



INSTALLATION AND OPERATION MANUAL

RLMCSFP Series

Electrical Substation-Rated
10/100/1000 Mbps Ethernet Media Converter
with Optional High-Output Power over Ethernet

**This manual serves the following
ComNet Model Numbers:**

RLMCSFP24DC

RLMCSFP48DC

RLMCSFP4V

RLMCSFPPOEHO

The ComNet RLMCSFP is designed for deployment in environments where high levels of electromagnetic noise and interference (EMI) and severe voltage transients and surges are routinely encountered.

The DIP-switch-selectable 100BASE-FX or 1000BASE-FX port supports conventional CAT-5e/CAT-6 copper or optical transmission media by selection of the appropriate ComNet SFP module.

User-selectable link fault pass-through provides remote indication of a network fault, and a summary fault alarm provides a local or remote indication via Form C dry contact closure in the event of loss of optical link or operating power.

The 10/100/1000BASE-TX port supports both auto-negotiation and automatic MDI/MDI-X crossover for full and half-duplex operation; manual MDI/MDI-X switching is not required.

The RLMCSFPPOEHO model additionally provides up to 60 Watts of Power over Ethernet (PoE).

LED indicators confirm operational status.

See **Figures 1 – 6** for complete operation details.

The RLMCSFP is DIN-rail or panel-mountable. See **Figure A** on the last page for mounting instructions.

Figure 1 - RLMCSFP Series Front Panel

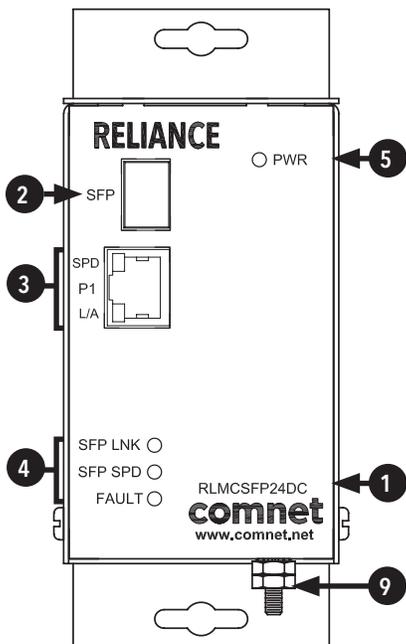


Figure 2 - RLMCSFP24DC and RLMCSFP48DC Bottom Panel

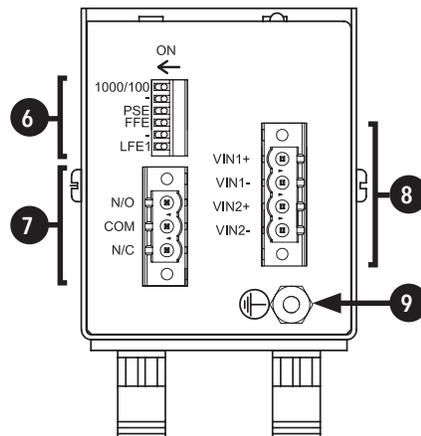


Figure 3 - RLMCSFPHV Bottom Panel

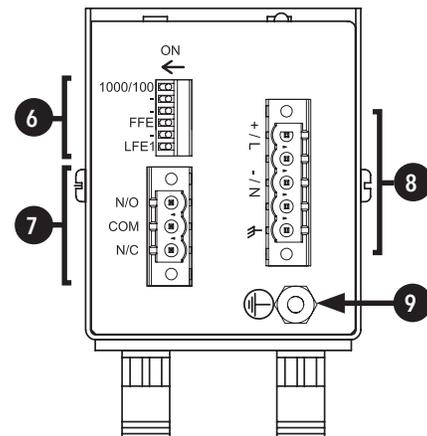


Table 1 – RLMCSFP Physical Feature Descriptions

| Call-out | Description | Manual Reference |
|----------|---|--|
| 1 | Unit Model Number (Be sure to refer to any specific instructions for your unit variation) | - |
| 2 | 100/1000 Mbps SFP Fiber Optic Port (Fiber Type and Quantity are dependent on installed SFP) | See Installation Instructions, Step 6 |
| 3 | 10/100/1000 TX RJ-45 Port 1 and Port 1 Link/Activity (L/A) and Speed LED Indicators | See Installation Instructions, Step 8 See Table 6 - Indicating LEDs |
| 4 | SFP Port Link Status and SFP Port Link Speed LED Indicators | See Table 5 - Indicating LEDs |
| 5 | Power LED Indicator | See Table 5 - Indicating LEDs |
| 6 | User-selectable DIP Switches | See Installation Instructions, Steps 1 - 2 See Table 3 - DIP Switch Settings See Figure 6 - DIP Switches |
| 7 | Fault Relay Connections | See Installation Instructions, Step 4 See Figure 8 - Fault Relay Operation |
| 8 | Power Connections | See Installation Instructions, Step 7 See Table 4 - Power Connections per Use Case |
| 9 | Chassis GND Lug | See Installation Instructions, Step 3 |

