LevelHub®

Wireless Tank or Silo Level Monitor

FLOWLINE™
LEVEL BEST

HB01 Series Manual

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MN890700 Rev B

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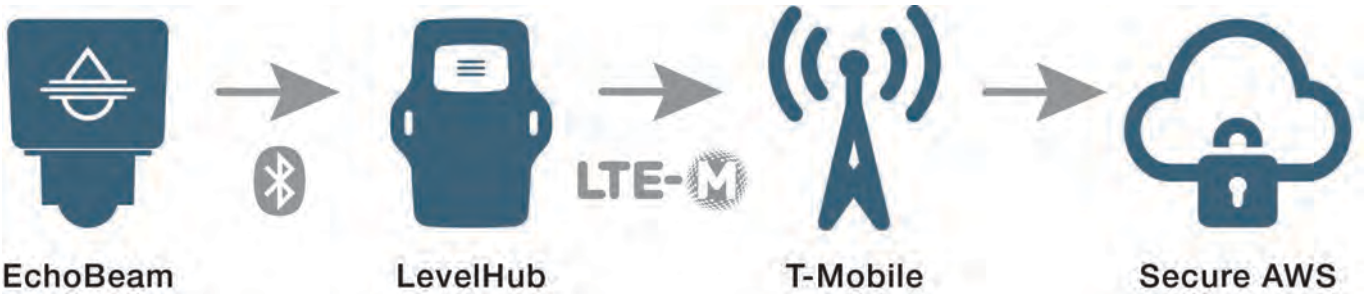
WHAT IS THE CLOUD?

The cloud is a network of remote servers accessible over the internet, where users can store data, run applications, and access services like email, streaming video, and office software. LevelHub is the solution that seamlessly integrates level sensors (EchoBeam) to the online remote servers using the embedded Bluetooth communication of the sensor and a built in 5G cell phone in the device. LevelHub is the manager of the data that will be stored online and accessed via a secured website. The data can be integrated into any analytical resource enabling the improvement of supplies and operational services.

HOW DOES LEVELHUB WORK?

EchoBeam transmitters have a built-in Bluetooth chip that will transmit key sensor information. Level Hub receives the wireless Bluetooth signal and transmits that information into the cloud using 5G cellular technology. This information is stored in a secure cloud platform and can be accessed through a web address or App.



FEATURES

- Transmits level, location, alerts and battery status
- Viewable on LevelTap App and LevelHub.io website
- Adjustable data scanning and transmission intervals
- Optional lithium battery lasts up to 8 years in service
- Secure data transmission with end-to-end encryption
- Easy to install, configure and run within 15 minutes
- PBT enclosure rated IP67 or IP66 for industrial use

BENEFITS

What is the cost of running out of chemicals, or having full tanks awaiting pick up, or making inefficient deliveries or pick-ups, or having to expedite all the above to your company, customers and suppliers? What if you could reliably measure, easily set up and securely share tank or silo level data where and when it is needed with field and office stakeholders? Now you can with EchoBeam sensors, LevelHub gateways and the LevelTap App.

BATTERY POWERED OR DC POWERED

LevelHub is available in battery powered and DC powered versions. Battery life depends on the configured scan and transmit intervals and on LTE-M signal quality. In factory default (where the gateway wakes to scan for data every 15 minutes and transmits data every 6 hours) the battery life exceeds 5 years with good signal quality. Thus, shortening either interval reduces battery life, or increasing it extends battery life. Alternatively, the DC powered version ships with a power supply, and supports scan and transmit intervals as short as every 5 minutes.

SPECIFICATIONS

Wireless comm.:	
Standard:	CAT-NB2/CAT-M1 (Aka NB-IoT and LTE-M), BLE 5.x
LTE band supp.:	B2, B3, B8, B12, B20 Software update over air (SUOTA)
SIM-card:	e-SIM
Cellular networks:	T-Mobile (US & Canada), Vodafone (EU & UK)
GNSS positioning:	GPS, GLONASS, Galileo and BeiDou.
Power:	
Battery powered:	HB01-01: 3.6V High power lithium manganese (Li-Mn) battery.
DC powered:	HB01-11: 5-12 VDC (ships w/ power supply)
Power supply (for HB01-11 series only):	
Nom. input voltage:	100-240 VAC ±10%, 50-60 Hz
Nom. input current:	0.16-0.08 Arms @ max load
Nom. output voltage:	5VDC ±5%
Nom. output current:	1400mA
Cable Length:	6 feet (1.82 m)
Cable Connector:	HB01-11 only: M8, male, 4-pin, code A
Estimated battery life:	HB01-01 only: Up to 8 years (based on 4 scans per hour & 1 transmit per day with good LTE-M signal quality)
Data Transmit:	Level, location, alerts & battery status
Configuration :	LevelTap™ App (IOS & Android)
Browser interface:	levelhub.io
Data export:	CSV, JSON, API formats
Memory:	Non-volatile
Operating temp.:	F: -22° to 176° C: -30° to 80°
Enclosure rating:	HB01-01: Type IP67 HB01-11: Type IP66
Enclosure material:	PBT (polybutylene terephthalate)
Weight:	8 oz (255 grams) approx.
Classification:	General purpose
Compliance:	FCC, CE, RoHS, PTCRB, Reach

BATTERY LIFE (HB01-01 SERIES ONLY)

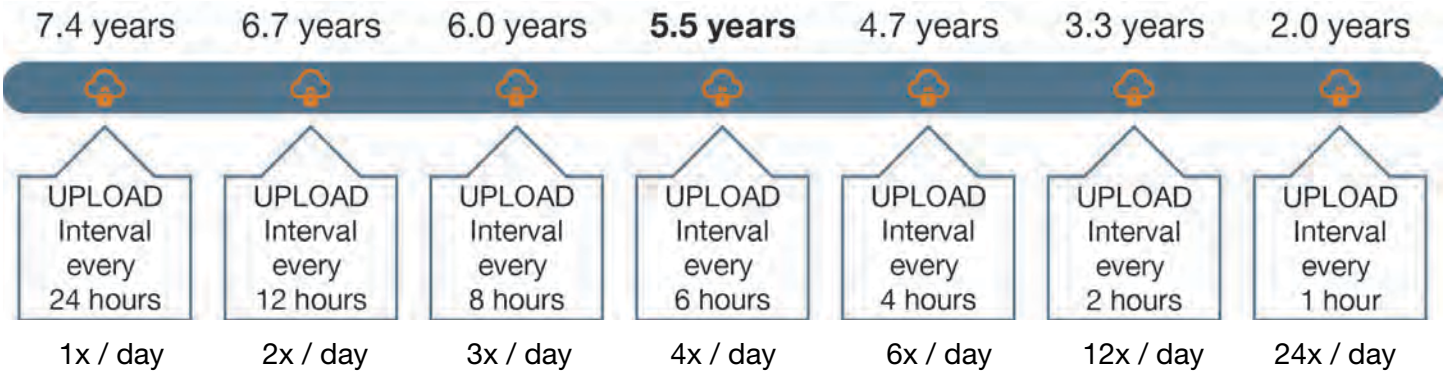
Battery life is determined by the configured scan and transmit intervals and LTE-M signal quality. For example, under good signal quality, in factory default (where the gateway awakens to scan for data every 15 minutes and transmit data packets every 6 hours), the battery life is 5+ years. Thus, increasing or decreasing the scan and transmit intervals will decrease or increase the battery life.

LEVEL DATA (SCAN) INTERVAL (HB01-01 SERIES ONLY)

Default Level Data (SCAN) interval is every 15 minutes. The fastest SCAN interval is 5 minutes. Decreasing the interval will increase the expected battery life within LevelHub (see below).

TRANSMISSION (UPLOAD) INTERVAL (HB01-01 SERIES ONLY)

Default Transmission (UPLOAD) interval is at every 6 hours (4 times a day). Increasing or decreasing the upload rate will change the expected battery life (see below).



ESTIMATED POWER CONSUMPTION TABLE (HB01-01 SERIES ONLY)

The chart below shows how the expected battery life changes as the upload rate and scan interval is adjusted for the LevelHub Gateway. Values below are in Estimated Years of Battery Life.

Level Data (SCAN) Interval	Transmission (UPLOAD) Interval (every X hours)								
	24	12	8	6	4	3	2	1.5	1
	Uploads per Day[2]								
	1	2	3	4	6	8	12	18	24
5 min	3.2	3.0	2.9	**2.8**	2.5	2.4	2.1	1.7	1.5
10 min	5.6	5.1	4.7	**4.4**	3.9	3.5	2.8	2.2	1.9
15 min	**7.4**	**6.7**	**6.0**	**5.5**[1]	4.7	4.1	3.3	2.7	2.0
30 min	11.1	9.5	8.3	7.3	6.0	5.0	3.8	3.1	2.2
45 min	13.4	11.1	9.4	8.2	6.5	5.4	4.1	3.2	2.3
1 hr	14.8	12.1	10.1	8.8	6.9	5.7	4.2	3.3	2.3
1.5 hr	16.7	13.2	11.0	9.4	7.3	5.9	4.3	3.4	2.4
2 hr		13.9	11.4	9.7	7.5	6.0	4.4	3.4	2.4
3 hr			12.0	10.1	7.7	6.2	4.5	3.5	2.4
4 hr				10.3	7.8	6.3	4.5	3.5	2.4
6 hr					7.9	6.3	4.5	3.5	2.5
8 hr						6.4	4.6	3.5	2.5
12 hr							4.6	3.6	2.5
15 hr								3.6	2.5
18 hr									2.5
24 hr									2.5

(1) This is the LevelHub default (SCAN interval = 15 min and UPDATE interval every 6 hours)

(2) This information is based upon LevelHub being installed in a location with good cell coverage. Life expectancy can decrease in areas where cell service is obstructed.

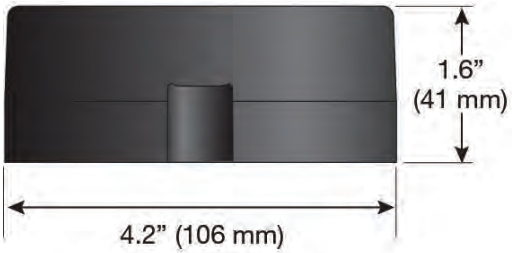
ACTIVATION TIME

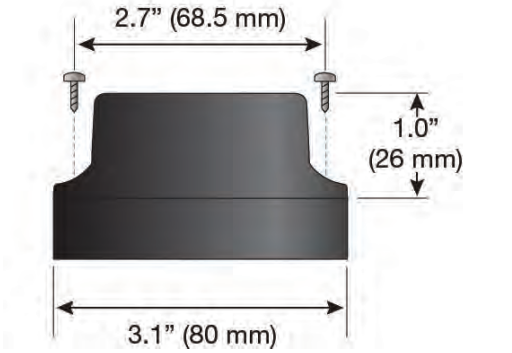
When first activated, the LevelHub HB01 series Gateway becomes active (sending and receiving data) at 0:00 UTC (4:00 PM PST / 7:00 PM EST). Information will not be seen until after this time has occurred. Transmissions (Uploads) will occur at the set interval. Default is set to 6 hours.

Activation	West Coast (North America)	East Coast (North America)
0:00 UTC (midnight)	4:00 pm PST (5:00 pm PDT)	7:00 pm EST (8:00 pm EDT)

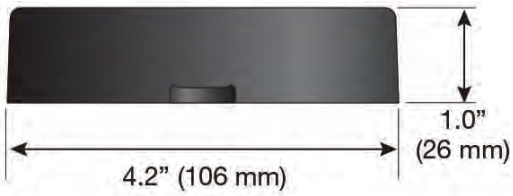
DIMENSIONS

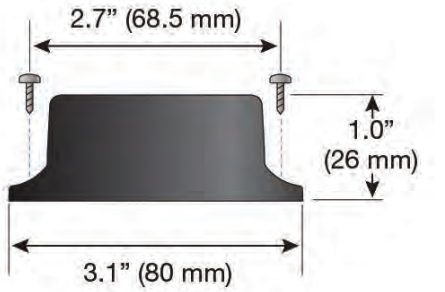
HB01-01 Series





HB01-11 Series





SAFETY PRECAUTIONS

- **About this Manual:** PLEASE READ THE ENTIRE MANUAL PRIOR TO INSTALLING OR USING THIS PRODUCT. This manual includes information on the LevelHub Remote Level Monitoring system from FLOWLINE. Please refer to the part number located on the sensor label to verify the exact model which you have purchased.
- **User's Responsibility for Safety:** Flowline manufactures a broad range of level products. While each of these products is designed to operate in a wide variety of applications, it is the user's responsibility to select a 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. Never overtighten the device within the mounting fixture. Always check for leaks prior to system start-up.
- **Wiring and Electrical:** Depending on the LevelHub model, the device could be battery powered or a fixed power of 5-12 VDC. Regardless of model, the level transmitters used in the system requires a supply voltage of 12 to 30 VDC (depending on model) to power the transmitter. Electrical wiring of the sensor should be performed in accordance with all applicable national, state, and local codes.
- **Material Compatibility:** The enclosure and antenna are made of Polybutylene Terephthalate (PBT). Make sure that the model which you have selected is chemically compatible with the application media.
- **Enclosure:** The sensor housing is liquid-resistant but is not designed to be operational when immersed. Mount the sensor in such a way that the enclosure and antenna 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 sensor and/or power failure. FLOWLINE recommends the use of redundant back-up systems and alarms in addition to the primary system.
- **Flammable, Explosive or Hazardous Applications**: **LevelHub is approved for use within general purpose applications ONLY and should NOT be used within classified hazardous environments.**
- **Handling Static-Sensitive Circuits and Devices:** When handling the instrument (part), the technician should follow the guidelines below to reduce the possibility of an electrostatic charge build-up on the technician's body from transferring to the electronic part. This should be repeated while handling the part and more frequently after sitting down from a standing position, sliding across the seat or walking a distance. DO NOT open the unit cover until it is time to work on the part. Wipe unit with a damp cloth when cleaning.
- 

  UN3091: Lithium metal batteries "packed with" or "contained in" this equipment. For more information call +1 (562) 598-3015

COMPONENTS

LevelHub® is offered in two different models. Depending on the model purchased, you may or may not have been shipped all the components shown below.

