

Trace Dissolved Oxygen Sensor

For additional information, please refer to the Instruction Manuals CD shipped with this product, or visit our website at www.emersonprocess.com/raihome/liquid/.

SPECIFICATIONS - SENSOR

- Pressure:** 0 to 65 psig (103 to 549 kPa abs)
- Temperature:** 32 to 122°F (0 to 50°C); Membrane permeability correction defined between 41 and 113°F (5 and 45°C)
- Process Connection:** 1 inch MNPT
- Wetted Parts:** Noryl^{®1}, Viton^{®2}, EPDM, Teflon^{®3}, silicone
- Cathode:** gold

US Patent No.: 6,602,401 B1

- ¹ Noryl is a registered trademark of General Electric.
- ² Viton is a registered trademark of DuPont Performance Elastomers.
- ³ Teflon is a registered trademark of E.I. duPont de Nemours & Co.

SPECIFICATIONS - FLOW CELL (PN 23728-00)

- Pressure:** 65 psig (549 kPa abs)
- Temperature:** 50°C (122°F) maximum
- Process Connection:** compression fittings for 1/4 inch tubing
- Wetted Parts:** acrylic, CPVC, 316 SS, Buna N

CAUTION
SENSOR/PROCESS
APPLICATION COMPATIBILITY

The wetted sensor materials may not be compatible with process composition and operating conditions. Application compatibility is entirely the responsibility of the user.

CAUTION

Do not exceed pressure and temperature specifications.

Pressure: 65 psig max (549 kPa abs max)
Temperature: 32 to 122°F (0 to 50°C)

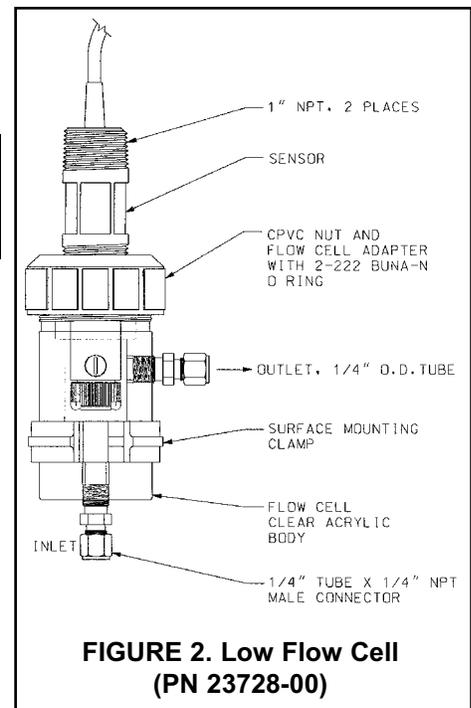
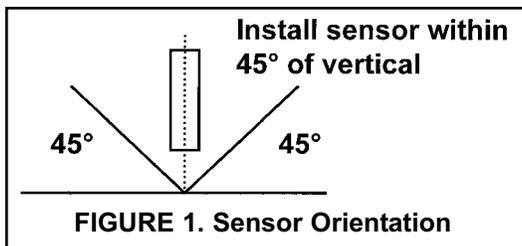
INSTALLATION

The gray PVC cap contains a solution of sodium sulfite. Remove the cap before installing the sensor.

CAUTION

The cap contains sodium sulfite solution. Avoid contact with skin or eyes. Do not swallow!

The sensor screws into the flow cell (PN 23728-00). See Figure 2. Keep the temperature as constant as possible between 5°C and 45°C. The analyzer automatically corrects for changes in membrane permeability with temperature. Because the sensor temperature element has about a four-minute time constant, readings will drift for a period of time following sudden temperature changes. Keep the flow between 100 and 400 mL/min.



WIRING

When making connections through a junction box (PN 22719-02), wire point-to-point.

