

TSG-500

True Specific Gravity and Temperature Meter



ABS-TSG TINFO
REV 2

TECHNICAL
INFORMATION

Traditional problems with density determination by differential pressure measurements are hydraulic transmission losses, lateral fluid forces caused by agitation, and high susceptibility to damage because of oversized diaphragms.

Besides solving the issues mentioned above, the TSG-500 has several industry firsts. Its onsite adjustment of pressure probes distance allows one system to be optimized on the fly to the depth of any tank onsite. Also, with the integral temperature sensor, proper specific gravity calculation becomes possible since H₂O density is compensated with liquid temperature. With both sensor and transmitter electronics submerged and integrated into one waterproof housing, best signal-to-noise ratio is achieved (as hydraulic lines are virtually eliminated). Finally, unprecedented downsizing of diaphragm diameters allowed downwards orientation of the probes, eliminating lateral flow effects.



Specifications

Model

TSG-500

Application

Density, Specific Gravity and Temperature measurements of liquids

Implementation

Density calculation by differential pressure measurement; Specific Gravity calculation with liquid temperature compensation; Field-installable data acquisition module conditions sensor signals while allowing calibration and network or WITS settings

Sensing Range³

Density: 6.2-22 ppg (0.719-2.64 g/cc)
Specific Gravity: 0.719-2.64
Temperature: 0-150°C (0-302°F)
Tank Height: 0.46-1.52 m (18-60 in)²

Precision¹

Density: 0.05 ppg (0.006 g/cc)
Specific Gravity: 0.006
Temperature: 0.1°C

Repeatability¹

Density: 0.1 ppg (0.012 g/cc)
Specific Gravity: 0.012
Temperature: 0.4°C (1°F)

Power Requirement

18-28VDC, < 3W Consumption

Connectivity and Signals

WITS Level 0 by RS-232 Serial or TCP/IP
Analog Outputs 0-10 VDC

Operating Temperature

Sensors: -25 to 150 °C (-13 to 302 °F)
DAQ Box: -25 to 70 °C (-13 to 158 °F)

Permissible Humidity

< 96%, non-condensing

Weight

Sensor System: 14.5 kg (32 lbs)
DAQ box: 2.3 kg (5 lbs)

Approvals / Certification

Pressure Probes: Class 1 Div 1, Groups C&D
Temperature: ATEX II 1G EEx ia IIC T6/5/4; FM IS Class I, Div 1+2, Group A,B,C,D
DAQ Box: IP 66; UL/ULC Type 2,3,4,4X,5,12,13

Features

- Allows onsite adjustment of HP (High Pressure) and LP (Low Pressure) probes distance, while maintaining easy wizard-driven calibration process.
- Full calibration can be done with onboard keypad – does not require any extra communications equipment like HART communicator, PLC, PC, etc.
- With the integral temperature sensor, water density adjusted to liquid temperature (as measured) can be used to produce actual Specific Gravity calculations which are at least 5% more accurate than non-compensated SG calculated readings.
- The data acquisition module comes with built-in approved Intrinsically Safe barriers, allowing installation of I.S. sensors in Class 1 Div 1 (Zone 1) hazardous environments.

NOTES: **1** – Precision and repeatability increase in direct proportion with the separation distance between pressure probes; values stated here are for 36 inches (91 cm) separation **2** – Discuss with us your application requiring deeper tanks **3** – Density / SG sensing lower limit can be extended further, contact local sales