



COPELAND MRLDS-250 Modular Refrigeration Leak Detection Sensor User Guide

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COPELAND

COPELAND MRLDS-250 Modular Refrigeration Leak Detection Sensor



Specifications:

- **Product Name:** MRLDS-250
- **Type:** Modular Refrigeration Leak Detection Sensor
- **Gas Detection Range:** Wide range of gases
- **Power Options:** 24VAC or 24VDC
- **Wiring Compatibility:** 14 to 22 AWG for power, 18 to 20 AWG for relay connections, 18 to 24 AWG shielded twisted pair for MODBUS network

Product Usage Instructions

Installation:

1. Open the housing using a flat blade screwdriver.
2. Mount the base to the desired location (Wall Mount or Junction Box Mount).

Wiring and Configuration:

Power the MRLDS-250 using either 24VAC or 24VDC and connect wiring to the appropriate terminal locations. Make relay connections using specified wire gauges. Provide analog output signal wiring and MODBUS network configuration as needed.

Set Up Analog Output Type and Scaling:

1. Access parameter list and find P.-03 for Analog Output type selection.
2. Select the desired output type.
3. Save the settings.
4. For Scaling adjustment, find P.-16 on the parameter list and make necessary changes.

FAQ:

- **Q: What type of gases can the MRLDS-250 detect?**
A: The MRLDS-250 can detect a wide range of gases.

• **Q: What is the default communication parameter for MODBUS network with the MRLDS-250?**

A: The default communication parameters for MODBUS network with the MRLDS-250 are provided in the user manual.

MRLDS-250

The Modular Refrigeration Leak Detection Sensor is Copeland's state-of-the-art infrared refrigerant gas detector that can detect a wide range of gases. The MRLDS-250 can be used on a stand-alone basis or integrated into supervisory controls. The MRLDS-250 can be used in locations that require continuous monitoring and to add gas detection solutions to an existing system.

The MRLDS-250 is available in two versions:

- The broadband gas detector is used as a general purpose gross leak detector and is factory tested and certified to +/- 35% accuracy.
- The gas specific versions come factory certified and calibrated with +/- 3% accuracy to the target refrigerant when there is a need for more accurate detection.

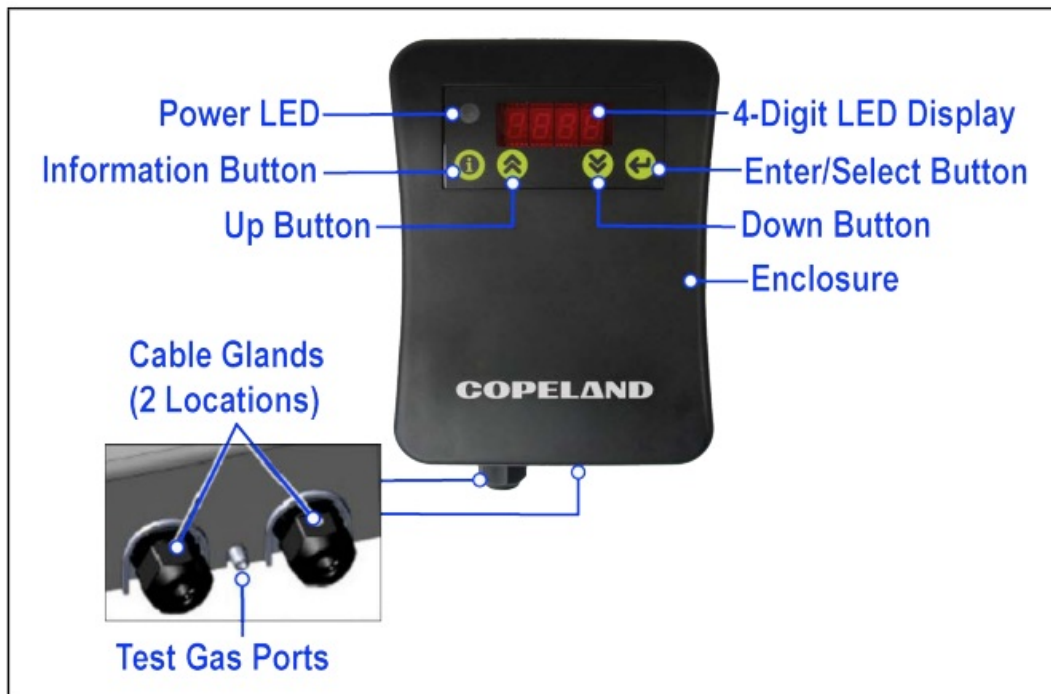


Figure 1 - MRLDS-250 Components

For complete part number and installation information, see the full MRLDS-250 manual (P/N 026-1315).