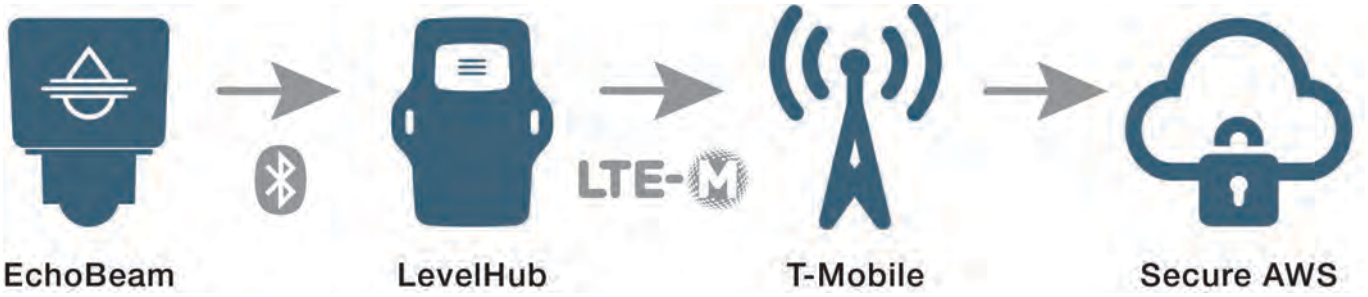
LevelHub® Wireless Tank or Silo Level Monitor

Part Number	Power	Voltage	Power Supply
HB01-01	Battery Powered	3.6V high power lithium manganese (Li-Mn) battery	N/A
HB01-11	DC Powered	5-12 VDC	Included

Notes: LevelHub hardware is purchased through distribution and the service is purchased via credit card on levelhub.io at $195 USD/year. Download the free LevelTap App at the Apple Store or Google Play, register, and then follow the instructions in the LevelHub manual.

LEVELHUB OPERATION

The LevelHub Gateway collects data from paired Flowline sensors.



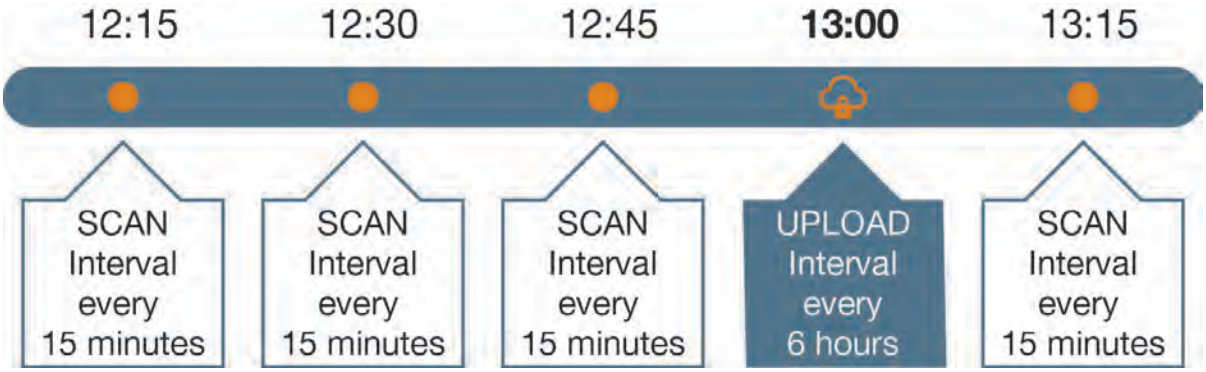
The collected data is transmitted to the Cloud via onboard SIM solution that leverages the NB-IoT/LTE-M band on the mobile network. The NB-IoT/LTE-M technology has long range and strong signal penetration to reach through concrete or underground. As the technology is part of the LTE-M mobile network, your devices will also work on future generation networks. From the Cloud, the data can be viewed directly in a secure browser or can be integrated into other services.

LEVEL DATA (SCAN)

SCAN every 15 minutes (default setting).

TRANSMISSION (UPLOAD)

UPLOAD every 6 hours (4 times per day…default setting).



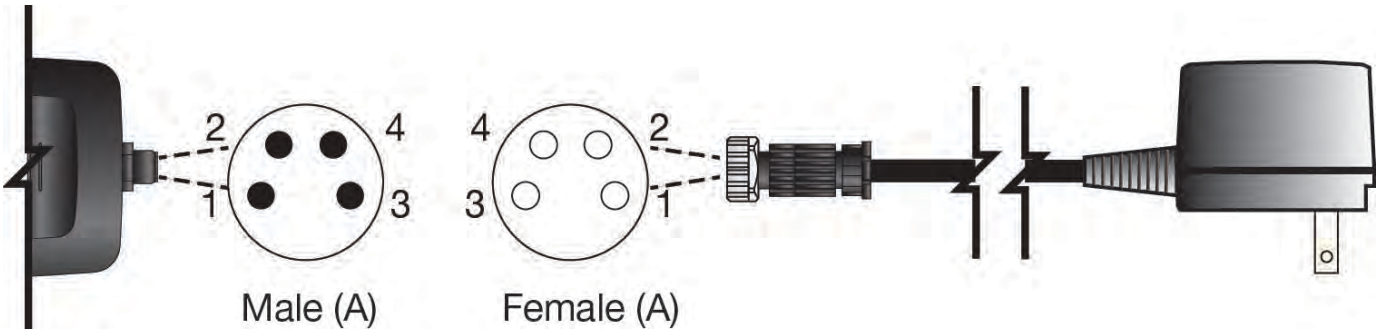
Note: An UPLOAD can manually be sent to the cloud by pressing the main button on the face of LevelHub.

WIRING (HB01-11 SERIES ONLY)

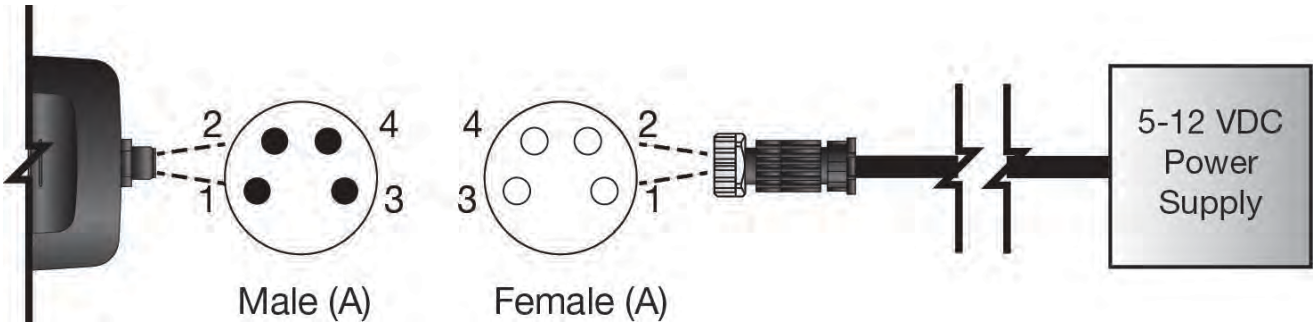
Depending on the model, wiring may not be required.

- Model **HB01-01** is Battery powered and does not require any wiring.
- Model **HB01-11** is Fixed powered and requires wiring (see below). The 90-250 VAC power adapted is included with the HB01-11.
    - HB01-11 features a 4-pin M8 male connector (code A).

Standard Wiring – Included with HB01-11

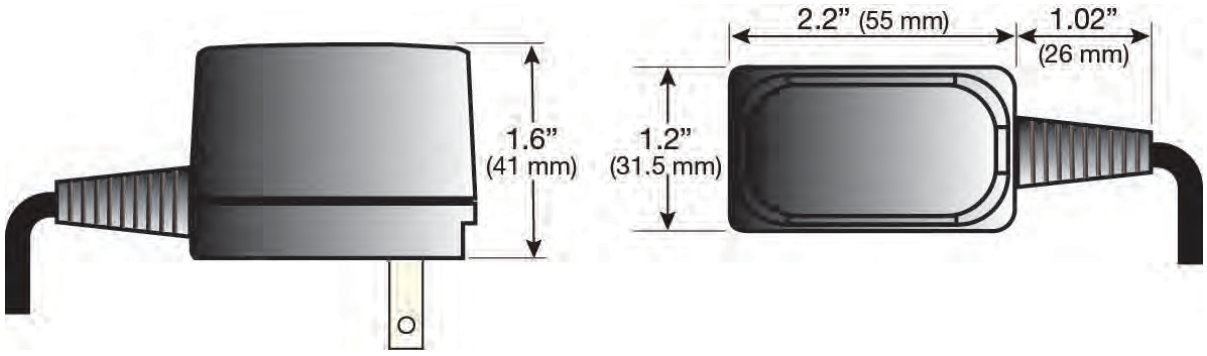


Alternative Wiring – Using a local power supply



Dimensions for Included Power Supply

Includes 6 feet (1.82m) of cable



BASIC STEPS

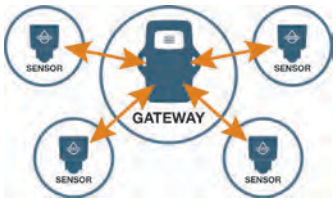
The following are the basic steps for configuring a LevelHub Gateway for the first time. You will need a LevelHub (HB01 series) Gateway, an EchoBeam transmitter (powered), a Smartphone (Apple or Android platform) with LevelTap App installed.

Note: When setting up the LevelHub Gateway, you must be online. Spotty wi-fi signals can affect the set up. An option is to turn off wi-fi and use a cellular connection.

Note: After downloading the LevelTap App to your Smartphone, be sure to either create a new account or to log into an existing account prior to beginning the steps below:

Step 1 (Section 3)	Step 2 (Section 4)
Pair EchoBeam to Flowline's LevelTap App 	Using LevelTap, configure EchoBeam for the Application 

Step 3 (Section 5)	Step 4 (Section 6)	Step 5 (Section 7)
Using LevelTap App, create Sites to Manage Gateways 	*Activate Level Hub Gateway with a 5-Sec. hold on the front button 	Using LevelTap App, connect Level Hub Gateway to Site 

Step 6 (Section 8)	Step 7 (Section 9)
Using LevelTap App, assign EchoBeam sensors to LevelHub Gateway 	Using LevelHub website (LevelHub.io), arrange for Payment and Subscription for Data Service 

* When first activated, the LevelHub HB01 series Gateway becomes active (sending and receiving data) at 0:00 UTC (4:00 PM PST / 7:00 PM EST). Information will not be seen until after this time has occurred.

GET THE LEVELTAP APP

EchoBeam® is configured through the LevelTap App, an application-based software program that uses Bluetooth to communicate with EchoBeam® via your smartphone or tablet. LevelTap is downloaded via the App Store for iOS and iPadOS operating systems or Google Play for the Android operating system.

Download on the App Store

GET IT ON Google Play

BLUETOOTH CONNECTION

A Smartphone with the LevelTap App is used to configure and communicate with the EchoBeam® transmitter. The Bluetooth signal has a maximum range of 26 feet (8m) under ideal conditions (direct line of sight without obstructions). Line of sight will result in the best connection, especially when close to the maximum range of the Bluetooth signal.

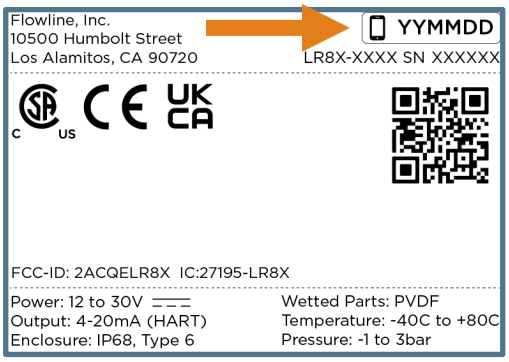
Note: The transmitter must be powered for Bluetooth to function. Refer to the part number to confirm the correct VDC power required for the EchoBeam®.

Note: After downloading the LevelTap App to your Smartphone, be sure to either create a new account or to log into an existing account prior to beginning the setup of the EchoBeam and the LevelHub:

PAIR ECHOBEAM® TO THE LEVELTAP APP

Make sure the LevelTap App is installed on your Smartphone and open. Initially, you will see a list of sensors under Paired and Unpaired. If this is the first time using LevelTap, then sensors will only appear under Unpaired. If there are no sensors powered on, then the screen will not show any sensors. Power the sensor you want to pair with the App. Wait until the sensor appears under Unpaired Sensors, and then tap on the sensor shown. Enter the sensor's PIN code to complete the pairing. The sensor's PIN code (6-digit) is located on the sensor label in the upper right corner (see below). Once paired, the sensor will appear under Paired Sensors.

Note: The Sensor PIN Code is the manufacturer's date code located on the label of EchoBeam® (see below).



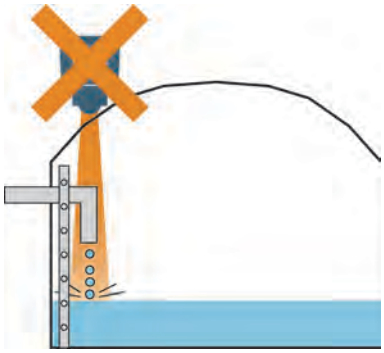
Note: Any sensor that will be connected to the LevelHub Gateway must be paired to the LevelTap App. This can be confirmed by observing the sensor(s) under paired (see above).

BASIC REQUIREMENTS

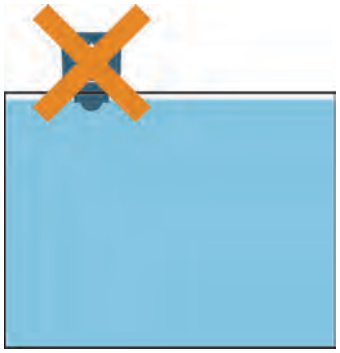
When the antenna transmits the frequency-modulated continuous wave, it has a certain transmission angle or Beam Angle.

Series	LR80	LR81	LR83	LR85
Beam Angle	8°	8°	6°	4°
Min. Distance from Side Wall	7.9” (200mm)	7.9” (200mm)	7.9” (200mm)	19.7” (500mm)

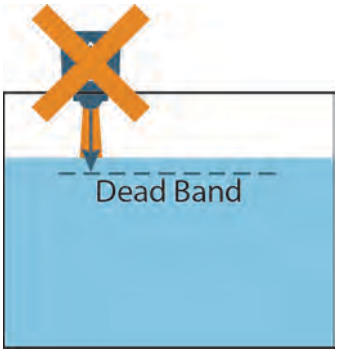
There should be no obstacles in the area radiated by the transmitted FMCW signal from the lower edge of the antenna to the liquid or solid surface to be measured. It is best to avoid the obstacles in the tank during operation, for example: ladders, alarm switches, heating equipment, supports, etc. If necessary, a “False EchoCurve” may be implemented. In addition, please note that the FMCW signal should not intersect with the inflow of liquids or solids. During operation of the transmitter, please note that the highest level of material should not touch the bottom of the transmitter (and if a dead band is configured, enter the dead band). The transmitter should be kept at a minimum distance from the side wall of the tank as stated in the above chart. The installation of the transmitter should enable the transmitting direction of the antenna to be perpendicular to the surface being measured as much as possible.



