ViewSonic Manual

Battery Operated
Ultrasonic Level Sensor (Models)

ViewSonic Level Sensor with Leak Detection Switch + Remote Display (Model VS1000-L)

ViewSonic Level Sensor with Remote Display (Model VS1000)

ViewSonic Level Senor c/w Leak Detection Switch (Model VS500-L)

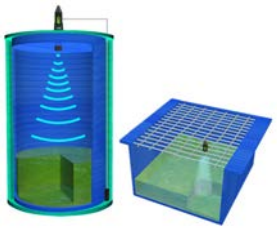
ViewSonic Level Sensor (Model VS500)

Read the user's manual carefully before starting to use the unit or software.
Levelpro reserves the right to implement changes without prior notice.

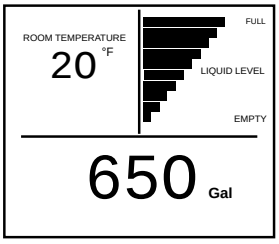
ViewSonic Manual

1. INTRODUCTION

The ViewSonic Sensor is a battery operated ultrasonic liquid level sensor that is capable of providing the user with instant level indication at a glance. The ViewSonic Transmitter uses ultrasonic (sound wave) technology to measure the distance from the sensor face to the surface of the liquid in chemical tank or sump, then back to sensor face; this is referred to as (time of flight) As the liquid product inside the tank decreases the distance that the senor measures increases accordingly. The current level measurement can be viewed directly on the LCD screen located on the sensor or via the remote display. No wiring is required as the level data is wirelessly transmitted to the remote display.

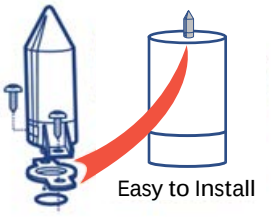


Gallons / Inches / %



After completion of programming the display calculates and displays the amount of liquid remaining in your tank in gallons, inches or as a percentage of the tank capacity. In addition

Mounting



The ViewSonic sensor can be mounted directly on the top of the tank, drum, tote and is suitable for use with any plastic or metal tank up to 10' (3m) in height, including double walled tanks.

2. Viewsonic Level – Features and Functions

ViewSonic Features

1	LCD Display	8	ViewSonic Sensor
2	MODE key	9	Self-tapping screws x 2
3	DOWN key	10	Weatherseal (Gasket)
4	ENTER key	11	Installation Fitting 2" , 1 1/2" NPT
5	UP Key	12	ViewSonic Level display
6	SETUP Key	13	ViewSonic Level + Leak Detection Switch
7	Alarm Red LED		

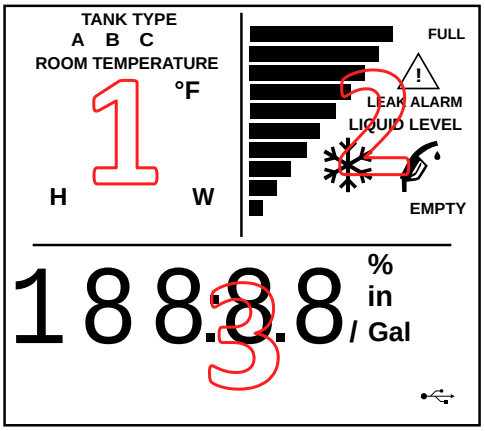
ViewSonic Key Functions

MODE	When the display is in **'NORMAL'** mode press **'MODE'** to move between the current and the historical information screens.
△	Press 'UP' to move between screens when in '**NORMAL**' mode to view Gal, In, or % of current liquid level .Use it to increase a setting when in **'SETUP'** mode.
ENTER	The **'ENTER'** key is used only during the **'SETUP'** mode. Press to save the setting shown on the display and then move automatically to the next **'SETUP'** number.
▽	Press **'DOWN'** to move between screens when in **'NORMAL'** mode to view Liquid Level in Gal, In or %. Use it to decrease a setting when in **'SETUP'** mode.
SETUP	Press **'SETUP'** for 3 seconds to enter **'SETUP'**. When in **'SETUP'**, press 'SETUP' to exit from **'SETUP'** mode.
△+▽	When in **'NORMAL'** mode, by press together and release, the screen will flash the current tank configuration for 20 seconds.

Note: △ ▽ **PRESS** and **HOLD** UP or Down Arrows to Increase Selection Speed

LED

The red light above the **'ENTER'** key flashes when there is an Alarm condition (see section 6)



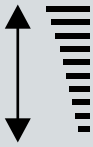
DISPLAY - SYMBOLS & INDICATORS

The **Viewsonic Display** displays valuable information during normal use and during its initial setup and configuration for use with your tank. The display contains three sections (1, 2, & 3) as indicated in the diagram.

