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Westermeyer Industries Inc.
A COMPANY OF MUELLER INDUSTRIES

INSTRUCTION SHEET

Refri-Shield™ Differential Pressure Monitor **RDP-01**

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Refri-Shield™ Differential Pressure Monitor RDP-01

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3.1 OVERVIEW

Introduction

The **RDP-01 Differential Pressure Monitor** is part of the **Refri-Shield™** line of system monitoring products.

When the filter element of a coalescing oil separator is contaminated, it negatively effects performance and efficiency—of the oil separator itself, and of the entire system. A differential pressure monitor is used to monitor, both visually and electronically, when the filter is contaminated and needs replaced.

The **Refri-Shield™ RDP-01** features a multicolored LED readout indicating pressure range and an analog output for precise pressure monitoring. The device's case is both dust and weather resistant and comes equipped with 6-foot pressure-transducer cables and a 6-foot power cable, allowing for significant versatility in its placement.

Features & Specifications

- **Power supply:** 10—24V AC or DC
  6′ power cable included (24 AWG)
- **Analog output for PSID Monitoring**
  0.5—4.5V at 0—20 PSID range
  Minimum accepted load: 500 ohms
  ± 0.4 PSID accuracy
- **Amp Draw:** 30mA
- **Operating Temperature**
  Electronics Enclosure: -40°F to 175°F
  Pressure Transducers: -40°F to 257°F
- **Heavy-Duty Pressure Transducers**
  - Brass Housing
  - Port: 7⁄16–20 UNF ¼″ 45° Flare Female Schrader (SAE J512)
  - Temperature compensated
  - 6′ cables included

  Transducer Maximum Operating Pressure: 667 PSIG
  Overpressure: 1,000 PSIG*

  ***Overpressure** - The absolute maximum rating for pressure which may be safely applied to the product for it to remain in specification once pressure is returned to the Operating Pressure Range. Exposure to higher pressures may cause permanent damage to the product. Unless otherwise specified, this applies to all available pressure ports at any temperature within the Operating Temperature Range.*

  Note: Output Voltage Accuracy cannot be guaranteed while either transducer is operating under Overpressure Conditions.
- **Multicolor LEDs for quick visual monitoring**
  - 0.5 PSID resolution
  - Green LED: 0—8 PSID
  - Yellow LED: 8—12 PSID
  - Red LED: >12 PSID
  - Blinking Red LED indicates overpressure
  - If pressure falls below overpressure before 20 consecutive seconds have elapsed, overpressure indicator will turn off
  - If overpressure continues for more than 20 consecutive seconds, overpressure indicator remains on until manually reset
  - During overpressure, device remains active to continue monitoring PSID
  - Overpressure indicator reset button on front of case
  - Blinking Yellow LED indicates disconnected pressure transducer cable
- Copper Gasket & Mounting Screws Included
- Weather and dust-resistant case
- Factory Calibrated
- **PATENT PENDING**

3.2 WARNINGS

General Warning

Improper installation or misuse of this product may cause serious personal injury or damage to equipment and property.

THESE INSTRUCTIONS ARE PREPARED TO ASSIST QUALIFIED PERSONNEL TO SERVICE PRESSURE VESSEL EQUIPMENT. CONSUMERS ARE NOT QUALIFIED TO PERFORM THE INSTALLATION DESCRIBED BELOW.

Transducer removal warning

Should it appear necessary to remove the transducer from the tank, do not attempt removal unless under competent supervision with all due precautions taken against the hazards of released liquid or high-pressure and/or flammable gas.

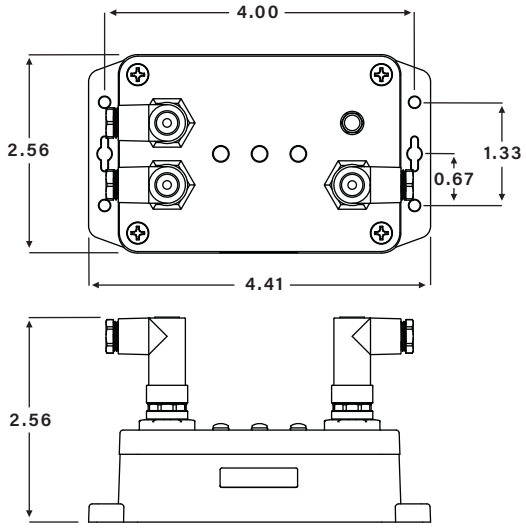
EVEN IF PRESSURE REGISTERS EMPTY, THE SYSTEM MAY CONTAIN HIGH PRESSURE AND FLAMMABLE GAS. A HAZARD OF FIRE OR EXPLOSION MAY EXIST IF PROPER METHODS ARE NOT USED WHEN REMOVING OR INSTALLING TRANSDUCERS.

