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PodView®

Level Indicator

FLOWLINE™
LEVEL BEST

LI40 Series Manual



The general purpose indicator displays tank level or volume in engineering units with 1-4 relay status indicators, and is compatible with any EchoPod® level sensor that's been configured with WebCal® 6 software and updated to V50 firmware or higher. Powered by EchoPod®, the field mount indicator may be located up to 4.5m (15') from the sensor. PodView® requires no programming. The indicator repeats the measured value, applicable relay status and set point configuration of the attached sensor. If EchoPod® relay set point changes are desired, they can be easily made through the field indicator.

NEW FEATURES

- Simple configuration with WebCal® software.
- Adjustable Loop Fail-Safe, Hold Last, Empty, Full, 21 mA, 22 mA
- Easy to reverse mA output, 4-20 mA to 20-4 mA
- Adjustable start-up condition, Empty, Mid (12 mA), Full, Over range (22 mA)

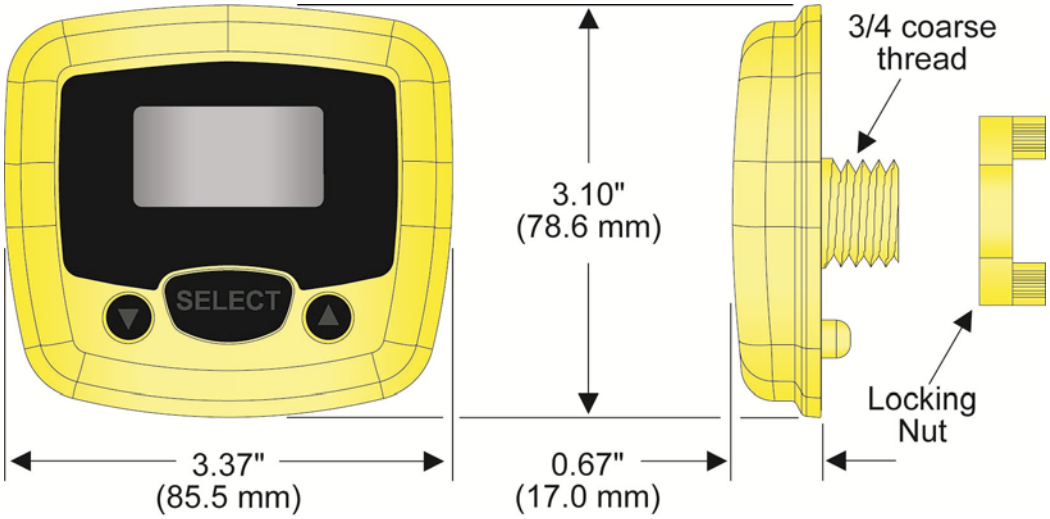
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Specifications / Dimensions

Display type:	LCD, 6-digit with 4 relay indicators	Operating temp.:	F: -4° to 140° C: -20° to 60°
Display units:	Engineering units, liquid volume or height	Cable type:	4-conductor, #22 AWG
Display output:	-9999.9 to 99999.9	Cable length:	4' (1.2m)
Character height:	0.374" (9.5 mm)	Cable material:	Polyurethane
Decimal point:	Fixed	Enclosure rating:	NEMA 4 (IP65) when mounted
Dot indication:	Relay status	Enclosure mat'l:	Polycarbonate
User interface:	Three button	Enclosure type:	Panel mount
Sensor input:	(1) EchoPod® sensor	Button mat'l:	Silicon rubber
Supply voltage:	Provided by EchoPod®	Compliance:	CE, RoHS

DIMENSIONS:

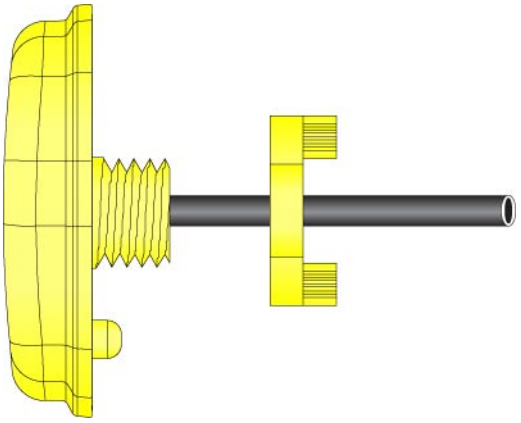


INCLUDED COMPONENTS:

PodView® comes with a 4' (1.2m) cable, locking nut and the Quick Start.



PodView® Front View



PodView® Side View

⚠ **About this Manual:** PLEASE READ THE ENTIRE MANUAL PRIOR TO INSTALLING OR USING THIS PRODUCT. This manual includes information on the PodView® series level indicator from FLOWLINE, LI40 series. Please refer to the part number located on the switch label to verify the exact model configuration, which you have purchased.

⚠ **User's Responsibility for Safety:** Flowline manufactures a broad range of level sensing technologies. While each of these sensors is designed to operate in a wide variety of applications, it is the user's responsibility to select a sensor model that is appropriate for the application, install it properly, perform tests of the installed system, and maintain all components. The failure to do so could result in property damage or serious injury.

⚠ **Proper Installation and Handling:** Only professional staff should install and/or repair this product. Install the level indicator with the included locking nut and never over tighten the indicator within the installation. Always check for leaks prior to system start-up.

⚠ **Wiring and Electrical:** A supply voltage of 12 to 28 VDC is used to power the PodView® and the EchoPod® sensor. Electrical wiring of the transmitter should be performed in accordance with all applicable national, state, and local codes.

⚠ **Material Compatibility:** The enclosure is made of Polycarbonate (PC) with the Cable made of Polyurethane and the Buttons made of silicon rubber. Make sure that the model, which you have selected, is chemically compatible with the application media.

⚠ **Enclosure:** While the level indicator housing is liquid-resistant the PodView® is not designed to be operational when immersed. It should be mounted in such a way that the enclosure and level indicator do not come into contact with the application media under normal operational conditions.

