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Communication Networks

INSTALLATION AND OPERATION MANUAL

CLFE4+2SMS[POE](C,U) Series
10/100TX DROP/INSERT/REPEAT 4TX/2EX
SELF-MANAGED SWITCH WITH POE+

This manual serves the following ComNet Model Numbers:

CLFE4+2SMSC

CLFE4+2SMSU

CLFE4+2SMSPOEC

CLFE4+2SMSPOEU

The ComNet CLFE4+2SMS[POE](C,U) is a six-port Ethernet switch with add/drop/repeat functionality and provides 4 copper ports operating at 10/100Mbps and is designed to combine four electrical ports along with the incoming Cat5, UTP or Coax CopperLine® extension port into a further CopperLine extension port that forwards this data to the next CopperLine network device. There is no programming required to use this product. The ComNet CLFE4+2SMS(C,U) comes pre-programmed, preventing network video flooding with DIP switch selection of the first CopperLine port as an uplink or as an unmanaged switch. Ports 1–4 of the CLFE4+2SMSPOE(C,U) can supply up to thirty (30) watts of Power over Ethernet (PoE) and incorporate PoE+ features based on the IEEE 802.3at standard. It is "Plug-and-Play".

CLFE4+2SMSU PHYSICAL DESCRIPTION
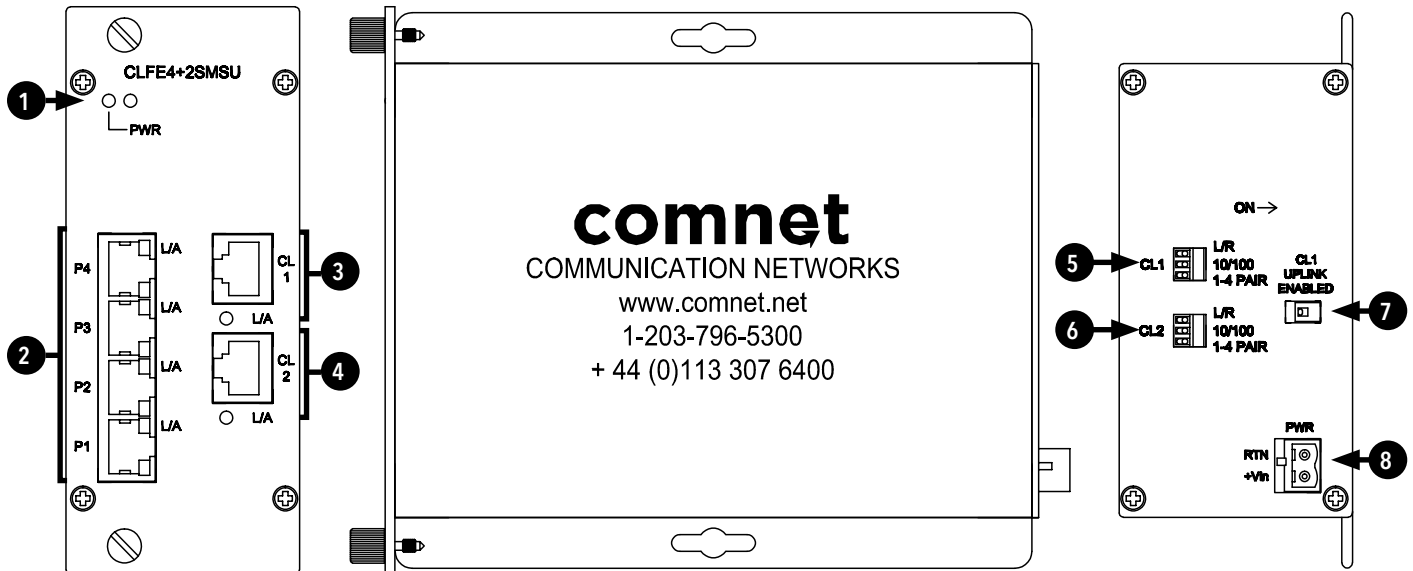
Figure 1 – Physical Features of CLFE4+2SMSU