4.1 INSTALLATION

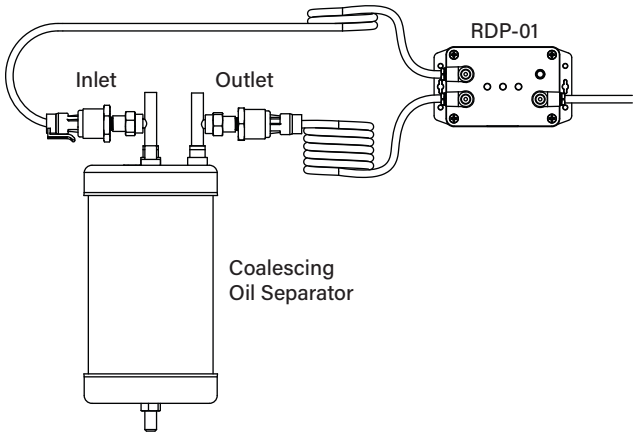
NOTE: Each product is calibrated to its own set of serialized transducers and MUST be used with supplied transducers to ensure product accuracy.

1. Place the provided copper gasket into the pressure transducer female connection.
2. Mount the pressure transducer body **with white sticker** on a 7/16—20 UNF ¼" 45° flare male Schrader port located as close to the coalescing oil separator inlet (high side) as possible and hand tighten. Make sure the copper gasket does not fall off during the process.
3. Using two wrenches, secure the ¼" male flare while tightening the pressure transducer. Apply up to 40 ft-lbs torque to ensure a leak-free connection.
4. Repeat steps 1, 2, and 3 with the second pressure transducer for the outlet (low side) of the coalescing oil separator.
5. Connect the pressure transducer cables to the trandsducer bodies. Ensure that the cable with **white shrink wrap** is connected to the pressure transducer with the **white sticker**. Connect the other side of the cable with white shrink wrap to the connector on the RDP electronics enclosure located next to the **white/silver dot**. Then connect the cable with black shrink wrap to the connector located next to the black dot.
6. The unit is now ready to be powered on.

   Note: If the above process is being done after the unit has been turned on, ignore the LED and analog output readings. Those readings will be reliable only after both pressure transducers have been reconnected.

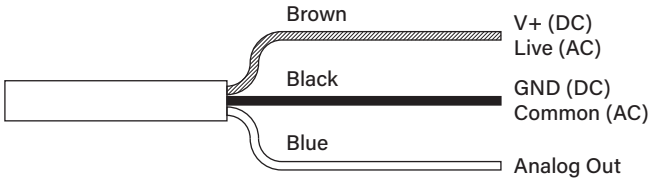


(All Dimensions in Inches)



4.2 ELECTRONICS WIRING

1. Using the supplied wiring diagram, connect the Refri-Shield™ differential pressure monitor to the power supply and rack controller as follows:
   a. Connect positive voltage (10—24V DC) or live wire (10—24V AC) to BROWN wire.
   b. Connect ground (DC) or common (AC) to BLACK wire.
   c. Connect analog out (BLUE wire, 0.5—4.5V) to main controller (if available).
2. Switch on the power supply to power on the unit.
3. Unit is now ready for service.



5.1 OPERATION

- The unit begins monitoring and outputting PSID as soon as it is powered on. No startup operation takes place.
- When the pressure differential enters the overpressure region (PSID >12) the Red LED starts blinking, while the device continues to monitor PSID.
- If the pressure differential drops below the overpressure region after an overpressure indication has been triggered, but before 20 consecutive seconds have elapsed, the Red LED will stop blinking.
- If the pressure differential remains in the overpressure region for 20 consecutive seconds or more, the Red LED will continue to blink until it is manually reset.
- To reset the overpressure indicator, press and hold the reset button until the overpressure indicator clears.
- Note that the blinking Red LED (overpressure indicator) will not affect the analog output of the unit in any way. This is only a visual indicator. If an electronic alarm is needed, this would be done through the main controller by using the analog output of the unit and setting the alarm at the PSID (output voltage) required by the user within the 0—20 PSID analog output range.
- If a pressure transducer cable is disconnected, the Yellow LED will blink and a voltage of 0.25V will be output. These indicators will continue until the transducer is reconnected.