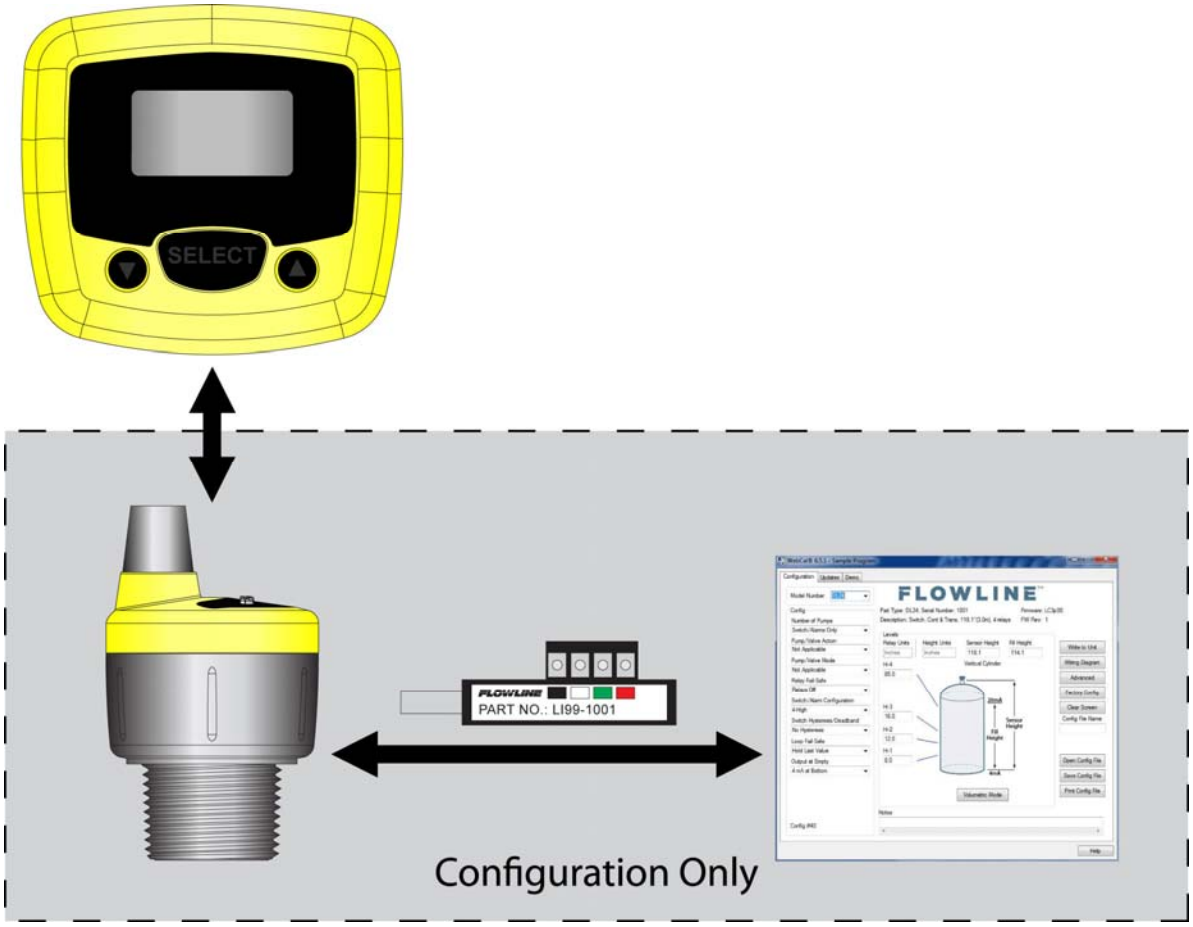
⚠ **Make a Fail-Safe System:** Design a fail-safe system that accommodates the possibility of EchoPod®/PodView® and/or power failure. FLOWLINE recommends the use of redundant backup systems and alarms in addition to the primary system.

⚠ **Flammable, Explosive or Hazardous Applications:** ***PodView® should not be used within classified hazardous environments.***

⚠ **Safety**

- ⚠ Installation should be done by properly trained staff
- ⚠ Supply voltage should never exceed a maximum of 28 VDC
- ⚠ Make sure the sensor is chemically compatible with your application
- ⚠ Design a fail-safe system that accommodates the possibility of sensor and/or power failure
- ⚠ This sensor should not be used in classified hazardous environments

PodView® does not require any configuration. PodView® level indicator will automatically read the configuration of the attached EchoPod® and display the level per the sensor's configuration. EchoPod® does require configuration with the WebCal® software (especially if the relay are to be used). For a copy of WebCal®, please go to flowline.com, click on WebCal® Software and select your language version. Before attaching PodView® to the EchoPod®, configure the EchoPod® to WebCal® via the LI99-1001 USB® Fob. Once the EchoPod® is configured, remove the Fob and attach the PodView®.



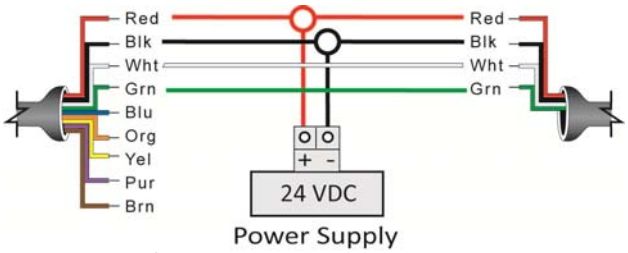
Note: *Please refer to EchoPod® manual for the wiring, configuration with WebCal® and installation of EchoPod®.*

WIRING PODVIEW® TO ECHOPOD®:

PodView® and EchoPod® require a 12 to 28 VDC power supply to operate. The maximum cable distance between PodView® and EchoPod® is 15' (4.5m). Follow the below steps to wire EchoPod® with EchoPod®:

EchoPod®





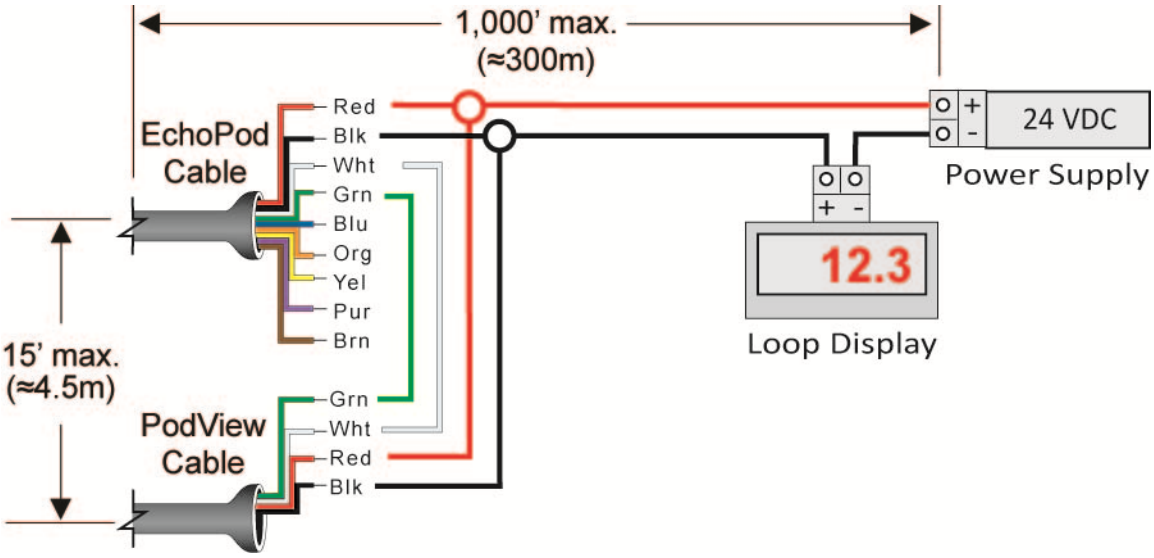
PodView®



Wiring is identical for all EchoPod® models – Use only the Red, Black, Green and White wires.

1. Connect the Red and Black wires of both PodView® and EchoPod® to the 12-28 VDC power supply.
2. Connect the Green and White wires of PodView® to the corresponding Green and White wires of EchoPod®.
3. Isolate the Green and White wires from active power to prevent a short of the configuration circuit.

ADDING A LOOP POWERED DISPLAY



GENERAL SAFETY

- Where personal safety or significant property damage can occur due to a spill, the application must have a redundant backup safety system installed.
- Wiring should always be done by a licensed electrician.
- Supply voltage should never exceed 28 VDC.
- Protect the sensor from electrical spikes by isolating the power.
- Design a fail-safe system for possible indicator and/or power failure.
- Never use the sensor in environments classified as **Hazardous**.

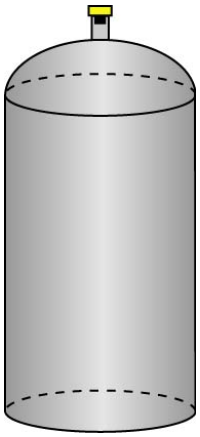
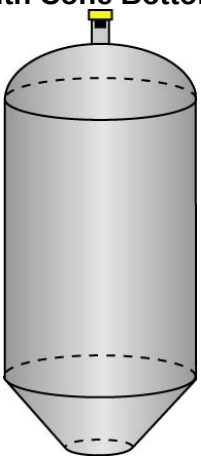
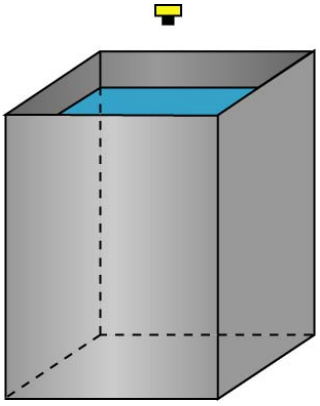
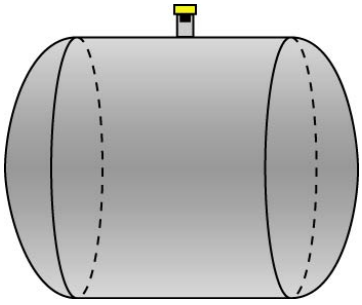
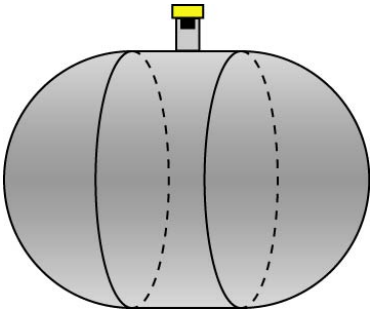
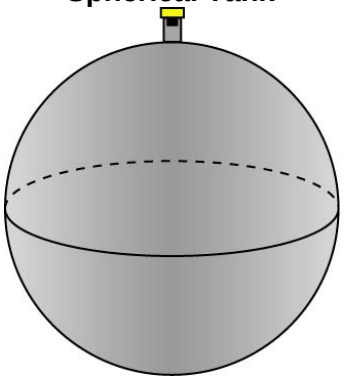
LEVEL HEIGHT VS. VOLUME:

The latest version of WebCal® (WebCal® 6.0) has a new feature which allows the sensor to be configured to read either the height of the liquid or the volume of the liquid. This selection is made under the Sensor Output Units selection of either Volume (volume of liquid) or Distance (height of liquid). See the chart below for the engineering unit options available for both Distance and Volume.



