

# ENDURANCE™ Conductivity Sensor

For additional information, please visit our website at [www.emersonprocess.com/raihome/liquid/](http://www.emersonprocess.com/raihome/liquid/).

## SENSOR SPECIFICATIONS

SPECIFICATIONS	MODEL 401
Wetted Materials	graphite, Kynar, epoxy, EPDM
Temperature Range	32-212°F (0-100°C)
Maximum Pressure	200 psig (1481 kPa abs)


**⚠ 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.

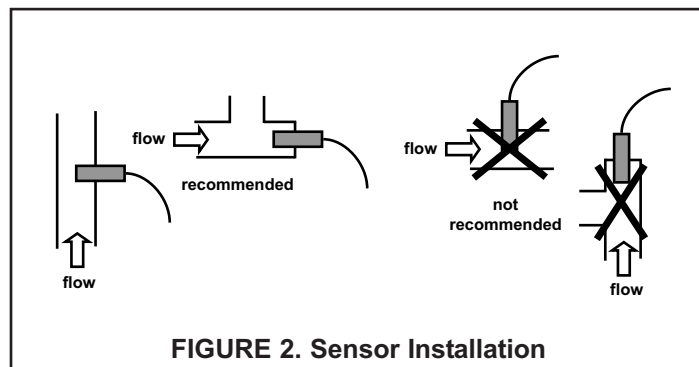
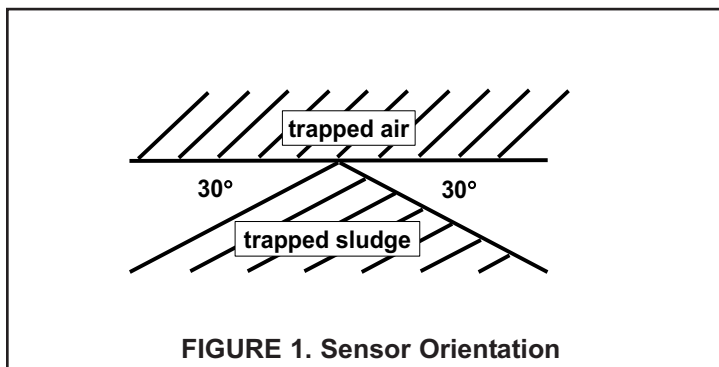
## INSTALLATION

See Figures 1 and 2 for recommended sensor orientation and installation. The sensor must be completely submerged in the process liquid. Keep 1/4 in. (0.6 cm) clearance between electrodes and piping.

If the sensor is installed in a sidestream 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.

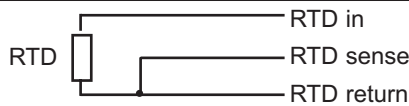
**⚠ WARNING** 

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!



