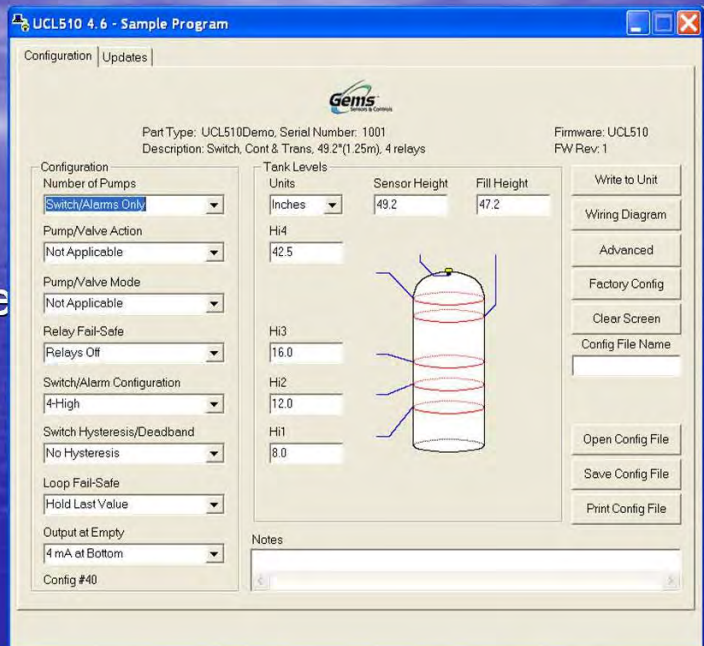# UCL-510 CONFIGURATION SOFTWARE
(FOR V.5.23.0.0)

Basic Steps

1. Select Configuration
2. Input Tank Levels
3. Save Configuration File
4. Click "Write to Unit"
5. Click "Wiring Diagram"

Option
Click "Open Config File" to select an example similar to your application

Configuration

In this group you will select the configuration options for your sensor. The available options are presented by a series of drop-down menus. When you make a selection, the UCL-510 evaluates it against supported configurations. All configurations that support your selection remain, and those that don't are eliminated. ***This must be completed first before setting tank levels.***

- **Accessing the Help Window**

   If there is any question about a configuration option, put your cursor on the menu and right-click to open the help menu.

- **Factory Configuration**

   It may be helpful to start with an example configuration. If you prefer to work from a known valid configuration, press this button.

- **Clear Screen**

   To start from scratch, press "Clear Screen."

Pump/Valve Action

In single or multiple pump configurations, pumps must perform the same fill or empty action.

- **Fills Tank**

   Pumps that fill a tank will require a high "Off" switch point and either single or multiple "On" switch points (duplex pumps) below the "Off" point.

- **Empties Tank**

   Pumps that empty a tank will require a low "Off" switch point and either single or multiple "On" switch points (duplex pumps) above this point.

Pump/Valve Mode

This feature assigns the operation of the pump/valves.

- **Simplex Pump Operation**

   This defines a single pump, either pumping up or pumping down.

- **Lead Lag Pump Operation**

   In this mode there are two pumps connected to typically pump down a sump. Therefore, Pump 1 and Pump 2 will each have different "On" points. However, they will have the same "Off" point. Generally, used to control surges or intermittent high inflows.

- **Duplex Pump Operation**

   Two pump operation. Pumps that would be connected as LEAD LAG (two pumps to pump in or out a single vessel with separate turn "On" points and the same "Off" points). Additionally, they can be connected to alternate between them, that is… Pump 1 would turn on and complete its cycle. Once it completes its pumping, the next cycle pump 2 would be used to pump the same volume, thus pumps are ALTERNATING. Generally, this is a configuration used to maintain even wear.

- **No Pump**

   In this case "Switch Points Only" will be selected. No pumps are controlled by this controller.

Relay Fail-Safe

This feature allows you to select a relay fail-safe if the sensor fails to detect a return signal. When the sensor regains signal, the relays will revert back to the current level condition.

- **Relays Off**
  Relays go to their "Off" state (de-energized condition), if loss of echo in the sensor.
- **Relays On**
  Relays go to their "On" state (energized condition), if loss of echo in the sensor.
- **Hold State**
  Relays will remain in whatever state they were prior to the loss of echo.
- **Pump/Valves Off**
  Pumps/Valves are turned "Off" if there is a loss of echo in the sensor.
- **Pump/Valves On**
  Pump/Valves are turned "ON" if there is a loss of echo in the sensor.

Switch/Alarm Configuration

This feature allows you to select the number of available high and low set points for your switches/alarms. The number of available set points is determined by the number of relays available (determined by previous configuration selections).