Units of Measurement	
Distance	**Volume**
Inches	Gallons
Cm	Liters
Feet	
Meters	

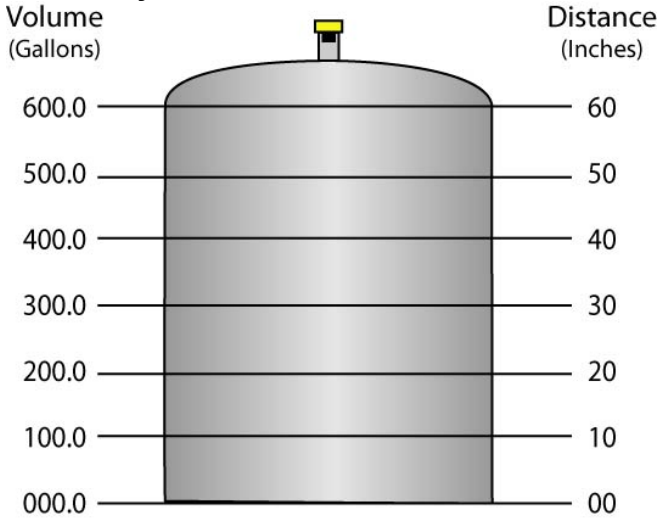
There are 6 different tank shapes that you can select with WebCal®.

Vertical Cylinder Tank 	**Vertical Cylinder Tank with Cone Bottom** 	**Rectangular Tank** 
Horizontal Cylinder Tank with End Caps 	**Horizontal Cylinder Tank with Spherical End Caps** 	**Spherical Tank** 

LINEAR VS. NON-LINEAR:

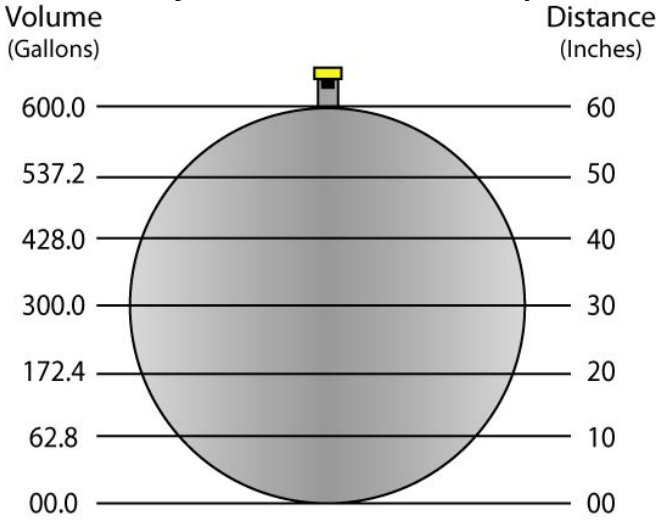
Two of the shapes (Vertical Cylinder Tank and Rectangular Tank) will always provide a linear output, regardless of selecting Distance or Volume. The remaining four shapes (Vertical Cylinder Tank with Cone Bottom, Horizontal Cylinder Tank with End Caps, Horizontal Cylinder Tank with Spherical End Caps and Spherical Tank) will have a linear output when Distance is selected, but will have a non-linear output when volume is selected.

Vertical Cylindrical Tank



In the above illustration, 10” of liquid will always be equal to 100 gallons of liquid (1” = 10 gallons).

Horizontal Cylinder Tank with End Caps



In the above illustration, 1” of liquid does not equal 10 gallons. The 10” at the bottom represents a rise of 62.8 gallons where the change between 10” and 20” represents an increase of 109.6 gallons.

When volume is selected, the 4-20 mA output from the sensor will be proportional to the volume of the tank, not the height of the tank. This means that the current output will track the volume of the tank (in gallons or liters) within a non-linear tank (Vertical Cylinder Tank with Cone Bottom, Horizontal Cylinder Tank with End Caps, Horizontal Cylinder Tank with Spherical End Caps or Spherical Tank).

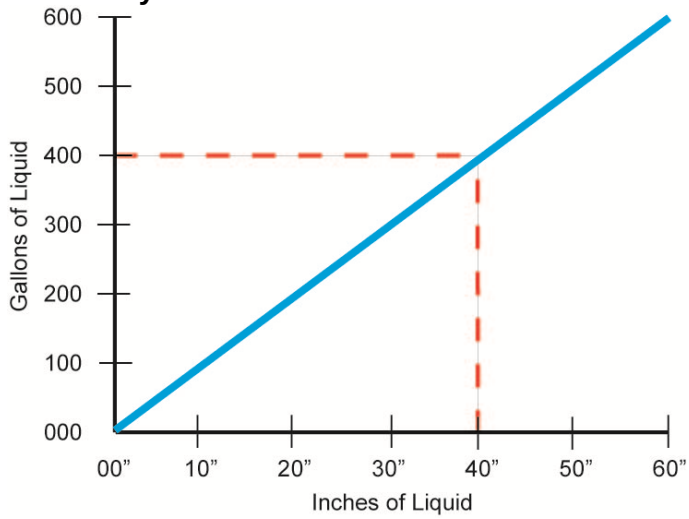
When connecting the 4-20 mA output to a display, the current signal will follow the volume of the tank. The display will also reflect the volume of the tank and not the height of the liquid.

Example #1 (Volume Output): In the illustrations above, @ 20” of liquid, the display will show 200.0 gallons in the Vertical Cylindrical Tank. However, in the Horizontal Cylinder Tank with End Caps, the same level of 20” would show 172.4 gallons.

EXAMPLE #2 (CURRENT OUTPUT):

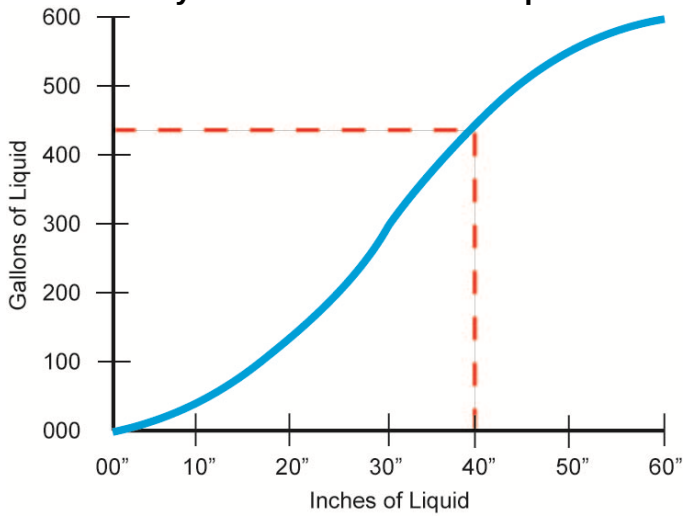
In the illustrations below, the 4mA signal is set at 0” (0.0 gallons) and the 20 mA signal is set to 60” (600.0 gallons). In the Vertical Cylindrical Tank, 40” of liquid will output a current signal of 14.67mA. However, in the Horizontal Cylindrical Tank with End Caps, 50” of liquid will output a current signal of 15.41mA. A simple loop display set with 4mA = 0 gallons and 20 mA = 600 gallons will show two different volumes based upon the tank shape configuration. Vertical Cylindrical Tank will show 400.0 gallons while Horizontal Cylindrical Tank with End Caps will show 428.0 gallons.

