



### ▶ Highlights

- Monitor product, interface & temperature using a single Resistive Level Sensor
- 1/2" or 1/4" sensor option / flex or rigid
- ± 1/8" accuracy on 1/4" sensor (5800 Version)
- ± 1/4" accuracy on 1/2" sensor
- Modbus or LevelMaster interface
- Self-contained, rugged design
- Installs in minutes
- IP66, -40 °C to 70 °C
- 6-12 Vdc
- Supports up to 16 sensors multi-dropped
- Class I, Division 1 (Zone 0), Intrinsically Safe



US Patent #6967589 & #8,763,455 B1

## ▶ The Most Reliable Hardwired Tank Level Monitoring System

### Ultimate Level Sensing Solution

The OleumTech® H-Series Resistive Tank Level Sensor is the superlative hardwired tank level monitoring solution. This accurate level monitoring instrument has the ability to monitor product, interface, and temperature levels using a single OleumTech Resistive Tank Level Sensor.

OleumTech's patented Resistive Sensors are offered in both flexible (PTFE) and rigid (316 SS) materials in various custom lengths.

The 1/4" resolution sensors mate with the HW5800-RL3 and HW5800-RL4 versions.

The 1/2" resolution sensors mate with the HW5000-RL3 and HW5000-RL4 versions.

### Reliable, Scalable, and Safe

The field-proven level sensor can communicate with any Modbus master or LevelMaster device via RS485 Serial connection. The low-power Resistive Level Sensor can be multi-dropped of up to 16 sensors. Additional data such as volume and tank full percentage can be calculated and reported as well, along with the core level variables. The Resistive Level Sensor is certified for use in Class I, Division 1 (Zone 0) hazardous locations.



### Flex (PTFE) Resistive Sensor



Quick Connect eliminates wiring error and gets workers safely off the process faster

20" coiled diameter only:  
Easy to transport and  
easier to install

1/4" or 1/2" resolution option

### Rigid (316 SS) Resistive Sensor



Height-adjustable compression fitting

Dual-level monitoring capabilities  
+ temperature

Sensor supports wide temperature range  
-40 °C to 120 °C / -40 °F to 248 °F

Limited lifetime warranty against damage  
from H<sub>2</sub>S and paraffin buildup


1/4" or 1/2" resolution option

### Technical Specifications

#### HARDWARE FEATURES

Device Functionality	· Serial Resistive Level Sensor RL3/RL3-T: Modbus, 3-in-1 Measurement Capability: Product, Interface and Temperature RL4/RL4-T: LevelMaster ASCII, 3-in-1 Measurement Capability: Product, Interface and Temperature
Embedded Controller	· Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradeable)
Configuration	· USB to RS485 Converter (SX1000-CC8)
Sensor Type	· Resistive
Resolution	· High Resolution, Depends on Sensor: 1/4" (6.4 mm) or 1/2" (12.7 mm)
Accuracy	· ±1/8-inch for 1/4-inch Resolution Sensor ; ±1/4-inch for 1/2-inch Resolution Sensor · ±3.2 mm for 6.4 mm Resolution Sensor ; ±6.4 mm for 12.7 mm Resolution Sensor
Power Source	· External 6-12 Vdc (12 Vdc Max)
Self-Diagnostics	· Contains Comprehensive Self-Checking Software and Hardware for Continuous Monitoring of Operation
Communication	· Modbus or LevelMaster ASCII
Baud Rate	· 1200-115200 bps

#### CERTIFICATIONS & COMPLIANCE

Safety	 <ul style="list-style-type: none"> <li>· Intrinsically Safe for Use in Hazardous Environments</li> <li>· Class I, Division 1, Groups C, D T4; Ex ia IIB T4 Ga; Class I, Zone 0, AEx ia IIB T4 Ga, -40 °C ≤ Tamb ≤ 70 °C</li> <li>· ATEX: Sira 16ATEX2229X; Ex ia IIB T4 Ga, -40 °C ≤ Tamb ≤ 70 °C</li> <li>· IECEx: SIR 16.0079X; Ex ia IIB T4 Ga, -40 °C ≤ Tamb ≤ 70 °C</li> </ul>
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#### MECHANICAL SPECIFICATIONS

Dimensions	· 5" (W) x 7.6" (H) x 4.4" (D) / 127 mm (W) x 193 mm (H) x 112 mm (D)
Package Dimensions	· 10.25" (W) x 14" (H) x 6.5" (D) / 260 mm (W) x 356 mm (H) x 165 mm (D)
Package Weight	· ~4.5 lbs/ 2.0 kg
Connection Fitting	· 3/4" NPT Female
Enclosure Casing Material	· Type 4X Aluminum; IP66