## WIRING

### 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

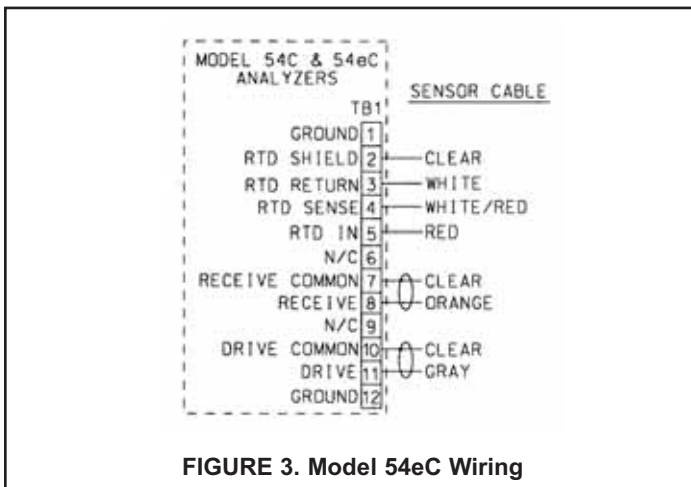


FIGURE 3. Model 54eC Wiring

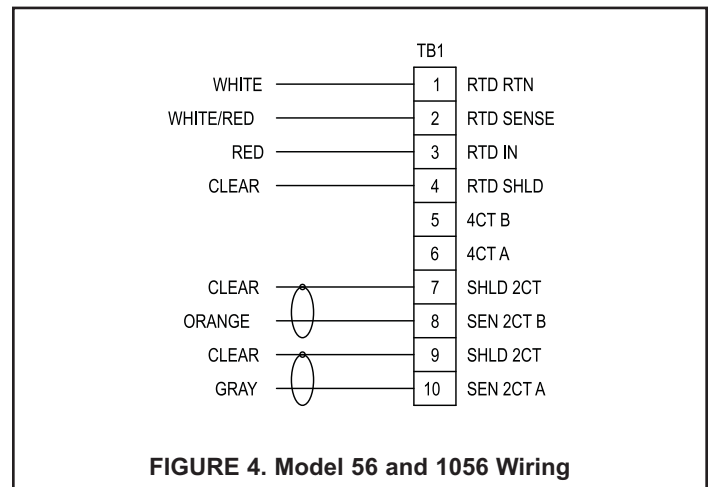


FIGURE 4. Model 56 and 1056 Wiring

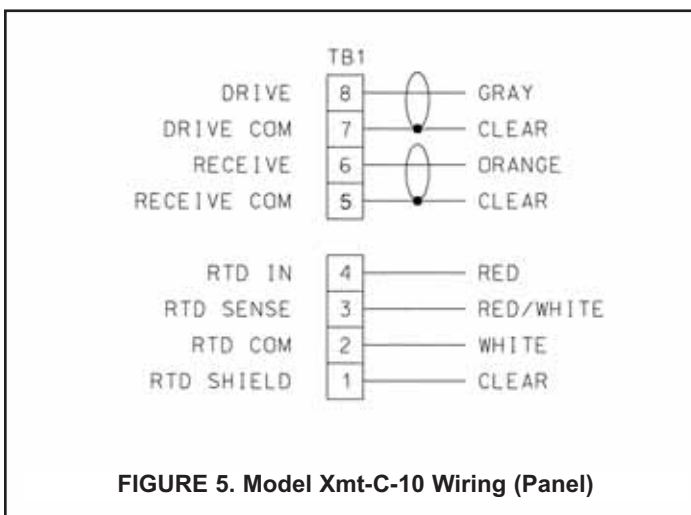


FIGURE 5. Model Xmt-C-10 Wiring (Panel)

