

Warranty

Gems Warranty

Gems warrants to the original purchaser of its products that such products will be free from defects in material and workmanship under normal use and service for a period which is equal to the shorter of one year from the date of purchase of such products or two years from the date of manufacture of such products.

This warranty covers only those components of the products which are non-moving and not subject to normal wear. Moreover, products which are modified or altered, and electrical cables which are cut to length during installation are not covered by this warranty.

Gems' obligation under this warranty is solely and exclusively limited to the repair or replacement, at Gems' option, of the products (or components thereof) which Gems' examination proves to its satisfaction to be defective. Gems SHALL HAVE NO OBLIGATION FOR CONSEQUENTIAL DAMAGES TO PERSONAL OR REAL PROPERTY, OR FOR INJURY TO ANY PERSON.

This warranty does not apply to products which have been subject to improper use, accident, negligence, abuse or misuse. Abuse shall be assumed when indicated by electrical damage to relays, reed switches or other components. The warranty does not apply to products which are damaged during shipment back to Gems' factory or designated service center or are returned without the original casing on the products. Moreover, this warranty becomes immediately null and void if anyone other than service personnel authorized by Gems attempts to repair the defective products. Equipment sold by Gems Sensors Inc. not intended for use in a nuclear installation, nor shall it be used as a "Basic Component" as same as defined under Part 21, Title 10 of the Code of Federal Regulations. In the event of such use, you agree to indemnify and hold us harmless from any and all subsequent liabilities and responsibilities which might arise in connection with such use.

Return Policy

Returns are accepted on stock items up to 30 days from date of order. You must contact our Returns Department for a Return Authorization (RA) number. Return the goods – freight prepaid – in the original container and include original packing slip. C. O. D. returns are not accepted. Gems reserves the right to apply restocking charges.

Gems further reserves the right to unilaterally waive this warranty and to dispose of any product returned to Gems where:

- a. There is evidence of a potentially hazardous material present with or on the product.
- b. The product has remained unclaimed at Gems for longer than 30 days after dutifully requesting disposition of the product from the Customer.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. This warranty and the obligations and liabilities of Gems under it are exclusive and instead of, and the original purchaser hereby waives all other remedies, warranties, guarantees or liabilities, express or implied. EXCLUDED FROM THIS WARRANTY IS THE IMPLIED WARRANTY OF FITNESS OF THE PRODUCTS FOR A PARTICULAR PURPOSE OR USE AND THE IMPLIED WARRANTY OF MERCHANTABILITY OF THE PRODUCTS.

Important Points:

- Gems products must be maintained and installed in strict accordance with the National Electrical Code and the applicable Gems product instruction Bulletin that covers installation, operation and proper maintenance. Failure to observe this information may result in serious injury or damages.
- The supply voltage to the sensor should not exceed 36 VDC, Max.
- Please adhere to the pressure and temperature limitations shown. These limitations must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.
- Selection of materials for compatibility with the media is critical to the life and operation of Gems products. Take care in the proper selection of materials of construction, testing is required.
- Avoid over tightening when mounting.
- Life expectancy of switch contacts varies with application. Contact Gems if life cycle testing is required.
- Ambient temperature changes do affect switch set points, since the gravity of a liquid can vary with temperature.
- Our sensors have been designed to resist shock and vibration. However, shock and vibration should be minimized.
- Electrical entries and mounting points in an enclosed tank may require liquid/vapor sealing.
- Our sensors must not be field-repaired.
- Physical damage sustained by product may render it unserviceable.

This warranty may not be extended, altered or varied except by a written instrument signed by a duly-authorized officer of Gems, Inc.



UCL-510

Part Number 225100

Manual

225835 REV: D1
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Made In USA

Level sensing at its best!

Thank you for purchasing Gems new innovative small tank solution. The UCL-510 is a general purpose sensor that combines switch, controller and transmitter capabilities for small tanks 49.2" (1.25 m) or less.

Configuration

UCL-510 is configured through Configuration, a PC software program. Configuration is a free download from Gems website. You must download and install Configuration prior to plugging in the USB® Fob. Please go to <http://www.Gemssensors.com/software>.

