

RU FLEX 2100 DIGITAL LEVEL SENSOR

Rugged UHMW Hose Design Delivers a Flexible Sensor
with Increased Measurement Accuracy

Since 1976,
Electrolab has been a
leader in developing
electronic controls and
sensors.



Electrolab's RU Flex 2100 DLS is a flexible, extremely rugged, chemically and abrasion resistant digital level sensor offering continuous, accurate, and reliable monitoring of tank level and temperature.

Patent Pending
Flexible, Rugged,
Non-Stick
3/16" Accuracy—Ready
for Stringent API 18.2
Custody Transfer
Requirements

Built on Electrolab's proven, patented sensing technology, the UHMW-PE (Ultra High Molecular Weight Polyethelene) hose offers an 18" flexible radius allowing for one person to install the RU Flex 2100 DLS, regardless of sensor length. The sensor hose and components fit in one box, which can be easily shipped to your location.

*Measure up to two levels with **3/16" accuracy** and 8 temperature measurements in the same tank with a single sensor. After installing the RU Flex 2100 and setting the initial offset this sensor requires **no** additional calibration.*

RU FLEX 2100 DLS

Electrolab has over 60,000 Digital Level Sensors (DLS) installed in North American production tanks, midstream collection tanks, and many other applications. Dedication to engineering and development, coupled with relationships with world-class OEMs, integrators and distributors, have placed Electrolab level sensors in mission-critical applications throughout North America—including hazardous locations.

FLEXIBLE AND EASY TO INSTALL

The RU Flex 2100 DLS offers all the benefits of Electrolab's Model 2100 Digital Level Sensor with the added flexibility of a bendable material that can be coiled to an 18" radius. This means the sensor can fit neatly in a box for shipping and storage. All components (sensor, housing, cord grip, floats, weight and grounding cable) fit neatly inside the same box, reducing the possibility of misplaced pieces.



Once carried to the installation site and assembled, the RU Flex 2100 DLS is easily carried on the shoulder and installed in a tank by one person.



A weight, sized based on the length of the sensor, attaches to the bottom of the hose before installation to ensure the sensor straightens out inside the tank and to prevent sensor movement from affecting measurement accuracy.



HOSE MATERIAL AND LENGTH <ul style="list-style-type: none"> • UHMW-PE (Ultra High Molecular Weight Polyethylene) • Available in measurement lengths from 2 feet to 48 feet 	PRESSURE <ul style="list-style-type: none"> • 40 psi: standard
LEVEL MEASUREMENT INCREMENTS <ul style="list-style-type: none"> • 1/8-in. resolution; 3/16-in. accuracy • 1/4-in. resolution; +/- 1/8-in. accuracy • 1/2-in. resolution; +/- 1/4-in. accuracy • +/- 0.1% repeatability 	PROTOCOL <ul style="list-style-type: none"> • Modbus RTU 16-bit unsigned integer • Modbus RTU 32-bit floating point • Modbus RTU 2 x 16-bit • Serial Data via ASCII
COILED DIAMETER <ul style="list-style-type: none"> • Approximately 36-inch diameter (will vary slightly with the length of the sensor) 	ANCHOR WEIGHT <ul style="list-style-type: none"> • 3 in. diameter • Required weight can vary based on sensor length
FLOAT <ul style="list-style-type: none"> • NYTROPHYL stainless steel • Two piece floats for field installation and replacement • One float used for product level • One float for water interface level • Designed to fit through a three-inch NFPT tank port 	WIRING <ul style="list-style-type: none"> • 18 AWG recommended for digital circuits
OPERATING TEMPERATURE RANGE <ul style="list-style-type: none"> • -40° C to 80° C 	CLASSIFICATION <ul style="list-style-type: none"> • Class I, Div. 1, Group D hazardous locations (when connected to an approved intrinsically safe barrier device)
TEMPERATURE MEASUREMENT <ul style="list-style-type: none"> • 12 inches from bottom • +/- 1.5° C accuracy • Up to 8 distinct temperature measurements (one standard) 	CERTIFICATION <ul style="list-style-type: none"> • ANSI/UL-913, 7th Edition • CAN/CSA C22, No. 157
POWER REQUIREMENTS <ul style="list-style-type: none"> • 5.6 VDC TO 12.9 VDC 	POWER CONSUMPTION <ul style="list-style-type: none"> • 15 mA nominal 20 mA maximum
COMMUNICATION <p>Open communication protocols allow Electrolab's RU Flex 2100 DLS to interface with most manufacturers' equipment. We offer:</p> <ul style="list-style-type: none"> • RS485 <ul style="list-style-type: none"> • Two- or four- wire communications • Baud rate and parity programmable • 4-20mA signal available when connected to an Electrolab 3010 digital-to-analog converter board • Wireless compatibility with preferred partners 	

ACCURATE — READY FOR API 18.2 CUSTODY TRANSFER REQUIREMENTS

The RU Flex 2100 DLS delivers consistently accurate level and temperature measurements of different types of fluids in both hazardous and non-hazardous environments. With 3/16" accuracy (optional), this sensor is ready to meet stringent API Custody Transfer requirements.

Multiple fluid densities and temperatures do not affect measurement.

The RU Flex 2100 DLS is suitable for production monitoring, inventory control, and leak detection in a variety of different types of storage tanks (crude oil, diesel, kerosene, gasoline, water and chemical).

Communications to SCADA systems can be digital or analog and the DLS works with most wireless systems using Modbus RTU protocols and ASCII.

RELIABLE—

No ONGOING CALIBRATION

After installing the sensor hardware and setting your initial level offset, these sensors require **no calibration**. All electronics, with the exception of the optional fuse board, are sealed inside the sensor tube, which is constructed of rugged, abrasion resistant UHMW.