1. Screen (1) displays Programming number, Tank Type -during normal operation displays room temperature.
2. Provide Liquid Level information including a visual bar-graph tank.
3. Information about the remaining usable liquid in Gal/Inches or % Tank Volume

ViewSonic Display features

1	TANK TYPE	Indicates the Tank Type being selected
	A,B,C	A, B,C refers to tank shapes (see section 5)
	ROOM TEMPERATURE	The value displayed is the Room Temperature where display is located
	20	Numeric display - Shows the Room Temperature in normal mode e.g 20.
	°F	The value displayed is temperature in degrees Farenheit
	in	The value displayed is in INCHES
	H	The value displayed is the Tank Height (Tanks A, B, C)
	W	The value displayed is the tank width-(tank types B & C Only)

2		**ViewSonic Monitor Display:** Bargraph indicator of liquid level - each bar represents 10% of tank height
		**ViewSonice Transmitter Display:** Tanks 10 ft (3m) in height or greater - each bar represents 10 % of tank height
	FULL	Indicates the '**Full**' level of tank/drum being measured
	LIQUID LEVEL	Indicates the **LCD** display bargraph current liquid level
	EMPTY	Indicates the '**Empty**' level of the tank/drum being measured
	LEAK DETECTION ALARM	The flashing of the **LED** light and **LCD** bars indicates a leak has been detected.
	TANK LOW BATTERY	The ViewSonic Transmitter battery needs to be changed. (See page 11)
		Flashing - Indicates that the liquid level in the tank is at 10% or below of tank height. (Appears on both the Viewsonic Display and Transmitter)
		Flashing - There is a problem with the RF signal from the ViewSonic Sensor (Appears on both the Display and Sensor)
		The temperature is close to or below the limit of operation of the ViewSonic Sensor - the accuracy and battery life of the sensor may be affected.
3	%	The value displayed is the **%** of liquid remaining in the tank.
		Numeric display - used to show numeric values
	Inches	Displayed value in **Inches**
	Gallons	Displayed value in **Gallons**
	Time	The value displayed in 24 Hour Clock
		USB data connection.

Note : Reset Button located on back of Viewsonic Display

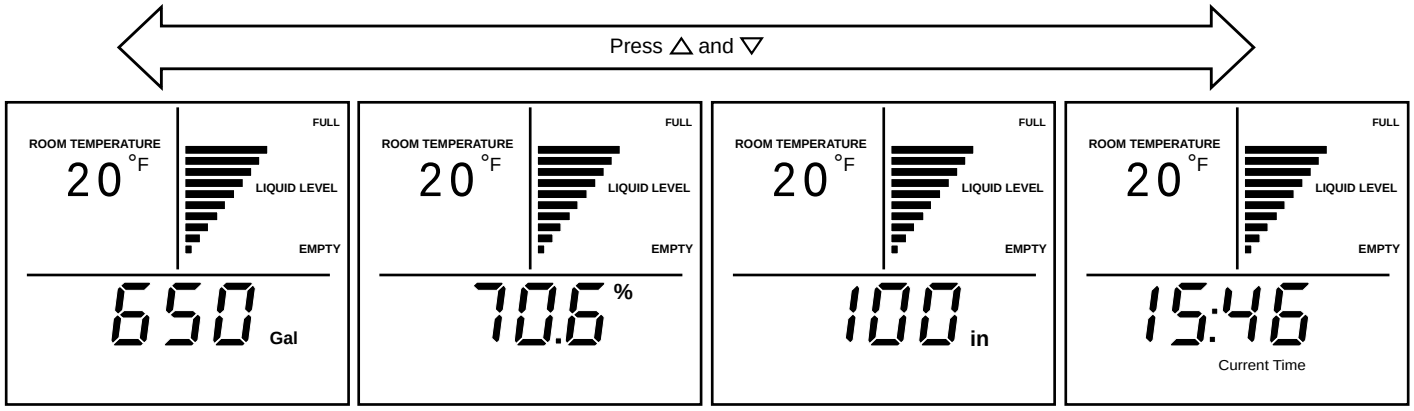
3. PRODUCT INFORMATION

TECHNICAL SPECIFICATIONS:

Tank Size	Min.Height : 1.6 ft (0.5m) Max. Height: 10 Ft (3m) Max. Tank Volume: 5200 Gal (19999L)
Displays	Multi-function LCD display including : • 10 bar-graph level indication on both **ViewSonic** Display and Sensor • Display of various current and historical values (**ViewSonic** Display only) • Red LED provides low level indication less than of liquid remaining
Audible Alarm	Audible alarm sounds every 60min (hourly) when the tank level is low
Max communication distance	Typically 200 Ft in normal 'line of sight' conditions
Wireless Communications	433MHz FM transmission (EN300-220)
Power Supply	- 3V LiMn cell, CR2450
Power Supply for Display	120 VAC, 50-60 Hz, meets EN60950-1
Battery Life	Sensor : > 5 years (estimated life) Display Monitor – approx 3yr of data retention if display is not plugged in
Dimensions	**Sensor:** 5.5" X 2.7" X 1.6" **Display:** 4.72" X 3.5" X 2"
Max and Min Operation (Transmitter)	Operating temperature range: -20°C to +60°C Operating Humidity : 0 - 95% non-condensing
Hole size for Fitting Transmitter :	1.25" diameter

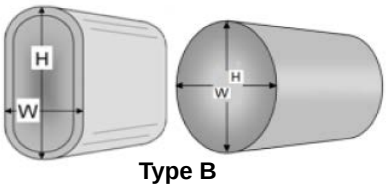
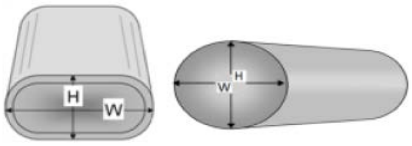
4. DISPLAY SCREENS

Main Display Screen– provides current status of the liquid level of the tank., and allows for easy visual display 'Gal' or ,'%', or 'Days to empty', as well the current time

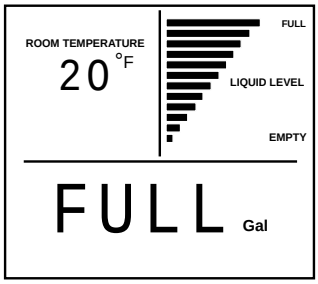


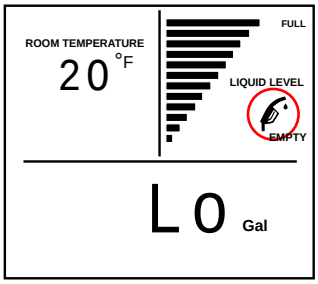
5. TANK SETUP

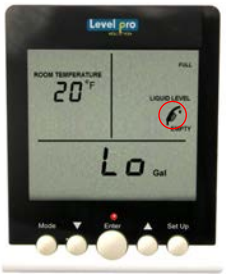
In order calculate the volume in your tank the **ViewSonic** Display needs to know the shape of the tank. There are three (3) basic shapes as illustrated below. Identify the shape that is closest to the shape of the tank being measured. Each **ViewSonic** Display is supplied with the default settings as shown. The **ViewSonic** Display must then be configured to match the tank's dimensions that is goingto be measured

Type	Tank Capacity (Gallons)			Tank Height (in)			Tank Width (in)		
	Low Limit	Default	High Limit	Low Limit	Default	High Limit	Low Limit	Default	High Limit
 Type A							N/A	N/A	N/A
 Type B				Tank Width					Tank Height
 Type C						Tank Width	Tank Height		

6. LEVEL ALARMS / INDICATIONS







Full Indication

When the level in your tank is with in 4" of the sensors transducter, the main display will indicate 'FULL'.

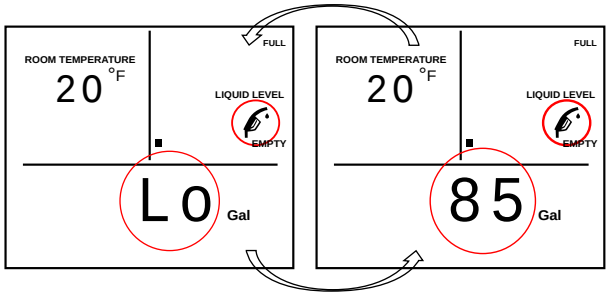
Low Level Indications

If tank level reaches a low level the 're-fill' symbol will flash. When the tank level is below 10% of the usable volume of liquid left in the tank, the CURRENT information screen alternates between showing the' Gal' and will indicate 'Lo' on the display

If the Liquid level drops below 5% of liquid remaining :

- 'Lo' is displayed constantly on the Main screen.
- The monitor there will be an audible beeps 5 times, repeating every hourly,
- The RED LCD light will begin to flash

This will continues until the tank is refilled with liquid



Leak Detection Alarm (Model with Leak Detection Boyancy Switch)

If the leak detection switch senses liquid it will cause the red LED light and local LCD display (bar graph) on the ViewSonic to flash

If the remote ViewSonic display is utilized the LCD (bar graph) and red LED light will flash. An audible alarm will also become active.