INSTRUCTION SHEET

Refri-Shield™ Differential Pressure Monitor **RDP-01T**

For Transcritical CO_2 Applications

Westermeyer Industries Inc.

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INSTRUCTION SHEET

Refri-Shield™ Differential Pressure Monitor RDP-01T

For Transcritical CO_2 Applications

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7.1 OVERVIEW

Introduction

The **RDP-01T Differential Pressure Monitor** is part of the **Refri-Shield™** line of system monitoring products. This model is designed for use with high-pressure CO2 refrigerant systems. When the filter element of a coalescing oil separator is contaminated, it negatively effects performance and efficiency—of the oil separator itself, and of the entire system. A differential pressure monitor is used to monitor, both visually and electronically, when the filter is contaminated and needs replaced.

The **Refri-Shield™ RDP-01T** features a multicolored LED readout indicating pressure range and an analog output for precise pressure monitoring. The device's case is both dust and weather resistant and comes equipped with 6-foot pressure-transducer cables and a 6-foot power cable, allowing for significant versatility in its placement.

Features & Specifications

- **Power supply:** 10—24V AC or DC
  6' power cable included (24 AWG)
- **Analog output for PSID Monitoring**
  0.5—4.5V at 0—20 PSID range
  Minimum Accepted Load: 500 ohms
  ± 2 PSID accuracy
- **Amp Draw:** < 50mA
- **Operating Temperatures**
  Electronics Enclosure Ambient: -40°F to 175°F
  Transducer Ambient: -22°F to 185°F
  Transducer Refrigerant: -40°F to 275°F
- **Heavy-Duty Pressure Transducers**
  - Stainless Steel 316 housing and 304 pressure connection; All metal wetted parts
  - Port: ¼–18 NPT
  - Temperature compensated
  - 6' cables included

  Transducer Maximum Operating Pressure: 2175 PSIG
- **Multicolor LEDs for quick visual monitoring**
  - 0.5 PSID resolution
  - Green LED: 0—8 PSID
  - Yellow LED: 8—12 PSID
  - Red LED: >12 PSID
  - Blinking Red LED indicates overpressure
  - If pressure falls below overpressure before 20 consecutive seconds have elapsed, overpressure indicator will turn off
  - If overpressure continues for more than 20 consecutive seconds, overpressure indicator remains on until manually reset
  - During overpressure, device remains active to continue monitoring PSID
  - Overpressure indicator reset button on front of case
  - Blinking Yellow LED indicates disconnected pressure transducer cable
- Mounting Screws Included
- Weather and dust-resistant case
- Factory Calibrated
- **PATENT PENDING**

7.2 WARNINGS

General Warning

Improper installation or misuse of this product may cause serious personal injury or damage to equipment and property.

THESE INSTRUCTIONS ARE PREPARED TO ASSIST QUALIFIED PERSONNEL TO SERVICE PRESSURE VESSEL EQUIPMENT. CONSUMERS ARE NOT QUALIFIED TO PERFORM THE INSTALLATION DESCRIBED BELOW.

Transducer removal warning

Should it appear necessary to remove the transducer from the tank, do not attempt removal unless under competent supervision with all due precautions taken against the hazards of released liquid or high-pressure and/or flammable gas.

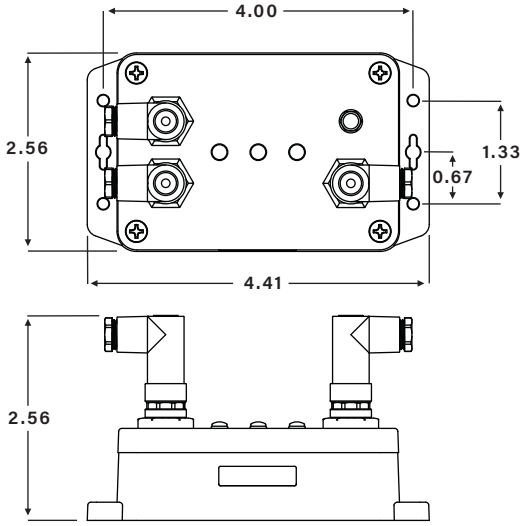
EVEN IF PRESSURE REGISTERS EMPTY, THE SYSTEM MAY CONTAIN HIGH PRESSURE AND FLAMMABLE GAS. A HAZARD OF FIRE OR EXPLOSION MAY EXIST IF PROPER METHODS ARE NOT USED WHEN REMOVING OR INSTALLING TRANSDUCERS.