#### ELECTRICAL SPECIFICATIONS

DC Power Input	· 6-12 Vdc (12 V Max)
Power Consumption	· 5.4 mA Max @ 6-12 Vdc
IS Safety Protection	· Barrier Board (SX1000-BB1)

#### GENERAL SPECIFICATIONS

Operating Conditions	· Ambient Temperature (Class I, Division 1): -40 °F to 158 °F (-40 °C to 70 °C) · Ambient Temperature (Non-Hazardous Applications): -40 °F to 176 °F (-40 °C to 80 °C) · Humidity: 0 to 99 %, Non-Condensing
Warranty	· 2-Year Parts and Labor
Country of Origin	· USA

#### ORDERING INFORMATION

Model Numbers	· 1/2" Resolution (6-pin): HW5000-RL3 (Modbus), HW5000-RL4 (LevelMaster ASCII) · 1/4" Resolution (8-pin): HW5000-RL3-T (Modbus), HW5000-RL4-T (LevelMaster ASCII)
Barrier Boards	· SX1000-BB1
Configuration Kit	· H-Series Configuration Kit (SX1000-CC8)

#### REGISTER TABLE (FIXED, 32-bit)

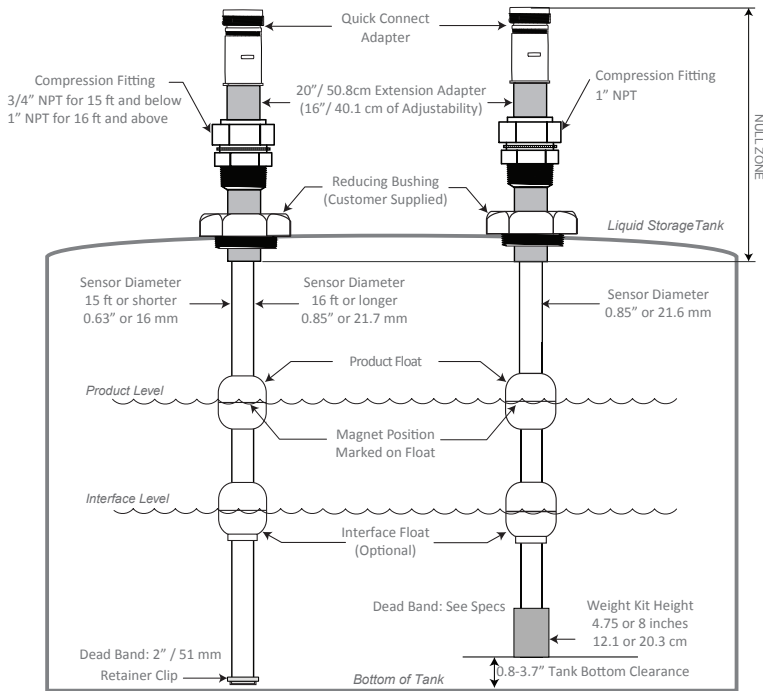
7001	· Read Count
7002	· Product Level
7003	· Interface Level
7004	· Temperature
7005	· Error
7006	· Tank Full Percentage
7007	· Product Volume
7008	· Interface Volume

### Networking Diagram



### RIGID - 316SS

### FLEX - PTFE



## Highlights

- Extremely reliable, accurate & robust performance
- OleumTech's flagship level sensing solution
- Monitor product, interface & temperature levels from a single sensor
- Lifetime limited warranty against H2S damage and paraffin buildup
- 1/2" or 1/4" resolution option
- 1/2" resolution with  $\pm 1/4$ " accuracy  
"TG" & "ZG" resistive sensor kit numbers
- 1/4" resolution with  $\pm 1/8$ " or  $2/16$ " accuracy  
"TH" & "ZH" resistive sensor kit numbers
- "Set it and forget it" one-time calibration
- Quick and easy to install
- Class I, Division 1 (Zone 0), Intrinsically Safe
- Supports wide temperature range  $-40^{\circ}\text{C}$  to  $120^{\circ}\text{C}$  /  $-40^{\circ}\text{F}$  to  $248^{\circ}\text{F}$