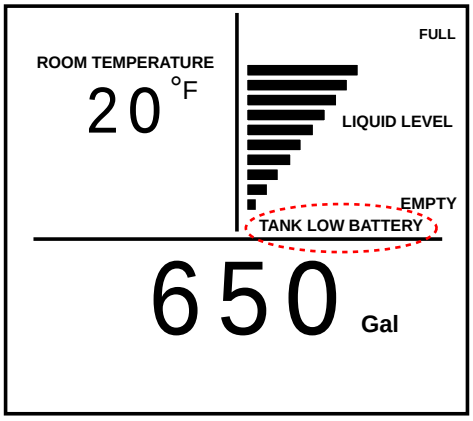
Press **Enter** to **Cancel** Audible Alarm on remote Display

Note : LCD Bar graph,and LED Light will continue to flash until upset alarm condition is addressed and rectified

7. TRANSMITTER BATTERY CHANGE

If the battery in the **ViewSonic Transmitter** needs to be changed the display will provide advance warning by showing the 'TANK LOW BATTERY' situated below the bargraph will begin to flash

- Remove the ViewSonic Transmitter from the tank
- The battery can be accessed by removing the four (4) screws from the base of the unit.
- Remove the old battery and replace it with a new battery, 3V CR2450 type
- Please ensure the O-ring is not damaged - relocate in the correct position.
- Connect the ViewSonic transmitter to the top of the tank.



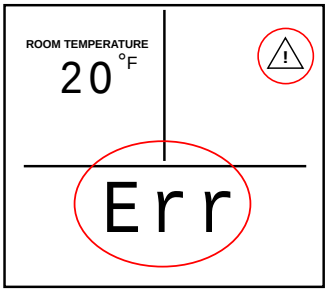
There is no need to 'Pair' the Sensor with the Display when the ViewSonic Sensor battery is changed.

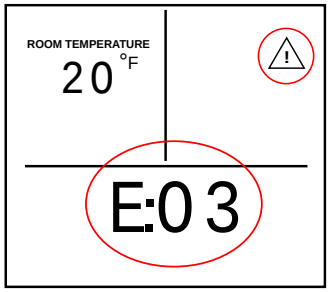
Disposal :

The crossed out garbage symbol on the packaging indicates that this product and its battery shall not be treated as household waste.
Proper disposal will help prevent potentially negative consequences for the environment and human health.

8. TROUBLESHOOTING

If the **ViewSonic Display** does not receive or cannot understand the RF signal from the **Viewsonic Sensor** , an error message will be displayed on the Display. The error message appears as an alternating screen showing 'Err' and 'E:0?' where ? is a number. Error codes are listed on a label on the rear of your ViewSonic Display.



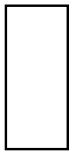


Error	Description	To Rectify :
EO1	Received reading is inconsistent	• Check the transmitter is vertical on the tank. • Check positioning of the transmitter (ensure the transmitter is not too close to the tank sides or internal obstructions). • Ensure that the transmitter is not too tightly attached to the tank. • Ensure that the tank is not overfilled and that the bottom of the transmitter is clean.
E02	Reading not received after 6 hours	• Check the transmitter is within range of the monitor. Try and relocate the monitor to a position that is nearer a window, remember that the transmitter communicates with the monitor by use of an FM signaland moving the monitor plug from possible metalobstructions can improve the signal. • Check that there are no metal obstruction that may deflect the signal. • Ensure the monitor is not too close to, or obstructed by, other electrical appliances.
E03	Reading received but void	• Check positioning of the transmitter (ensure the transmitter is not too close to the tank sides or internal obstructions). • Ensure that the transmitter is not too tightly attached to the tank. • Ensure that the tank is not overfilled i.e. there is a minimum of 4 inches free space between the transmitter and level. • Ensure the bottom of sensor is clean.
E04	Received Reading greater than tank height	• Check the tank height and ensure this information is correct on the monitor, press the 6. and V keys together to view your tank configuration. If height is incorrect, enter the setup mode by pressing SETUP for thre seconds, press ENTER until you reach screen 5 and adjust the height using 6. and V keys. Press ENTER to save. Press SETUP to exit Setup mode. Wait 3 hours for updated readings. • Check the transmitter is vertical and the positioning of the transmitter (ensure the transmitter is not too close to the tank sides or internal obstructions).
EO5	Contact Vendor	• This is a hardware fault please contact your distributor
EO6	Contact Vendor	• This is a hardware fault please contact your distributor

TROUBLESHOOTING (con't)

a. Blank Screen

Pairing my not have activated correctly or battery may need to be replaced. Repeat Step 3 or replace battery. If problem continues contact technical support

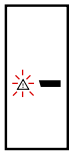


b. Full Screen but tank not full

Viewsonic Sensor may not be positioned 90 degrees vertically on tank to the liquid. Ensure sensor is vertical. Clear any obstacles in field of vision of the sensor.

c. Middle Bar + Flashing Triangle

Indicates lost ultrasonic echo. Ensure transducer (sensing) face is wiped clean. Sensor not Vertical- Ensure sensor is positioned 90 degress to liquid.