Figure 4 - RLMCSFPPOEHO
Front Panel

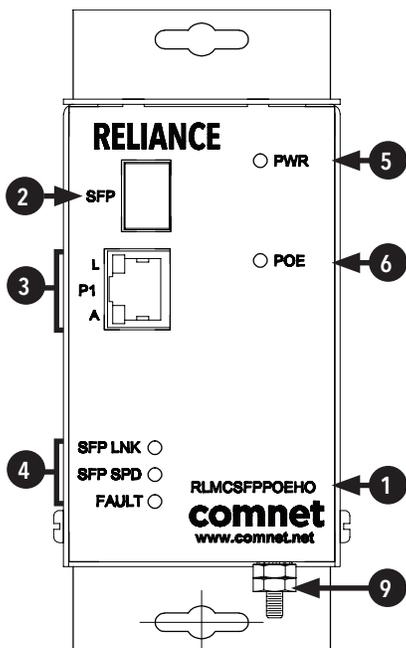


Figure 5 - RLMCSFPPOEHO Bottom Panel

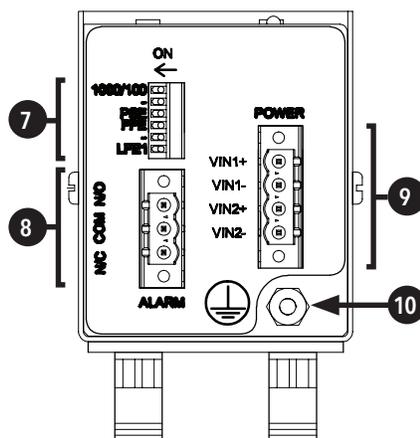


Table 2 – RLMCSFPPOEHO Physical Feature Descriptions

| Call-out | Description | Manual Reference |
|----------|---|--|
| 1 | Unit Model Number (Be sure to refer to any specific instructions for your unit variation) | - |
| 2 | 100/1000 Mbps SFP Fiber Optic Port (Fiber Type and Quantity are dependent on installed SFP) | See Installation Instructions, Step 6 |
| 3 | 10/100/1000 TX RJ-45 Port 1 and Port 1 Link/Activity (L/A) and Speed LED Indicators | See Installation Instructions, Step 8 See Table 6 - Indicating LEDs |
| 4 | SFP Port Link Status and SFP Port Link Speed LED Indicators | See Table 5 - Indicating LEDs |
| 5 | Power LED Indicator | See Table 5 - Indicating LEDs |
| 6 | Power over Ethernet (PoE) LED Indicator for Port 1 | See Table 5 - Indicating LEDs |
| 7 | User-selectable DIP Switches | See Installation Instructions, Steps 1 - 2 See Table 3 - DIP Switch Settings See Figure 6 - DIP Switches |
| 8 | Fault Relay Connections | See Installation Instructions, Step 4 See Figure 8 - Fault Relay Operation |
| 9 | Power Connections | See Installation Instructions, Step 7 See Table 4 - Power Connections per Use Case |
| 10 | Chassis GND Lug | See Installation Instructions, Step 3 |

Installation Instructions

Figure 4 - DIP Switches



DIP Switches on RLMCSFP24DC, RLMCSFP48DC, and RLMCSFPPOEHO Models

DIP Switches on RLMCSFPHV Model

Table 2 – DIP Switch Settings

| SW | NAME | OFF (DOWN) | ON (UP) |
|----|--------------------------|--|--|
| 1 | Link Fault Enable Port 1 | Link Fault Pass-Through Disabled | Link Fault Pass-Through Enabled |
| 2 | – | N/A | N/A |
| 3 | FFE | Fiber Fault Relay Disabled | Fiber Fault Relay Enabled |
| 4 | PS Fault Enable | Power Supply Fault Relay Disabled | Power Supply Fault Relay Enabled |
| 5 | – | N/A | N/A |
| 6 | 1000/100 (SFP Speed) | 100 Mbps Speed Set Speed must match speed of installed SFP. Reset power if switch or SFP is changed. | 1000 Mbps Speed Set. Speed must match speed of installed SFP. Reset power if switch or SFP is changed. |

1 - SET DATA RATE DIP SWITCHES

Locate the 100/1000 data rate DIP switch on the bottom panel of the unit. Set the data rate according to bandwidth required.