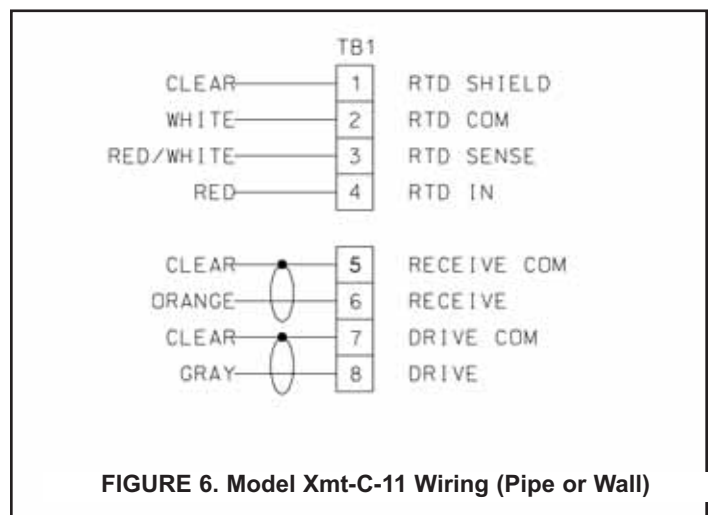
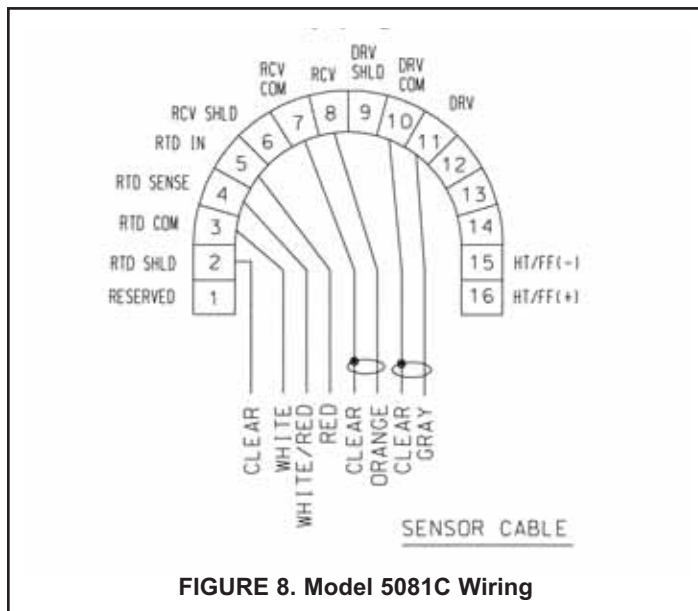
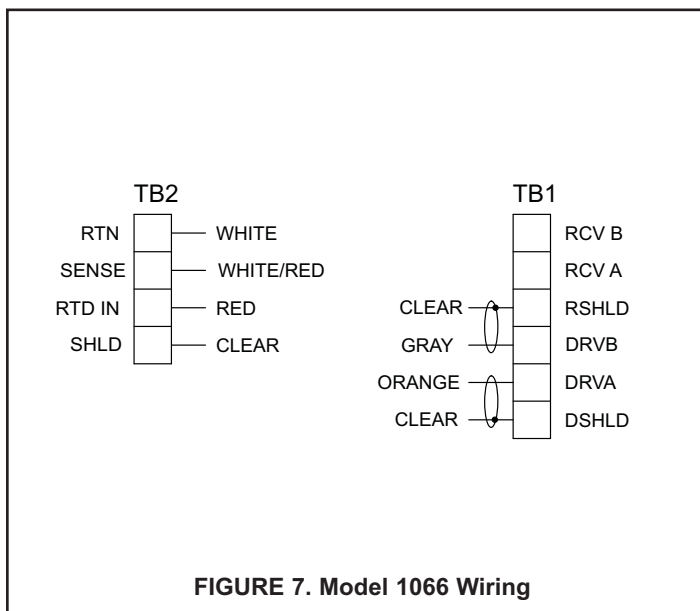


FIGURE 6. Model Xmt-C-11 Wiring (Pipe or Wall)



### 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).

### 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

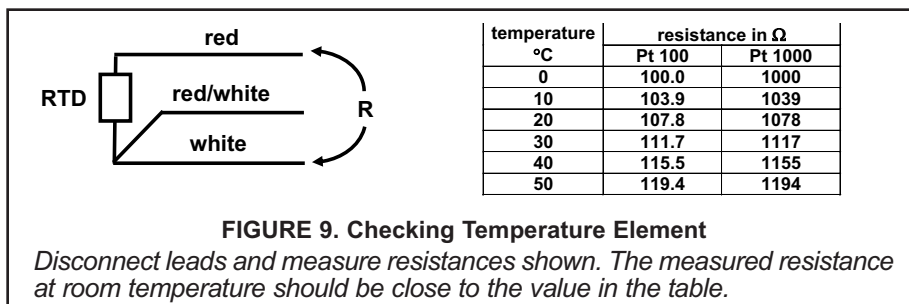
ENDURANCE conductivity sensors are calibrated at the factory and do not need calibration when first placed in service. Simply enter the cell constant printed on the label into the analyzer.

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 of about 5000 uS/cm.

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.
	Temperature element is open or shorted.	Check temperature element for open or short circuits. See Figure 9.
	Sensor is not in process stream.	Be sure sensor is completely submerged in process stream.
	Sensor has failed.	Call the factory.
Noisy reading	Sensor is improperly installed in process stream.	Be sure sensor is completely submerged in process stream.
Reading seems wrong (lower or higher than expected)	Bubbles trapped in sensor.	Be sure sensor is properly oriented in pipe or flow cell. See Figures 1 & 2 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.



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