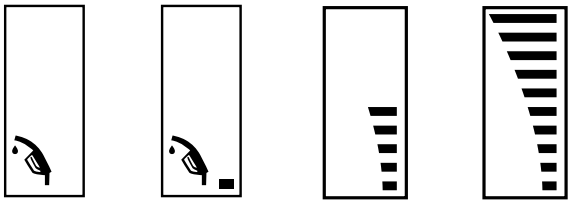


d. Low Battery Signal

Triangle - Not Flasing = Low Battery.

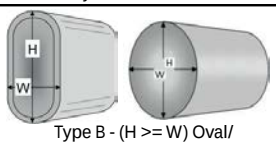
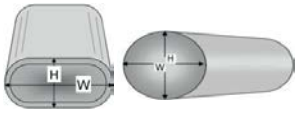
1. Remove ViewSonic sensor from the tank
2. Access the battery by removing the 4 sst screws from the underside of the ViewSonic sensor
3. Remove and replace with a new battery (3VCR2450) (Note + side up)
4. Replace upper cover with screws (do not overtighten) Ensure O-Ring is in place and not damaged.
5. Reinstall the Viewsonic Sensor

Visual Low Level Indication



Installation Guide-Programming

ViewSonic Battery Operated Ultrasonic Level Sensor + Display + Leak Detection Switch

Your tank/Drum/Sump Dimension Chart	Tank Type	Height (H) ins.	Width (W) ins.	Brimful Capacity (Gls.)	Nominal Capacity (Gls.) (95% of Brimful)
 Type A - Rectangular/ cylindrical vertical			N/A		
 Type B - (H >= W) Oval/ cylindrical horizontal					
 Type C - (W > H) Lo profile					

STEP 1 - DETERMINE THE SHAPE OF YOUR TANK/DRUM/

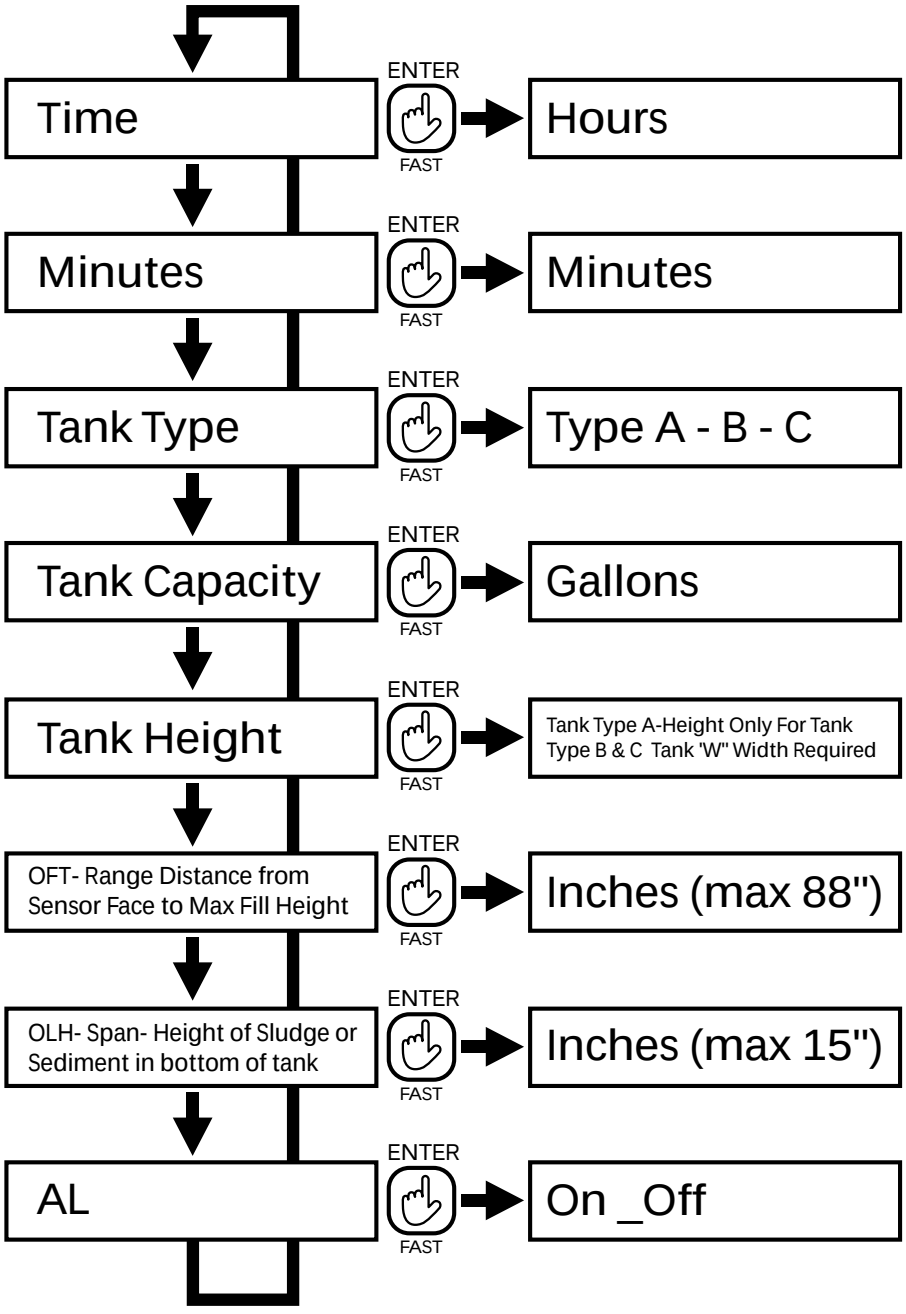
Select the tank type that most closely matches the vessel you are using from the above chart

