PURSense™ Conductivity Sensors

For additional information, please visit our website at www.rosemountanalytical.com.

⚠ CAUTION

SENSOR/PROCESS APPLICATION COMPATIBILITY
The wetted sensor materials may not be compatible with process com position and operating conditions.
Application compat ibility is entirely the responsibility of the user.

⚠ WARNING

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!

Specifications - Sensor

Specifications	403 and 403VP
Wetted Materials	titanium, PCTFE, 316 SS, EP
Temperature Range	32–221 °F (0–105 °C) Sensors tolerate steam sterilization to 135 °C
Maximum Pressure	250 psig (1825 kPa abs)

NOTE

Elastomers and fluorocarbon resins are compatible with 21CFR177. Elastomers also meet the requirements of USP Class VI. Stainless steel contains <5 % delta ferrite. All surfaces in have 16 microinch (0.4 micrometer) Ra finish.

Installation

Depending on the option selected, the sensor can be installed in either a 1 ½-inch or 2-inch Tri-Clamp tee. The gasket,

Figure 1. Sensor Orientation

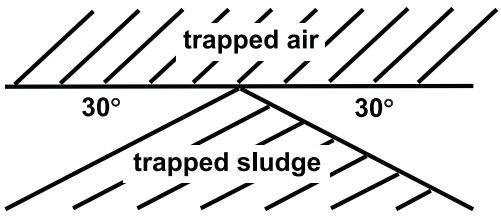
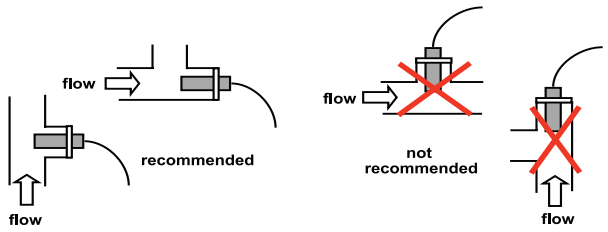


Figure 2. Recommended Installation



clamp, and tee must be supplied by the user. The electrodes must be completely submerged in the process liquid, i.e., up to the inside surface of the flange.

If the sensor is installed in a side stream with the sample draining to open atmosphere, bubbles may accumulate on the electrodes. Trapped bubbles will cause errors. Normally, as bubbles accumulate the conductivity reading drifts down. To control bubble formation, apply a small amount of back pressure to the sensor.

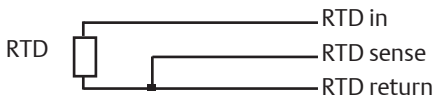
Wiring

NOTE

For additional wiring information on this product, including sensor combinations not shown here, please refer to either our online wiring programs or the Manual DVD enclosed with each product.

1056, 1057, 56, 5081, 6081, 54e, and XMT : http://www3.emersonprocess.com/raihome/sp/liquid/wiring/XMT/
1066 and sensors with SMART preamps: http://www2.emersonprocess.com/en-US/brands/rosemountanalytical/Liquid/Sensors/Pages/Wiring_Diagram.aspx
1055: http://www3.emersonprocess.com/raihome/sp/liquid/wiring/1055/

Wire Color and Connections in Sensor

COLOR	FUNCTION
Gray	Connects to outer electrode
Clear	Coaxial shield for gray wire
Orange	Connects to inner electrode
Clear	Coaxial shield for orange wire
Red	
White with red stripe	
White	
Clear	Shield for all RTD lead wires