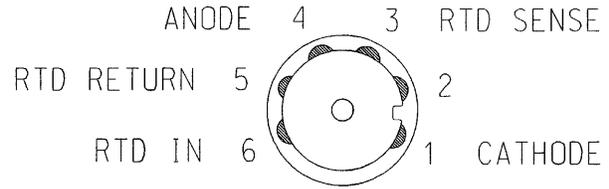


FIGURE 3. Pin Out Diagram for Model 499ATrDO-VP Sensor (top view connector end of sensor)

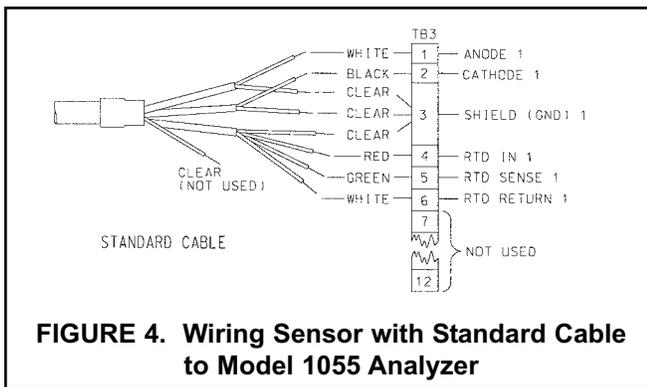


FIGURE 4. Wiring Sensor with Standard Cable to Model 1055 Analyzer

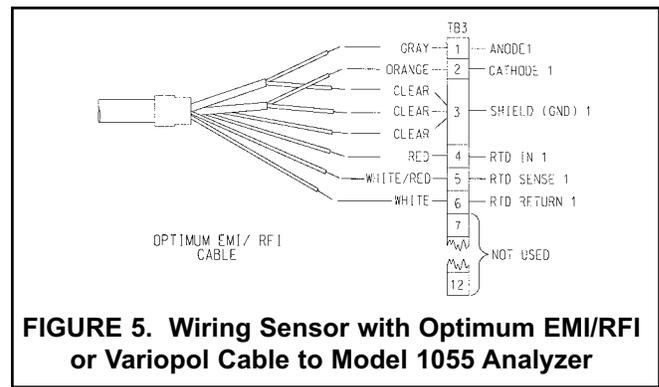


FIGURE 5. Wiring Sensor with Optimum EMI/RFI or Variopol Cable to Model 1055 Analyzer

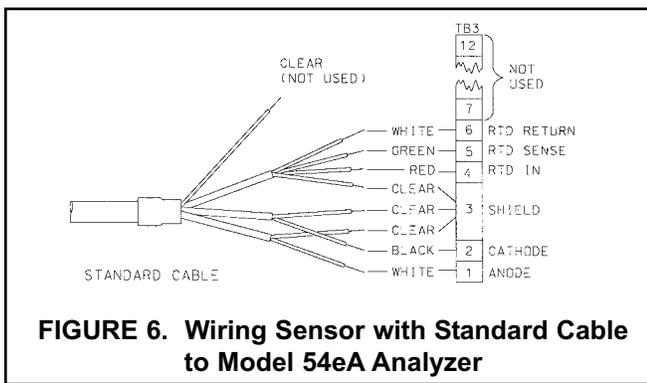


FIGURE 6. Wiring Sensor with Standard Cable to Model 54eA Analyzer

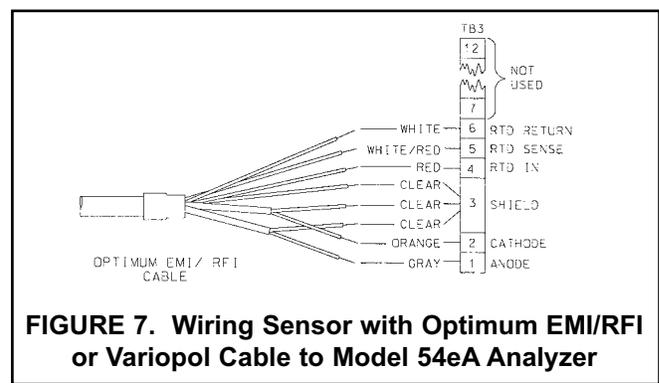


FIGURE 7. Wiring Sensor with Optimum EMI/RFI or Variopol Cable to Model 54eA Analyzer