Table 1 – Physical Feature Descriptions

Call-out	Description	Manual Reference
1	Power Indicating LED (Unlabeled LED Reserved for Future Use)	See Table 3 - Indicating LEDs
2	10/100 TX RJ-45 Ports 1 through 4 and Link/Activity (L/A) Indicating LEDs	See Installation Instructions, Step 5 See Table 3 - Indicating LEDs
3	Channel 1 Extended Distance over UTP RJ-45 Port and Link/Activity (L/A) Indicating LED	See Installation Instructions, Step 4 See Table 3 - Indicating LEDs
4	Channel 2 Extended Distance over UTP RJ-45 Port and Link/Activity (L/A) Indicating LED	See Installation Instructions, Step 4 See Table 3 - Indicating LEDs
5	Channel 1 Extended Distance over UTP Port DIP Switches for Local/Remote Operation, Data Speed, and Wire Pairs	See Installation Instructions, Steps 1 – 3
6	Channel 2 Extended Distance over UTP Port DIP Switches for Local/Remote Operation, Data Speed, and Wire Pairs	See Installation Instructions, Steps 1 – 3
7	Channel 1 Extended Distance over UTP Uplink DIP Switch	See Installation Instructions, Step 6
8	Power Connections	See Installation Instructions, Step 7

CLFE4+2SMSPOEU PHYSICAL DESCRIPTION

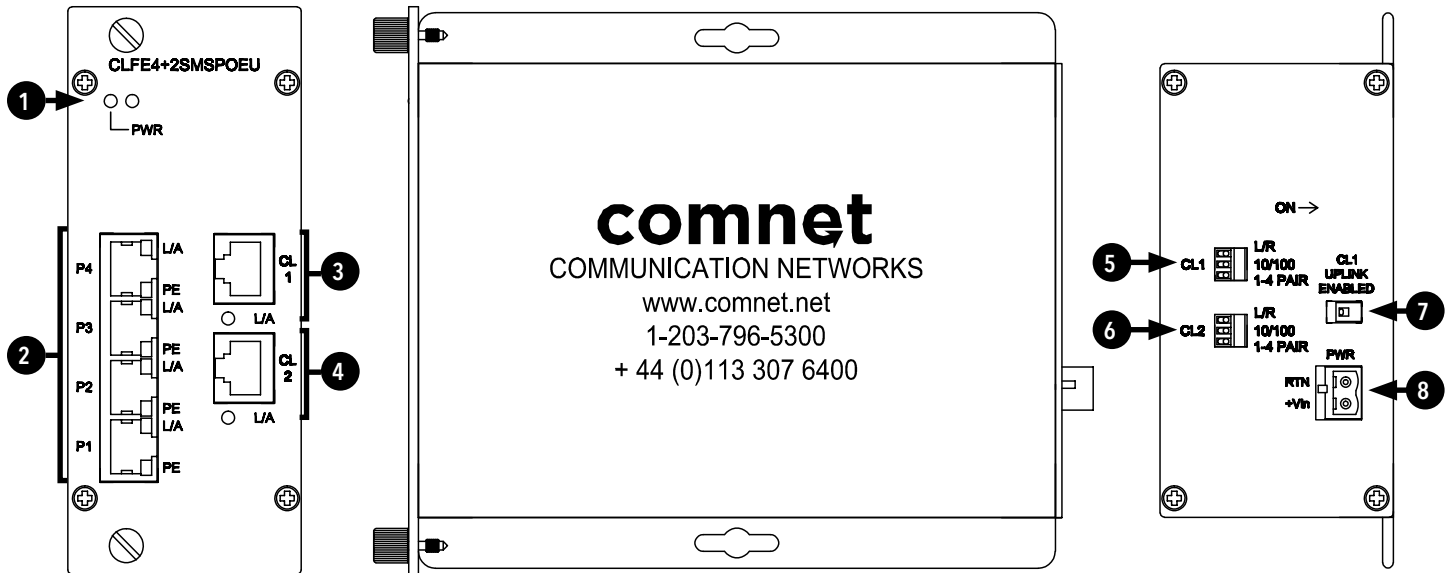**Figure 1 – Physical Features of CLFE4+2SMSPOEU**

Table 1 – Physical Feature Descriptions

Call-out	Description	Manual Reference
1	Power Indicating LED (Unlabeled LED Reserved for Future Use)	See Table 3 - Indicating LEDs
2	10/100 TX RJ-45 Ports 1 through 4 and Link/Activity (L/A) Indicating LEDs	See Installation Instructions, Step 5 See Table 3 - Indicating LEDs
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5	Channel 1 Extended Distance over UTP Port DIP Switches for Local/Remote Operation, Data Speed, and Wire Pairs	See Installation Instructions, Steps 1 – 3
6	Channel 2 Extended Distance over UTP Port DIP Switches for Local/Remote Operation, Data Speed, and Wire Pairs	See Installation Instructions, Steps 1 – 3
7	Channel 1 Extended Distance over UTP Uplink DIP Switch	See Installation Instructions, Step 6
8	PoE Power Connections	See Installation Instructions, Step 7