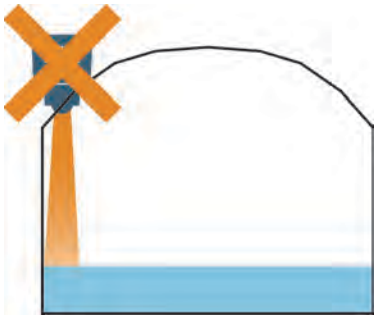
Avoid Obstructions



Avoid Material Touching Sensor

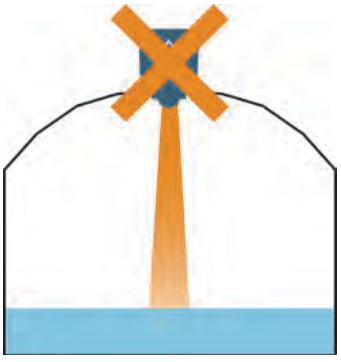


Avoid Level in the Dead Band



Avoid the Side Wall

Avoid Mounting at an Angle



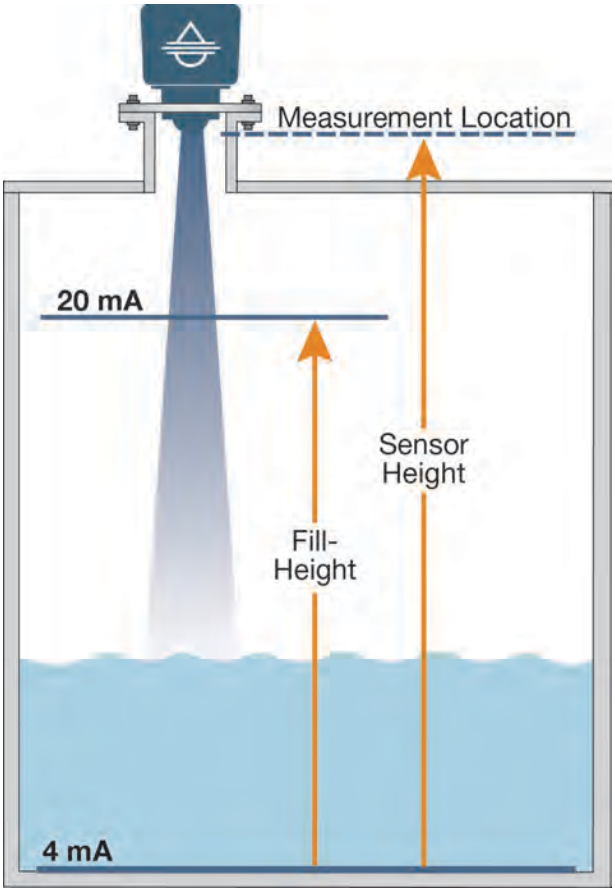
Avoid Mounting in Center of a Domed Metallic Tank.

BASIC TANK DIMENSIONS

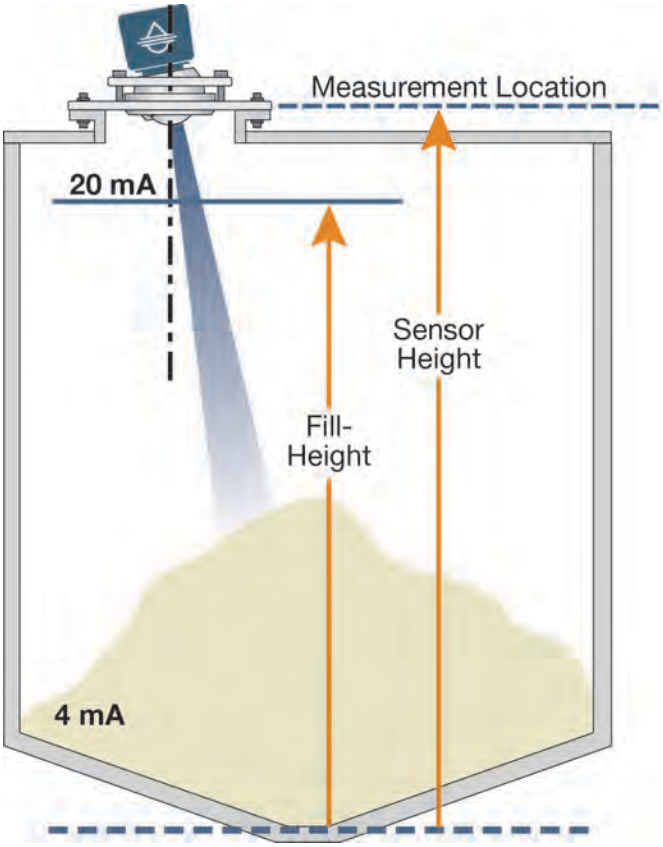
EchoBeam® measures the distance between the sensor and the liquid or solids surface below. Measuring the tank is one of the most important aspects in configuring the transmitter. When measuring the tank, consider the location of the transmitter with respect to fittings, risers, dome tops and bottoms, and identify where the measurements are taken from the transmitter. The basic measurements for configuration are as follows:

- Sensor Height
- Fill-Height

All measurements are made from the bottom of the tank up to the bottom of the sensor (Sensor Height) or to the operational full for the tank (Fill-Height).



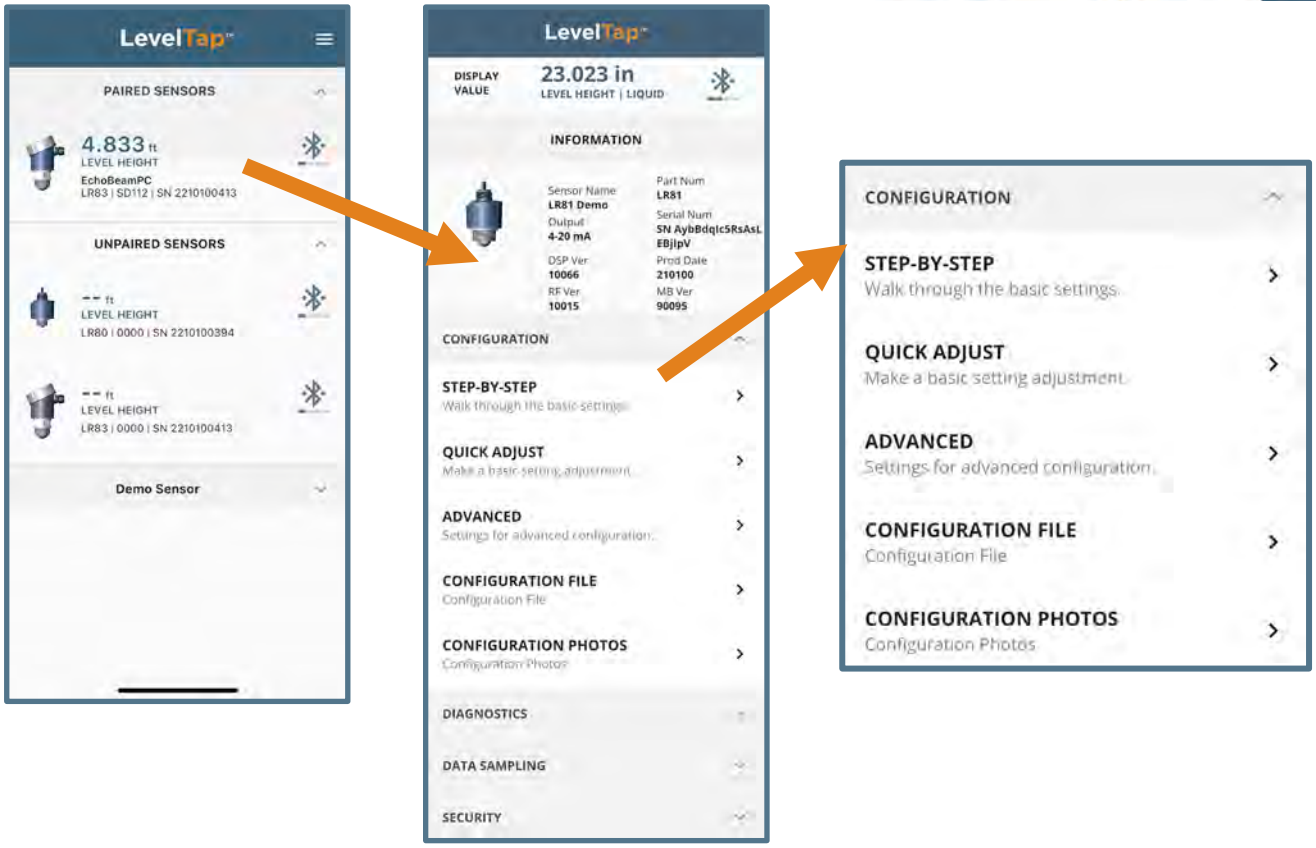
Installation in Liquids



Installation in Solids

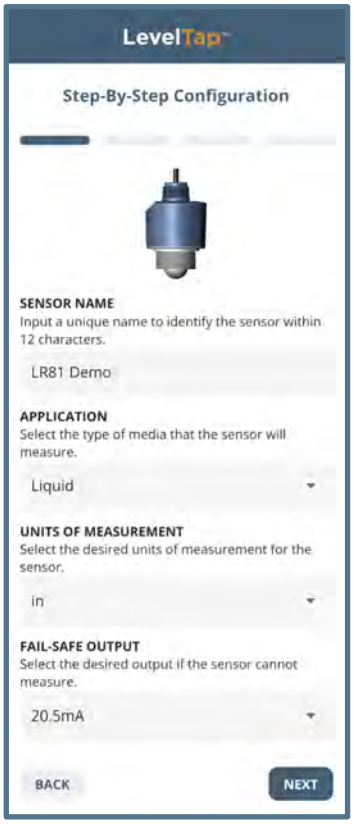
USING THE LEVELTAP APP

From the Main Sensor Screen, pressing on any of the paired sensors will jump to the Configuration Setup Options Screen. To set up a transmitter, select one of the three setup options: Step-by-Step Configuration, Quick Adjust or Advanced. For first-time configuration, we suggest using the Step-by-Step Configuration method. If you need to make any changes later, then we suggest using the Quick Adjust method.



STEP-BY-STEP CONFIGURATION

Use this option for first time configurations. This method will walk you through all the information needed to configure your transmitter.



Step 1 – Basic Settings

Enter the following information:

- **Sensor Name**

  Input a unique name to identify the sensor (location, tank and/or media) within 12 characters.

- **Application**

  Select the type of media (liquid or solids) that the sensor will measure.

- **Units of Measurement**

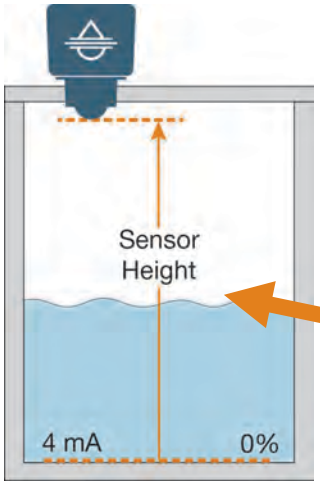
  Select the desired units of measurement (inches, feet, millimeters, centimeters or meters) for the sensor.

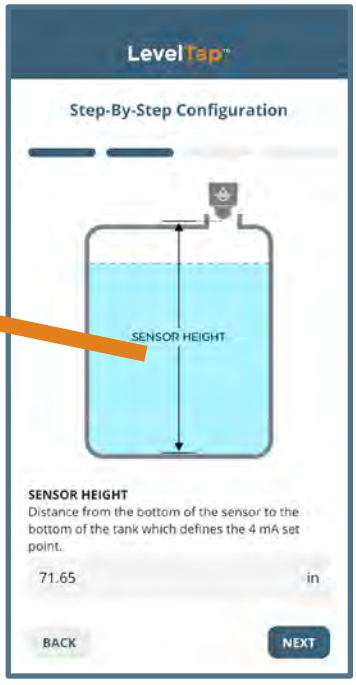
- **Fail-Safe Output**

  Select the desired output if the sensor cannot measure a valid signal return or level (3.8mA, 20.5mA, 21.5mA or Hold Last Value).

Step 2 – Set the Sensor Height (4mA)

- Input the distance from the bottom of the tank to the bottom of the sensor, which defines the 4mA set point.

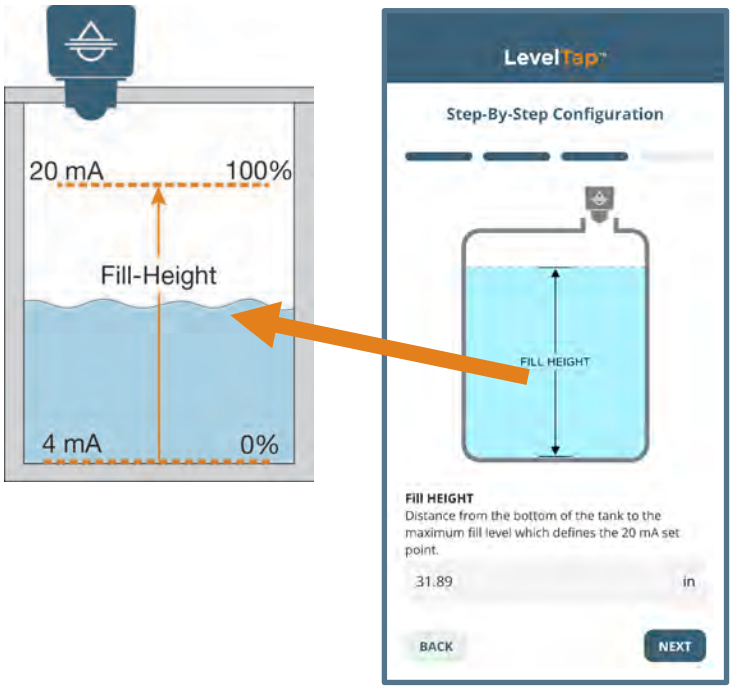




STEP BY STEP CONFIGURAITON (CONTINUED)

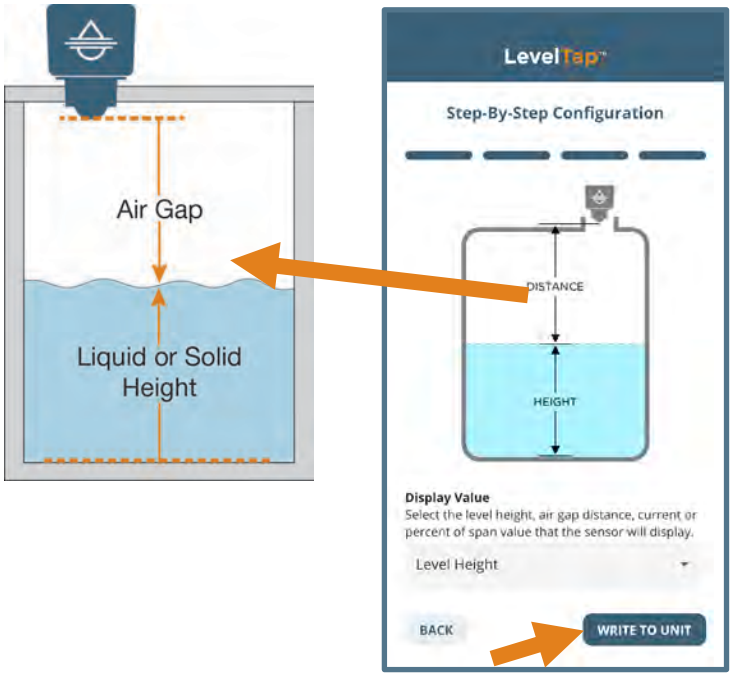
Step 3 – Set the Fill-Height (20mA)

- Input the distance from the bottom of the tank to the maximum fill level, which defines the 20mA set point.