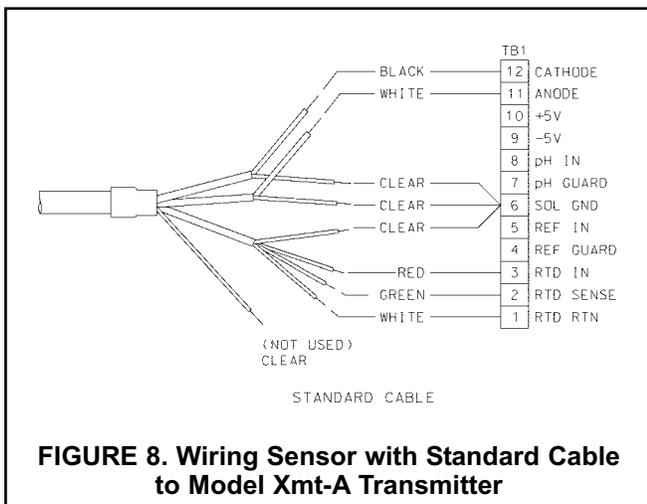


FIGURE 8. Wiring Sensor with Standard Cable to Model Xmt-A Transmitter

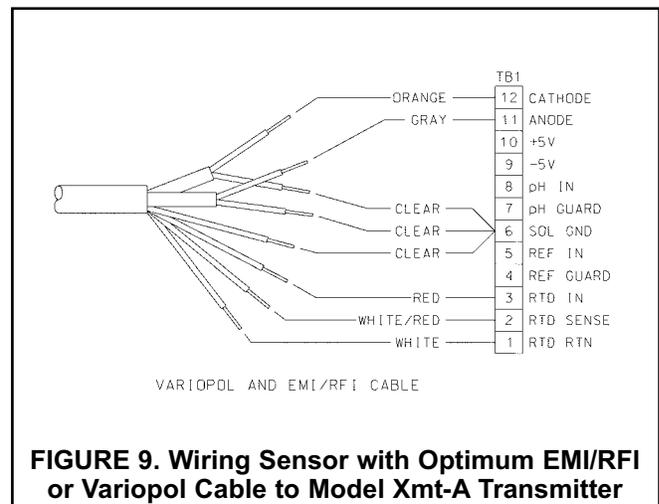


FIGURE 9. Wiring Sensor with Optimum EMI/RFI or Variopol Cable to Model Xmt-A Transmitter

WIRING TO MODEL 5081-A

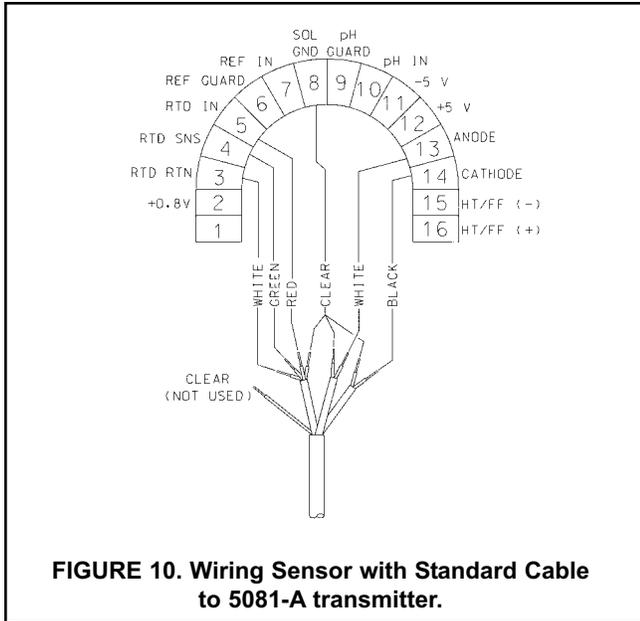


FIGURE 10. Wiring Sensor with Standard Cable to 5081-A transmitter.