Installation Instructions

1 - SET DATA RATE DIP SWITCHES
Locate the 10/100 data rate DIP switch on the unit.
Set the data rate according to bandwidth required.
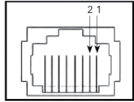*NOTE: The data rate must be set the same on both the local and remote units.*

2 - SET WIRE PAIR DIP SWITCHES
Locate the wire pair DIP switch on the unit.
Set the pair according to number of twisted wire pairs used (1 or 4).
NOTE: The number of pairs selected must be set the same on both the local and remote units.

Figure 2 – One-Pair Pin Assignment

For 1-pair mode, use the first pair of pins (pins 1 and 2) of the
"Extended Ethernet" RJ-45 port.

3 - SET LOCAL/REMOTE DIP SWITCHES
Set the Local/Remote switch to Local (LC) for Local (head end) devices or Remote (RM) for Remote (field end) devices.

4 - SET CL1 UP LINK ENABLED DIP SWITCH
Set the Up Link switch to the "ON" position to enable Uplink port features.

5 - CONNECT EXTENDED WIRING
Connect Extended Distance Port to field wiring.

6 - CONNECT NETWORK WIRING
Using Cat5/5e, connect Local unit to network and Remote unit to camera.

7 - CONNECT POWER
Connect power to unit per the following table.
NOTE: Remove Electrical Connector for Rack Mount Units

Table 2 – Power Connections per Use Case

	Non-PoE	**PoE Models Only**
Operating Voltage	12 to 24 VDC (9 VDC [†] when in C1 or C2 Rack)[†]	48 to 56 VDC
Use Power Connectors	RTN and +Vin	RTN and +Vin

[†] Contact the ComNet Design Center, or refer to the appropriate installation and operation manual when configuring and specifying power for a deployment.

8 - VERIFY FUNCTIONALITY
See LED table below and Troubleshooting Guide if corrective action is needed.

Table 3 – Indicating LEDs

	PWR	**Link (Ethernet Port)**	**Activity (Ethernet Port)**	**L/A (CH 1 or 2)**	**POE (PoE Models Only)**
SOLID	Power Applied	Link Detected	–	Link Detected	Supplying PoE to PD(s)
BLINKING	–	–	Data Activity	Data Activity	–
OFF	Power Off	No Link	–	No Link	Not Supplying PoE to PD(s)

Table 4 – Approximate Maximum Extended Distances[1]

Media	COAX - RG59/U		UTP - 1 pair		UTP - 4 pair	
Extended Port Data Rate	10M	100M	10M	100M	10M	100M
Extended Distance[1]	5,000 ft 1,524 m	2,000 ft 610 m	3,000 ft 914 m	1,000 ft 305 m	3,000 ft 914 m	2,000 ft 610 m

[1] Distance figures are obtained using in-house testing mirroring installations. Factors such as coaxial/copper cable quality, the number of connectors/ splices in the cable run, the use of PoE, and environmental conditions encountered within the installation may affect the actual transmission distance, and should be taken into consideration.

Table 5 – Troubleshooting Guide

| Problem	Steps to Take
Indicating LEDs not lighting	Check that power is properly applied to the unit using the correct connector pair.
No Communication	Check Ethernet Link LEDs, Extended Link LEDs, All Connections, Local/Remote switch is set properly. Verify that Local units are installed at the head end and that Remote units are installed in the field. Verify that the Data Rate switches are set to the same data rate on both the Local and Remote units.
Bad Video or Data	Make sure Data Rate and 1/4 Pair Switches are set properly, and the extended distance is within specifications (see Table 4 – Approximate Maximum Extended Distances).
Units not reaching estimated max distances over COAX or UTP	Check extended distance cable and connections. Try connection on a short cable to eliminate possibility of faulty cabling. Check that the extended distance wire is connected to Extended Distance Port. Verify that there is no additional equipment (e.g. surge protector) on the Extended Link. The cable should be continuous from end to end, with no active components.