MRLDS-250 Installation

Mounting the MRLDS-250

1. To open the housing as received, use a flat blade screwdriver and depress the top latch. While pushing the latch, grasp the back edge of the housing near the latch and pull the back away.
2. Position the base to the pre-determined mounting location.
3. or Wall Mount, attach the MRLDS-250 base to the mounting surface using two #6 screws (provided) through two of the seven mounting holes (see Figure 2). For Junction Box Mount, attach the MRLDS-250 base to the junction box through the two junction box holes.

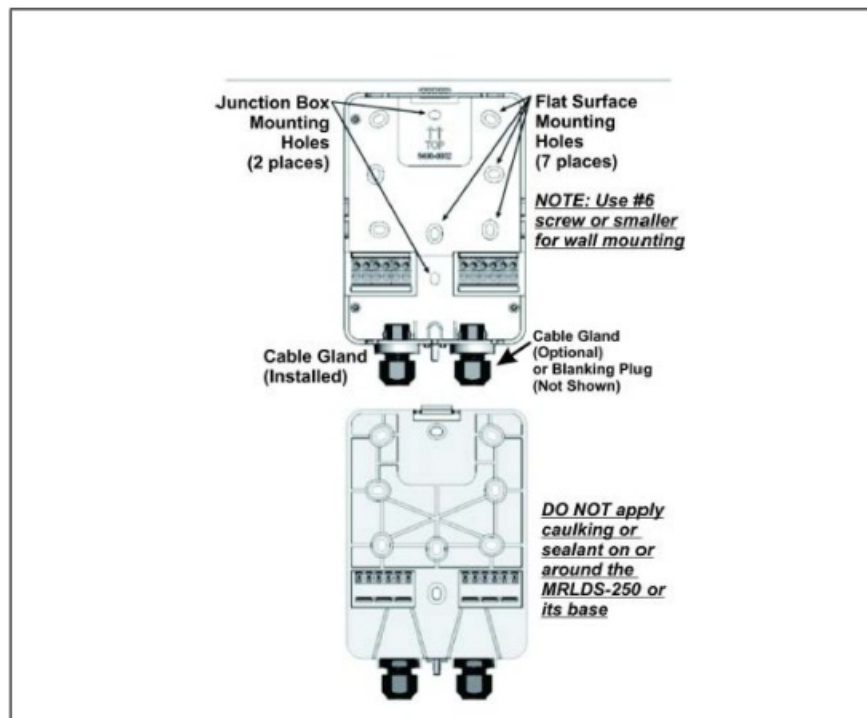


Figure 2 - Front and Back of the MRLDS-250 Base

Wiring and Configuration

Either 24VAC or 24VDC may be used to power the MRLDS-250. Connect wiring to the appropriate terminal locations. Use two wires, between 14 and 22 AWG. Refer to Figure 3 for AC wiring (left) or DC wiring (right):

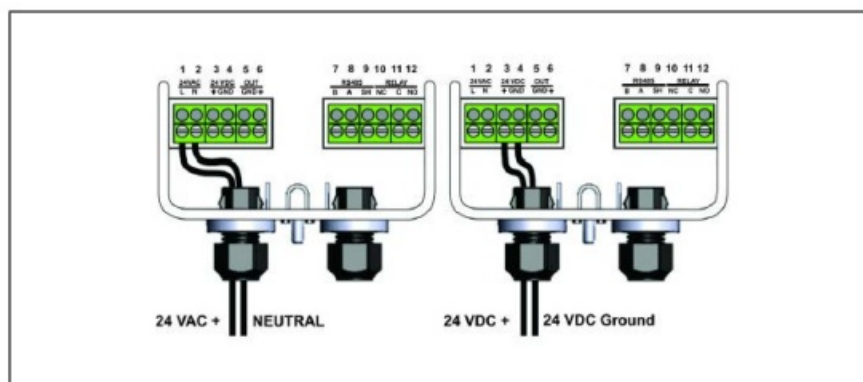


Figure 3 - Supply and Power Wiring Options

WARNING: The MRLDS-250 must be powered by:

- A suitable UL 60950/CSA certified power supply that is isolated from line voltage by double insulation.
- An appropriately rated UL listed/CA Class 2 Transformer; a 10VA Transformer is recommended.
- For multiple devices cascaded, a 50VA Class 2 Transformer is recommended and neutral polarity **MUST** be maintained across units.

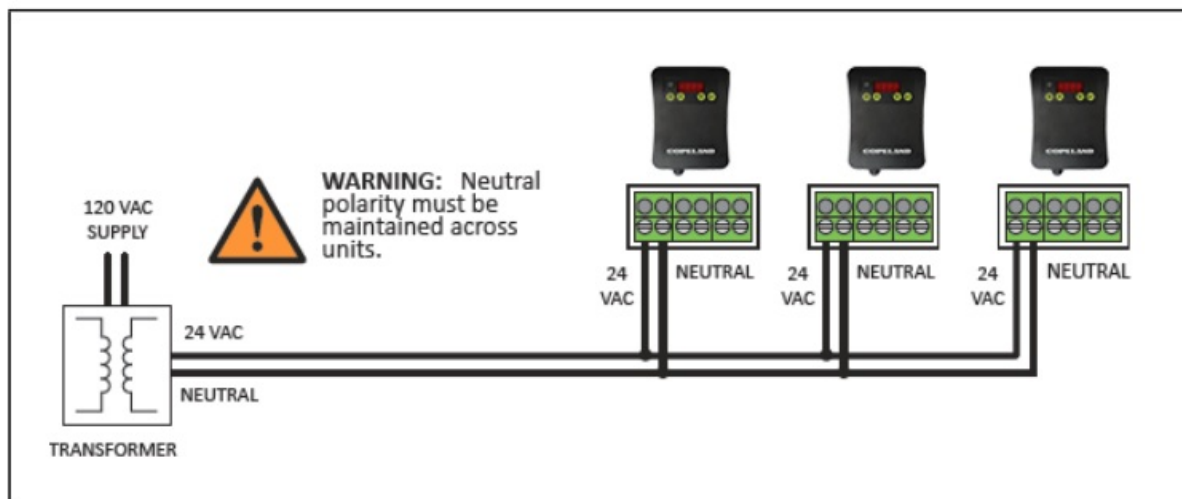


Figure 4 - Power Wiring of a Device Network

The MRLDS-250 provides an analog output signal that is proportional to the level of gas detected. Connect two 18 to 20 AWG wires to terminal block positions 5 and 6 (see Figure 5), noting ground and signal polarity.

Make relay connections (NO, NC, or both) using 18 to 20 AWG wires to terminal block positions 10, 11, and 12 (see Figure 6), noting normally open, normally closed, and common connectors.

