


Four-electrode Conductivity Sensor

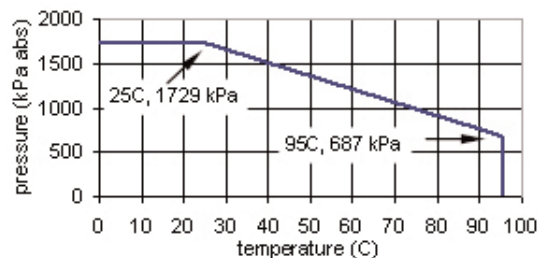
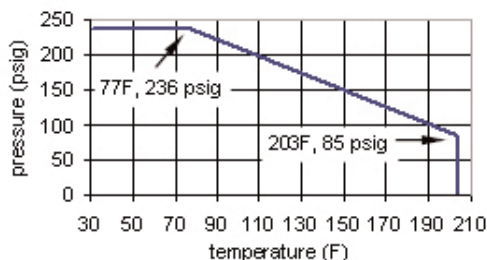
For additional information, please refer to the Instruction Manuals CD shipped with this product, or visit our website at www.emersonprocess.com/raihome/liquid/.

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| <p>NOTICE</p> <p>SENSOR/PROCESS APPLICATION COMPATIBILITY</p> |
| <p>The wetted sensor materials may not be compatible with process composition and operating conditions. Application compatibility is entirely the responsibility of the user.</p> |

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| <p>CAUTION</p>  |
| <p>Before removing the sensor, be absolutely certain that the process pressure is reduced to 0 psig and the process temperature is lowered to a safe level!</p> |

SENSOR SPECIFICATIONS

Pressure and Temperature:



Wetted materials: Unfilled PEEK, 316L stainless steel, EP (option 22 only). PEEK meets 21CFR177.2415. EP meets 21CFR177.2600.

Surface finish: 16 microinch (0.4 micron) Ra (except electrode surfaces)

Steam sterilization: tolerates SIP to 284°F (140°C)