8.1 INSTALLATION

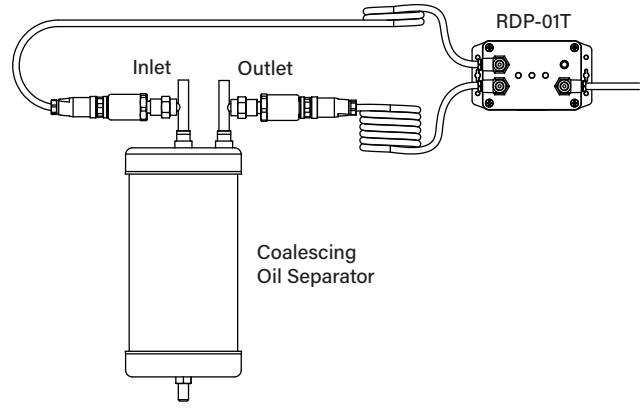
NOTE: Each product is calibrated to its own set of serialized transducers and MUST be used with supplied transducers to ensure product accuracy.

1. Place sealing compound (Teflon tape) on transducer NPT threads.
2. Mount the pressure transducer body **with white sticker** on a female 1/8 NPT port located as close to the coalescing oil separator inlet (high side) as possible and hand tighten.
3. Using two wrenches, secure the female NPT port while tightening the pressure transducer. Tighten 2 full turns to ensure a leak-free connection.
4. Repeat steps 1, 2, and 3 with the second pressure transducer for the outlet (low side) of the coalescing oil separator.
5. Connect the pressure transducer cable to the transducer body. Ensure that the cable with the **white shrink wrap** is connected to the pressure transducer with the **white sticker**. Connect the other side of the cable with the white shrink wrap to the connector on the RDP electronics enclosure located next to the **white/silver dot**. Then connect the cable with black shrink wrap to the connector located next to the black dot.
6. The unit is now ready to be powered on.

   Note: If the above process is being done after the unit has been turned on, ignore the LED and analog output readings. Those readings will be reliable only after both pressure transducers have been reconnected.

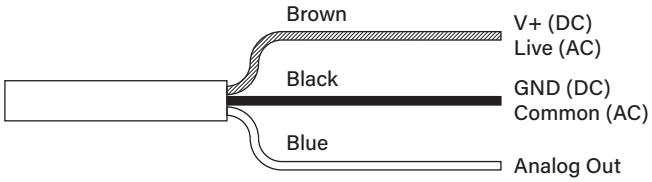


(All Dimensions in Inches)



8.2 ELECTRONICS WIRING

1. Using the supplied wiring diagram, connect the Refri-Shield™ differential pressure monitor to the power supply and rack controller as follows:
   a. Connect positive voltage (10—24V DC) or live wire (10—24V AC) to BROWN wire.
   b. Connect ground (DC) or common (AC) to BLACK wire.
   c. Connect analog out (BLUE wire, 0.5—4.5V) to main controller (if available).
2. Switch on the power supply to power on the unit.
3. Unit is now ready for service.



9.1 OPERATION

- The unit begins monitoring and outputting PSID as soon as it is powered on. No startup operation takes place.
- When the pressure differential enters the overpressure region (PSID >12) the Red LED starts blinking, while the device continues to monitor PSID.
- If the pressure differential drops below the overpressure region after an overpressure indication has been triggered, but before 20 consecutive seconds have elapsed, the Red LED will stop blinking.
- If the pressure differential remains in the overpressure region for 20 consecutive seconds or more, the Red LED will continue to blink until it is manually reset.
- To reset the overpressure indicator, press and hold the reset button until the overpressure indicator clears.
- Note that the blinking Red LED (overpressure indicator) will not affect the analog output of the unit in any way. This is only a visual indicator. If an electronic alarm is needed, this would be done through the main controller by using the analog output of the unit and setting the alarm at the PSID (output voltage) required by the user within the 0—20 PSID analog output range.
- If a pressure transducer cable is disconnected, the Yellow LED will blink and a voltage of 0.25V will be output. These indicators will continue until the transducer is reconnected.

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