Step 4 - Set the Display Value

- Select the level height, air gap distance, current or percent of span value that the sensor will display.



Press **WRITE TO UNIT** to save these settings in the transmitter. At this point, the EchoBeam® is configured to provide a 4-20mA signal proportional to the level in your tank.

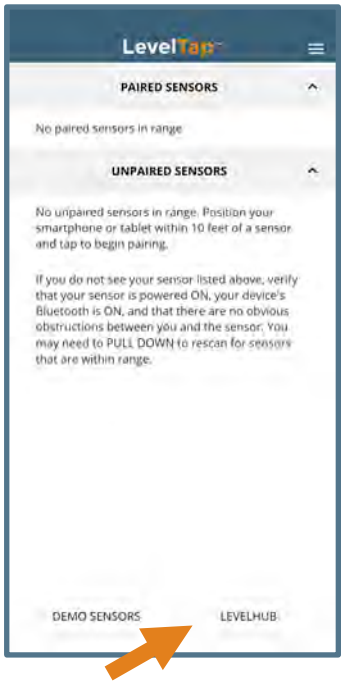
Note: The Dead Band and Maximum Range are automatically set based on Sensor Height and Fill-Height. After writing to unit with the new Sensor Height and Fill-Height, the dead band is set to 0.9 x (Sensor Height – Fill-Height) and the Maximum range is set to 1.05 x (Sensor Height).

WHAT ARE SITES?

Sites are used to identify stations, venues, neighborhoods, sections of a plant, etc. where Gateways are located. They are primarily used to assign who will have access to the information (via email assignment) generated by the Gateways at each site. There is no limit to the number of Gateways associated with a Site. All email addresses for each site will have access to all the Gateways and Sensors assigned to that Site.

ADD SITES TO LEVELTAP APP

This step creates a site which is typically a specific physical location. Multiple sites can be in the same location as well. Gateways are the actual LevelHub devices.



- Tap LevelHub button at bottom of the Sensors Screen.

- Tap +Add New Site at bottom of the Sites Screen.

- Give the site a unique Name to easily identify the location. Press Add Site to save information.

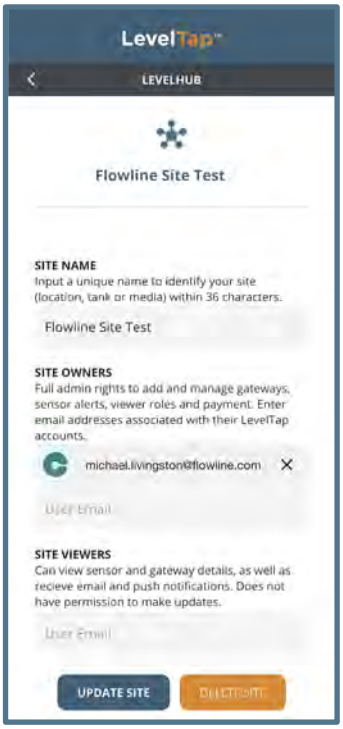
SITE INFORMATION

Once the site has been created, the site will appear in box. The box will provide the following information:

- Name of the Site
- Number of Gateways connected to this site
- Number of Sensors connected to this site
- Number of Alarms active for this site

To view Site Settings or Alerts, tap on the icon in the upper right corner.

SITE SHARING EMAIL ADDRESSES



To access the Site Sharing information screen, tap on the icon in the upper right corner of the Site.

- **Site Name** – Input a unique name to identify your site (location, tank or media) within 36 characters.
- **Site Owners** – Full Admin rights to add and manage gateways, sensor alerts, viewer roles and payments. Enter email addresses associated with their LevelTap accounts.
- **Site Viewers** – Can view sensor and gateway details, as well as receive email and push notifications. Does not have permission to make updates.

Tap on Update Site to save any changes.

Tap on the "**X**" at the end of an email address to remove the address from the list. Be sure to tap on Update Site to save any changes.

If at any time it is required to delete the Site, tap on Delete Site on the Site Settings and Alerts Screen.

Note: Any email address added to the Site Share List must be registered with the LevelTap App prior to being added. The LevelTap App is downloaded via the App Store for iOS and iPadOS operating systems or Google Play for the Android operating system.

Download on the App Store

GET IT ON Google Play

Note: Only the creator of the Site is allowed to add email address to the Site Share list.

ACTIVATE LEVELHUB

A new LevelHub must be activated. * Activation enables the device to interface with the local 5G network.

To activate, **press** and **hold main button for 5 seconds**.

A green LED will flash while the sensor connects to the network.

A solid green LED will appear for 1-2 seconds indicating a successful connection.

A solid red LED will appear for 1-2 seconds for a failed connection.

If the solid red LED appears, wait 30 seconds before attempting activation again. If this red LED continues, the location of LevelHub may be in a location that is not accessible to the 5G network. Moving the sensor to another location would address this issue.

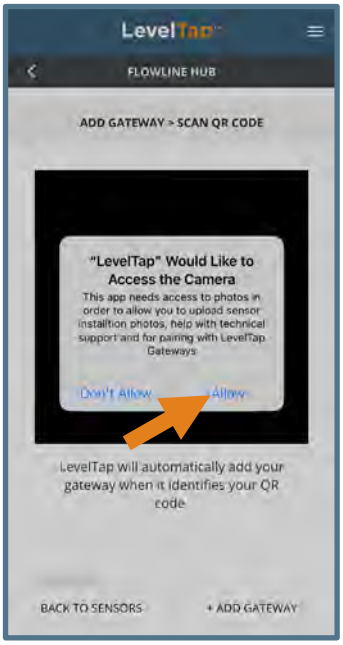
Note: Upon activation of the LevelHub gateway, a fourteen (14) day clock begins. The subscription for the HB01 series must be completed or the data will stop. Information on setting up the subscription can be found in Section 9 (Payment and Subscription) in this manual. Payment can be made using either the LevelTap App or the levelhub.io page.

* When first activated, the LevelHub HB01 series Gateway becomes active (sending and receiving data) at 0:00 UTC (4:00 PM PST / 7:00 PM EST). Information will not be seen until after this time has occurred. Transmissions (Uploads) will occur at the set interval. Default is set to 6 hours.

CONNECT LEVELHUB GATEWAY TO SITES USING LEVELTAP APP

A new LevelHub Gateway must be assigned / connected to a Site using the LevelTap App. When this is done, LevelTap will make the required pairing for this specific LevelHub Gateway to the on-line data connections. The LevelTap App uses the Smartphones camera to identify each Gateway via the QR code on the back on the LevelHub. Follow the instructions below.

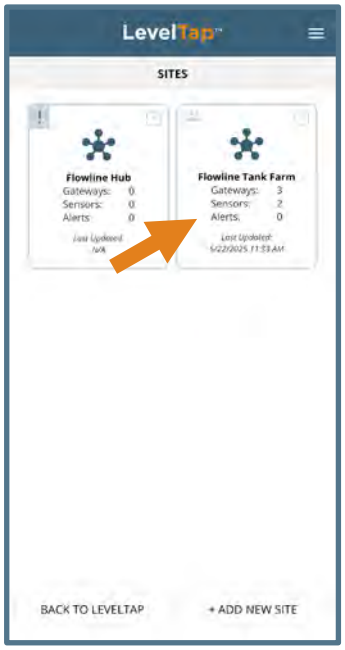
- Tap on the Site you want to add too.
- Tap on Manage Gateways.
- Tap on +Add Gateways.

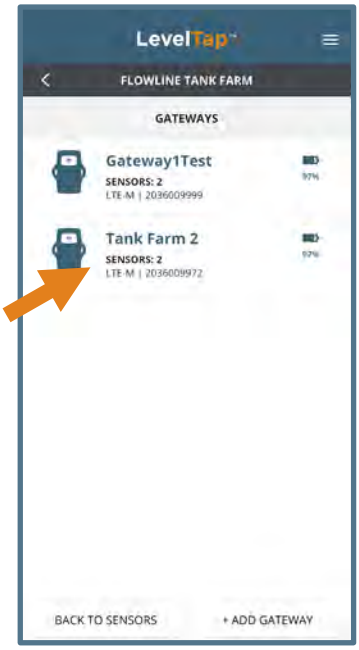


- Tap on Scan Gateway QR Code.
- Allow the App to use the phone's camera.
- Point camera at QR code on Gateway.

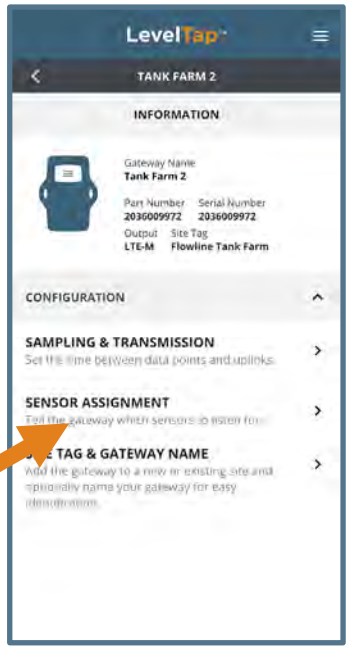
ASSIGN ECHOBEAM SENSOR(S) TO GATEWAY USING LEVELTAP APP (SENSOR ASSIGNMENT)

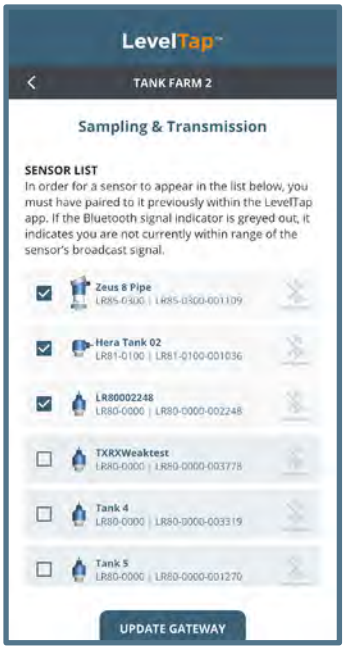
Now is the time to connect an EchoBeam sensor to the LevelHub Gateway. This will allow the transmitter to communicate via Bluetooth to the Gateway, which will then transmit the data via the 5G cellular network into the cloud so it can be accessed using the secure server. Follow the steps below to connect an EchoBeam to a LeveHub Gateway.





- Select Site that a sensor will be assigned to.
- Tap on Manage Gateways.
- Select Gateway that a sensor will be assigned to.





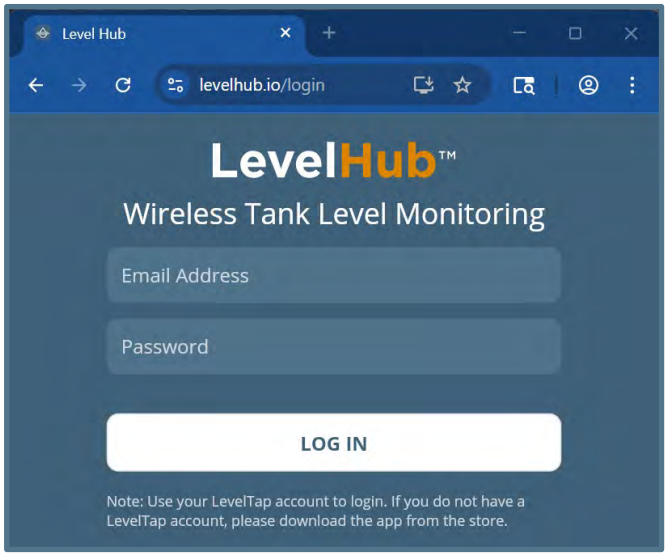
- Tap on Sensor Assignment.
- Select the sensor you want assigned to this Gateway and tap on Update Gateway to save.

Note: The EchoBeam sensor was configured previously under Step Four.

Note: Press the button on the LevelHub Gateway to update the Cloud when completed with all changes.

ARRANGE FOR PAYMENT AND SUBSCRIPTION FOR DATA SERVICE

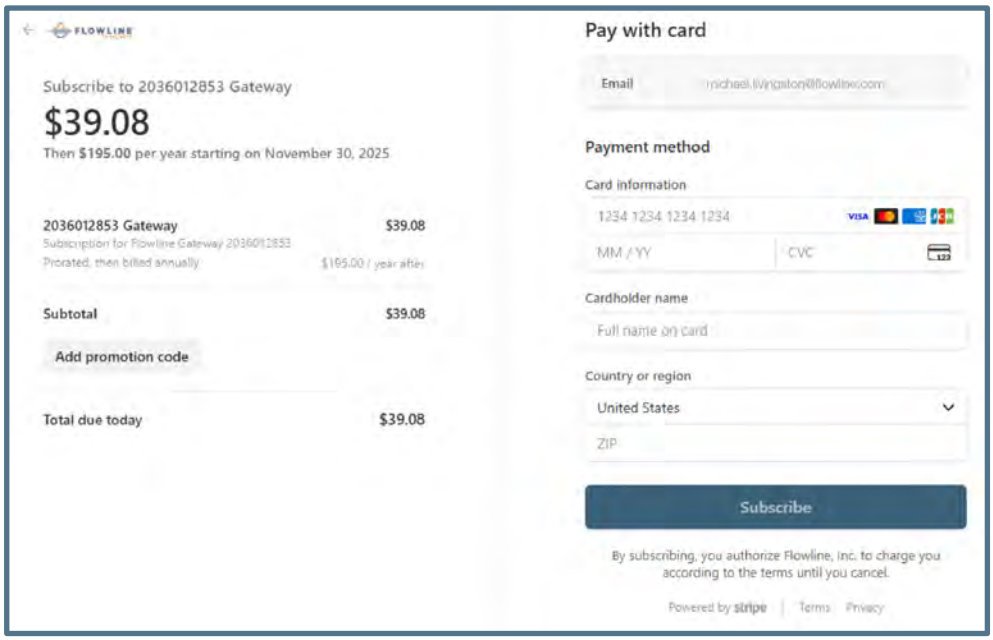
After assigning a Gateway to a Site and assigning a sensor, payment for the subscription must be made within the 14-day trial period. Payment is for 1-year period. Payment and Subscription can only be made on www.levelhub.io, the LevelHub website. To begin, open a Web Browser and enter **levelhub.io** into the Address Bar. Use the same Email Address and Password you created for LevelTap to Login. Next tap on Manage Gateways.