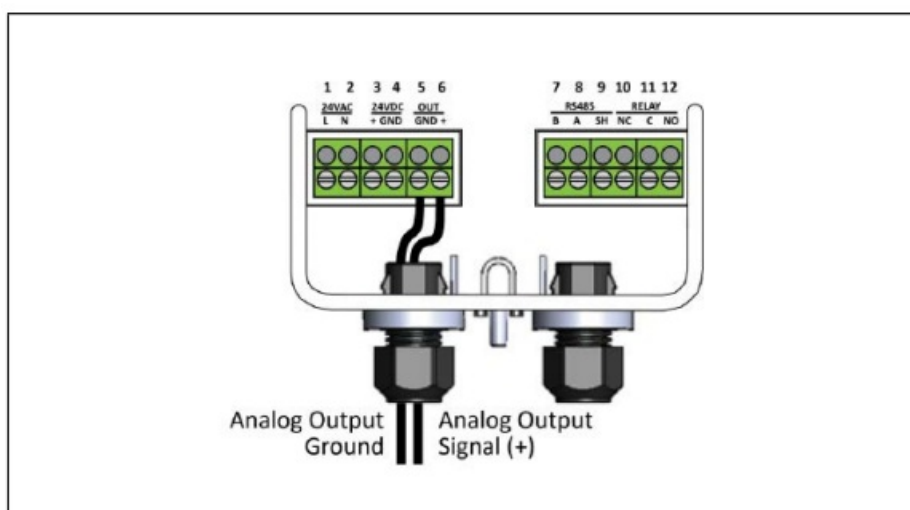


Figure 5 - Analog Output Wiring

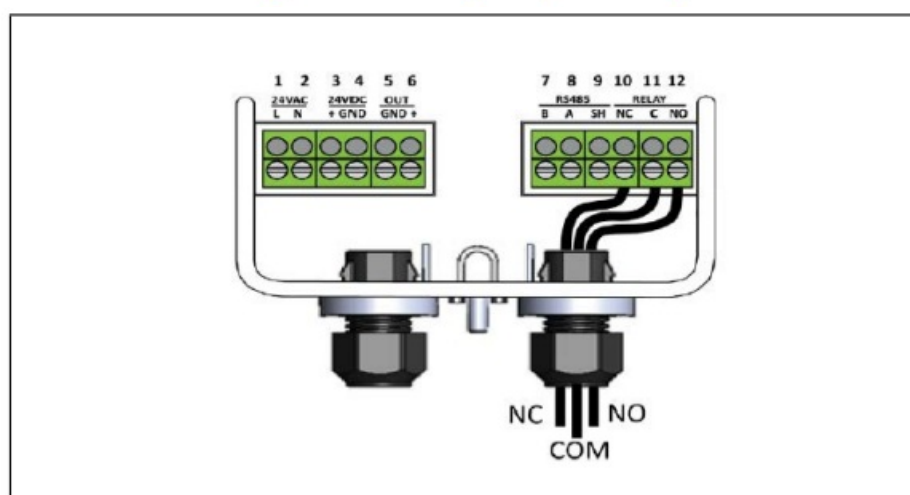


Figure 6 - Sample Relay Output Wiring

MODBUS Network Configuration

NOTE: For MODBUS network communications wiring, use only 18-24 AWG shielded twisted pair wire with 120 ohm characteristic impedance.

When connecting MRLDS-250 to an E2 or Site Supervisor via MODBUS, make network connections (RS-485 A and RS-485 B) using 18 to 24 AWG shielded twisted pair wires to terminal block positions 7 and 8 as shown in Figure 7.

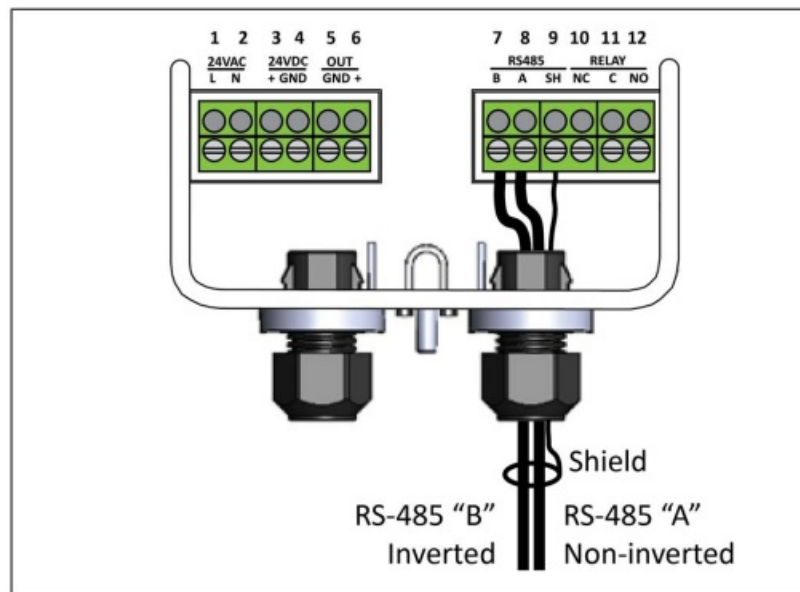


Figure 7 - MODBUS Network Configuration

For MODBUS communications with the MRLDS-250, the default communications parameters are as follows:

- Baud rate = 9600
- Parity = none
- Stop bits = 1

If the MRLDS-250 is at the end of an RS-485 network, be sure to set the RS-485 Terminator on the inside of the cover panel PCB, to IN. When set to IN, a terminating resistor is applied to the end of the line. The terminator should be set to OUT for all other installation conditions as shown in Figure 8.