Vertical Cylindrical Tank



- 10” of liquid will always be equal to 100 gallons of liquid (1” = 10 gallons).

Horizontal Cylinder Tank with End Caps

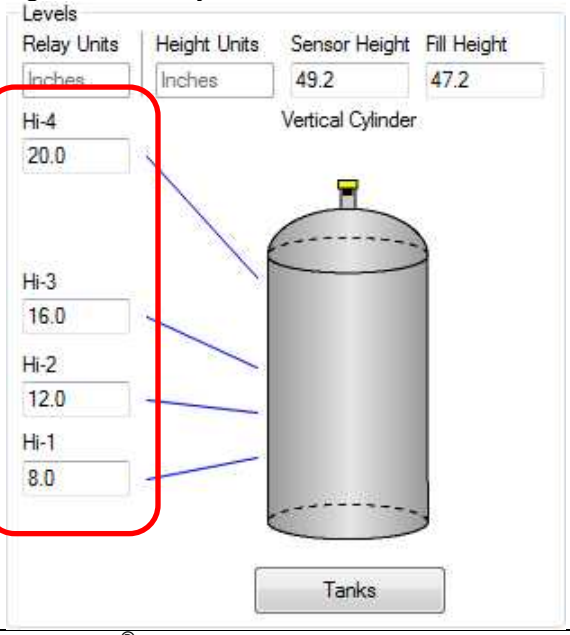


- 1” of liquid does not equal 10 gallons. The 10” at the bottom represents a rise of 62.8 gallons where the change between 10” and 20” represents an increase of 109.6 gallons.

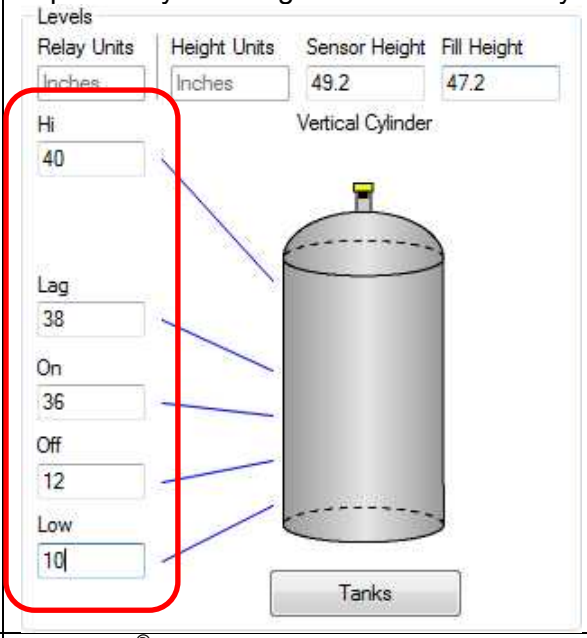
RELAY SETTINGS:

PodView® not only displays the level reading of the EchoPod® (Height or Volume), but PodView® also allows you to adjust the settings for relays. PodView® will not allow changes to Sensor Height or Fill-Height, just the relay settings.

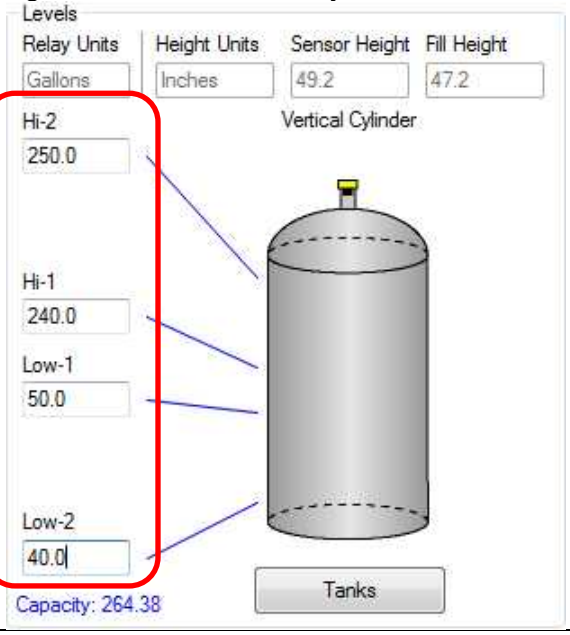
EchoPod® configured to read inches of liquid plus 4 high alarm relays.



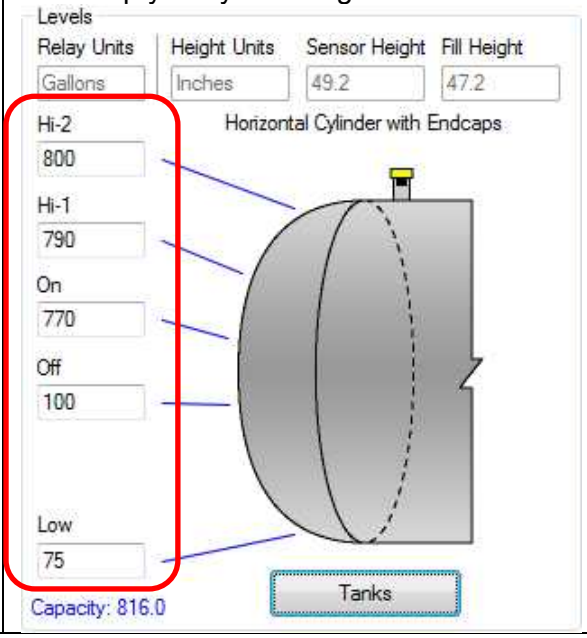
EchoPod® configured to read inches of liquid plus duplex relays and high and low alarm relays.