- **High Alarm**
  When the detected level rises above the set point, the relay closes. This alarm triggers when the level is rising.
- **Low Alarm**
  When the detected level lowers below the set point, the relay closes. This alarm triggers when the level is dropping.
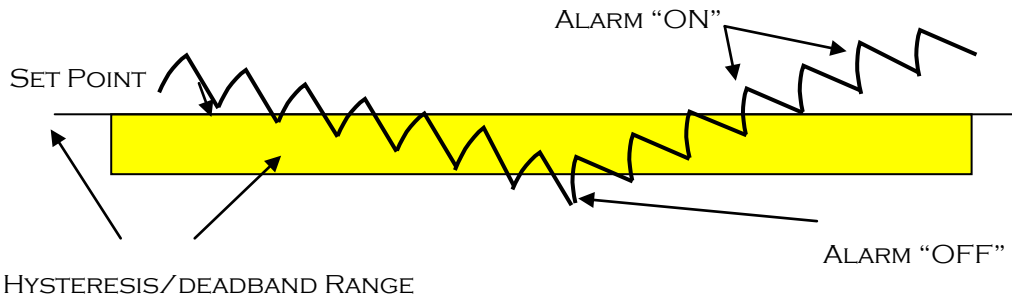
Switch Hysteresis / Deadband

This feature only applies to alarm set points and not pump or valve control set points. Hysteresis/deadband is used when you have established set points and wants to eliminate relay chatter caused by wave action / agitation on the liquid surface. Often when the liquid level reaches a set point, the relay will open and close a number of times (relay chatter) in response to wave action / agitation in the tank. Applying hysteresis/deadband appropriately will eliminate the relay chattering.

EXAMPLE **WITHOUT** HYSTERESIS/DEADBAND:

ALARM "ON"

SET POINT

ALARM "OFF"
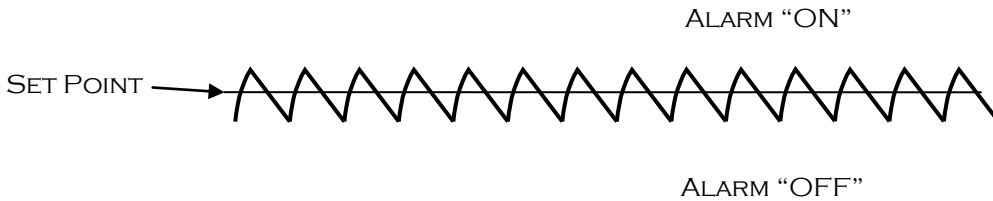
EXAMPLE **WITH** HYSTERESIS/DEADBAND:

ALARM "ON"

SET POINT

ALARM "OFF"

HYSTERESIS/DEADBAND RANGE

With Hysteresis
When fluid levels rise above a switch point with added hysteresis/deadband, the relay will trigger. The relay state is cleared when the level falls below the set point plus the hysteresis/deadband amount. The selected hysteresis/deadband level should be large enough so that once triggered, wave motion in the tank will not cause toggling of the relay. UCL-510's default hysteresis/deadband setting is ½" and is a suggested starting point. *User should be aware that adding hysteresis/deadband will change the alarm level set point by amount of hysteresis/deadband added; the level should be adjusted to account for this change.*

No Hysteresis
This setting may be appropriate when exact set points are necessary, cases where the surface is not turbulent or where the level changes rapidly.

Loop Fail-Safe

This feature allows you to select a current output fail-safe if the sensor fails to detect a return signal. When the sensor regains signal, the output current will revert back to the current level condition.

- **Hold Last Value**
  The output will remain in the same state as the last echo detected.
  Example: If the output was 6.7mA just prior to the lost signal, the device will continue to output 6.7mA.
- **Empty**
  The output will revert to the value selected from Output at Empty menu.
- **Full**
  The current output will revert to the value opposite of the Output at Empty menu. Example: If 4 mA is empty, the device will hold 20mA upon loss of signal.
- **Overfill (22mA)**
  The output current will go to 22mA when the return signal is lost.

Output at Empty

This feature allows you to select the orientation of the 4-20mA output and choose which output current is the top and bottom of your tank. This is a personal preference and will not affect the performance of the sensor. The UCL-510's factory default is 4mA at bottom and 20mA at top. *When connecting your sensor to a display, you must account for your output settings.*

- **4mA at Bottom**
  The output current will be 4mA when the sensor measures an empty tank and 20mA when the sensor measures a full tank.
- **20mA at Bottom**
  The output current will be 20mA when the sensor measures an empty tank and 4mA when the sensor measures a full tank

Tank Levels

In this group you will select your units of measurement, sensor height, fill height and set point levels for your sensor. The set points are determined by the configuration selections you first made earlier.

- **Units**
  This feature allows you to use inches or centimeters as your unit of measurement.
- **Sensor Height**
  Refers to the physical height from the bottom of the tank to the face of the sensor.
- **Fill Height**
  Refers to the physical height from the bottom of the tank to the desired fill height of the tank.
- **Levels**
  The set points in which you would like an action to take place.

Write to Unit

The **"Write To Unit"** button writes your configuration data to your sensor. This button is enabled only when the configuration is completely defined.

