

DATASHEET

HW-RL3-LCD

H SERIES SENSORS



Highlights

- Monitor product, interface, and temperature with a single sensor
- 2 discrete inputs provided
- 1/4" resolution option ($\pm 1/8"$ accuracy)*
*API 18.2-compliant
- 1/2" resolution option ($\pm 1/4"$ accuracy)
- Sensor option: flex (PTFE) or rigid (316 SS)
- Multiple liquid compatibilities
- Device is fully configurable using the LCD display UI, RS485 Modbus, or the H Series Configuration Software
- LCD is always on with auto-scroll convenience
- Quick and easy to install
- Sensor only requires a one-time calibration
- Supports a wide temperature range
-40 °C to 120 °C (-40 °F to 248 °F)
- Highly resistant to H2S damage, scaling, and paraffin buildup (Limited lifetime warranty, please contact your OleumTech representative for details)
- 9-30 Vdc power input
- Class I, Division 1 (Zone 0), Intrinsically Safe



US Patent #8,763,455 B1

The Most Reliable Tank Level Sensors for Industrial Applications

Ultimate Level Sensing Solution

The RS485 Resistive Tank Level Sensors by OleumTech® are part of the H Series line of high quality instruments that deliver unrivaled performance, reliability, and accuracy in hazardous locations as well as under harsh, extreme environmental conditions.

With over two decades of innovation and manufacturing expertise, OleumTech's Resistive Level Sensors are the company's flagship level monitoring solution that offers industry-leading 5-in-1 monitoring capabilities: product (oil), interface (water), and temperature, along with two discrete inputs for connecting to dry contact sources. The HW-RL3-LCD also has the ability to calculate and report volume and tank full percentage data.

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

Reliable, Scalable, and Safe

The H Series ultra-high-performance level gauging solution can communicate with any Modbus master device via RS485 Serial connection. The low-power Resistive Level Sensors can be multi-dropped up to 16 devices. The Resistive Level Sensors are certified for use in Class I, Division 1 (Zone 0) hazardous locations and are Intrinsically Safe, making them one of the safest products in the world.

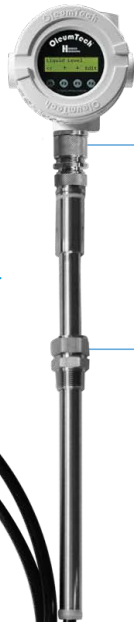
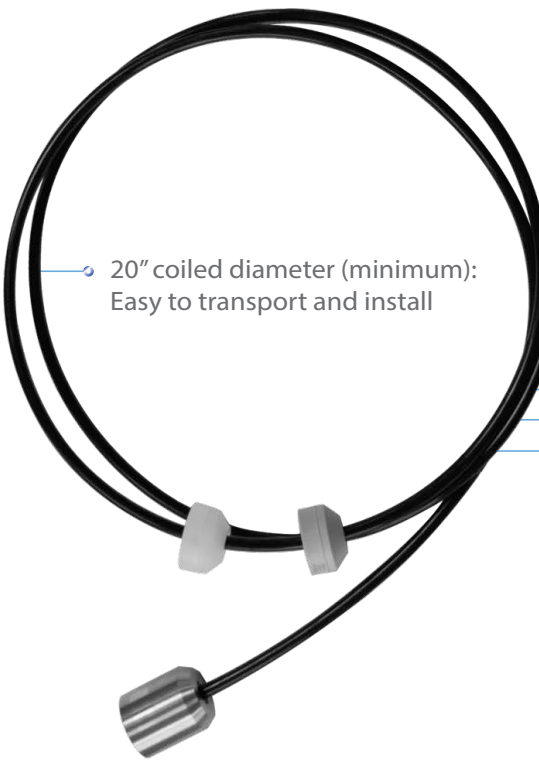


OleumTech Level Sensors are Ideal for:

Production Tanks | Water Tanks | SWD Locations | Separators | Condensate Tanks
 Midstream Collection and Blend Tanks | Refinery Holding Tanks | Chemical Tanks
 and Many Others