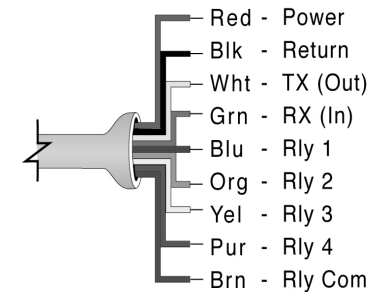
Configuration Software System Requirements

Windows® XP or 2000
10 mB hard drive space
256 mB RAM
1 USB® 2.0 port
Internet connection

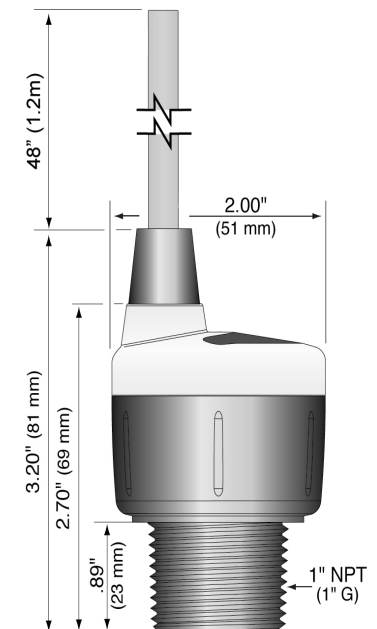
Specifications

Range:	49.2" (1.25 m)
Accuracy:	0.125" (3 mm)
Resolution:	0.019" (0.5 mm)
Beam width:	2" (5 cm)
Dead band:	2" (5 cm)
Supply voltage:	24 VDC (loop)
Loop resistance:	400Ω max
Consumption:	0.5W
Signal output:	4-20 mA, two-wire (when loop powered)
Contact type:	(4) SPST relays 1A
Loop fail-safety:	4 mA, 20 mA, 21 mA, 22 mA or hold last
Relay fail-safety:	Power loss: Hold last Power on: Open, close or hold last
Hysteresis:	Selectable
Configuration:	Software, PC Windows® USB 2.0
Temp. comp.:	Automatic over range
Process Temp.:	F: 20° to 140° C: -7° to 60°
Ambient Temp.:	F: -31° to 140° C: -35° to 60°
Pressure:	MWP = 30 PSI
Enclosure:	Type 6P encapsulated, corrosion resistant & submersible
Encl. material:	PC/ABS FR
Strain relief mat.:	Santoprene
Trans. material:	PVDF
Cable length:	48" (1.2 m)
Cable jacket mat.:	Polyurethane
Process mount:	1" NPT (1" G)
Mount. gasket:	Viton®
Classification:	General purpose
Approvals:	CE, cFMus

Wiring



Dimensions



Safety

1. Installation should be done by properly trained staff
2. Supply voltage should never exceed a maximum of 24 VDC
3. Always use stepper relays between the sensor and external loads
4. Make sure the sensor is chemically compatible with your application
5. Design a fail-safe system that accommodates the possibility of sensor and/or power failure.
6. *This sensor should not be used in classified hazardous environments*

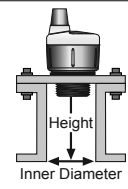
Wiring UCL-510

After you have finished positioning and mounting the UCL-510, use the wiring diagram created in the configuration software to wire the unit. Always use an external relay in-between UCL-510 and any components. Gems Sensors recommends using a licensed electrician to wire UCL-510 and your application's components. Once the UCL-510 is mounted and wired, observe your application and double check your relay set points.

Mounting Guide

1. Do not mount at an angle
2. Liquid should never enter the 2" dead band
3. Mount at least 2" from the side wall
4. Do not mount where obstacles will intrude on 2" beam width
5. Do not mount in a vacuum
6. Never screw directly into tank, always use a *non-metallic* fitting
7. Always use a tank adapter with the minimal height possible

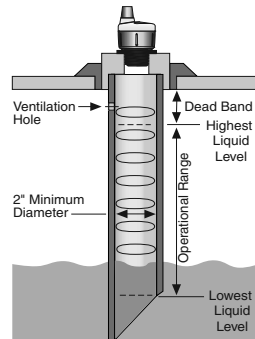
Tank Adapter: Select a tank adapter with minimum height to ensure that UCL-510's transducer will not be substantially elevated inside the fitting. Gems recommends using a 2" x 1", thread by thread, reducer bushing.

	Riser Specifications	
	Inner Dia.	Max. Height
	2" (5 cm)	4" (10 cm)
	3" (7.6 cm)	6" (15 cm)
	4" (10 cm)	8" (20 cm)
	6" (15 cm)	12" (30 cm)

Riser: Use the riser specifications guide and match your riser's inner diameter with the height.

Flange: Select a flange with a thread that is above the plane of the flange. If your installation requires the use of a blind flange, tap a 2" thread and use a thread by thread reducer bushing (see tank adapter).

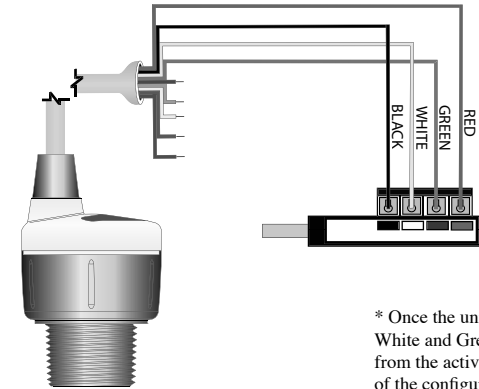
Stand Pipe: Use a stand pipe when surface foam or turbulence are present. Use a 2" diameter pipe or larger with a length that runs the distance of the span. Cut a 45° notch at the bottom and a 1/4" hole within 2" from bottom of the transducer face.