NOTE: If two units are connected via the SFP Port, the data rate must be set the same on both units, and must match the data rate of the installed SFPs. Data rate settings are read on start-up, so restart the unit after making any changes.

2 - SET FAULT DIP SWITCHES

Locate the LFE, FFE, and PSE DIP switches on the bottom panel of the unit.

LFE1: If the Copper Port is Down or Not Connected, the Optical Port will turn on and off at a ~1 sec rate to indicate copper port fault and the alarm relay will be triggered.

FFE: If the optical link is lost or there is a power failure then the alarm relay output will be triggered.

NOTE: You may select multiple fault event triggers.

NOTE: Power Supply Fault DIP Switch is only available on Redundant Power Models. When a redundant power supply is available, a failure of power on one power supply will trigger the alarm relay output.

NOTE: Restart not required when making changes to this DIP switch setting.

3 - CONNECT GROUND WIRING

Connect Ground Wiring to ground screw and tighten nut to secure.

4 - CONNECT FAULT RELAY WIRING

Connect Faulty Relay device to 3-pin terminal block. The COM to N/C will be shorted in the fault condition.

5 - CONNECT DATA WIRING

Connect RJ-45 Ports to field wiring using Cat5/5e/6 cable.

6 - CONNECT NETWORK WIRING

Using fiber optic cabling appropriate to the installed SFP, connect the unit to a network device.

Installation Instructions (Continued)

7 - CONNECT POWER

Connect power to unit per the following table.

Table 3 – Power Connections per Use Case

| | RLMCSFP24DC | RLMCSFP48DC | RLMCSFPHV | RLMCSFPPOEHO |
|-----------------------------|--|--|--|--|
| Operating Voltage | Redundant Inputs 9 to 36 VDC (max) | Redundant Inputs 36 to 59 VDC (max) | 88 to 300 VDC (max) OR 85 to 264 VAC (max) | Redundant Inputs 44 to 57 VDC (max) |
| Use Power Connectors | Vin1+ and Vin1- for PS 1 Vin2+ and VIN2- for PS 2 | Vin1+ and Vin1- for PS 1 Vin2+ and VIN2- for PS 2 | +/L, -/N, and Earth GND | Vin1+ and Vin1- for PS 1 Vin2+ and VIN2- for PS 2 |

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 Indicator table below and Troubleshooting Guide if corrective action is needed.

Table 4 – Front Panel LED Indicators

| | | SFP Link | SFP Speed | Fault | Power | PoE |
|-------|----------|---|--|----------------------------------|----------------------------------|-----------|
| GREEN | Solid | Communication link has been established over optical fiber. Flashes when data is being transmitted. | 1000 Mbps | No Fault (NC-COM) | Power Applied | - |
| | Flashing | Fiber failure or copper failure (Link Fault Enable must be switched set to ON) | - | - | - | - |
| | Dim | - | - | - | - | 30 W Mode |
| | Bright | - | - | - | - | 60 W Mode |
| RED | Solid | - | 100 Mbps | Fault (NO-COM) | - | - |
| OFF | | Communication link has not been established. | Unit is not correctly powered up or DIP Switch incorrectly set. (Reset power after switch change.) | Unit is not correctly powered up | Unit is not correctly powered up | - |

Figure 5 – Electrical Port

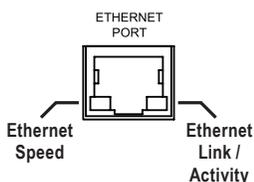
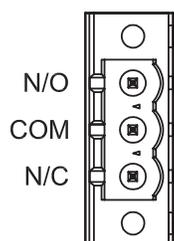


Table 5 – Electrical Port LED Indicators

| | | Link / Activity | Speed |
|--------|----------|---|-------------------|
| GREEN | Solid | Communication link has been established over the electrical cable | - |
| | Flashing | Data is being transmitted over the electrical cable | - |
| YELLOW | - | - | 1000 Mbps Speed |
| OFF | - | Communication link has not been established. | 10/100 Mbps Speed |

Figure 6 - Fault Relay Operation



The fault relay is normally closed and will open on any of the following alarm conditions:

- Link Fault is enabled on the **remote** RLMCSFP unit and the corresponding copper port has been disconnected.
- Link Fault is enabled on the **local** RLMCSFP unit and the corresponding copper port has been disconnected.
- Fiber Fault is enabled on the **local** RLMCSFP unit and the fiber link is down or the power has been lost to either the local or remote RLMCSFP unit.