EchoPod® configured to read gallons of liquid plus 2 high alarm and 2 low relays.



EchoPod® configured to read gallons of liquid plus an auto empty relays and high and low alarm relays.

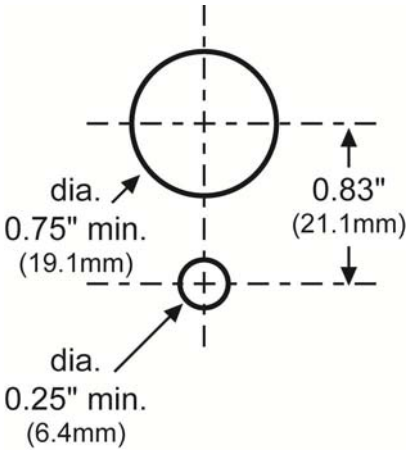


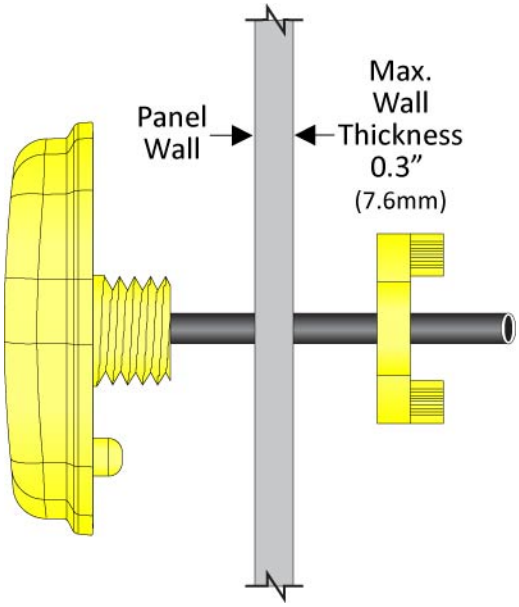
PodView® is designed for typical panel mount installations, either located within an instrument panel or through the wall of a NEMA box enclosure.

PANEL MOUNT:

The maximum cable distance between PodView® and EchoPod® is 15’ (4.5m). Follow the below steps to install the indicator in a panel or NEMA box enclosure located near EchoPod®:

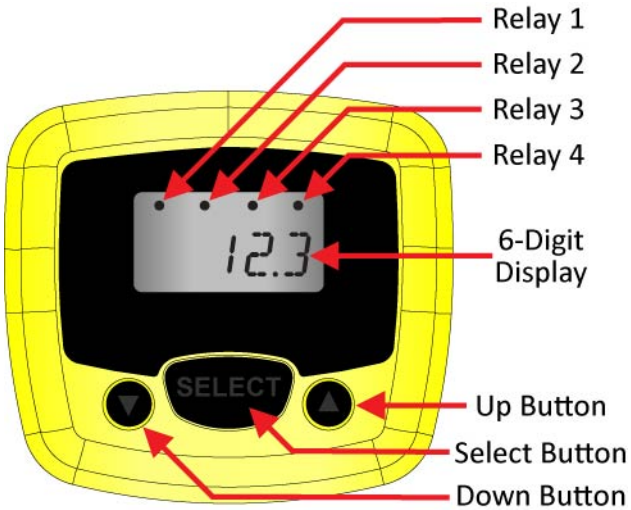
1. Drill (1) large 0.75” (19.1mm) diameter hole in the panel for the cable and nipple.
2. Drill (1) small 0.25” (6.4mm) diameter hole 0.83” (21.1mm) below the large hole that will prevent the installed indicator from rotating off center.
3. Run the indicator cable through the large top hole and locking nut (on the rear side of the panel).
4. Properly align the indicator with the flat gasket and holes on the panel. Then press the indicator in place against the panel.
5. Tighten the locking nut down over the nipple and route the cable for termination.





PodView® features a 6-digit display with relay indicators and a three-button user interface. The indicator displays the measured value and relay status of the connected EchoPod® (if the sensor has relays and they are configured for use).

- **Relay 1-4** – Indicates when the sensor's relay is energized. ***Note:*** *Not all EchoPod® sensor models have relays.*
  - If the EchoPod® does not have any relays, then the indicators will remain off.
- **6-digit Display** – Shows the liquid level in height (inches, cm, feet or meters) or the volume of liquid (gallons or liters).
  - The selection of height vs. volume is set in the WebCal® software.
- **Up Button** – Used to increase a set point value.
- **Select Button** – Used to enter the Menu and accept values.
- **Down Button** – Used to decrease a set point value.

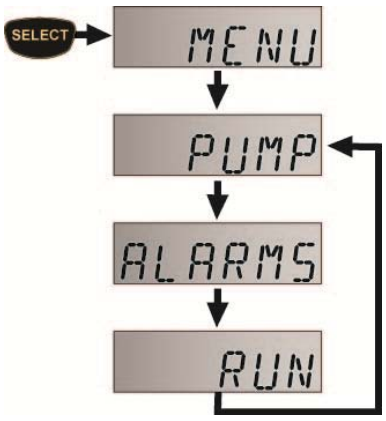


Note: *To increase the scrolling speed of the display, hold down the SELECT button while simultaneously pressing the UP or DOWN button.*

ENTERING THE MENU:

If desired, users can change EchoPod® relay ALARM, VALVE or PUMP ON-OFF set points using PodView®. To enter the menu PodView® MENU functions, press and hold the SELECT button for 5 seconds. The MENU will then scroll between the configured PUMP, ALAMRS and RUN modes. ***Note:*** *If the relays are configured for PUMPS and ALARMS, then both will appear in the menu.* If the relays are configured for Alarms only, then PUMP will not appear. If the relays are configured for PUMPS only (also for valves), then ALARMS will not appear.