Wiring Diagrams

Figure 3. Wiring for 54eC

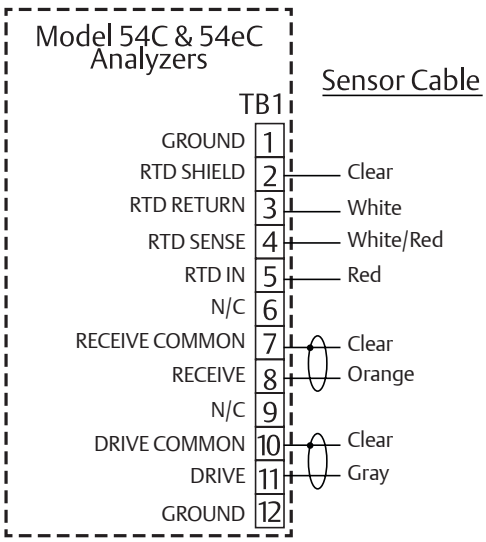


Figure 4. Wiring for 56 and 1056

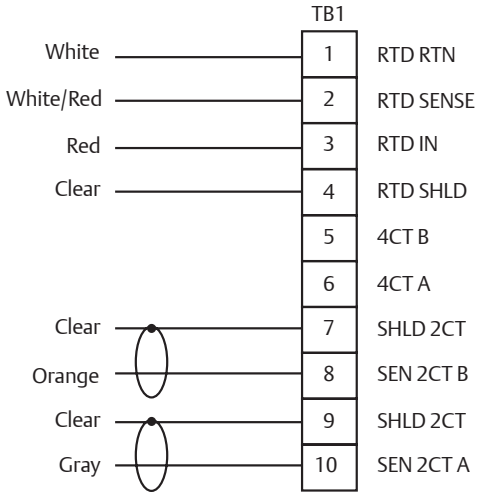


Figure 5. Wiring for 1066

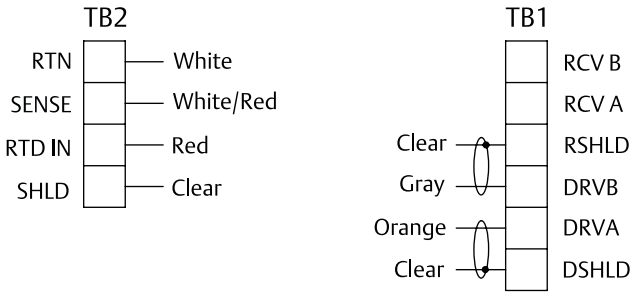


Figure 6. Wiring (Panel) for Xmt-C-10

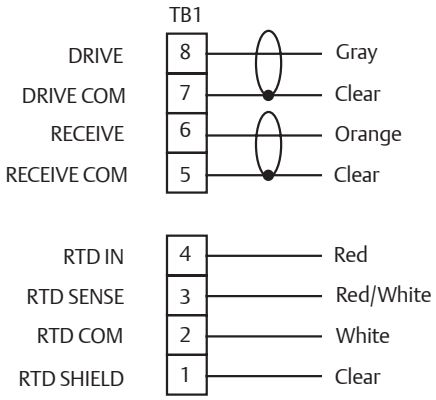


Figure 7. Wiring(Pipe or Wall) for Xmt-C-11

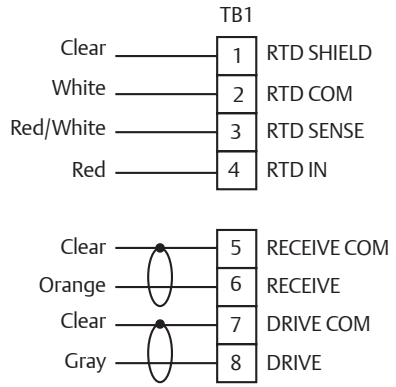


Figure 8. Wiring for 5081-C

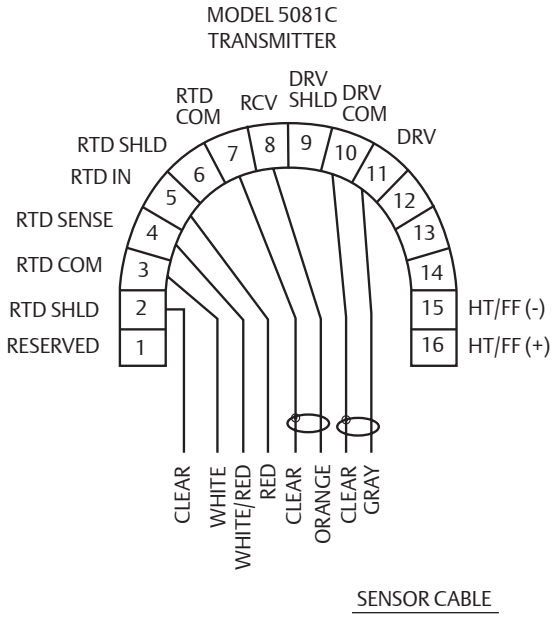
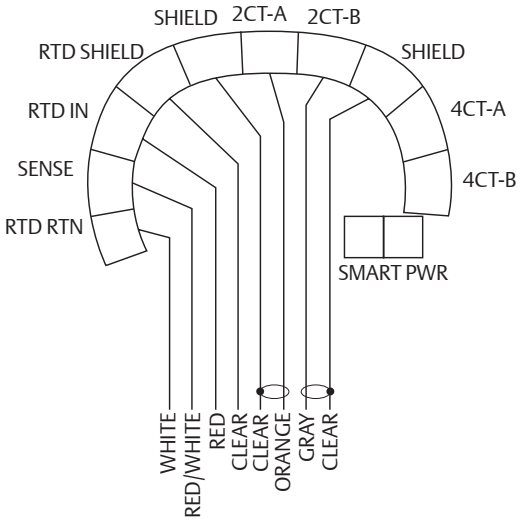