Next, Click on Subscription button for your Gateway.

Subscription

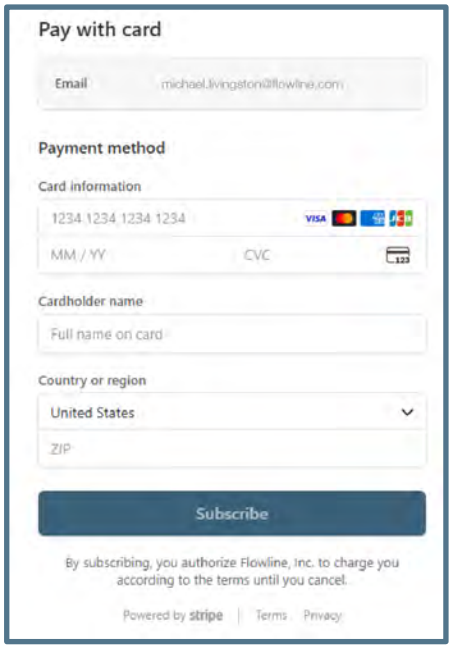
Information on the Subscription can be found on this screen.



Key information includes Serial Number of the LevelHub Gateway as the pro-rated charge for the remaining year (begins on December 1st) as well as the current Subscription Information:

- Length of Subscription
- Auto Renew Date
- Days in Plan

Adding New Payment Method requires the following information:



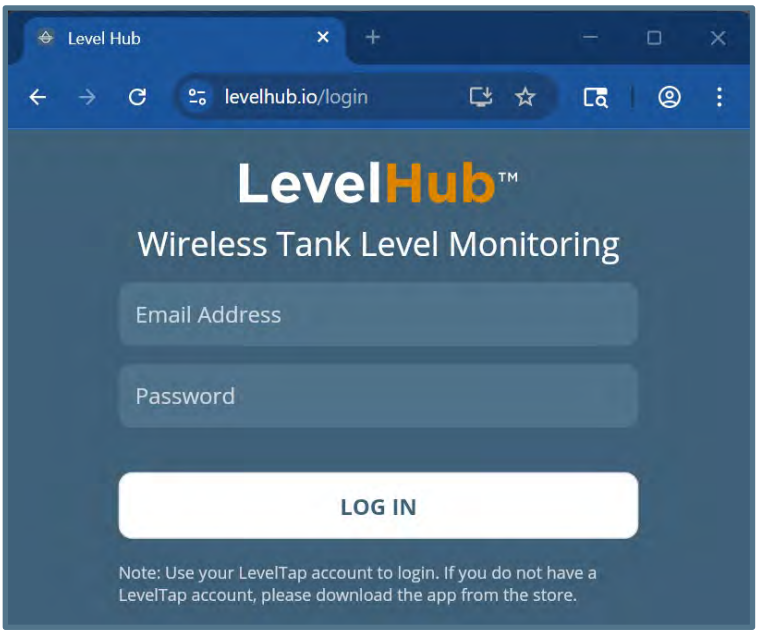
- Credit Card Number
- Expiration Date
- Security Code
- Card Holder Name
- Country
- Zip Code

Note: Be sure to click on Subscribe to make the payment.

Note: At the end of the subscription period and a credit card is not saved, the subscription will end and data will stop at that time.

HOW TO VIEW DATA USING LEVELHUB WEB APP

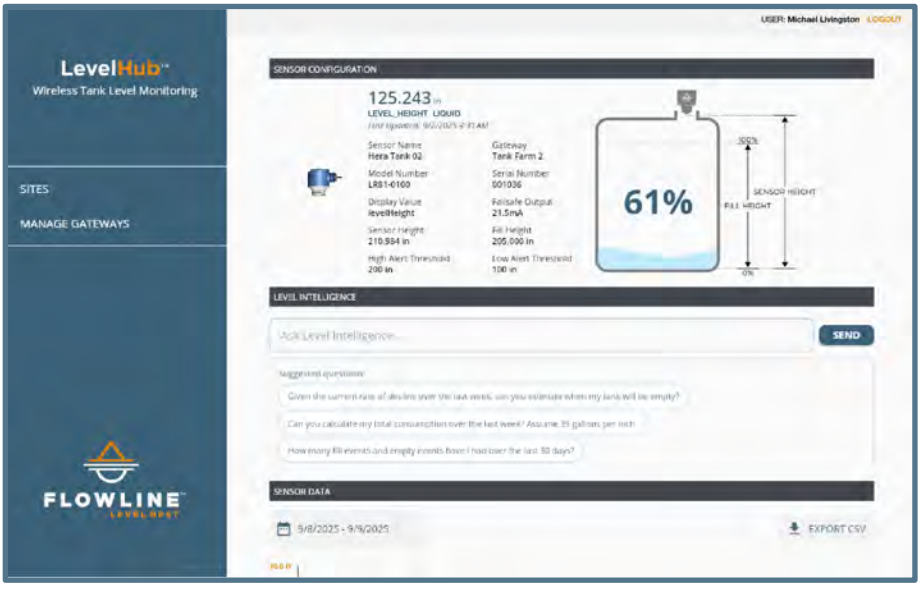
Once the data has been sent to the cloud, it can be viewed via a secure website on your smartphone, laptop or desktop. Individual tanks can be viewed providing current level and past level trends easily on the website. To begin, open a Web Browser and enter **levelhub.io** into the Address Bar. Use the same Email Address and Password you created for LevelTap to Login.



The first page (Sites) will list all the active Sites associated with your account login. Each Site will provide the Site ID, the number of Gateways linked to this Site, the number of Sensors connected to this Site, the number of Alerts active and the last update for this site. Click on any Site to view the Sensors at the site.

The Sensors page will list all the active Sensors associated at this site. Each Sensor listed will provide the level reading, Last Update Date and Time, Sensor Name, Gateway Name, Part Number and Serial Number as well as an icon representing the level of the tank. Sensors under Alert will appear in Orange. Click on any Sensor to view detailed information.

Sensor Information page is broken into six sections: Sensor Configuration (provides more detailed configuration information), Level Intelligence (an AI feature to ask questions about your data), Sensor Data (provides level data from the sensor), High/Low Alerts (provides settings for High and Low Alerts as well as who is notified) % Change Alerts (trigger level changes off-hours) and Alert History (lists history of alerts, up to 1 year).



Sensor Configuration

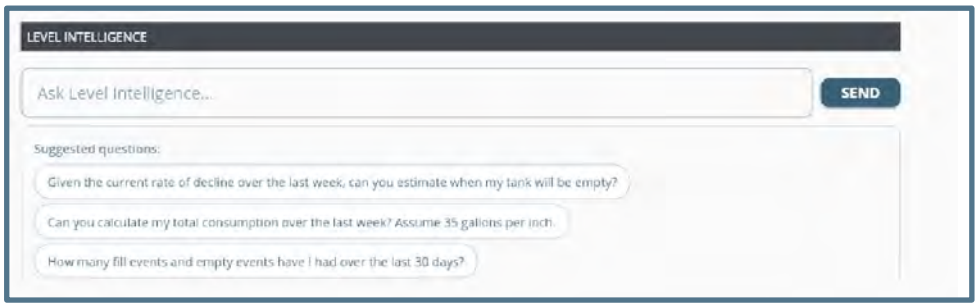
The following information is displayed.

- Last Level Reading
- Last Update
- Sensor Name
- Gateway Name
- Model Number
- Serial Number
- Display Value
- Fail-Safe Output
- Sensor Height
- Fill Height
- High and Low Alert Threshold

Level Intelligence

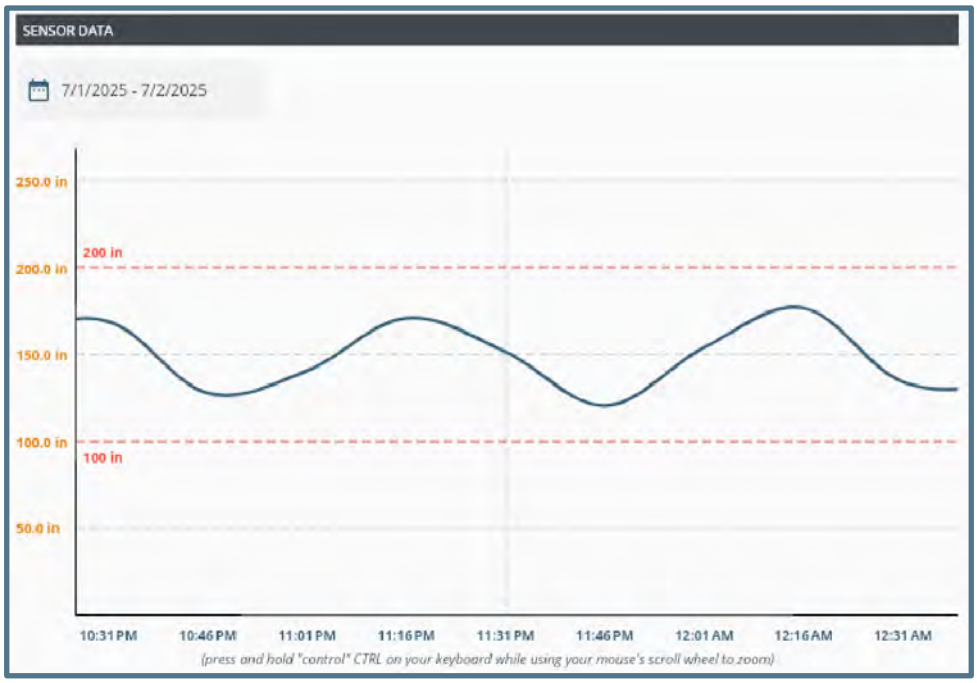
This is an advanced AI chatbot developed by Flowline in its first generation. It can be used to ask questions about the data received by Gateway. The questions can be more detailed as the database increases. Such questions include the following:

- Given the current rate of decline over the last week, can you estimate when my tank will be empty?
- Can you calculate my total consumption over the last week? Assume 35 gallons per inch
- How many fill events have I had over the last 30 days?



Sensor Data

The following information is displayed.

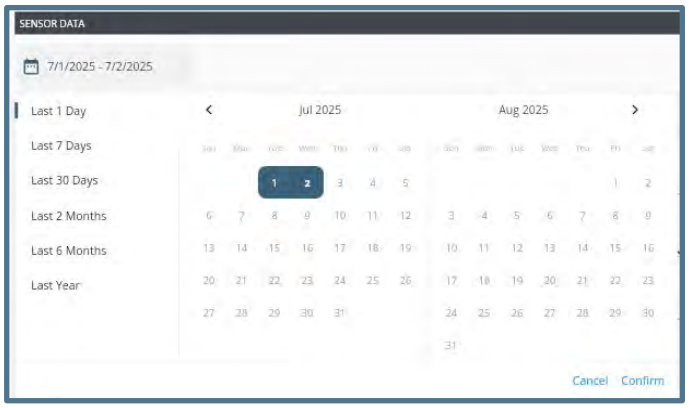


- A graph of the data over the period of time listed in the upper left corner.
- Y-axis represents the height/volume of the level in the tank.
- X-axis represents the time period for the data.
- The High and Low Alert Thresholds are also shown on the graph.

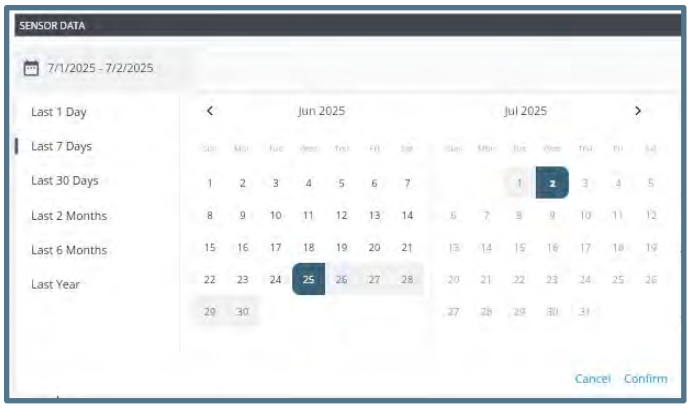
Date Range

The data range is selected by clicking in the upper left corner. Select the data range: Last 1 Day, Last 7 Days, Last 30 Days, Last 2 Months, Last 6 Months, Last Year. Click on either Cancel to return to previous range or click on Confirm to view new date range.

Last 1 Day



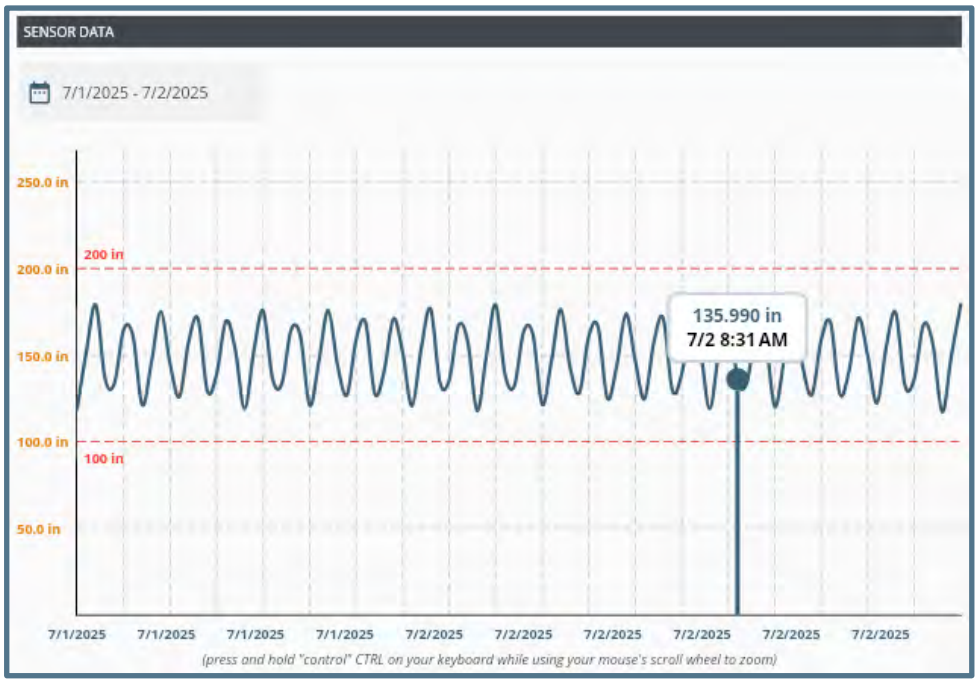
Last 7 days



Note: Click on Confirm to save the setting.

Data Details

Scrolling over the data (Blue Line) will show the level reading, date and time for every data sample point.