Figure 3 – DIP Switch Settings
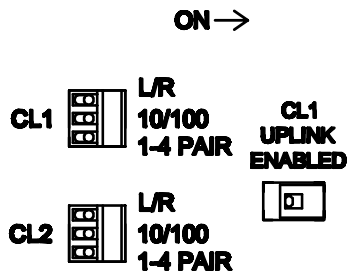
Table 6 – DIP Switch Settings

DIP Switch		Setting Effect	
		On	Off
CL1	L/R	Unit will operate as remote / field	Unit will operate as local / head-end
	10/100	100 Mbps Data Speeds	10 Mbps Data Speeds
	1 - 4 PAIR	1 Pair Twisted Wires	4 Pair Twisted Wires
CL2	L/R	Unit will operate as remote / field	Unit will operate as local / head-end
	10/100	100 Mbps Data Speeds	10 Mbps Data Speeds
	1 - 4 PAIR	1 Pair Twisted Wires	4 Pair Twisted Wires
CL1 UP LINK		Enabled	Disabled

Application notes

1 Mixed PoE and Non-PoE systems can be implemented.

2 Lower data rates generally provide longer operating distances.
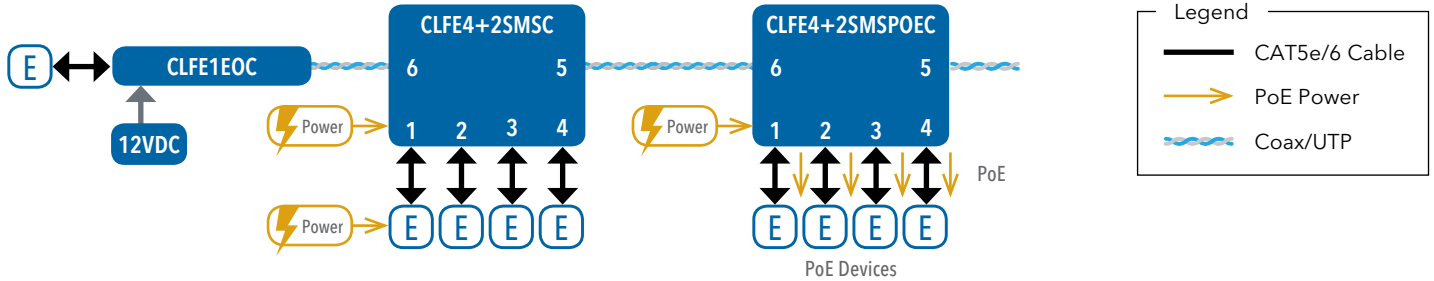
Figure 4 – Typical Application