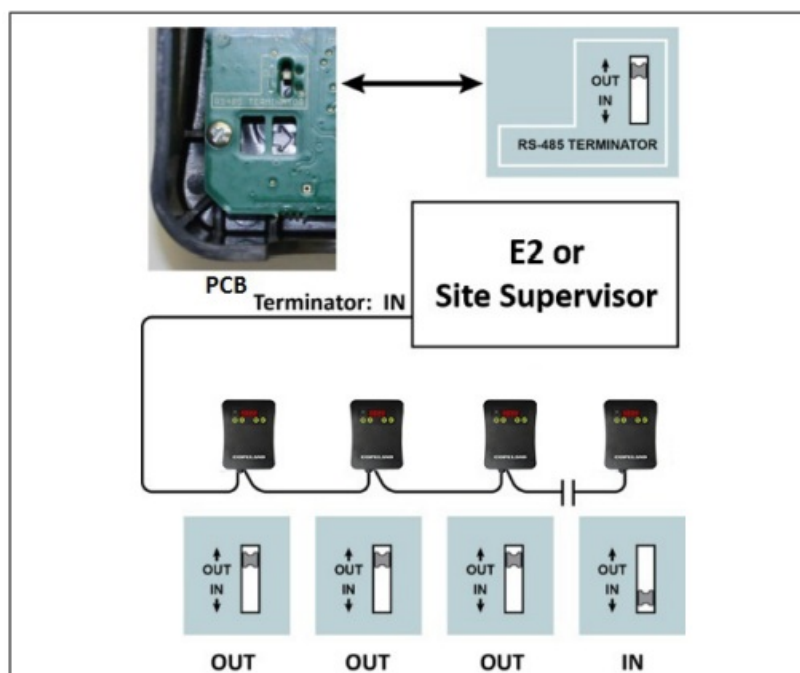

















Figure 8 - RS-485 Termination Resistor Setting

Set Up Analog Output Type and Scaling








1. For Analog Output, look for P.-03 on the parameter list then press the Enter  button.
2. Set the desired output by pressing  Up or Down  to select the type designated as follows:
 - 00 Selects 0-5V
 - 01 Selects 1-5V (Default)
 - 02 Selects 0-10V
 - 03 Selects 2-10V
 - 04 Selects 4-20mA
3. Press the  Enter button to save.
4. For Scaling, look for P.-16 on the parameter list then press the  Enter button.
5. This will allow you to select the full scale PPM value that represents the maximum analog output (for example: 1000PPM = 5V when 1-5V output range was selected for P.-03). Use  Up or Down  to adjust the value and set it to 1000PPM.
6. Press the Enter  button to save the setting.











MRLDS-250 Modbus Setup

Setting Up Modbus Address and Baud Rate




1. Press and hold the  information button for five seconds to activate the parameter list.
2. For the Address, look for P.-10 on the parameter list then press the Enter  button.
3. Set the desired address by pressing  Up or Down  and press the  Enter button to save.
4. For the Baud Rate, look for the P.-13 parameter then press the  Enter button
5. Select 00 for 9600 Baud or 01 for 19200 Baud. Press the Enter  button to save

How to Add an MRLDS-250 to the E2 Controller

1. MRLDS-250 is only native on E2 Enhanced Controllers with firmware version 4.08F03; otherwise you need to add a description file and License Key.
2. Contact Customer Service to obtain the License Key: 527-0476.
 - Phone Number: [770-425-2724](tel:770-425-2724) Option 4
 - Email: ColdChain.CustomerService@copeland.com
3. Add the description file using UltraSite.
4. Reboot the controller after the upload.
5. Load the License Key on the E2 by logging in and then press  ,  , 
6. Press F1 for ADD FEATURE and enter the License Key.
7. Add the MRLDS-250 by pressing  ,  ,  , 
8. Press F2 to select C4: Third Party tab.
9. Scroll down to MRLDS-250 and enter the quantity of MRLDS-250 devices up to the maximum indicated.