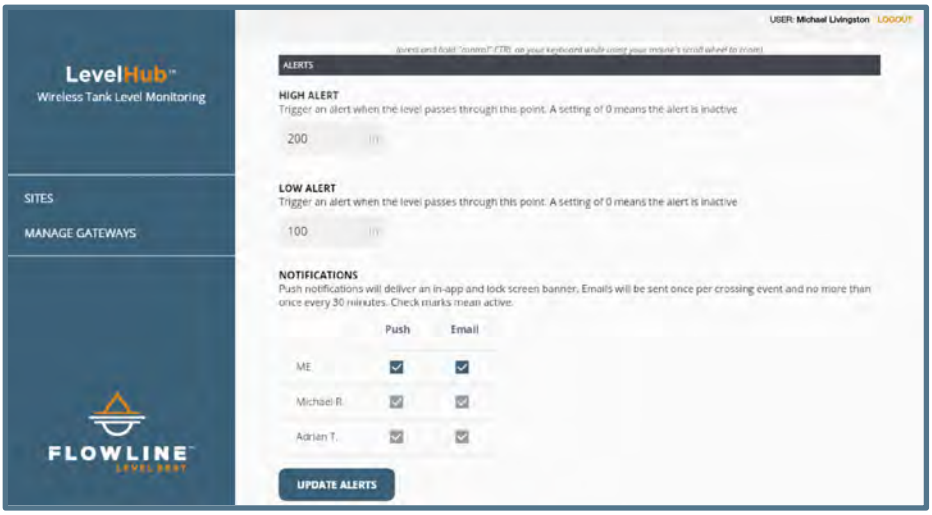
Use the scroll on the mouse to zoom in and out of the data (Blue Range).

High/Low Alerts

This section is used to configure the settings for the High and Low Alerts. The Alerts (both High and Low) can only be modified by Site Owners. A High Alert will be sent when the level passes above the High Alert Setting. A Low Alert will be sent when the level passes below the Low Alert Setting. To turn off the Alert, set the value to 0.0.

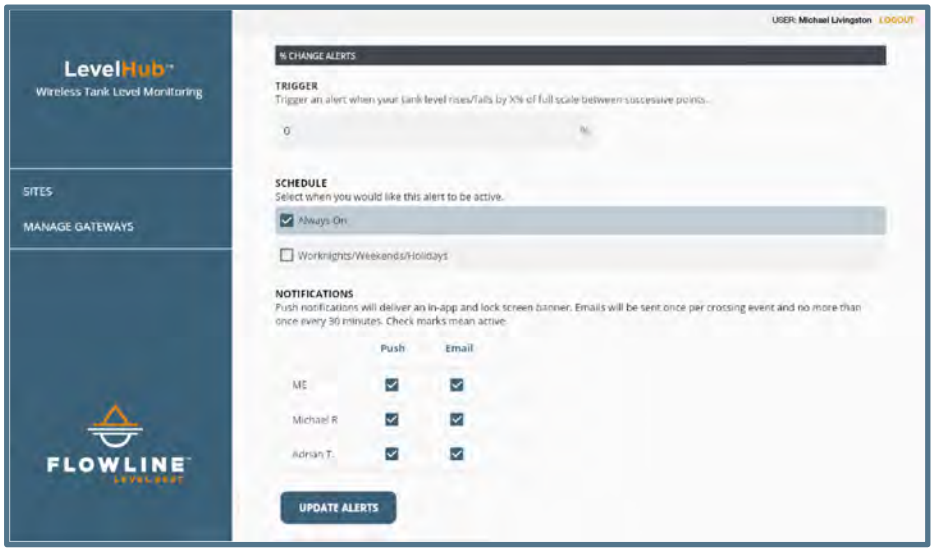
When an alert occurs, a Notification (Push and/or Email) is sent to those on the notification list. Site Viewers can only remove themselves while Site Owners have control over all those notified. Be sure to click on Update Alerts to save any changes.

Note: Push Notifications and emails will be sent once per crossing event.



% Change Alerts

This feature enables an alert to be triggered when your tank level rises or falls by X% of full scale between successive points.



Trigger

Enter a percentage value as a trigger value. An alert will trigger when the level changes by the percentage entered (both above and below).

Schedule

Select when this function is active. Options are Always On or Worknights / Weekends / Holidays. When selecting Worknights / Weekends / Holidays, the Work Days and Off-Work Hours can be selected to match your requirements. This will only appear when this option is selected.

Work Days

Select the working days. Alerts will be active during off-hours of the selected days. Click on Done to save.

Off-Work Hours

Set the hours you want the alarm to be active on workdays (this can span two days). Using the app, set the start and stop times for Off-Hours. For the Start and Stop times, you will first select the Hour, tap OK, then select the Minutes and tap on OK again to save (see below). To change, tap on either Start or Stop times.

Initial View

Rotate Dial to 5:00 PM

Rotate Dial to 5:30 PM

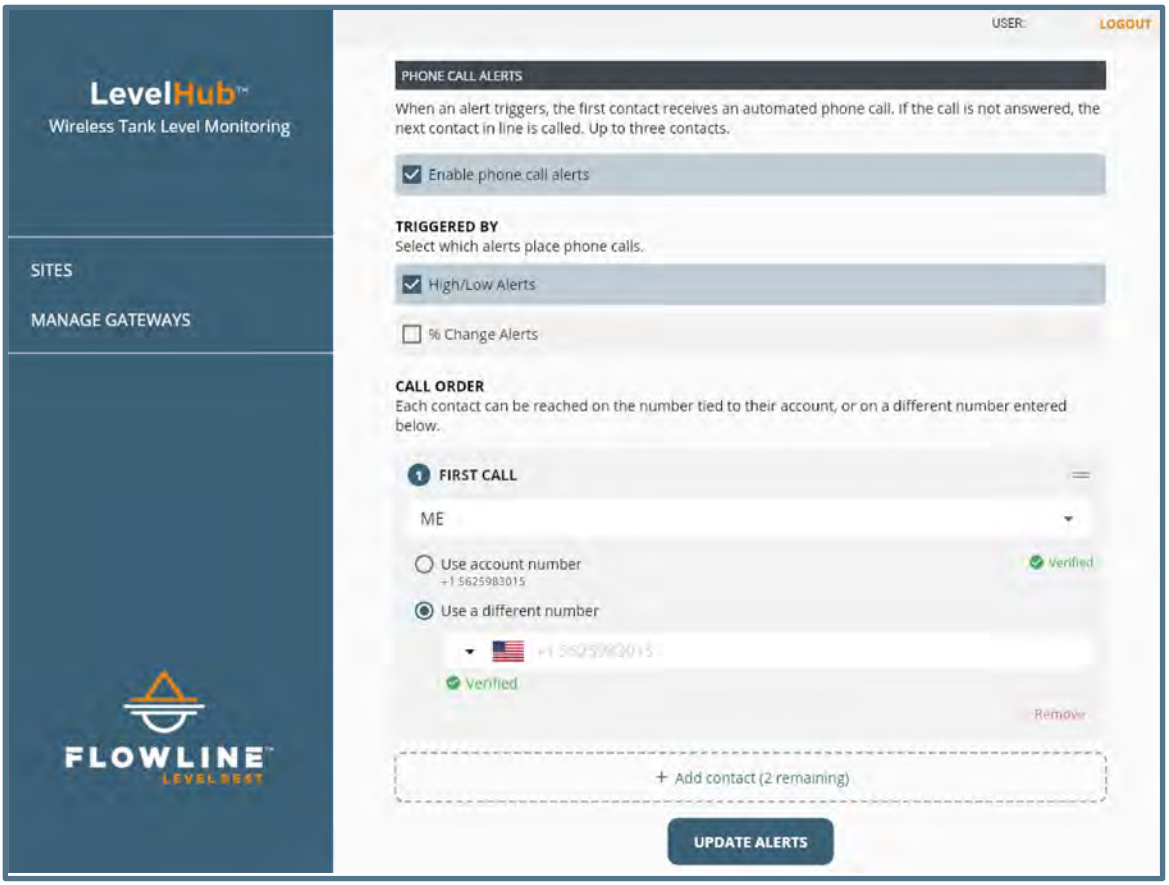
Notifications

When an alert occurs, a Notification (Push and/or Email) is sent to those on the notification list. Site Viewers can only remove themselves while Site Owners have control over all those notified. Be sure to click on Update Alerts to save any changes.

Note: Push Notifications and Emails will be sent once per crossing event.

Phone Call Alerts

When an alert triggers, the first contact receives an automated phone call. If the call is not answered, the next contact in line is called. Up to three contacts can be assigned.



Check Enable Phone Call Alerts to activate the Phone Call Alerts.

Trigger

Select either High/Low Alerts, % Change Alerts or Both to select the alerts that will place a phone call.

Call Order

Each contact can be reached on the number tied to their account, or on a different number entered below. Use Pull Down to select who will be called. Select either the phone number associated with the account or enter a different number after selecting Use a different number. To add additional contacts, tap on + Add Contact. When all information has been entered, tap on Update Alerts to save information.

Note: All phone numbers must be verified prior to sending a Phone Call Alert. Phone Verification can be performed by tapping on Verify Number or by editing your account in the LevelTap App. A 6-digit verification code will be sent to the phone number via text.

Phone Call Alert Message – High/Low Alert

When High/Low Alert is selected and an alert occurs, the following message is sent via a phone call:

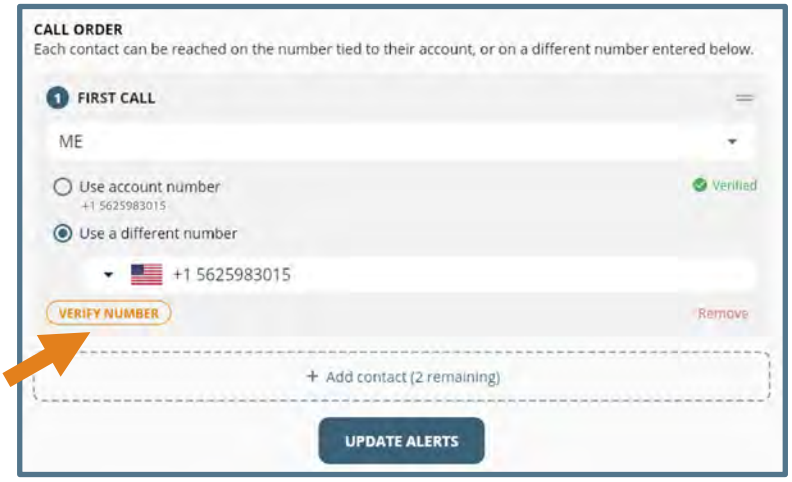
*Sensor [**Sensor Name**] at site [**Site Name**] has crossed the [**Alert Type**] level threshold. The current reading is [**Current Level Reading**] [**Units**].*

Phone Call Alert Message – % Change Alert

When % Change Alert is selected and an alert occurs, the following message is sent via a phone call:

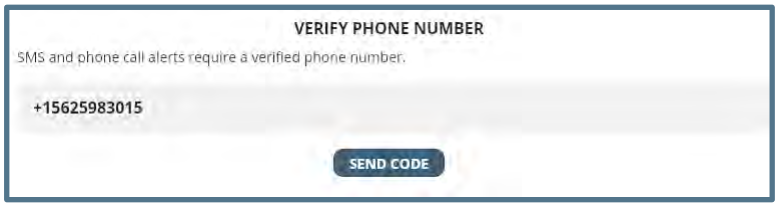
*Sensor [**Sensor Name**] at site [**Site Name**] has changed more than [**Threshold**] percent between readings. The current reading is [**Current Level Reading**] [**Units**].*

Phone Number Verification

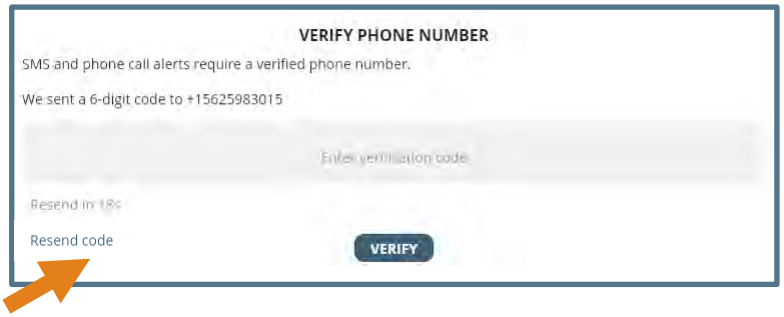


Note: All phone numbers must be verified prior to sending a Phone Call Alert.

Phone Verification can be performed by tapping on Verify Number or by editing your account in the LevelTap App. A 6-digit verification code will be sent to the phone number via text.



Enter the new phone number and tap on Send Code.

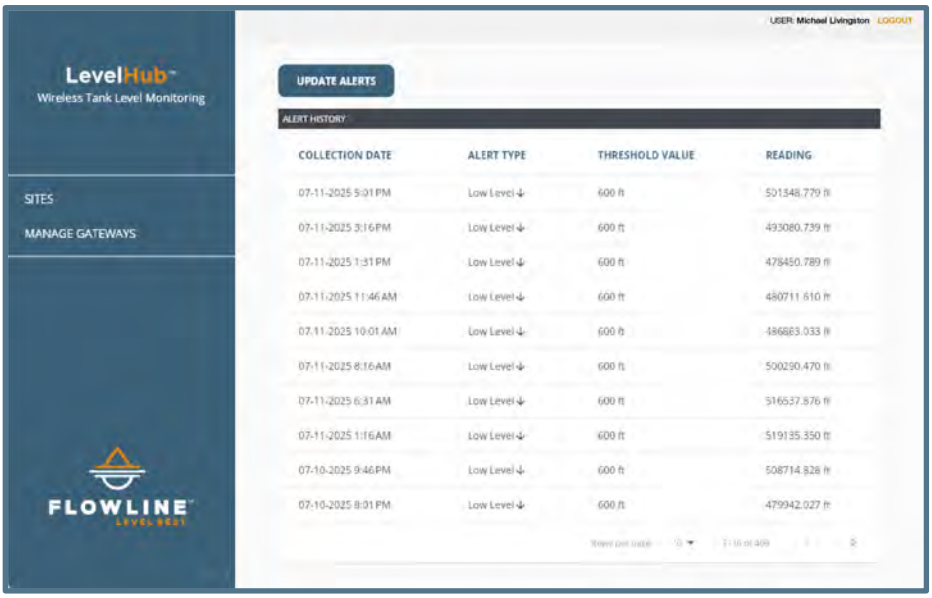


The phone will receive a text message with a 6-digit code. Enter the code and tap on Verify.

There is a 60-second timer to enter the verification code. If this expires, tap on resend Code to send a verification code.