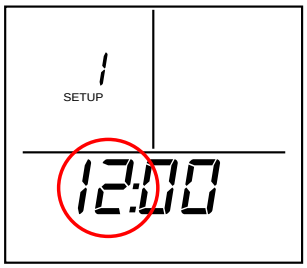
- Determine the dimensions of your tank either from the manufacturer or by physically measuring the Tank /Drum /Sump/Tote
- For Double Walled Tanks Only the Internal Dimensions and Type (Chart) are required
- The tank height, will be measured from the top of the tank, i.e. where the ViewSonic Level sensor will be mounted, to the bottom of the tank
  (Note: Ensure the ViewSonic sensor is installed on the top of the internal tank if using a double walled tank.)

STEP 2 – Programming DISPLAY

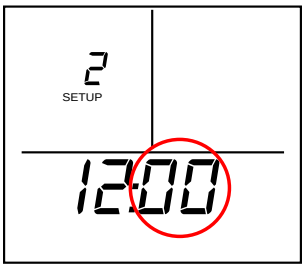
When first turning on the ViewSonic Dispay it will display the **SETUP mode** -In the top left corner. **Setup1**. During the Programing Phase you will be guided through the Setup via flashing screens. The 'Programming' is very intuitive and it is very easy to configure the display to your specific application.

Note: that if you enter incorrect information simply continue to press ENTER until you are back to the correct step where you can enter the correct value and press ENTER to store.

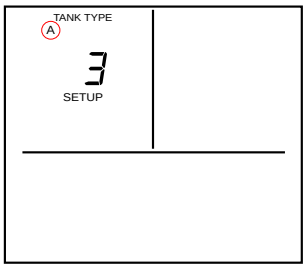




SETUP 1 – Setting the time (hrs) Adjust the hour displayed using △/▽. Press **ENTER** to save.

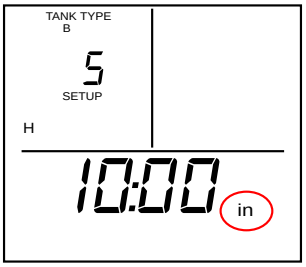


SETUP 2 – Setting the time (mins) Adjust minutes displayed using △/▽. Press **ENTER** to save.

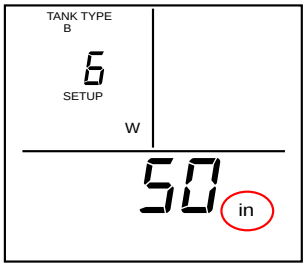


SETUP 3 – Programming the tank type Select tank type A, B, or C, using △/▽. to match your tank then Press **ENTER** to save.

SETUP 4 – Programming the tank/drum/sump capacity (ltr./ Gal.) Enter the number in litres/ gallons then Press **ENTER** to save



SETUP 5 – Programming tank/ drum/sump height (ins.) Press **ENTER** to save. Note that if Tank Type 'A' was selected, SETUP 6 will be skipped.