10. Press the  button to save.
11. Press , , ,  for Network Summary or  + .
12. Scroll down to the MRLDS-250 and press F4 to COMMISSION. Repeat for each MRLDS-250 added.
13. Select the address the MRLDS-250 is set to and press  to confirm.
14. The MRLDS-250 should be Online on the E2 Network Summary (press  + ).

How to Configure Alarm Setup on the E2 Controller

1. Press ,  and then select MRLDS-250.
2. Press F5 for SETUP and F2 to select C2: Set Points.
3. Set the parameters depending on the System Requirement and press the  button to save.

MRLDS to MultiFlex I/O

How to Set a MultiFlex Input Point

1. An input point on a MultiFlex board consists of two terminals. One of these terminals labeled as SIG reads the signal from the sensor, while the other, labeled 0v is where the sensor ground wire is connected:



Figure 9 - MultiFlex Input Point

2. The Analog Output Signal (+) should go to (SIG) terminal of the MultiFlex board and the Ground (GND) should go to (0v) terminal of the board.
3. The DIP switch setting of the MultiFlex board terminal for the MRLDS-250 should be in the OFF position (see Figure 10) because it supplies its own voltage signal to the point:

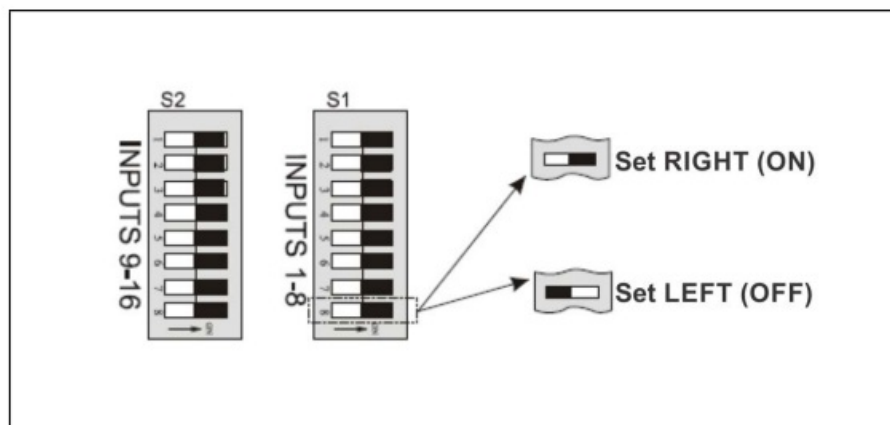









Figure 10 - MultiFlex Input Dip Switches

How to Set the Input Type on the E2 Controller

1. Press , ,  to go to the Input Status Screen.
2. Select the input point where the MRLDS-250 is connected, and press F1 for SETUP. Press  for Analog.
3. Highlight Sensor Type and press F4 for LOOK UP. Select Linear and press  to confirm.
4. Navigate down to Eng Units and press F4 for LOOK UP. Select PPM 33 and press  to confirm.
5. Set the Low End Point and HighEnd Point equivalent to the range set on P-.03 for Analog Output.
6. Set the Low End EU and the High End EU equivalent to PPM Scaling set on P.-16.
7. For the Low End Limit, set it to -10% of Low End EU and for the HighEnd Limit, set it to +10% of High End EU.
8. Press the  button to save.

*For more product information,
scan the QR Code:*




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Documents / Resources

	<p>COPELAND MRLDS-250 Modular Refrigeration Leak Detection Sensor [pdf] User Guide MRLDS-250 Modular Refrigeration Leak Detection Sensor, MRLDS-250, Modular Refrigeration Leak Detection Sensor, Refrigeration Leak Detection Sensor, Leak Detection Sensor, Detection Sensor</p>
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References

- [User Manual](#)

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