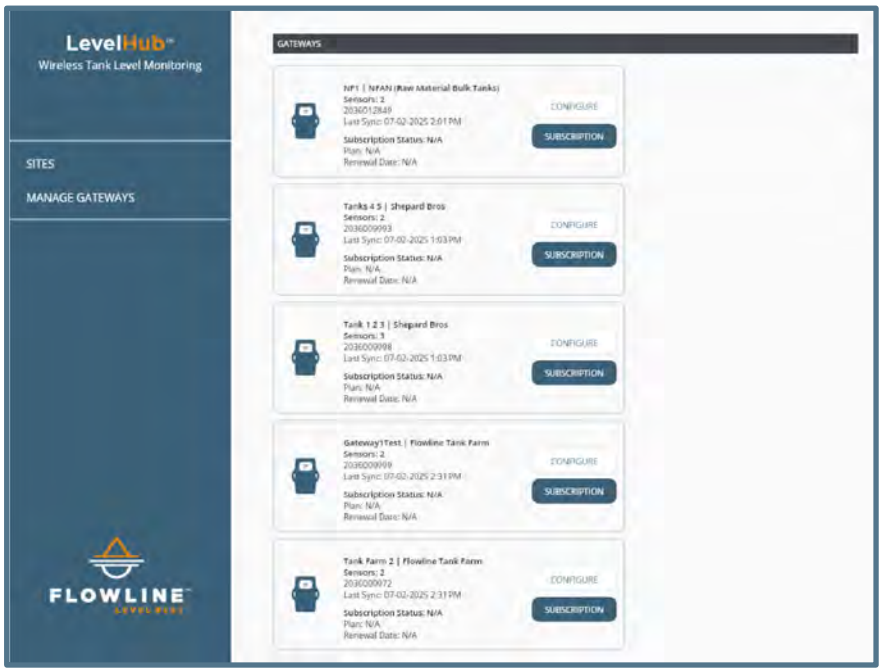
Alert History

This feature will provide a history of alerts (from newest to oldest) including the Collection Date, Alert Type, Threshold Value and Reading up to 1 year.



MANAGE GATEWAYS

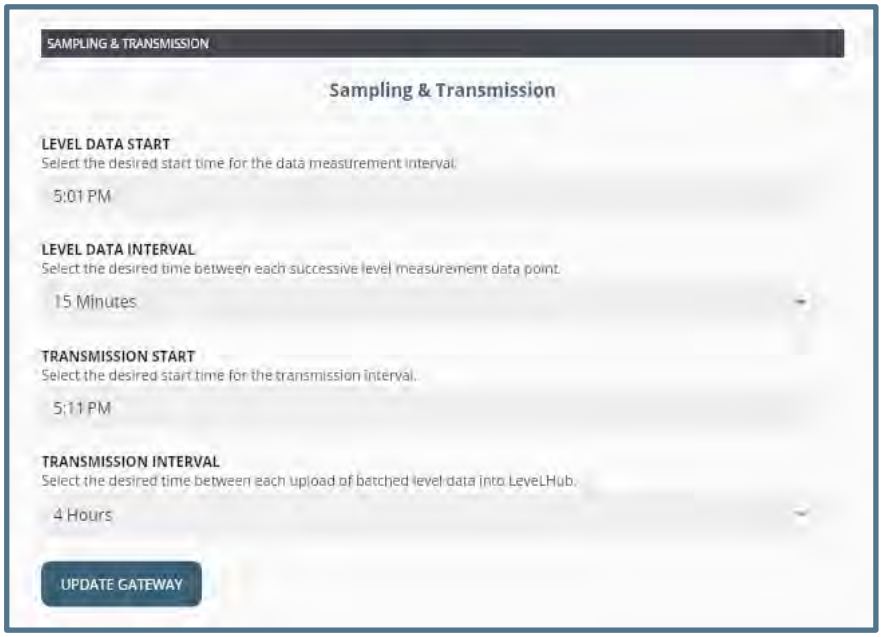
Click on Manage Gateways to view a list of LevelHub Gateways assigned to your account. The following information is displayed for each Gateway.



- Gateway Name
- Site Name
- No. of sensors assigned
- Gateway serial number
- Last Update/Sync
- Subscription status
- Plan
- Renewal date

Configure Gateway

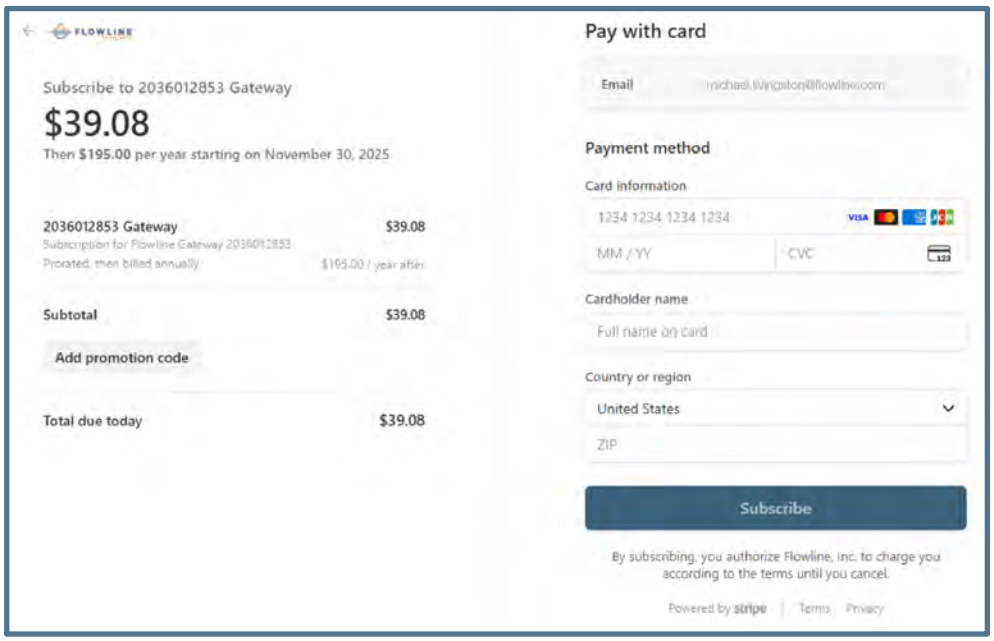
The Level Data Interval and Transmission Interval can be adjusted as well as the start times for both. To save the changes, be sure to click on Update Gateway.



- **Level Data Start** – Select the desired start time for the data management interval.
- **Level Data Interval** – Select the desired time between each successive level measurement data point.
- **Transmission Start** – Select the desired start time for the transmission interval.
- **Transmission Interval** – Select the desired time between each upload of batched level data into LevelHub.

Subscription

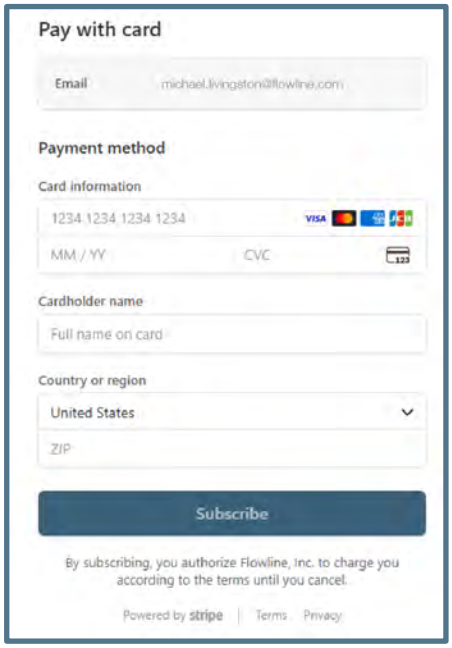
Information on the Subscription can be found on this screen.



Key information includes Serial Number of the LevelHub Gateway as the pro-rated charge for the remaining year (begins on December 1st) as well as the current Subscription Information:

- Length of Subscription
- Auto Renew Date
- Days in Plan

Adding New Payment Method requires the following information:

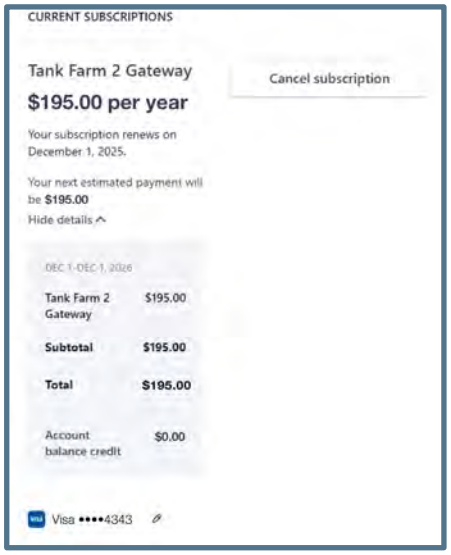


- Credit Card Number
- Expiration Date
- Security Code
- Card Holder Name
- Country
- Zip Code

Note: Be sure to click on Subscribe to make the payment.

Subscription (Current)

Once payment has been made, the screen will change to a Current Subscription format that lists All Gateways, Payment Methods, Billing Information and Invoice History.



Current Subscription

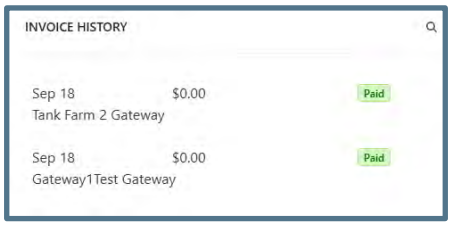
Lists all Gateways that are part of this subscription including the subscription period, the amount for the subscription and the credit card associated with this gateway. Click on the Cancel Subscription button to end subscription.

Payment Methods

Lists all credit cards on this account.

Billing Information

Lists the contact information for the person in charge of billing for the account. Click on Update Information to change.



Invoice History

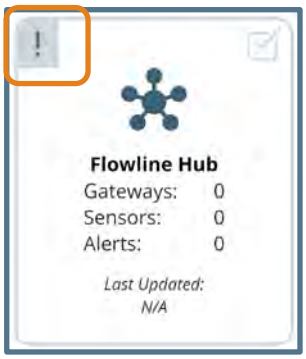
Lists all past invoices for this account as well as their status.

SITE STATUS

The upper left corner will provide icons that indicate the status for the Site.

If the corner is blank, then this account is the Site Owner for this site and can make changes to any sites, gateways and sensors.

If the corner shows this icon (for Site Viewers), then this account can only read the sites, gateways and sensors and cannot make any changes.



If the corner shows this icon, then the Site has no gateways attached.

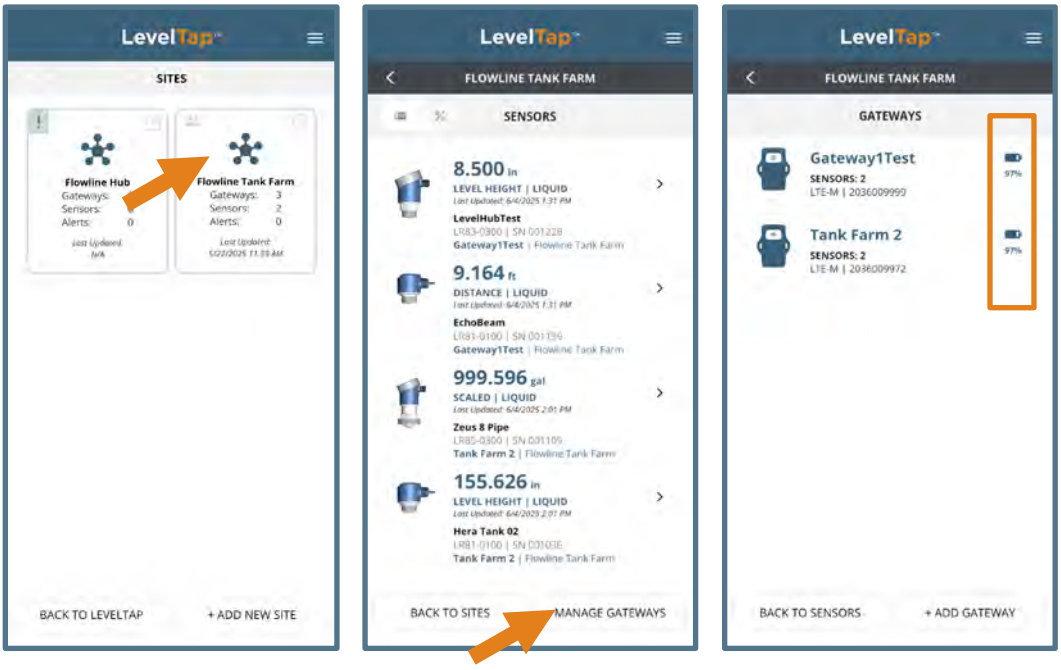
If the corner shows this icon (in orange), there is an Alert occurring at this Site.

MANAGING GATEWAYS

To access gateway information, use the LevelTap App. From the app, go to your list of Sites.

- Tap on the Site you want to view.
- Tap on Manage Gateways.
- Under Gateways, review the list of Gateways present at the Site and tap on any gateway to review.

Note: the battery level for each Gateways is shown on this list.



Basic Gateway information is displayed including gateway name, sensors connected and serial number.

GATEWAY CONFIGURATION

Tap on any Gateway to view its information including Gateway Name, Part Number, Serial Number, Output and Site Tag. Tap on Sampling & Transmission to view settings:

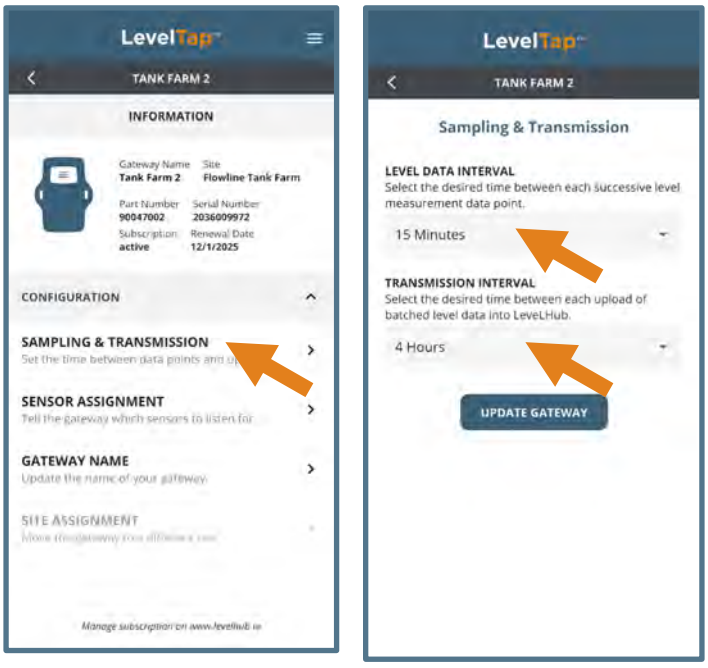
Sampling & Transmission

- **Level Data Interval –** Select the desired time between each successive level measurement data point between 5 minutes and 24 Hours).
- **Transmission Interval -** Select the desired time between each upload of batched level data into LevelHub(between 5 minutes and 24 Hours).

Tap on Update Gateway to Save.