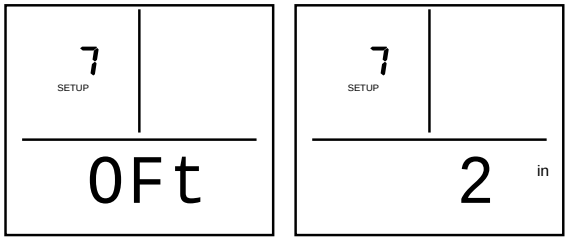


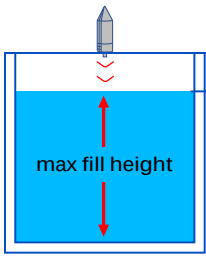
SETUP 6 (Type B & C tanks only) Programming the in (inches) Press ENTER to save.

N.B. If you unable to measure your tank /sump / drum please confirm that you have selected the correct type...A-B or C

Setup 7

Programming Offset -OFT you are able to program the distance freom the Sensor face to the maximum level of the liquid. This is measured in 'inches' and can be set from 0-19" Span



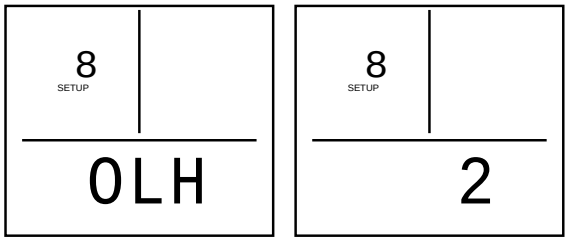


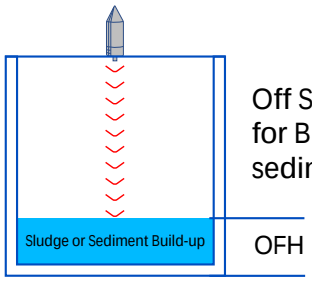
OFT Distance from Sensor Face to max fill Height

Setup 8

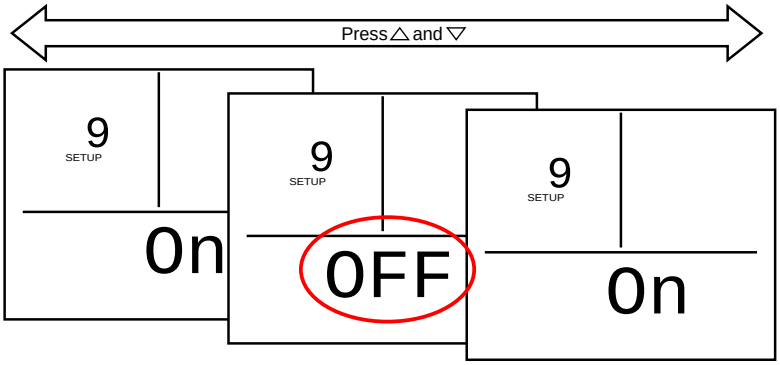
Programming Range -OFH

The Viewsonic Display can be programmed to account for sediment or sludge build-up located at the bottom of the tank. Input value





Off Set to account for Buildup sludge or sediment inside tank.



Setup 9 – Programming the-Leak Detection Visual +Audible Alarm

Alarm on : When a leak is sensed the ViewSonic Display will sound an audible beep and the LCD Display will flash on the sensor as well as on the display. The LED red light on the sensor will also light up and flash. The Audible sound can be turned off by pressing Enter

Alarm off : Turn alarm notification off .

Select **AL ON/OFF** using △ / ▽. When the display shows your preferred setting press **ENTER** to save.

SETUP is now complete. Press **SETUP** to exit and progress to STEP 3.
On exiting Programming mode the monitor temporarily displays 'CALC'.

Note: If at any stage during the Programming stage you exit SETUP mode , simply press and hold the SETUP button for at least 3 seconds to begin again.

STEP 3 - Pairing THE Sensor TO THE Display

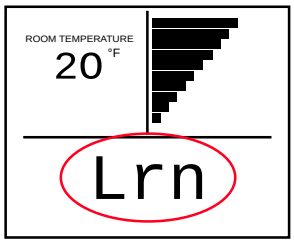


Image 1 : 'Lrn' mode

Image 2 : Alignment Pin

The Display must be in Pairing Mode (Lrn) mode which can be entered in one of two ways:
A) Pressing **SETUP** after completing STEP 2 above
B) Disconnecting and reconnecting the power. The Pairing mode (Lrn) the display shows 'Lrn' in the main screen area **(image 1)**. Pairing mode will last for approx **2 minutes** during which time you must 'match/pair' the sensor to the display.

Image 3 : Correct positioning

Image 4 : Alignment

The sensor LCD display should be facing in the same direction as the LCD on the display as shown in image #4 base of the display.