INSTALLATION

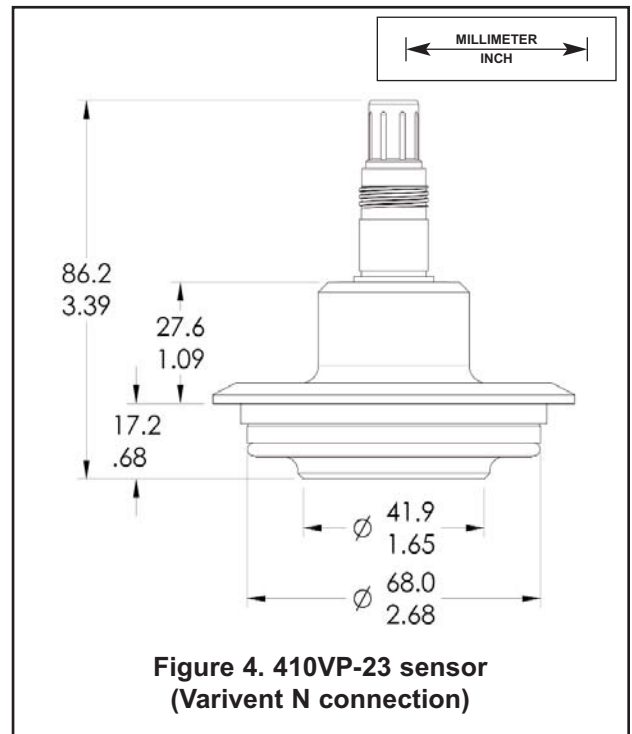
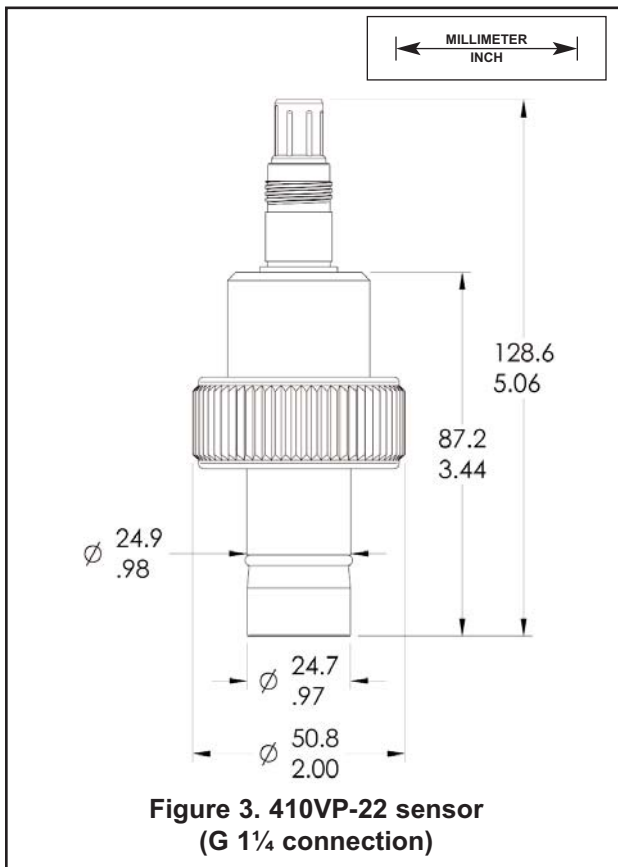
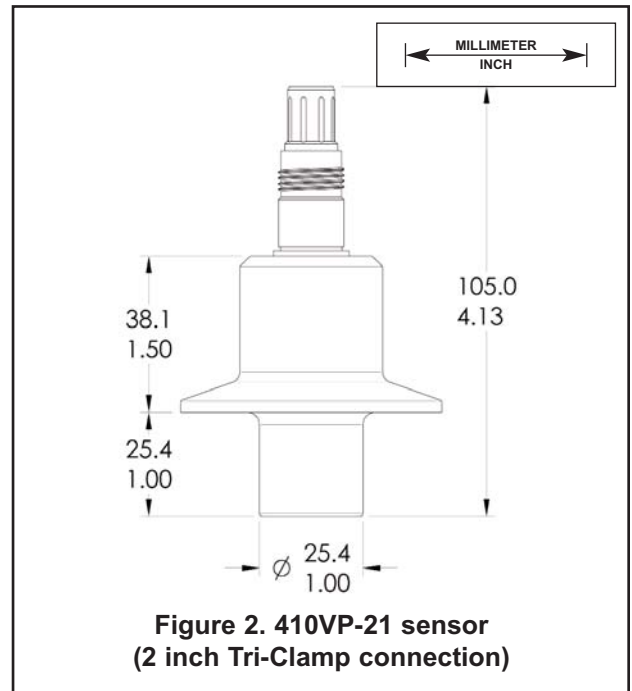
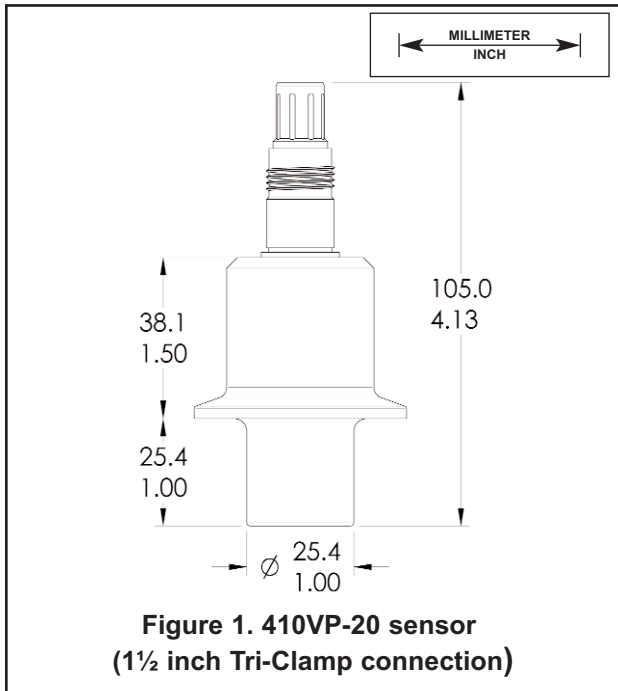
The 410VP sensor is available with four process connections: 1½ inch Tri-Clamp¹, 2-inch Tri-Clamp, G 1¼, and Varivent N². Gaskets and clamps for the Tri-Clamp and Varivent connections must be supplied by the user.