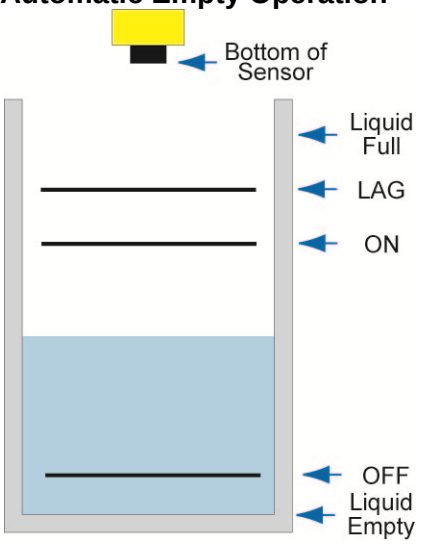


- To change a pump set point value, press **SELECT** when PUMP appears.
- To change an Alarm set point value, press **SELECT** when ALARMS appear.
- To exit the menu and return to run mode, press **SELECT** when RUN appears.

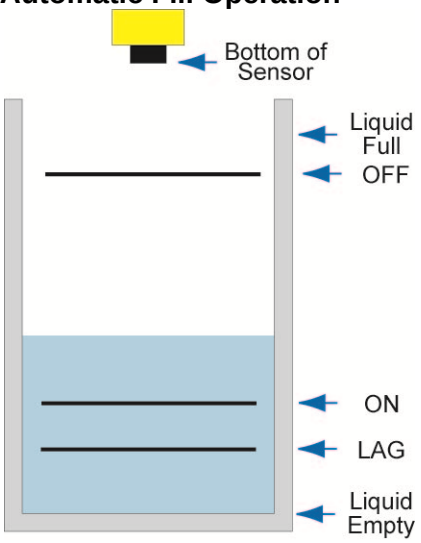
CHANGING A PUMP SET POINT:

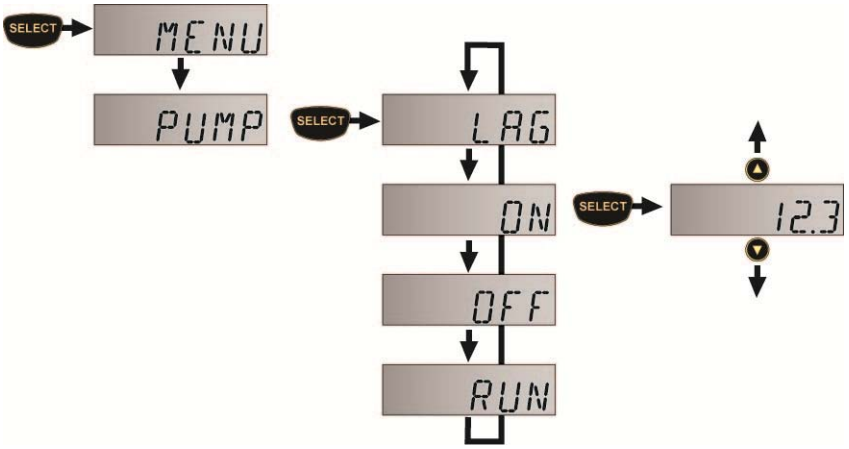
EchoPod® sensor models with relays have (1-4) channels. If after accessing the MENU, PUMP appears in the display, then at least (1) relay is configured for pump or valve control. Simplex pump control has (1) ON and (1) OFF setting. Duplex pump control (2-pumps) has a third additional LAG setting. ***Note:*** *Prior to making any changes, we recommend that you write down all existing set point values.* The example below highlights a duplex pump system in an automatic empty or automatic fill operation with (1) LAG, (1) ON and (1) OFF set point. Use the following steps to change your simplex or duplex pump control settings.

Automatic Empty Operation



Automatic Fill Operation





Steps to Change Pump Set Points

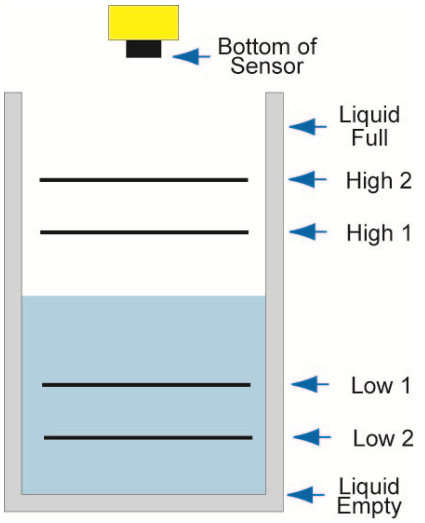
1. Hold SELECT for 5 seconds to enter the MENU.
2. Press SELECT when PUMP appears.
3. Press SELECT when the set point (ON, OFF, LAG) you want to change appears.
4. Press the UP and DOWN buttons to increase or decrease the set point to the desired value. To scroll faster, hold SELECT while pressing UP or DOWN.
5. To enter the set point, hold SELECT for 2 seconds.
6. To change another set point, press SELECT when the set point appears.
7. To exit the MENU, press SELECT when RUN appears.

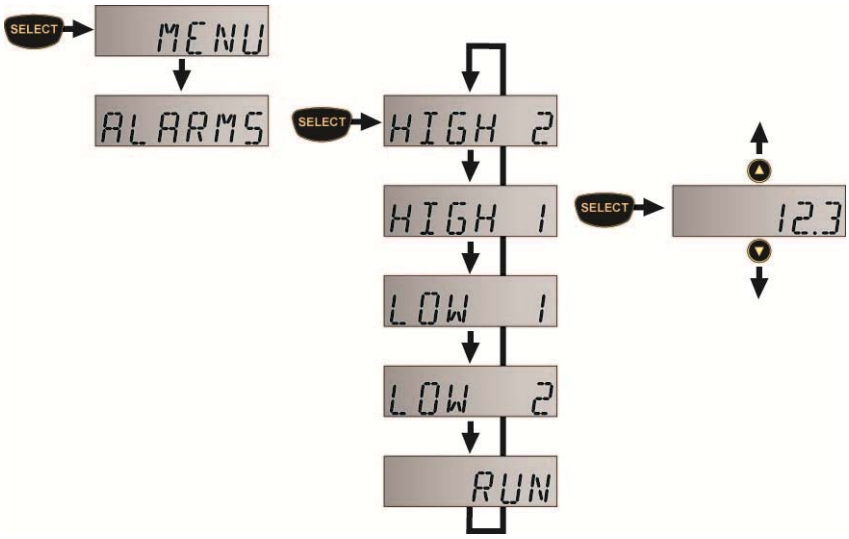
Tech Tips

Never place a relay set point (ON, OFF, LAG) at the liquid empty or liquid full position. You should have at least some distance or volume buffer separating them. For example, in a 500 gallon tank, the relay set points could be placed at ≥ 10 gallons or ≤ 490 gallons.