The apparatus is intrinsically safe (when used with a qualified intrinsically Safe Barrier, such as Electrolab's 2110 Barrier Unit.)

The RU Flex 2100 DLS offers low power consumption and is **virtually maintenance free**.

MORE VERSATILE AND RELIABLE THAN GUIDED-WAVE RADAR

Electrolab's RU Flex 2100 DLS offers greater versatility, flexibility and more robust features than conventional guided-wave radar (GWR) level sensors.

A **dual float sensor measures multiple fluid levels and temperature measurements through a SINGLE TANK PORT**, eliminating the need for multiple sensors in one tank. To accomplish these same measurement and alarm protections, GWR requires two separate ports in a tank. This single device can also read up to eight distinct temperature measurements.

Unlike radar, this sensor is **not affected by electro-mechanical interference, tank turbulence or changing environmental variables**. Simply install the sensor, set your initial level offset and the RU Flex 2100 DLS is ready to monitor your tank. Under normal operating conditions, **no additional calibration is needed—EVER**.

Ongoing maintenance is practically non-existent. The naturally oleophobic non-stick nature of the UHMW prevents buildup on the sensor and **prevents floats from sticking** and impacting measurement accuracy. Cleaning of the RU Flex 2100 DLS is rarely necessary.

For more information about the RU Flex 2100 and other digital level sensor products, or for service related questions, contact us at (888) 301-2400 or InsideSales@electrolabcontrols.com.

CHEMICAL COMPATIBILITY WITH THE RU FLEX 2100 DLS

The RU Flex 2100 DLS is compatible with a variety of different chemicals and chemistries. It is ideal for caustic and corrosive environments.

Naturally non-stick, the UHMW tube prevents buildup and wipes clean. The following table is a partial list of some common chemicals known to be compatible with the RU Flex 2100 DLS. **Contact us to verify compatibility of other chemicals not in this list.**

Chemical	
Ammonia Aqueous	Maleic Acid
Ammonium Sulfate	Malic Acid
Amyl Acetate	Methanol
Aniline	Mineral Oil
Aniline Dyes	Molasses, Crude
Asphalt	Monochloro Benzene
Benzoic Acid	Naphtha
Borax (Sodium Borate)	Naphthalene
Boric Acid	Nickel Salts
Brines	Nitric Acid (35%)
Butane	Nitrobenzene
Butyric Acid	Oils (Animals)
Calcium Carbonate	Oils/Water Mixture
Calcium Chloride	Oleic Acid
Calcium Hydroxide	Ozone (Dry)
Calcium Nitrate	Ozone (Wet)
Camphor	Paraffins
Carbon Bisulfide	Petrol / Benzene Mixture
Carbon Dioxide	Phenol
Carbon Tetrachloride (Dry)	Phosphate Acid 10%
Carbon Tetrachloride (Wet)	Phosphorous Trichloride
Chloroform	Phthalic Acid
Copper Salts	Potassium Bichromate
Creosote Oil	Potassium Chloride
Cresylic Acid	Potassium Cyanide
Crude Oil	Potassium Permanganate
Detergents	Propylene Glycol
Diesel Oil Fuel	Salt
Dowtherm	Sea Water
Dry Cleaning Fluid	Silicone Fluids
Ethanol	Soap Solutions (Stearates)
Ethyl Silicate	Soda Ash
Ethylene Glycol	Sodium Bicarbonate
Formic Acid	Sodium Borate
Fuel Oils	Sodium Hydroxide (50%)
Gasoline	Sodium Nitrate
Glycerine	Sodium Peroxide
Glycol	Sodium Silicate
Hexane	Sodium Sulfide
Hexyl Alcohol	Stearic Acid
Hydraulic Oil	Sulfate White Liquor
Hydrazine	Sulfur
Hydrocyanic Acid	Sulfur Dioxide (Dry)
Hydrogen Peroxide	Sulfuric Acid (70%)
Hydrogen Sulfide (Liquid and Gas)	Sulfurous Acid
Iso-Octane	Tannic Acid
Kerosene	Tartaric Acid
Lactic Acid	Transformer Oil
Lubricating Oil (Petro Based)	Turpentine
Linseed Oil	Water
Magnesium Chloride	Zinc Sulfate

Not Recommended for use in environments at 100% concentrations:*
Benzene, Toluene, Xylene, Sulfuric Acid, Nitric Acid, Hydrochloric Acid, Bleach
*Mixtures and low concentrations/trace amounts of these chemicals may be acceptable, contact us for details.

TYPICAL RU FLEX 2100 DLS INSTALLATION

Hazardous Side



RU Flex 2100 DLS (uncoiled)

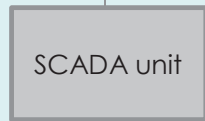
RS-485 Communication Cable

Non-Hazardous Side



Model 2110 Barrier Unit

RS-485
Communication
Cable



SCADA unit

NOTE: The illustration above shows one popular combination of equipment used with the RU Flex 2100 DLS and the required configuration of this equipment. However, your application may require different equipment or a different configuration. For example, some applications may require wireless communication capability (available through Electrolab preferred partners), Modbus/ASCII translation, or analog outputs. Please contact us for specific technical options and installation instructions for your application and operating environment.



Copyright © 2016, Electrolab, Incorporated

Headquarters:
159 Enterprise Parkway
Boerne, Texas 78006
1-210-824-5364 (phone)
1-888-301-2400 (toll free)

EL#: 29075

All rights reserved.
This document is subject to change without prior notice.
The information in this document provides a general description of the product and available options.
Please contact us for specific technical options for your application.

www.electrolabcontrols.com