNFE1CL1MC-M is a single, small-sized unit that can be surface mounted where space is limited, while the CNFE2CL2MC is a dual channel media converter that can be surface mounted or installed in a rack. These units can extend distances between devices to as much as 500 meters on Coaxial Cable or up to 3000 meters on twisted pair versus traditional CAT-5e/6 cable. The output ports are standard BNC connectors or terminal blocks and the input ports are standard RJ-45 connectors.

Additional Features

› Distances up to 3km



CNFE1EOC-M and CNFE2EOC

Commercial Grade Ethernet to COAX/UTP Media Converters

EoVDSL2 Technology
Five Year Warranty



EXTENDER



1 OR 2

The ValueLine CNFE1EOC-M single channel and CNFE2EOC dual channel are cost-effective, feature-rich media converters that support Ethernet over twisted pair or coaxial cable. These units can extend distances between devices to as much as 500 meters on Coaxial Cable or up to 3 kilometers on twisted pair at data rates of up to 91 Mbps. Ethernet data may be transmitted over telephone-grade twisted copper pair, legacy serial cabling, or standard 75Ω coaxial cable circuits, making this unit ideal for those applications where it is desired to utilize an existing installed base of copper wiring for Ethernet transmission.

Additional Features

› Distances up to 3km

› Operating Temperature Range of 0° C to +60° C



CWFE1POCOAXM

Commercial Grade Ethernet + Power to COAX Media Converter

Ethernet data rates of up to 100Mbps
Five Year Warranty



HARDENED



EXTENDER



802.3af



1 OR 2

The CWFE1POCOAX Series transports Ethernet and camera/device operating power between the remote device and head-end location using existing coaxial cable. It eliminates the need to have a separate power source at the remote location and provides operating power for the remote ComNet modem and PoE device. Based on the IEEE 802.3af standard for Power over Ethernet (PoE), the CWFE1POCOAX provides 15 Watts of operating power to the remote PSE device. The CWFE1POCOAX transports Ethernet data at rates of up to 100Mbps over a distance of 230 meters (750 feet) over standard 75Ω coaxial cable.

Additional Features

› Distances up to 230m



CWFE1COAXM

Commercial Grade Ethernet to COAX Media Converter



EXTENDER



1 OR 2

The CWFE1COAXM allows Ethernet based equipment to be connected over coaxial cable. It accepts common 10/100TX Ethernet data and transports it over standard 75Ω coaxial CCTV cable at data rates up to 100Mbps. The CWFE1COAXM can extend distances between IP devices to as much as 305 meters on coaxial cable. The input port is a standard RJ-45 connector and the output port is a standard BNC connector. This media converter is designed to operate in environments typical for commercial security.

Additional Features

› Distances up to 305m

› Five Year Warranty

Data and Contact Closure over Ethernet

Integrating legacy serial data and Contact Closure devices over an Ethernet network has never been easier.



CNFE2DOE2

RS232/422/485 Data over Ethernet Terminal Server



The ComNet CNFE2DOE2 allows any combination of two RS-232, RS-422, or 2 or 4-wire RS-485 serial data channels be transported by any Ethernet-based network. It includes two serial data input/output ports, and two Ethernet ports. Serial data appearing on either of the two serial data ports is converted to Ethernet, and transmitted to both the SFP and RJ-45 ports, permitting the unit to be used as a media converter and a terminal server.

Additional Features

- › Two RS232/422/485 selectable serial ports
- › Easy configuration through web interface (HTTP)



CNFE8(X)COE

Eight Channel Contact Closure over Ethernet



The ComNet CNFE8(X)COE transmits eight contact closures over an Ethernet network. It is available with a 10/100TX RJ45 Ethernet connector and an SFP fiber optic interface. These units can be one-to-one mapped over Ethernet or controlled via a PC. Included is a driver that allows the CoE to read or write contact information from a PC based application. A software utility allows customers to search for this device that is installed on the network. The transmitter and receiver support Windows® Discovery.