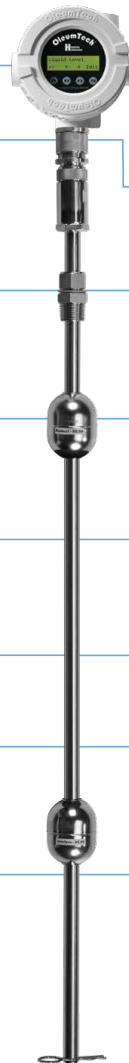
Flex (PTFE) Resistive Level Sensor

The Flex Sensor is shown with
the H Series RS485 Modbus Transmitter



Rigid (316 SS) Resistive Level Sensor

The Rigid Sensor is shown with
the H Series RS485 Modbus Transmitter



- RS485 Modbus, configurable via LCD module
Multi-drop up to 16 sensors
2 discrete inputs
- Quick Connect allows for ultrafast installs and gives the ability to program on or off the tanks
- Height-adjustable compression fitting
- Monitor product, interface, and temperature using a single sensor
- Supports a wide temperature range
-40 °C to 120 °C (-40 °F to 248 °F)
- Multiple liquid compatibilities
- Limited lifetime warranty against damage from H2S, scaling, and paraffin buildup
- 1/4" resolution with ±1/8" accuracy*
*API 18.2-compliant
1/2" resolution with ±1/4" accuracy



MODBUS TABLE (FIXED, 32-bit Float)

| | |
|------|--------------------|
| 7001 | Read Count |
| 7002 | Product Level |
| 7003 | Interface Level |
| 7004 | Temperature |
| 7005 | Error(s) |
| 7006 | Tank Full % |
| 7007 | Product Volume |
| 7008 | Interface Volume |
| 7009 | DIN1 Value |
| 7010 | DIN1 Count |
| 7011 | DIN2 Value |
| 7012 | DIN2 Count |
| 7013 | Modbus Error Count |

Technical Specifications (RS485 Modbus Transmitter)

HARDWARE FEATURES

| | |
|--------------------------|---|
| Device Functionality | · H Series RS485 Modbus Transmitter with Support for Resistive Level Sensors · HW-RL3-LCD: Modbus, Provides Product, Interface and Temperature Levels + 2 Discrete Inputs |
| Embedded Controller | · Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradeable) |
| Configuration | · Integral LCD with Push Button Interface or H Series Configuration Software v3.0.0 or later or via Modbus |
| Sensor Type | · Resistive Reed Switch |
| Resolution | · High Resolution, Depends on Sensor: 1/4" (6.4 mm) or 1/2" (12.7 mm) |
| Accuracy | · US: $\pm 1/8"$ for 1/4" Resolution Sensor ; $\pm 1/4"$ for 1/2" Resolution Sensor · Metric: ± 3.2 mm for 6.4 mm Resolution Sensor ; ± 6.4 mm for 12.7 mm Resolution Sensor |
| 2 Discrete Inputs | · Dry Contact, NPN (Sink), Debounce Filter 0 - 2000 ms (Available on HW-RL3) |
| Interface | · RS485 Modbus (N81 framing: No Parity, 8 Data Bits, 1 Stop Bit) |
| Baud Rate | · 1200-57,600 bps |
| Local LCD Display | · 32-Character Display (16x2 Lines) with 4 Function Keys, Always On |
| Instant Displayable Read | · Product / Interface / Temperature / DIN1+2 with Counts / Modbus Error Count + Modbus Status |

CERTIFICATION & COMPLIANCE

| | | |
|--------|--|--|
| Safety | | · Class I, Division 1, Groups A, B, C, D T4; Ex ia IIC T4 Ga |
| | | · Class I, Zone 0, AEx ia IIC T4 Ga |
| | | · ATEX: Sira 16ATEX2229X; Ex ia IIC T4 Ga |
| | | · IECEx: SIR 16.0079X; Ex ia IIC T4 Ga |
| | | |

MECHANICAL SPECIFICATIONS

| | |
|---------------------------|--|
| Dimensions | · 5" (W) x 4.7" (H) x 4.4" (D) / 127 mm (W) x 119 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 (Head Only) |
| Connection Fitting | · 3/4" NPT Female |
| Enclosure Casing Material | · Type 4X Aluminum; IP66 |

