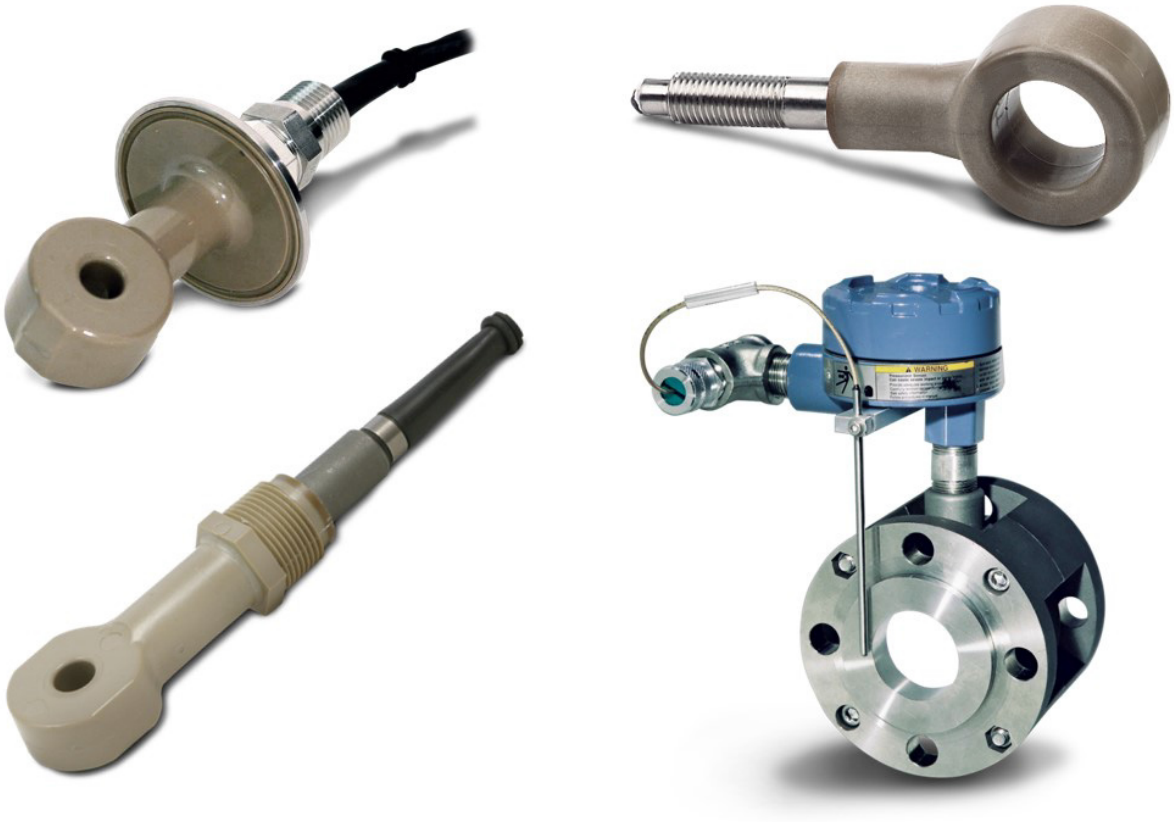
Technical Data Sheet
May 2017
LIQ-TDS-Toroidal-Conductivity

Toroidal Conductivity Sensor Addendum

Transmitter Compatibility



ROSEMOUNT™

EMERSON™

Rosemount 56, 1056, and 1066 Transmitters

Measurement Choices

Conductivity, resistivity, total dissolved solids, salinity, % concentration

Salinity: Uses practical salinity scale

Total dissolved solids: Calculated by multiplying conductivity at 25 °C by 0.65

% Concentration selections *: 0-12% NaOH, 0-15% HCl, 0-20% NaCl, and 0-25% or 96-99.7% H_2SO_4.

Temperature Compensation Options

Manual slope (X%/°C), neutral salt (dilute sodium chloride)

Repeatability

±0.25% ±5 µS/cm after zero cal

Input Filter

Time constant 1-999 seconds, default 2 seconds

Response Time

3 seconds to 100% of final reading

* *The conductivity concentration algorithms for these solutions are fully temperature compensated.*

Contents

Table 1. Rosemount 56, 1056, and 1066 transmitter temperature specifications

Temperature Range	-13 to 410 °F (-25 to 210 °C)
Temperature Accuracy, Pt-100, -25 to 50 °C	±0.5 °C
Temperature Accuracy, Pt-100,50 to 210°C	±1 °C

Table 2. Rosemount 56 and 1056 transmitter loop performance with Rosemount 228 and 225 sensors

Conductivity range	Loop performance (Following calibration)	
1 µS/cm to 15 µS/cm	± 15 µS/cm outside low recommended range	
15 µS/cm to 1500 mS/cm	± 1% of reading ±10 µS/cm in recommended range	
1500 mS/cm to 2000 mS/cm	± 5% of reading outside high recommended range	