Additional Features

- › NTCIP compatible
- › Remote network configuration
- › Saved to a web server based configuration, needs no electrical or optical adjustments

Small Form-Factor Pluggable Modules (SFPs)

ComNet Flexibility



SFP-(X)

Optical or Copper Interface

ComNet's **Small Form-Factor Pluggable modules** provide an optical or copper interface when using any ComNet managed or unmanaged switch or SFP-configurable media converters. These SFP modules are available for use with copper media, or Multimode or Single-mode optical fiber. The optical fiber SFP modules provide 10/100 or 10/100/1000FX transmission in one or two fiber versions. They are available with LC or SC optical connectors. These ComNet SFPs offer distances from 300 meters to 120 kilometers. Industrially rated to perform in the **most difficult operating environments**, ComNet SFPs are **MultiSource Agreement (MSA) compliant**.

COPPERLINE®

Distance Extending Ethernet over Copper SFP

The ComNet CopperLine® CL-SFP is a small form-factor pluggable Ethernet extender module that improves bandwidth and distance of existing copper networks. It helps avoid installation costs of new fiber lines on site by allowing full 100Mbps Ethernet bandwidth to be extended over 2-wire twisted pair or coaxial cable. It is designed for plug-and-play installation into any Ethernet unit with an MSA-compliant, 100Mbps SFP port.

Additional Features

- › Point-to-point Ethernet connectivity up to 2,000 ft (609 m) at 100Mbps
- › Extends Ethernet distance over single pair UTP or coax with adapter
- › Can be plugged into any Ethernet switch with MSA_compliant SFP ports that support 100BASE-FX



CL-SFP

Distance Extending SFP Series



For more information see the ComNet CopperLine® Brochure, available in print or online at <http://www.comnet.net/resources/product-literature/>



Ethernet Network Transmission Products

As industry continues the migration toward Ethernet-based network systems, it is more important than ever to be able to turn to a company specifically dedicated to these needs.

ComNet, a USA-based company with the key functions of product development, engineering, manufacturing, customer-care and tech-support headquartered in Danbury, Connecticut, and with sales offices located throughout the world, offers one of [the broadest Ethernet product lines in the industry](#).

ComNet supports its Ethernet products to the highest level, offering unparalleled [customer care](#), [technical support](#) and [pre- and post-sale support](#). That's the ComNet difference, behind you every step of the way with [a complete line of Ethernet products for every application](#).



Fiber Optic Video, Audio and Data Transmission Products

ComNet offers a comprehensive selection of single and multiple channel video and video and data transmission products as well as serial data and audio transmission products designed to the specific requirements for Access Control, Intrusion, Burglar and Fire Alarms and CCTV Surveillance/Incident Detection and the Intelligent Transportation Systems (ITS) market. ComNet manufactures a complete line of in-dome video and data and Ethernet fiber optic modules for many of today's leading CCTV manufacturers.

Technical Support

The ComNet Technical Support and Design Center provides pre-sale and post-sale support for Ethernet transmission network and fiber optic system design. The department is staffed by some of the most highly experienced, regarded and recognized experts in the industry.

Our direct Design Center phone number is **1-888-678-9427** or you can call **1-203-796-5300** in the US or **+44 (0)113 307 6409** throughout Europe and ask for the Design Center, or contact us by E-mail at designcenter@comnet.net

comnet
Communication Networks

www.comnet.net

3 Corporate Drive | Danbury, CT 06810 | USA
T: 1 (203) 796-5300 | F: 1 (203) 796-5303
Tech Support: 1 (888) 678-9427
info@comnet.net

8 Turnberry Park Road
Gildersome | Morley | Leeds, UK LS27 7LE
T: +44 (0)113 307 6400
F: +44 (0)113 253 7462
info-europe@comnet.net

AGENCY COMPLIANCE



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