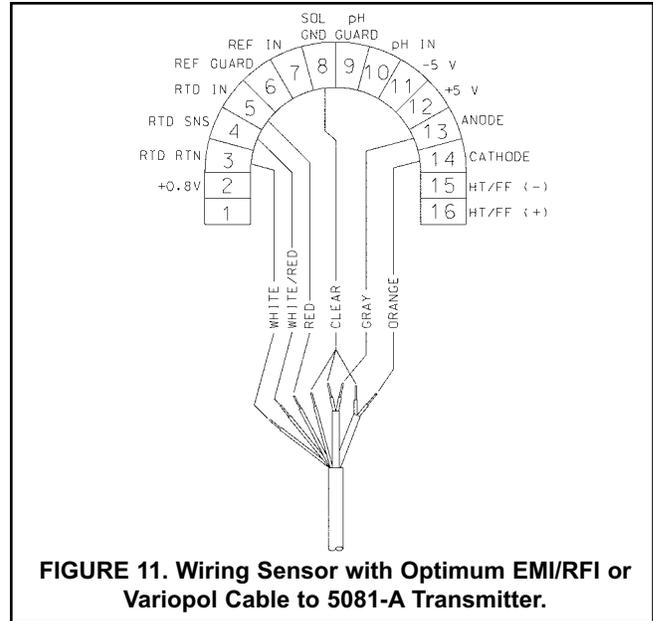


FIGURE 11. Wiring Sensor with Optimum EMI/RFI or Variopole Cable to 5081-A Transmitter.

CALIBRATION

Calibrate the sensor in water-saturated air. It usually takes no more than 20 minutes for the sensor reading to become stable. Prolonged exposure to air may affect the linearity of the sensor. If the cumulative exposure to air is less than five hours per year, sensor linearity should be within specifications. If cumulative exposure exceeds five hours per year, restore the linear response of the sensor by draining the electrolyte and replacing it with fresh solution.

MAINTENANCE

CAUTION: PRESSURIZED SPRAY INJURY
 Before removing the sensor from the process stream for maintenance, be sure the process pressure is reduced to 0 psig and the process temperature is at a safe level!

CAUTION
 Fill solution may cause irritation. May be harmful if swallowed. Read and follow manual.

CLEANING THE MEMBRANE.

Keep the membrane clean and free from solid corrosion products. Clean the membrane with water sprayed from a wash bottle or gently wipe the sensor with a soft, clean tissue.

REPLACING THE ELECTROLYTE SOLUTION AND MEMBRANE.

1. Unscrew the membrane retainer and remove the membrane assembly and O-ring. See Figure 12.
2. Hold the sensor over a container with the cathode pointing down.
3. Remove the fill plug and allow the electrolyte solution to drain out.
4. Inspect the cathode. If it is tarnished, clean it by gently rubbing in the direction of the existing scratches (do not use a circular motion) with 400-600 grit silicon carbide finishing paper. Rinse the cathode thoroughly with water.
5. Wrap the plug with several turns of pipe tape and set aside.

6. Prepare a new membrane. Hold the membrane assembly with the cup formed by the membrane and membrane holder pointing up. Place a drop of isopropyl alcohol in the cup. Slowly add about twenty (20) drops of electrolyte solution to the cup. This step is important because the alcohol wets the inside surface of the membrane and ensures that no air bubbles will be trapped when the membrane assembly is placed over the cathode. Leave the membrane assembly filled with electrolyte solution and set it aside.
7. Hold the sensor at about a 45-degree angle with the cathode end pointing up. Add electrolyte solution through the fill hole until the liquid overflows. Tap the sensor near the threads to release trapped air bubbles. Add more electrolyte solution if necessary.
8. Place the fill plug in the electrolyte port and begin screwing it in. After several threads have engaged, rotate the sensor so that the cathode is pointing up and continue tightening the fill plug. Do not over-tighten.