- **Writing to Additional Units**

  When a unit is successfully written, additional units may be written with the same configuration information. A window will pop-up and ask if you would like to write additional units.

Wiring Diagram

Once you have completed your configuration, a wiring diagram can be viewed. The wiring diagram is in Adobe Acrobat™ printable format (PDF), and is viewable with any PDF viewer. Gems also offers drawings in an AutoCAD™ format, but only by connecting to the Gems server.

- **Viewing .pdf file**

  Click the "Wiring Diagram" button after your configuration is complete.

- **Accessing .dxf files**

  Connect to the Gems server to view the files and print these files. These files require a .dxf viewing program, such as AutoCAD™.

Advanced Features

This tool is designed to help solve operational issues. Changing these setting will alter the performance of your unit. Please read through this HELP file to assist you in making adjustments or if still unclear about a specific issue, please contact Gems, Applications Engineering.

NOTE: When the Advanced Button is highlighted with a RED border, this indicates you have selected an advanced feature…

ADDITIONAL FEATURES.

- **Increase output filtering**:

Placing a check mark in the box will increase the filtering (averaging) of the analog output. If you are required to smooth the applications such as: Open Channel Flow measurement, you might check this box.

INVERT RELAY STATES.
- Invert Relay 1
- Invert Relay2
- Invert Relay 3
- Invert Relay 4

If you elect to invert one (1) or all of the relays, (change it from N/O to N/C)), please understand that the failsafe will also invert (if you have selected your relays to fail ON, and you invert your relay, the Failsafe will now be OFF).

To overcome this, select "Do not Invert Failsafe". This will leave the failsafe as you had originally configured them.

Factory Default

It may be helpful to start with an example configuration. If you prefer to work from a known valid configuration, use this feature.

Factory Defaults
Table

Factory Settings for EchoPod					Relay R1	Relay R2	Relay R3	Relay R4
	Max R	Min R	Start Up	FAULT				
UCL-510	4mA	20mA	4mA	Hold Last	8 In	12 In	16 In	20 In

Clear Screen

This button clears the screen and presents a default tank with a message on steps to configure

Configuration File

This feature allows you to save and retrieve configurations for customer service, installation of multiple sensors and future applications. A configuration file consists of your selections, measurements (set points, sensor height, tank height, etc.), model and serial number. This information is stored on your hard drive or via our website. A configuration file can only be saved once all selections are made and measurements have been entered.

- **Open Configuration File**
  When opening a configuration, you can only open files of the same model originally configured. An error message will alert you if the model number is different.
- **Save Configuration File**
  The file is formatted "Name[#].txt." "Name" is input by you and [#] is assigned by the program.

Open Configuration File

When opening a configuration, you can only open files of the same model originally configured. An error message will alert you if the model number is different.

Print Configuration

When selecting *Print Configuration*, a copy of the configuration file will be printed on your default printer. NOTE: you must have selected a configuration to print.

Updates TAB

You must have a connection to the internet for you to be able to use this feature

This page is dedicated to updating the UCL-510 software and the attached Gems sensor firmware.

These functions allows you to update your UCL-510 program. **Note:** each time you update, the latest firmware program available will download into your hard drive.

Update Sensor

To update sensor firmware, the unit must be attached to the USB port using a FOB. Confirm that the cable conductors are connected properly i.e.… **white to white, green to green, red to red and black to black as configured on the FOB label.**

Launch the UCL-510 program. Note: in the upper right of the screen a notation states the Firmware XXXXXX and FW Rev: XX below it. This represents the Firmware type and revision level that is presently programmed into the sensor.

Record these two numbers. Click on UDATES. Now, click on the **Browse** key. The screen will display a directory of firmware updates and version numbers. Example: UCL-510verXpx. Match the first 5 characters of the recorded numbers. Now select this file for updating.

Once you have selected the proper firmware, click on **Update Sensor.** A progress bar will reflect the firmware updating activity.
Monitor this until complete. Once completed, disconnect the wires from the FOB, and proceed as normal.

*NOTE: **Do not** remove power to your unit during updating. To do so will render the unit inoperable.*

UCL-510 Updates

You must have a connection to the internet to be able to use this function!

As Gems releases UCL-510 program revisions, this page enables you to download the current version to your hard drive.

The installed version number is located in the top left corner of the UCL-510. Example: It will display UCL-510 1.0. The number (1.0) represents the installed version.

Click on the UCL-510 button. A pop up window will appear indicating the version number that is available to update. Compare this version number to the one located in the top left corner of the UCL-510 software page. If this version number is less the one displayed, click YES.

A progress bar will indicate that your download is beginning. Upon completion of download, a pop up window will ask whether or not if you would like to proceed. Clicking YES will display a license agreement and request your acceptance. If you agree, the UCL-510 installer will be ready for download. Click Next to proceed with the updating.

NOTE: When updating UCL-510 if there are any sensor firmware updates available, they will be put into the sensor update folder. You can view these by clicking on BROWSE. The folder will open showing any available updates for the unit you have attached.