CHANGING AN ALARM SET POINT:

EchoPod® sensor models with relays have (1-4) channels. If after accessing the MENU, ALARMS appears in the display, then at least (1) relay is configured as an alarm. The Alarm settings may be in any combination of LOW and/or HIGH alarms (4-HIGH, 1-LOW & 3-HIGH, 2-LOW & 2-HIGH, etc.). *Note: Prior to making any changes, we recommend that you write down all existing set point values.* The example below highlights a 2-LOW and 2-HIGH alarm operation with (4) set points. Use the following steps to change your alarm settings.





Steps to change Alarm settings:

1. Hold SELECT for 5 seconds to enter the MENU.
2. Press SELECT when ALARMS appears.
3. Press SELECT when the set point (HIGH2, HIGH 1, LOW1, LOW2) you want to change appears.
4. Press the UP and DOWN buttons to increase or decrease the set point to the desired value. To scroll faster, hold SELECT while pressing UP or DOWN.
5. To enter the set point, hold SELECT for 2 seconds.
6. To change another set point, press SELECT when the set point appears.
7. To exit the MENU, press SELECT when RUN appears.

Hints:

- Never place a relays set point (High 1, Low 1) at the liquid empty or liquid full position. You should have at least some distance or volume buffer separating them. For example, in a 500 gallon tank, the relay set points could be placed at ≥ 10 gallons or ≤ 490 gallons.

TROUBLESHOOTING:

Display Descriptors: The following are the display's operational descriptors, meaning and corrective action:

WARMUP	WARMUP is seen when power is first applied to the EchoPod® and PodView®. WARMUP indicates that the display is waiting for the EchoPod® to acquire and send a valid level reading.
MENU	Indicates the menu for configuration of relay set points.
PUMP	PUMP is the identifier for the relay set points affecting Pump or Valve operations.
OFF	OFF is the relay set point that turns OFF the pump.
ON	ON is the relay set point that turns ON the pump.
LAG	LAG is the set point that turns ON the lag pump.
ALARM	Alarm is the identifier for the relay set points affecting Alarm operations.
HIGH #	HIGH # is the relay set point that energizes a high alarm relay.
LOW #	LOW # is the relay set point that energizes a low alarm relay.
CHECK WIRES	Not All four wires are properly connected to the EchoPod®. Check the wiring between the PodView® and the EchoPod®.
UPDATE FW REV	The attached EchoPod® is not running a version of the firmware (50.0 or higher) that is compatible with PodView®. Connect the EchoPod® to WebCal® 6.0 and update the firmware.

WARRANTY

Flowline 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 in accordance with instructions furnished by Flowline for a period of two years from the date of manufacture of such products. Flowline's obligation under this warranty is solely and exclusively limited to the repair or replacement, at Flowline's option, of the products or components, which Flowline's examination determines to its satisfaction to be defective in material or workmanship within the warranty period. Flowline must be notified pursuant to the instructions below of any claim under this warranty within thirty (30) days of any claimed lack of conformity of the product. Any product repaired under this warranty will be warranted only for the remainder of the original warranty period. Any product provided as a replacement under this warranty will be warranted for the full two years from the date of manufacture.

RETURNS

Products cannot be returned to Flowline without Flowline's prior authorization. To return a product that is thought to be defective, go to flowline.com, and submit a customer return (MRA) request form and follow the instructions therein. All warranty and non-warranty product returns to Flowline must be shipped prepaid and insured. Flowline will not be responsible for any products lost or damaged in shipment.

LIMITATIONS

This warranty does not apply to products which: 1) are beyond the warranty period or are products for which the original purchaser does not follow the warranty procedures outlined above; 2) have been subjected to electrical, mechanical or chemical damage due to improper, accidental or negligent use; 3) have been modified or altered; 4) anyone other than service personnel authorized by Flowline have attempted to repair; 5) have been involved in accidents or natural disasters; or 6) are damaged during return shipment to Flowline. Flowline reserves the right to unilaterally waive this warranty and dispose of any product returned to Flowline where: 1) there is evidence of a potentially hazardous material present with the product; or 2) the product has remained unclaimed at Flowline for more than 30 days after Flowline has dutifully requested disposition. This warranty contains the sole express warranty made by Flowline in connection with its products. ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED. The remedies of repair or replacement as stated above are the exclusive remedies for the breach of this warranty. IN NO EVENT SHALL FLOWLINE BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING PERSONAL OR REAL PROPERTY OR FOR INJURY TO ANY PERSON. THIS WARRANTY CONSTITUTES THE FINAL, COMPLETE AND EXCLUSIVE STATEMENT OF WARRANTY TERMS AND NO PERSON IS AUTHORIZED TO MAKE ANY OTHER WARRANTIES OR REPRESENTATIONS ON BEHALF OF FLOWLINE. This warranty will be interpreted pursuant to the laws of the State of California. If any portion of this warranty is held to be invalid or unenforceable for any reason, such finding will not invalidate any other provision of this warranty.

For complete product documentation, video training, and technical support, go to flowline.com.
For phone support, call 562-598-3015 from 8am to 5pm PST, Mon - Fri.
(Please make sure you have the Part and Serial number available.)