ELECTRICAL SPECIFICATIONS

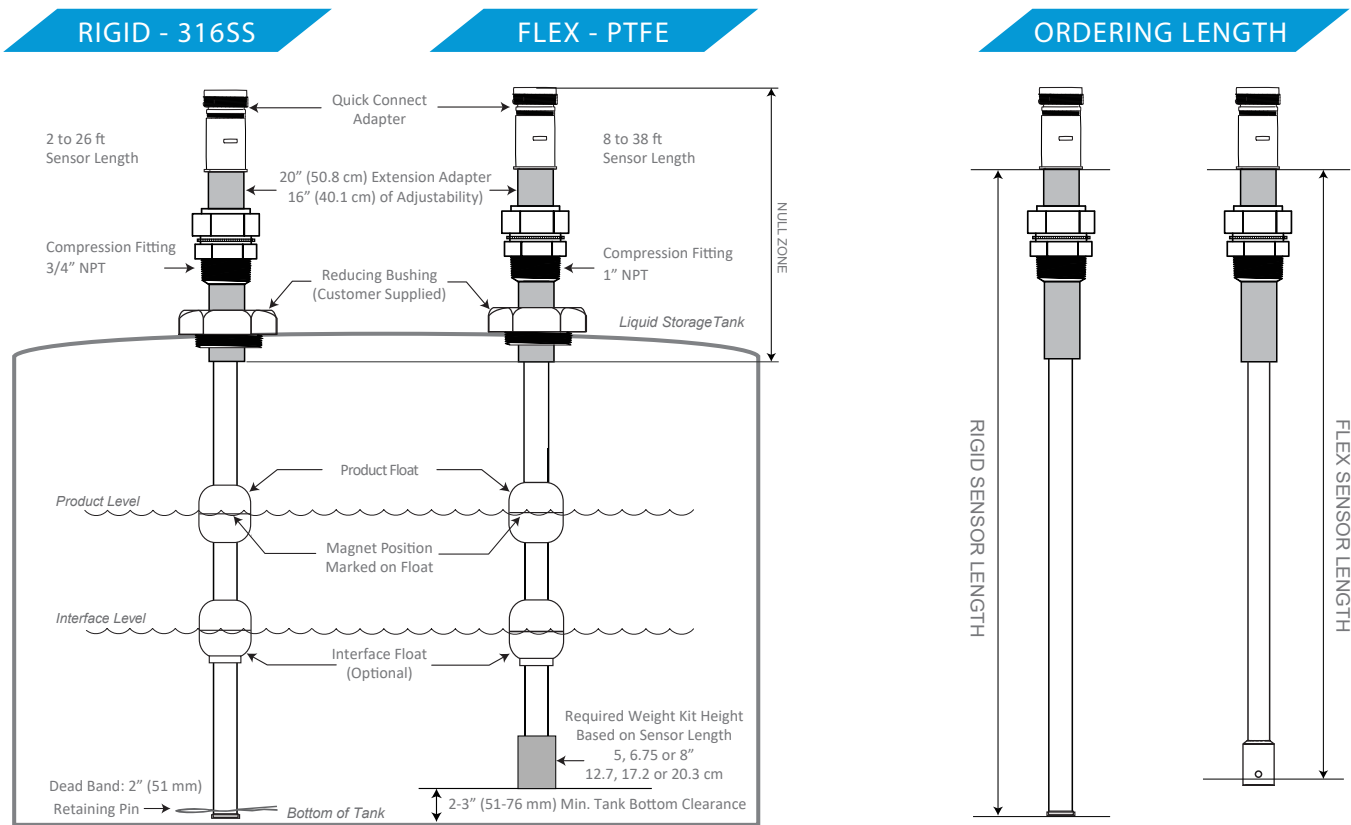
| | |
|----------------------------|---|
| DC Power Input | · 9-30 Vdc (30 V Max) |
| Current Consumption | · 25 mA Peak / 1.5 mA Idle |
| Multi-Drop Max Consumption | · 54 mA Maximum based on 16 Sensors Multi-Dropped |
| IS Safety Protection | · Barrier Board (See Part Numbers under Ordering Information) |