Figure 9. Wiring for 6081-C

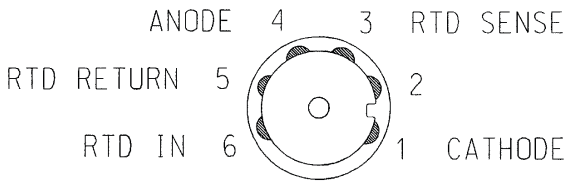


Wiring through a Junction Box

If wiring connections are made through a remote junction box (PN 23550-00), wire point-to-point. Use cable 23747-00 (factory-terminated) or 9200275 (no terminations).

Pin Out Diagram for 400VP

Figure 10. VP pin-out (viewed from connector end of sensor, looking down)



Cleaning the Sensor

Use a warm detergent solution and a soft brush or pipe cleaner to remove oil and scale. Isopropyl alcohol (rubbing alcohol) can also be used to remove oily films. Avoid using strong mineral acids to clean conductivity sensors.

Calibration

PURSense conductivity sensors are calibrated at the factory and do not need calibration when first placed in service. Simply enter the cell constant printed on the label into the analyzer.

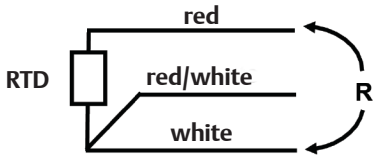
After a period of service, the sensor may require calibration. The sensor can be calibrated against a solution having known conductivity or against a referee meter and sensor. If using a standard solution, choose one having conductivity in the recommended operating for the sensor cell constant. Refer to the analyzer manual or product data sheet for recommended ranges. Do not use standard solutions having conductivity less than about 100 uS/cm. They are susceptible to contamination by atmospheric carbon dioxide, which can alter the conductivity by a variable amount as great as 1.2 uS/cm (at 25°C). Because 0.01/cm sensors must be calibrated in low conductivity solutions, they are best calibrated against a referee meter and sensor in a closed system.

For more information about calibrating contacting conductivity sensors, refer to application sheet ADS 43-024, available on the Rosemount Analytical website.

Troubleshooting

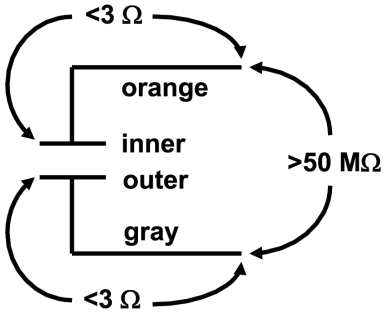
PROBLEM	PROBABLE CAUSE	SOLUTION
Off-scale reading	Wiring is wrong.	Verify wiring.
	RTD is open or shorted.	Check RTD for open or short circuits. See Figure 11.
	Sensor is not in process stream.	Be sure sensor is completely submerged in process stream.
	Variopol cable is not properly seated.	Loosen connector and reseat.
	Sensor has failed.	Perform isolation checks. See Figure 12.
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 reseat.
Reading seems wrong (lower or higher than expected)	Bubbles trapped in sensor.	Be sure sensor is properly oriented in pipe or flow cell. See Figure 1. Apply back pressure to flow cell.
	Wrong temperature correction algorithm.	Check that temperature correction is appropriate for the sample. See analyzer manual for more information.
	Wrong cell constant.	Verify that the correct cell constant has been entered in the analyzer and that the cell constant is appropriate for the conductivity of the sample. See analyzer manual.
Sluggish response	Electrodes are fouled.	Clean electrodes.
	Sensor is installed in dead area in piping.	Move sensor to a location more representative of the process liquid.

Figure 11. Checking RTD
Disconnect leads and measure resistances shown. The measured resistance at room temperature should be close to the value in the table.



temperature °C	resistance in Ω	
	Pt 100	Pt 1000
0	100.0	1000
10	103.9	1039
20	107.8	1078
30	111.7	1117
40	115.5	1155
50	119.4	1194

Figure 12. Checking Continuity and Leakage
Disconnect electrode leads and measure resistance and continuity as shown. Sensor must be dry when checking resistance between electrode leads.



Notes:

Notes:

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