Figure 5 – Application Diagram With Multicast Traffic

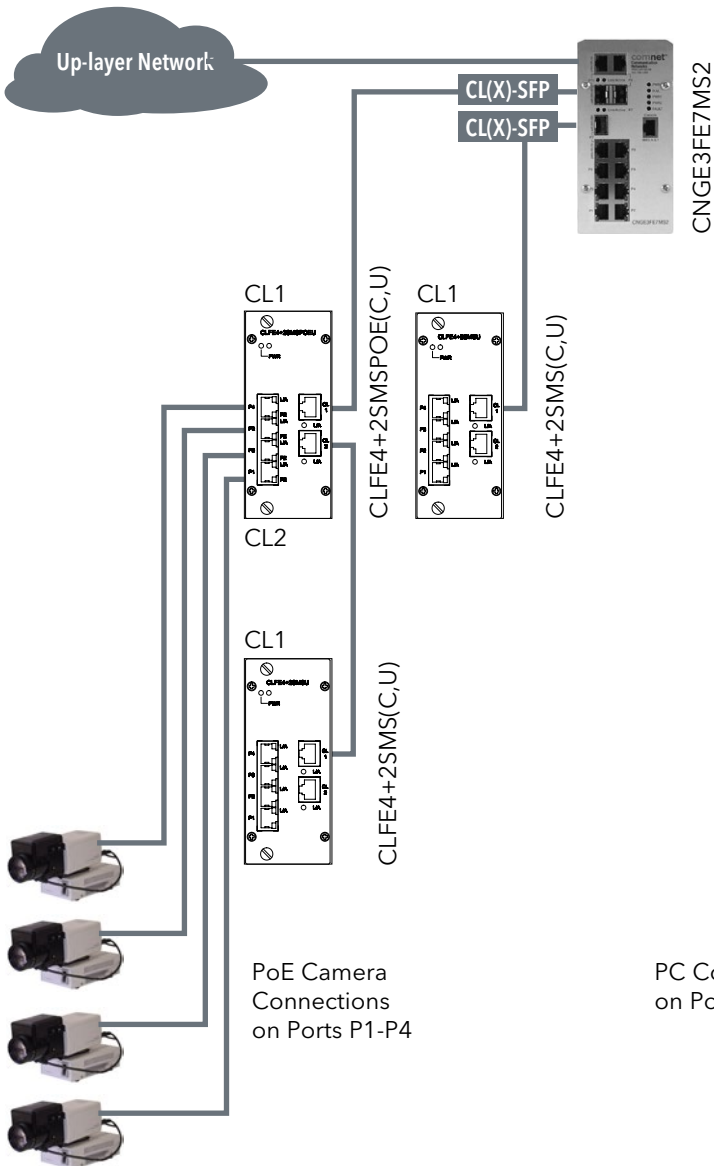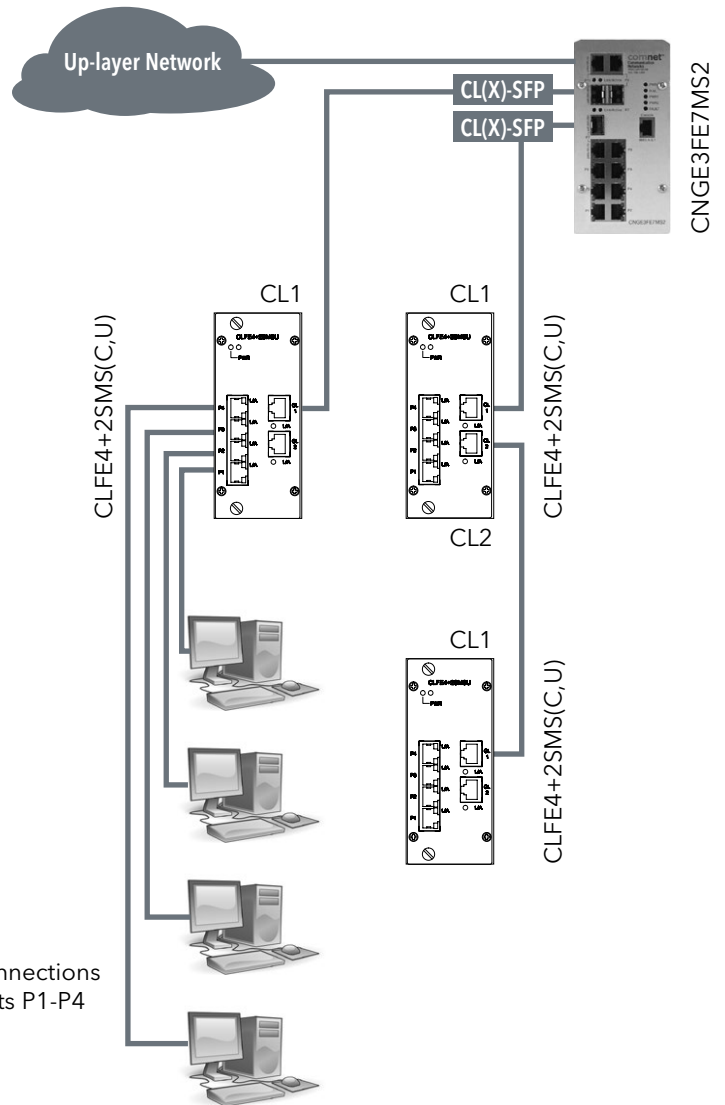*IGMP Enabled, Uplink enabled on the units*

Figure 6 – Application Diagram Without Multicast Traffic

IGMP Disabled, Uplink disabled on the units.

INSTALLATION CONSIDERATIONS

These units are supplied as Standalone/Rack mounted module. Units should be installed in dry locations protected from extremes of temperature and humidity.

WARNING: Unit is to be used with a Listed Class 2 power supply. Although the units may be mounted inside a ComNet rack the PoE models cannot be powered from the built-in rack PSU; they must be powered by an external 48-56VDC PSU.

IMPORTANT SAFEGUARDS:

A) **Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

B) **Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

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FIGURE A

Dimensions are for a ComFit module

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