Install the sensor so that the electrodes are completely immersed in the process liquid. Avoid installing the sensor in places where air bubbles are likely to get trapped or sediment is likely to accumulate on the electrodes. Generally, mounting the sensor in a vertical pipe run is best. If the sensor must be installed in a horizontal pipe, place the sensor in the 3 o'clock position. Keep at least 0.25 inch (6 mm) clearance between the end of the sensor and the opposite pipe wall.

To keep response time as fast as possible, do not install the sensor in dead legs or areas where circulation is poor.

¹Tri-Clamp is a registered trademark of Alfa Laval, Inc.

²Varivent is a registered trademark of Tuchenhausen, GmbH.



WIRING

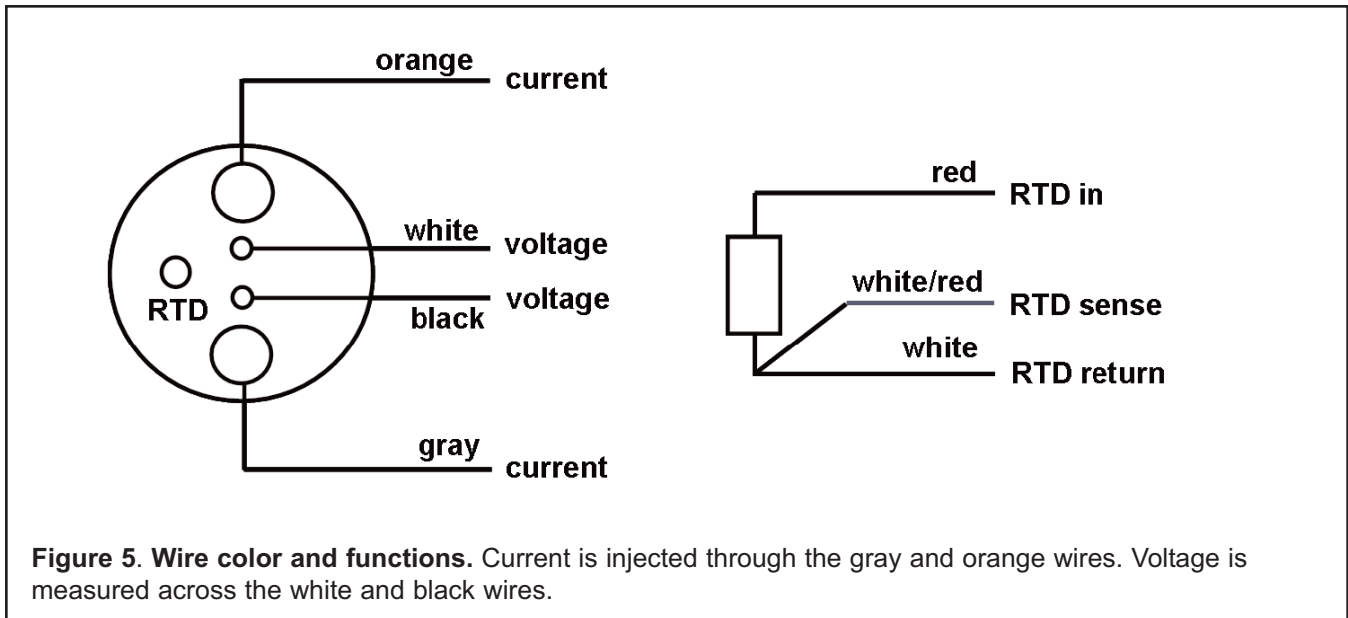


Figure 5. Wire color and functions. Current is injected through the gray and orange wires. Voltage is measured across the white and black wires.