MECHANICAL INSTALLATION INSTRUCTIONS

Table 7 – Troubleshooting Guide

| Problem | Steps to Take |
|--|---|
| Power LED not lighting | Check that power is properly applied to the unit using the correct connector pair. |
| No Communication | Check Ethernet Link LEDs, Fiber Optic Link LEDs. Confirm Connections, DIP switches are set properly. Verify that the Data Rate switches are set to the same data rate on back-to-back units and match the installed SFP. Restart the unit if the Data Rate Switch or installed SFP has changed. |
| PoE LED not lighting | Ensure a Powered Device (PD) is properly connected and verify 48 V input to RLMCSFPPOEHO. |
| PoE not supplying appropriate power levels | Check power supply and confirm it has the power capability to drive RLMCSFPPOEHO and network device. |

Installation Considerations

This product is supplied as Standalone/Surface Mount module. Units should be installed in dry locations protected from extremes of temperature and humidity.

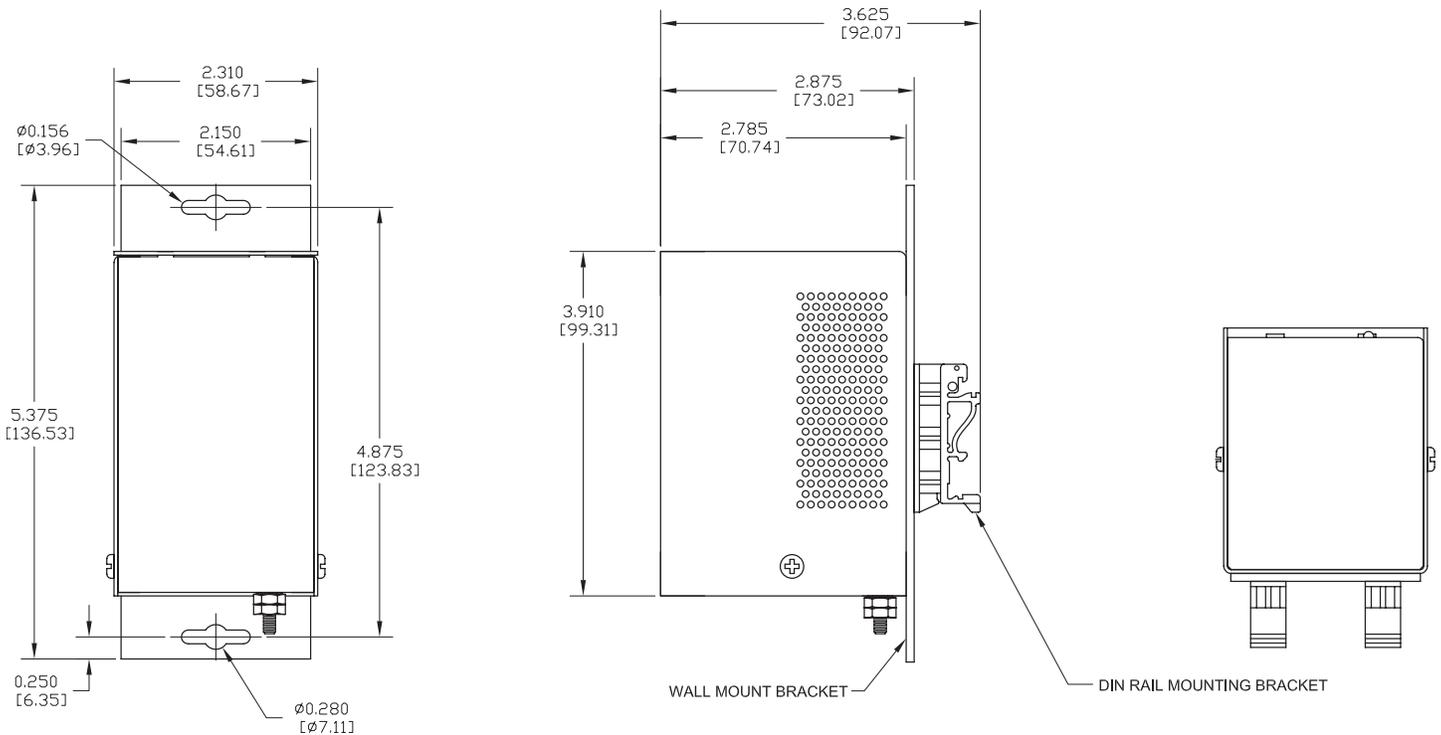
WARNING: Unit is to be used with a Listed Class 2 power supply.

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.

Figure A

Dimensions and mounting methods for a ComNet Reliance mini DIN Rail module



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