DATASHEET

HW-RL3
HW-RL4

H SERIES SENSORS

Highlights

- Monitor product, interface, and temperature with a single sensor
- 2 discrete inputs (HW-RL3 Modbus version only)
- 1/4" resolution option (±1/8" accuracy)*
  *API 18.2-compliant
- 1/2" resolution option (±1/4" accuracy)
- Sensor option: flex (PTFE) or rigid (316 SS)
- Multiple liquid compatibility
- RS485 interface (Modbus or LevelMaster ASCII)
- 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)
- 6-30 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's leading 3-in-1 monitoring capabilities: product (oil), interface (water), and temperature. Furthermore, the HW-RL3 RS485 Modbus Transmitter is equipped with two discrete inputs for connecting to dry contact sources delivering 5-in-1 monitoring capabilities. The HW-RL3 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

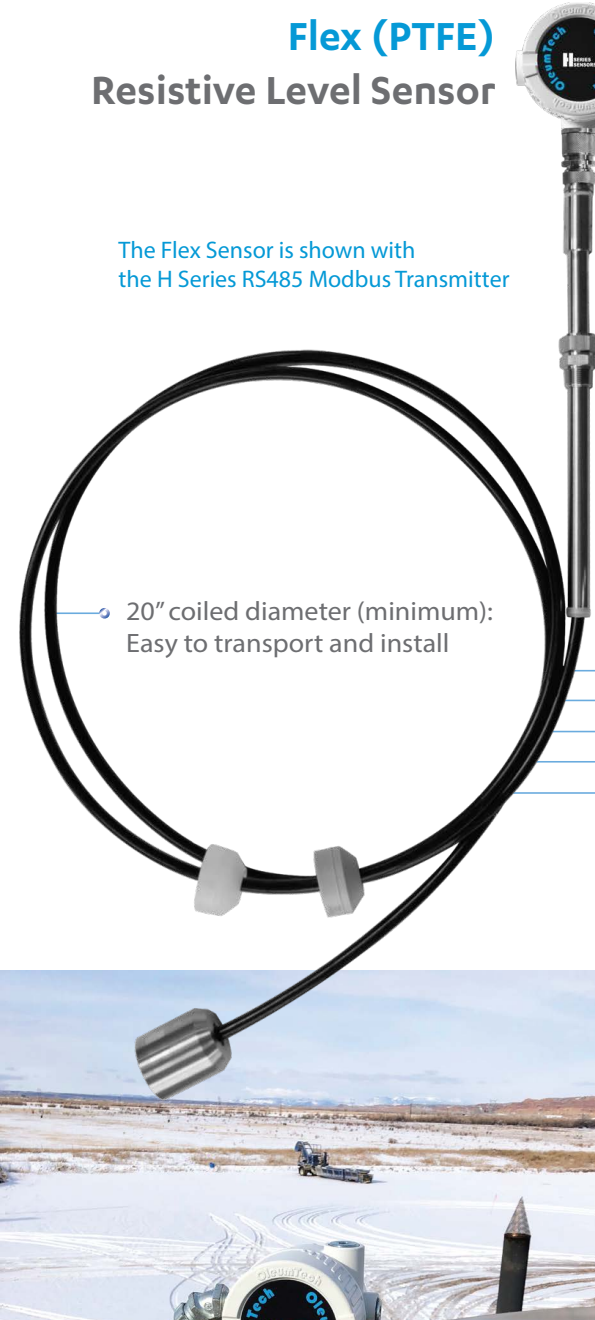
The H Series ultra-high-performance level gauging solution can communicate with any Modbus master or LevelMaster device via RS485 Serial connection. The low-power Resistive Level Sensors can be multi-dropped of up to 16 devices. The Resistive Level Sensors are certified for use in Class I, Division 1 (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

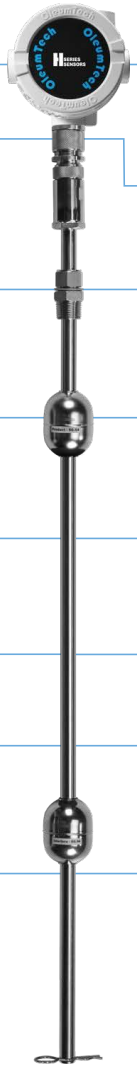
The Flex Sensor is shown with
the H Series RS485 Modbus Transmitter



- 20" coiled diameter (minimum): Easy to transport and install

Rigid (316 SS)
Resistive Level Sensor

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



- RS485 Modbus or LevelMaster ASCII
  Multi-drop up to 16 sensors
  2 discrete inputs (HW-RL3 Modbus only)
- Quick Connect allows for ultrafast installs and gives 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 compatibility
- 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)	
7001	Read Count
7002	Product Level
7003	Interface Level
7004	Temperature
7005	Error(s)
7006	Tank Full %
7007	Product Volume
7008	Interface Volume
7009	DIN 1
7010	DIN 2
7011	Product Offset
7012	Interface Offset
7013	Oil Level

Technical Specifications (RS485 Transmitters)