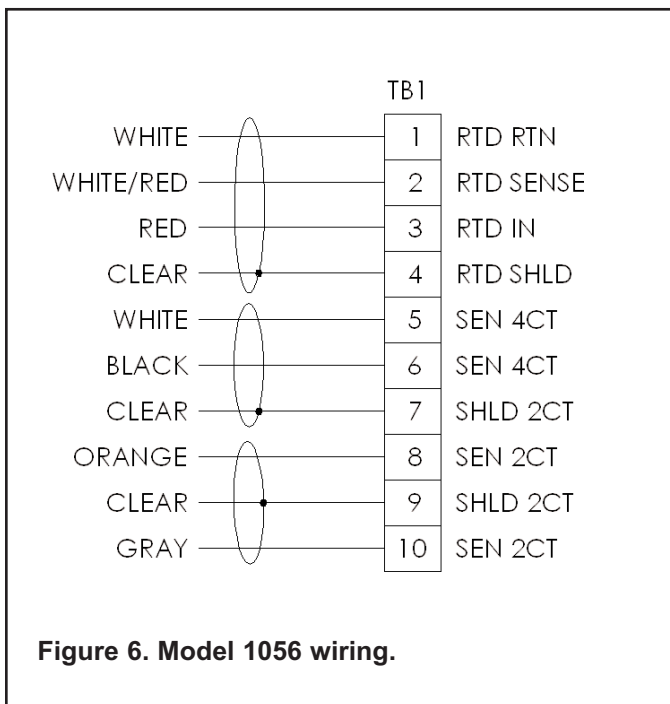


Figure 6. Model 1056 wiring.

The terminal end of the sensor is keyed to ensure proper mating with the cable receptacle. Once the key has slid into the mating slot, tighten the connection by turning the knurled ring clockwise.

SETUP AND CALIBRATION

The sensor is calibrated at the factory and does not require initial user-calibration. Simply configure the analyzer to accept a four-electrode sensor and enter the cell constant and calibration factor printed on the label.

After a period of use, the sensor may require recalibration. Recalibration frequency is best determined by experience. For additional calibration information, refer to the analyzer instruction manual.

TROUBLESHOOTING

| PROBLEM | PROBABLE CAUSE | SOLUTION |
|---|--|---|
| Off-scale reading | Wiring is incorrect. | Verify wiring. See Figure 6. |
| | RTD is open or shorted. | Check RTD for open connections or shorts. See Figure 5. |
| | Sensor is not in process stream. | Be sure sensor is completely submerged in process stream. |
| | Variopol cable is not properly seated. | Loosen connector and reseal. |
| Noisy reading | Sensor is improperly installed in process stream. | Be sure sensor is completely submerged in process stream. |
| | Variopol cable is not properly seated. | Loosen connector and reseal. |
| Reading seems wrong (lower or higher than expected) | Bubbles trapped on sensor. | Be sure sensor is installed so that air cannot become trapped against it. |
| | Wrong temperature correction algorithm. | Check that temperature correction algorithm is appropriate for the sample. See the analyzer manual for more information. |
| | Wrong cell constant. Wrong calibration factor. | Verify that the correct cell constant and calibration factor have been entered in the analyzer. See the analyzer manual for more information. |
| | Bottom of sensor is too close to pipe wall. | Maintain at least 0.25 in (6 mm) clearance between bottom of sensor and opposite pipe wall. |
| | Temperature reading in error | Disconnect red and white RTD wires. Measure resistance across leads, which should be about 1100Ω at room temperature. |
| Sluggish response | Electrodes are fouled. | Clean electrodes. |
| | Sensor is installed in dead area in process piping | Move sensor to a location more representative of the process liquid. |



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