USB® Fob Interface

UCL-510 communicates with the configuration software through a USB® interface called a Fob. Before plugging your Fob into your computer's USB® 2.0 port, be sure that you have installed the configuration software on your computer.

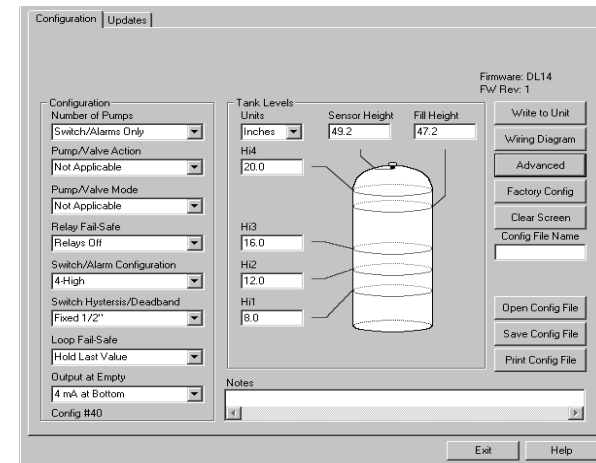
Connect the red, green, white and black wires from UCL-510 into the correct terminals on the Fob. Tighten the screws on the terminals and plug your Fob into the USB® 2.0 port of your computer.



* Once the unit has been configured, the White and Green wires must be isolated from the active power to prevent a shorting of the configuration circuit.

Configuration

With UCL-510 connected to your computer, open the Configuration software. Follow steps 1-3 (pg. 4-5) to configure the UCL-510. Click "Help" in the lower right hand corner and follow the help menu for further assistance.



Configuration Step 1: Configuration

Configuration

Number of Pumps
Switch/Alarms Only

Pump/Valve Action
Not Applicable

Pump/Valve Mode
Not Applicable

Relay Fail-Safe
Relays Off

Switch/Alarm Configuration
4-High

Switch Hysteresis/Deadband
Fixed 1/2"

Loop Fail-Safe
Hold Last Value

Output at Empty
4 mA at Bottom

Config #40

This section of Configuration is where you select the application's configuration settings. Start from the top and work to the bottom, choosing the selections that are applicable to your configuration. "Not Applicable" will automatically show when a selection doesn't apply to your configuration settings, and you may move on. All configuration settings must be selected or have "Not Applicable" before you can continue to step 2.

Right click on any menu that you may have questions on to open the help menu.

Configuration Step 2: Tank Levels

This section of Configuration is where you enter application measurement values. All values must be filled in before moving to step 3.

Tank Levels

Units
Inches

Sensor Height
49.2

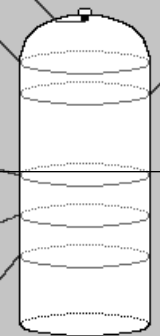
Fill Height
47.2

Hi4
20.0

Hi3
16.0

Hi2
12.0

Hi1
8.0



Sensor Height: Distance from the bottom of the tank to the bottom of the transducer.

Fill Height: Distance from the bottom of the tank to the maximum liquid height.

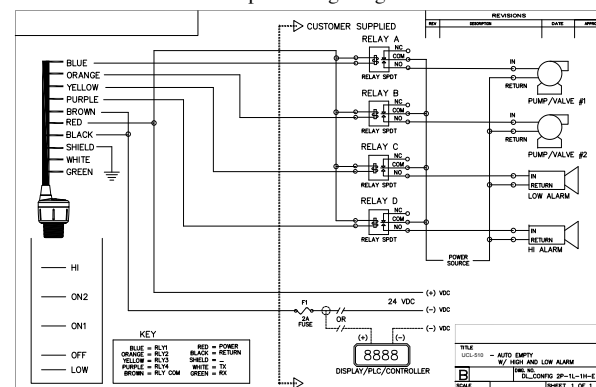
Relay Set Points: Distance from the bottom of the tank to set-points.

Right click on any value you may have questions on to open the help menu.

Configuration Step 3: Write to Unit

After you have entered configurations and tank values, click "Write to Unit" and send the configuration to UCL-510. Now use the configuration software's file management features to save your configuration by clicking "Save Config File" and print your wiring diagram by clicking "Wiring Diagram."

Example Wiring Diagram



Position and Mount

Positioning and mounting UCL-510 is critical to the sensor performing correctly. UCL-510 should always be mounted perpendicular to the liquid in the tank, clear of any obstructions in the beam path. Not doing so will result in poor performance. Refer to Gems mounting guide on pg. 6 for further instruction.