HARDWARE FEATURES	
Device Functionality	· H Series RS485 Transmitter with Support for Resistive Level Sensors · HW-RL3: Modbus, Provides Product, Interface and Temperature Levels + 2 Discrete Inputs · HW-RL4: LevelMaster ASCII, Provides Product, Interface and Temperature Levels
Embedded Controller	· Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradeable)
Configuration	· USB to RS485 Converter (SX1000-CC8)
Sensor Type	· Resistive Reed Switch
Resolution	· High Resolution, Depends on Sensor: 1/4" (6.4 mm) or 1/2" (12.7 mm)
Accuracy	· US: ±1/8" for 1/4" Resolution Sensor ; ±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 20 - 2000 ms (Available on HW-RL3)
Interface	· RS485 Modbus or LevelMaster ASCII
Baud Rate	· 1200-115,200 bps
CERTIFICATION & COMPLIANCE	
Safety	· Intrinsically Safe for Use in Hazardous Environments · 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
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 (Head Only)
Connection Fitting	· 3/4" NPT Female
Enclosure Casing Material	· Type 4X Aluminum; IP66
ELECTRICAL SPECIFICATIONS	
DC Power Input	· 6-30 Vdc (30 V Max) (9-30 Vdc Recommended For Best Performance)
Current Consumption	· 25 mA Peak / 1.2 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) · Transmitter: Ambient Temperature (Non-Hazardous Applications): -40 °C to 80 °C (-40 °F to 176 °F) · 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): HW5800-RL3 (Modbus), HW5800-RL4 (LevelMaster ASCII)
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)
Configuration Kit	· H-Series Configuration Kit (SX1000-CC8)

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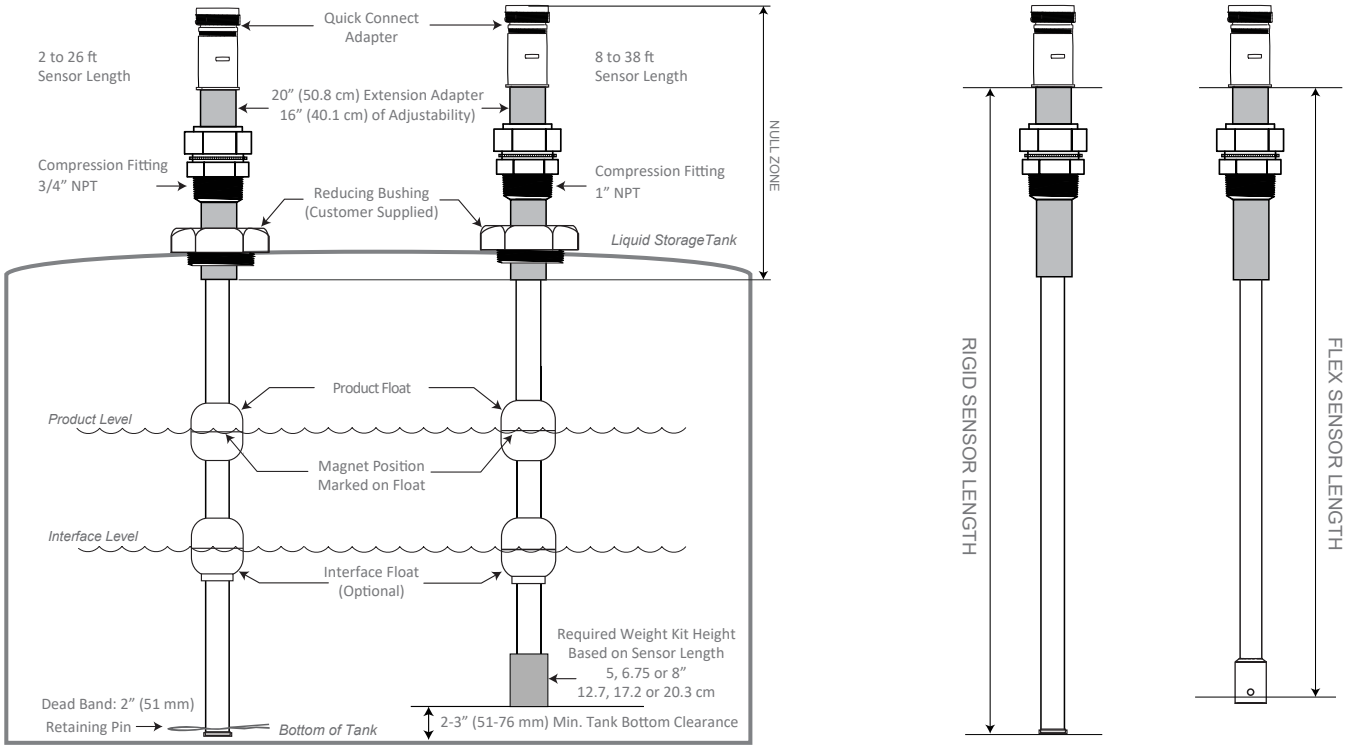
MADE IN USA

RIGID - 316SS

FLEX - PTFE

ORDERING LENGTH



Technical Specifications (Level Sensors)

SENSOR	RIGID: 316 Stainless Steel "SS"	FLEX: Polytetrfluoroethylene "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:		
*316 Stainless Steel - Small, (Fx0)	*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