9. Place a new O-ring in the groove around the cathode post. Cover the holes at the base of the cathode stem with several drops of electrolyte solution.
10. Insert a small **blunt** probe, like a toothpick with the end cut off, through the pressure equalizing port. See Figure 12.

NOTE

Do not use a sharp probe. It will puncture the bladder and destroy the sensor.

Gently press the probe against the bladder several times to force liquid through the holes at the base of the cathode stem. Keep pressing the bladder until no air bubbles can be seen leaving the holes. Be sure the holes remain covered with electrolyte solution.

11. Place a drop of electrolyte solution on the cathode, then place the membrane assembly over the cathode. Screw the membrane retainer in place.
12. The sensor may require several hours operating at the polarizing voltage to equilibrate after the electrolyte solution has been replenished.

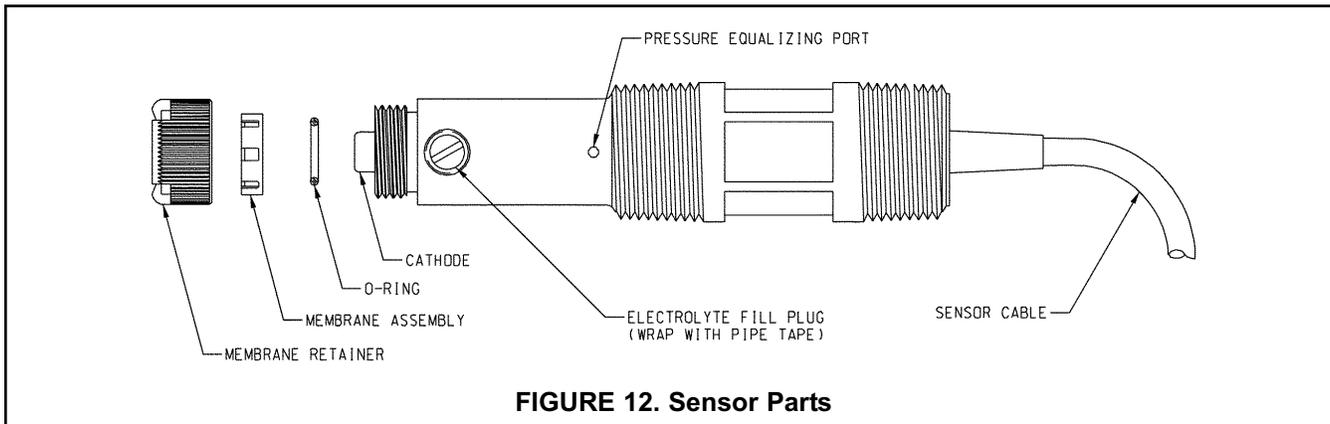


FIGURE 12. Sensor Parts

STORAGE.

Store the sensor with the membrane immersed in a fresh solution of saturated sodium sulfite. The PVC cap shipped with the sensor is ideal for the purpose. Leave the power to the analyzer turned on.

SPARE PARTS

33523-00	Electrolyte Fill Plug
9550094	O-Ring, Viton 2-014
33521-00	Membrane Retainer
23501-04	Dissolved Oxygen Membrane Assembly: includes one membrane assembly and one O-ring
23502-04	Dissolved Oxygen Membrane Kit: includes 3 membrane assemblies and 3 O-rings
9210264	#1 Dissolved Oxygen Sensor Fill Solution, 4 oz (120 mL)



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Emerson Process Management

Liquid Division
2400 Barranca Parkway
Irvine, CA 92606 USA
Tel: (949) 757-8500
Fax: (949) 474-7250
<http://www.raihome.com>