Step 1 Position Sensor with Display-Hold for approx 5-10 Second

Step 2 If after 10 seconds syncing does not occur (see Image 4) Remove Sensor from Display for approx 5 seconds.-(Depending on conditions this step may need to be repeated)

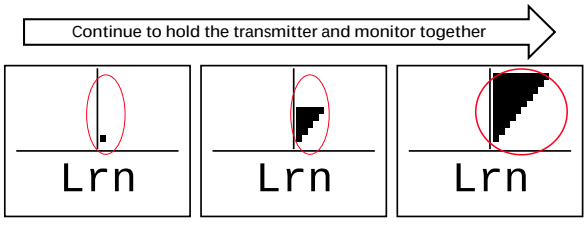


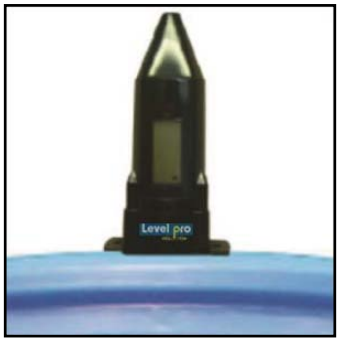
Image 4 : Syncing

Step 3 Reposition Sensor with the Display (Image 3) Hold in place. Once the units are connected the LCD bars on both the display and the sensor with climb in sync while bars climb in sync, and audible beep is emitted-This will indicate that the pairing is complete

After the pairing' is complete the sensor will send level data continuously to the display for approximately ten (10 minutes). Every time the display receives data from the sensor a audible clicking noise will sound and the red LED light will flash on the ViewSonic Sensor

The pairing procedure can be confirmed by **slowly** lowering and raising the **ViewSonic level** sensor over a flat surface and observing that the display reflects the changes. The 'Quick-Click' mode will stop after 10 minutes. The **Viewsonic Sensor** is now ready to mounted onto the tank/drum/ sump .
Note: Keep the Sensor Perpendicular to the surface being measured

STEP 4 - INSTALLING the ViewSonic Senor



Tanks with pre-drilled hole

- A 2" or 1 1/2" MNPT Bulkhead fitting is provide for threading directly onto the tank.
- Ensure the transmitter is vertical to the liquid on top of the tank.
- Ensure the LCD Bar Graph is displaying current liquid level

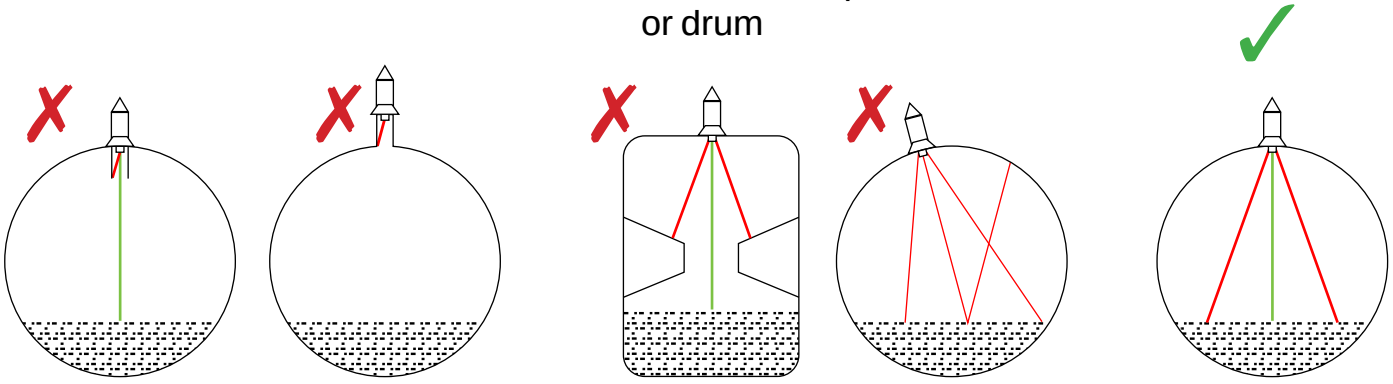
Note: if after 10 minutes the sensor is not mounted , the display may show the error symbol or display an incorrect reading. It may take 1-2 hours before the correct level data is shown on the display screen.

Installation Tips

Do not insert a down tube or stillwell or any other object.

Aviod obstacles such as ladders or mixers inside the tank/sump or drum

The transmitter must be mounted vertical



Ensure Sensor is Perpendicular to Liquid Level

Your ViewSonic display and Level Sensor is now complete.

Contact Details

Should you have any questions, please contact us : www.iconprocon.com
1-905 -469 9283
sales@iconprocon.com

Notes & Calculations

Icon Process Controls
www.iconprocon.com
www.SellingSolutionsFirst.com
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