US Patent 8,763,455 B1

SENSOR	RIGID: 316 Stainless Steel "SS"	FLEX: Polytetrafluoroethylene "PTFE"
Type	Extremely Reliable and Accurate Resistive Reed Switch Technology	
Measurement Capabilities (3-in-1)	Product, Interface, and Temperature	
Lengths Offered in US Units	2 to 21 ft Length in 1 ft Increments	8 to 38 ft Length in 1 ft Increments
Lengths Offered in Metric	0.61 to 6.4 m in 0.31 m increments	2.44 to 11.58 m in 0.31 m increments
Resolution and Accuracy	Option 1: 1/2-inch (12.7 mm) Resolution with $\pm 1/4$ -inch ( $\pm 6.4$ mm) Accuracy (6-pin Quick Connect) Option 2: 1/4-inch (6.4 mm) Resolution with $\pm 1/8$ -inch ( $\pm 3.2$ mm) Accuracy (8-pin Quick Connect)	
Sensor to Interface Mating Connection (No Wiring Solution)	316 SS Quick Connect: 6-pin Connection for 1/2" Resolution, 8-pin Connection for 1/4" Resolution	
Tank Mating Connection (Adjustable Compression Fitting)	2-15 ft: 3/4" NPT Male / 16-21 ft: 1" NPT Male	1" NPT Male
Temperature Accuracy	$\pm 1^{\circ}\text{C}$	
Sensor Rod/Tubing Diameter	0.63" (16 mm): 2-15 ft Sensor 0.85" (22 mm): 16-21 ft Sensor	0.85" (22 mm)
Anchor Weight Diameter	N/A	2.88" / 73 mm
Height of Anchor Weight	N/A	Up to 26 ft sensor: 4.75" / 121 mm 26 - 38 ft sensor: 8" / 203 mm
Coiled Diameter	N/A	20" (50.8 cm) Coiled Diameter
Minimum Measurement from Bottom (Deadband)	2" (50.8 mm) from Bottom	From Top of Anchor Weight
Sensor Pressure Rating	Float Dependent	Float Dependent
316 Stainless Steel - Standard (Included w/Rigid $\leq 15$ ft)	440 PSI / 30 Bar	N/A
316 Stainless Steel - Large	363 PSI / 25 Bar	142 PSI / 9.8 Bar
Polypropylene (PP) (Inc. w/Flex and w/Rigid $\geq 16$ ft)	72 PSI / 5 Bar	72 PSI / 5 Bar
Float Options:	Compatible Only with Rigid Sensor Length up to 15 ft Prod: 0.64 SG, Intf: 0.96 SG, ID 0.72" (18.3 mm) OD 2.05" (52.1 mm), Inner Clearance: 0.1" (2.6 mm)	
316 Stainless Steel - Standard, 440 PSI/30 Bar	Product: 0.62 SG, Interface: 0.95 SG, ID 1.1" (27.9 mm), OD 2.76" (70.1 mm), Inner Clearance: 0.5" (12.7 mm)	
316 Stainless Steel - Large, 363 PSI/25 Bar	Product: 0.64 SG, Interface: 0.96 SG, ID 1.1" (27.9 mm), OD 2.91" (73.9 mm), Inner Clearance: 0.5" (12.7 mm)	
Polypropylene (PP), 72 PSI/5 Bar	Product: 0.64 SG, Interface: 0.96 SG, ID 1.1" (27.9 mm), OD 2.91" (73.9 mm), Inner Clearance: 0.5" (12.7 mm)	
Operating Temp. Sensing Area	$-40^{\circ}\text{F}$ to $248^{\circ}\text{F}$ ( $-40^{\circ}\text{C}$ to $120^{\circ}\text{C}$ )	
Certifications	Class I, Division 1, Groups C, D T4; Ex ia IIB T4 Ga; Class I, Zone 0, AEx ia IIB T4 Ga, $-40^{\circ}\text{C} \leq \text{Tamb} \leq 70^{\circ}\text{C}$ ATEX: Sira 16ATEX2229X; Ex ia IIB T4 Ga, $-40^{\circ}\text{C} \leq \text{Tamb} \leq 70^{\circ}\text{C}$ IECEX: SIR 16.0079X; Ex ia IIB T4 Ga, $-40^{\circ}\text{C} \leq \text{Tamb} \leq 70^{\circ}\text{C}$	
Power (Hardwired)	External 6-12 Vdc (12 V max), 5.4 mA @ 6-12 Vdc	
Hardwire Serial Interface (H-Series Only)	RS485, 2-Wire, 16 or 32-bit Modbus RTU, LevelMaster ASCII, Termination for Daisy-chain	
Minimum Sensor Read Interval	Down to 5 Seconds	
Model #: 1/2" Resolution with $\pm 1/4$ -inch Accuracy	60-4001-xxx	60-4101-xxx
Model #: 1/4" Resolution with $\pm 1/8$ -inch Accuracy	60-4101-xxx	60-4102-xxx
Kit #: 1/2" Resolution with Float(s)	ZG-xxx-Fxx	TG-xxx-Fxx
Kit #: 1/4" Resolution with Float(s)	ZH-xxx-Fxx	TH-xxx-Fxx