GENERAL SPECIFICATIONS

| | |
|----------------------|---|
| Operating Conditions | · Sensor: Ambient Temperature (Class I, Division 1): -40 °C to 120 °C (-40 °F to 248 °F) |
| | · Transmitter: Ambient Temperature (Class I, Division 1): -40 °C to 70 °C (-40 °F to 158 °F) |
| Warranty | · LCD Screen -20 °C to 70 °C (-4 °F to 158 °F) |
| | · Transmitter: Ambient Temperature (Non-Hazardous Applications): -40 °C to 80 °C (-40 °F to 176 °F) |
| | · Humidity: 0 to 99 %, Non-Condensing |
| Country of Origin | · 2-Year Parts and Labor |
| | · USA |

ORDERING INFORMATION

| | |
|-------------------|--|
| Model Numbers | · 1/2" Resolution (6-pin): HW5000-RL3-LCD · 1/4" Resolution (8-pin): HW5800-RL3-LCD |
| IS Barrier Boards | · 12 V Kit: SX1000-B12, RS485 Module (61-6002-001) + 12 V Module (61-6003-001) · 24 V Kit: SX1000-B24, RS485 Module (61-6002-001) + 24 V Module (61-6004-001) |
| Cables | · H Series Configuration Cable Kit, SX1000-CC8 · OleumTech All-in-One Cable Kit, SX1000-CC2 (For Firmware Upgrading Purpose) |



Technical Specifications (Level Sensors)

| 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 26 ft Length in 1 ft Increments | 8 to 38 ft Length in 1 ft Increments |
| Lengths Offered in Metric | 0.61 to 7.9 m in 0.31 m increments | 2.44 to 11.58 m in 0.31 m increments |
| Resolution and Accuracy | Option 1: 1/2" (12.7 mm) Resolution with ±1/4" (±6.4 mm) Accuracy (6-pin Quick Connect) Option 2: 1/4" (6.4 mm) Resolution with ±1/8" (±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) | 3/4" NPT Male | 1" NPT Male |
| Temperature Accuracy | ±1 °C | |
| Anchor Weight Diameter | N/A | 2.4" / 60.3 mm |
| Height of Anchor Weight | N/A | 8 to 19 ft Sensor: 5" 20 - 28 ft Sensor: 6.75" / 29 - 38 ft Sensor: 8" |
| 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 |
| Pressure Rating | Float Dependent | Float Dependent |
| Sensor Only without Float(s) | 569 PSI (39 Bar) | 142 PSI (9.8 Bar) |
| Sensor w/ 316 SS Float - Small* | 440 PSI (30 Bar) | N/A |
| Sensor w/ Polyvinylidene Fluoride (PVDF) Float | 72.5 PSI (5 Bar) | 72.5 PSI (5 Bar) |
| Float Options: | *Compatible Only with Rigid Sensor Length up to 7 ft, Product: 0.64 SG, Interface: 0.96 SG, ID 0.72" (18.3 mm), OD 2.05" (52.1 mm), H 2.71" (68.83 mm) Polyvinylidene Fluoride (PVDF), (Fx3) Product: 0.64 SG, Interface: 0.96 SG, ID 1.18" (30 +0.3/-0 mm), OD 2.83" (72 +/-0.25 mm), H 1.77" (45 +/-1 mm) | |
| Operating Temp. Sensing Area | -40 °C to 120 °C (-40 °F to 248 °F) | |
| Certifications | Class I Division 1, Class I, Group A, B, C, D, Zone 0, Ex ia IIC T4, AEx ia IIC T4 Ga ATEX: Sira 16ATEX2229X; Ex ia IIC T4 Ga IECEx: SIR 16.0079X; Ex ia IIC T4 Ga | |
| Device Compatibility | OleumTech WT, SM, and H Series Resistive Level Transmitters | |
| Power | The Sensor is Powered by the Transmitter | |
| Kit Ordering #: 1/2" Resolution with Float(s) | ZGxxxFxx | TGxxxFxx |
| Kit Ordering #: 1/4" Resolution with Float(s) | ZHxxxFxx | THxxxFxx |