Table 3. Rosemount 1066 transmitter loop performance with Rosemount 228 and 225 sensors

Conductivity range	Loop performance (Following calibration)	
15 µS/cm to 1500 mS/cm	± 1% of reading ±15 µS/cm in recommended range	
1500 mS/cm to 2000 mS/cm	± 5% of reading outside high recommended range	

Table 4. Rosemount 56 and 1056 transmitter loop performance with Rosemount 226 sensors

Conductivity range	Loop performance (Following calibration)	
1 µS/cm to 5 µS/cm	±5 µS/cm outside low recommended range	
5 µS/cm to 500 mS/cm	±1% of reading ±5 µS/cm in recommended range	
500 mS/cm to 2000 mS/cm	±5% of reading outside high recommended range	

Table 5. Rosemount 1066 transmitter loop performance with Rosemount 226 sensors

Conductivity range	Loop performance (Following calibration)	
15 µS/cm to 500 mS/cm	± 1% of reading ±5 µS/cm in recommended range	
500 mS/cm to 2000 mS/cm	± 5% of reading outside high recommended range	

Table 6. Transmitter loop performance with Rosemount 222 sensors

Transmitter model	Conductivity Range	Loop performance (Following calibration)	
Rosemount 1056/56	500 µS/cm to 2000 mS/cm	± 4% of reading in recommended range	
Rosemount 1066		± 4% of reading ±5 mS/cm in recommended range	

Table 7. Transmitter loop performance with Rosemount 242 sensors

Transmitter model	Conductivity Range	Loop performance (Following calibration)	
Rosemount 1056/56	100 µS/cm to 2000 mS/cm	± 4% of reading in recommended range	
Rosemount 1066		± 4% of reading ±5 mS/cm in recommended range	

Rosemount 5081 Transmitter

Rosemount 5081 Transmitter Loop Specifications

Loop Accuracy: With a standard Rosemount 228 or 225 sensor and 20 ft. cable, laboratory accuracy at 25 °C can be as good as ± 2% of reading and ±50 µS/cm.
To achieve optimum performance, standardize the sensor in the process at the conductivity and temperature of interest. Results under real process conditions, at different temperatures, or using other sensors may differ from above.

RTD Accuracy: Utilizing a perfect 100 Ohm RTD after 1 point temperature standardization, temperature reading can be as good as ± 0.5 °C

Table 8. Rosemount 5081 transmitter specifications at 25 °C

Accuracy	± 1.0% of reading
Repeatability	±0.25% of reading
Stability	0.25% of output range per month, non-cumulative
Ambient temperature coefficient	± 0.1% of reading ± 2 µS/cm per °C
Temperature slope adjustment	0 to 5% per °C

Table 9. Recommended conductivity ranges for Rosemount 228 sensor with Rosemount 5081 transmitter

Nominal cell constant	3.0/cm	
Minimum conductivity	200 µS/cm	
Maximum conductivity	2,000,000 µS/cm	
Values shown are for 25° conductivity with a temperature slope of 2% per °C. The maximum range value will be lower for solutions with a higher temperature slope.		

Table 10. Recommended conductivity ranges for Rosemount 226 sensor with Rosemount 5081 transmitter

Nominal cell constant	1.0/cm
Minimum conductivity	50 µS/cm
Maximum conductivity	1,000,000 µS/cm
Values shown are for 25° conductivity with a temperature slope of 2% per °C. The maximum range value will be lower for solutions with a higher temperature slope.	

Table 11. Recommended conductivity ranges for Rosemount 225 sensor with Rosemount 5081 transmitter

Nominal cell constant	2.7/cm
Minimum conductivity	200 µS/cm
Maximum conductivity	2,000,000 µS/cm
Values shown are for 25° conductivity with a temperature slope of 2% per °C. The maximum range value will be lower for solutions with a higher temperature slope.	

Table 12. Recommended conductivity ranges for Rosemount 222 sensor with Rosemount 5081 transmitter

Nominal cell constant	6.0/cm (1in.)or 4.0/cm (2 in.)
Minimum conductivity	500 µS/cm
Maximum conductivity	2,000,000 µS/cm
Values shown are for 25° conductivity with a temperature slope of 2% per °C. The maximum range value will be lower for solutions with a higher temperature slope.	

Table 13. Recommended conductivity ranges for Rosemount 242 sensor with Rosemount 5081 transmitter

Nominal cell constant [1]	
Minimum conductivity	100 µS/cm [1]
Maximum conductivity	2,000,000 µS/cm [1]
Values shown are for 25° conductivity with a temperature slope of 2% per °C. The maximum range value will be lower for solutions with a higher temperature slope.	

1. Values depend on sensor configuration and wiring.

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