Note: Decreasing the interval from the defaults of Level Data = 1 hour and Transmission = 6 Hours will reduce the battery life of Gateway. LevelHub has an extended battery life of 8 years using default settings of scan = 15 minutes and upload = 1/day.

Note: Press the button on the LevelHub Gateway to update the Cloud when completed with all changes.



GATEWAY CONFIGURATION (CONTINUED)

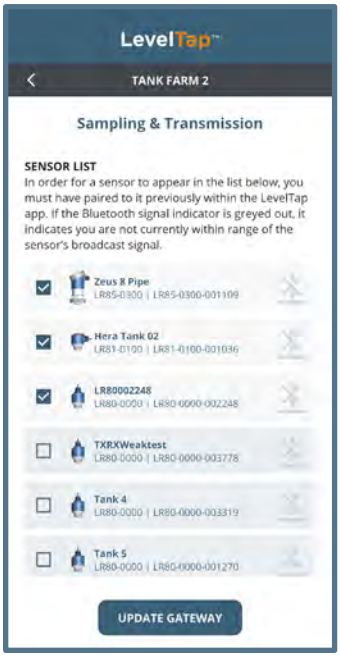
Sensor Assignment

For a sensor to appear in the list, you must have paired it previously within the LevelTap App. If the Bluetooth signal indicator is greyed out, it indicates you are not currently within range of the sensor's broadcast signal.

Sensors assigned to this Gateway are marked in Blue along with a checkmark.

Tap on Update Gateway to Save.

Note: Press the button on the LevelHub Gateway to update the Cloud when completed with all changes.

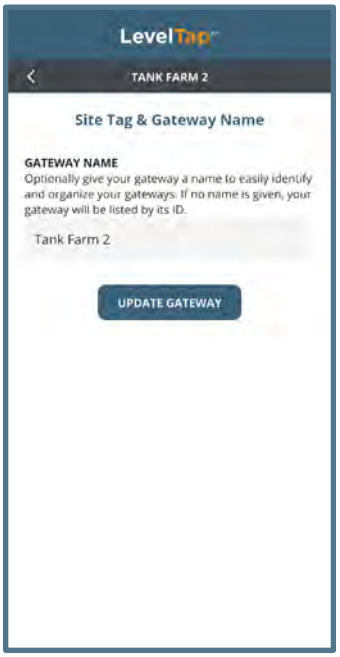


Gateway Name

Optionally give your Gateway a name to easily identify and organize your Gateways. If no name is given, your Gateway will be listed by its ID.

Tap on Update Gateway to Save.

Note: Press the button on the LevelHub Gateway to update the Cloud when completed with all changes.



GATEWAY CONFIGURATION (CONTINUED)

Site Name, Site Owners and Site Viewers

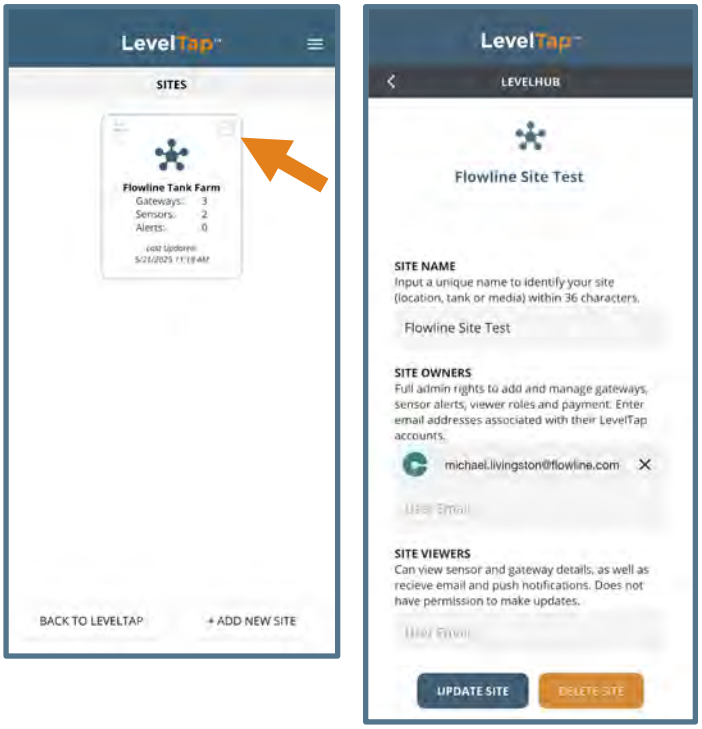
From the main Site menu, tap on the icon in the upper right corner to view/change the Site Name, Site Owners and Site Viewers.

- **Site Name** – Input a unique name to identify your site (location, tank or media) within 36 characters.
- **Site Owners** – Full Admin rights to add and manage gateways, sensor alerts, viewer roles and payments. Enter email addresses associated with their LevelTap accounts.
- **Site Viewers** – Can view sensor and gateway details, as well as receive email and push notifications. Does not have permission to make updates.

Note: Only Site owners can add or remove other Site Owners and Site Viewers.

Note: To save all changes, tap on Update Site on the bottom of the screen.

Note: The Site can be deleted from this screen. Tap on Delete Site to remove the site and all information.



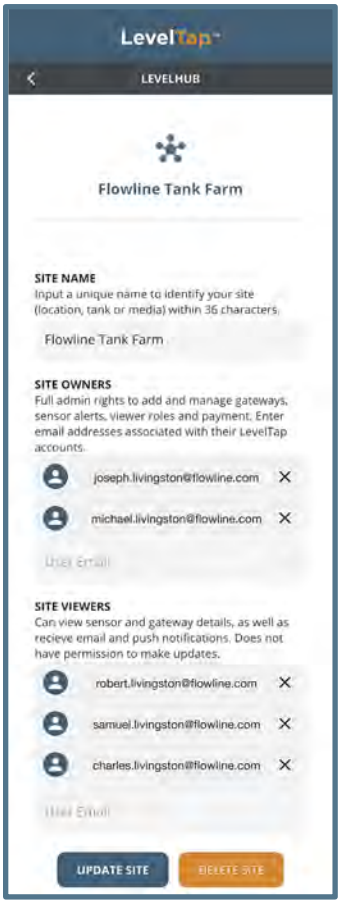
GATEWAY CONFIGURATION (CONTINUED)

Site Owner

From the main Site menu, tap on the icon in the upper left corner to view/change the Site Name, Site Owners and Site Viewers.

- **Site Name** – Input a unique name to identify your site (location, tank or media) within 36 characters.
- **Site Owners** – Full Admin rights to add and manage gateways, sensor alerts, viewer roles and payments. Enter email addresses associated with their LevelTap accounts.
- **Site Viewers** – Can view sensor and gateway details, as well as receive email and push notifications. Does not have permission to make updates.

Note: Only Site owners can add or remove other Site Owners and Site Viewers.



Note: To save all changes, tap on Update Site on the bottom of the screen.

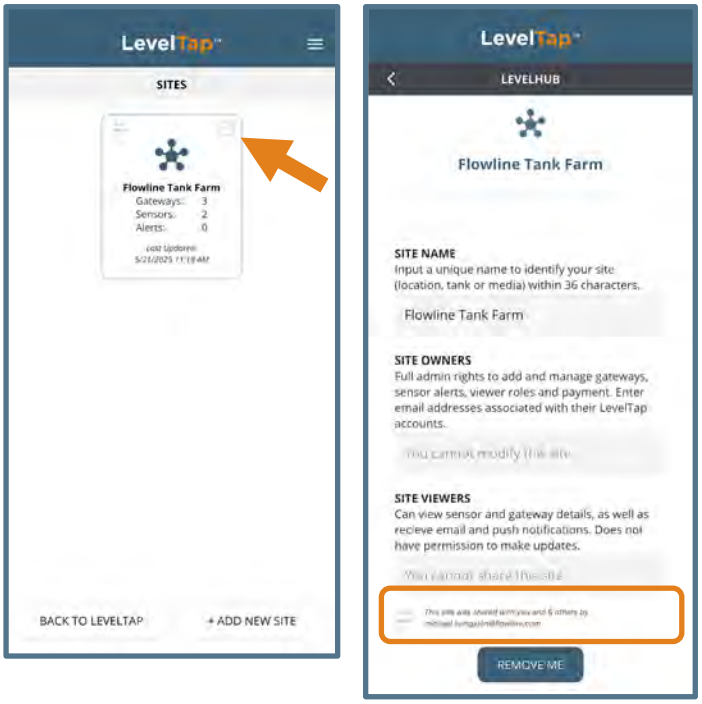
Note: The Site can be deleted from this screen. Tap on Delete Site to remove the site and all information.

GATEWAY CONFIGURATION (CONTINUED)

Site Viewers

- **Site Name** – Site Viewers cannot change the Site Name.
- **Site Owners** –Site Viewers cannot modify this section.
- **Site Viewers** – Site Viewers cannot modify this section. Site Viewers can only remove themselves from the Site or can view who are Site Owners for this site.

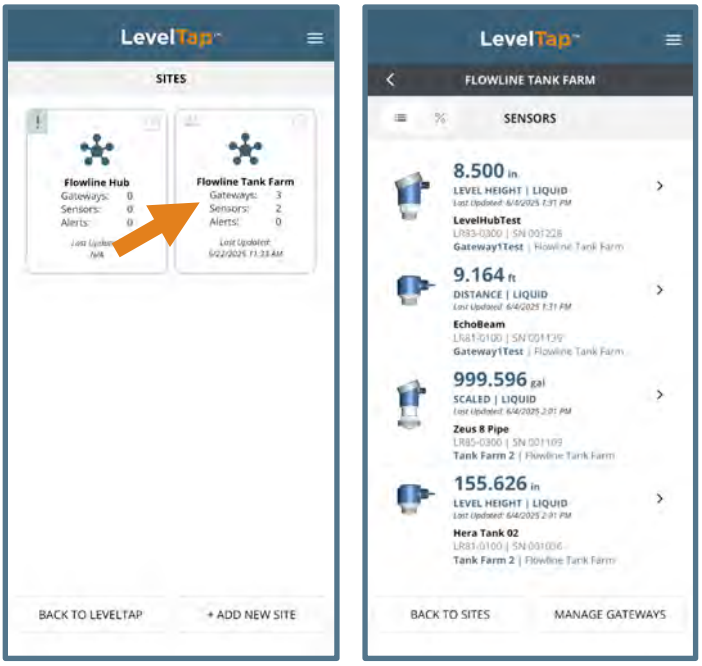
Note: Only Site owners can add or remove other Site Owners and Site Viewers.



SENSOR INFORMATION

To access sensor information, use the LevelTap App. From the app, go to your list of Sites.

- Tap on the Site you want to view.
- Review the list of sensors at this Site.



VIEWING SENSOR AT SITE

Sensors at this Site can be viewed as a list or as a small tank graphic.

To view the list, click on the list icon.

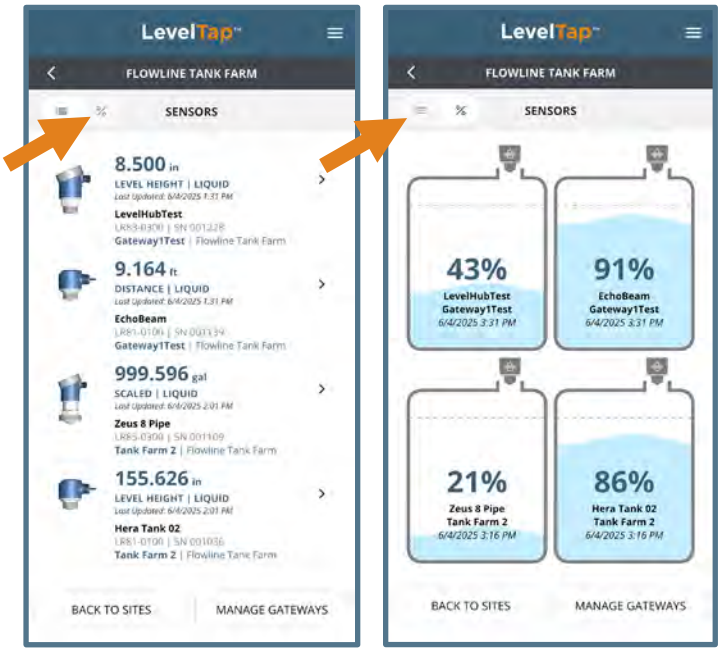
To view the graphics, click on the % icon.

Both icons are in the Upper Left Corner on the Sensors screen.

Both views will provide the last level measurement, last update time, sensor name, gateway name and site name. The list will also include part and serial numbers.

Note: Graphics will only show level in percentage while the List will show level in the units selected when configuring the sensor.

Tap on any sensor to see more detailed information.



DETAILED SENSOR INFORMATION

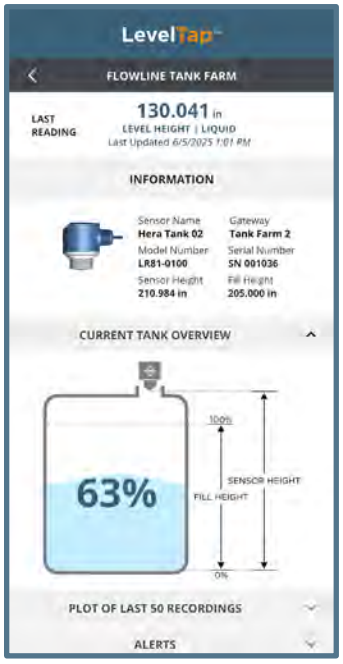
Sensor's information includes sensor name, gateway, site, part number, sensor number, display value, application, sensor height, fill height, last reading and last reading time.

Three categories also appear underneath: Current Tank Overview, Plot of Last 50 Readings and Alerts.

Current Tank Overview

Shows a simple graphic image of the tank along with the percentage full and how the Sensor height and Fill-Heights are identified.

Note: Changes to the Sensor Height or Fill-Height settings in the sensor and made through the main LevelTap Sensor screen and not within the LevelHub part of LevelTap.



Plot of Last 50 Readings

Shows a simple plot of the past 50 readings recorded by the sensor with the x-axis showing time and the y-axis showing level height.

Alerts

Shows the set values for High and low Alerts. When either level is reached, an alert is triggered by sending an email and push notification to those on the Share Site list. To change either setting, tap on the current value and enter a new setting. Be sure to tap on Update Alerts at the bottom of the screen to save the change.

Note: Press the button on the LevelHub Gateway to update the Cloud when completed with all changes.

Alerts

Shows the set values for High and low Alerts. When either level is reached, an alert is activated by sending an email and push notification to those on the Share Site list (See recipients list under Notifications). To change either setting, tap on the current value and enter a new setting.

Notifications

Push notifications will deliver an in-app and lock screen banner. Check marks mean the Push Notification and/or Email are active.

Note: Push Notifications and Emails will be sent once per crossing event.

Note: Only Site Owners will have access to add or remove Notifications to all on the list. Site viewers can only remove their own account.

Note: Be sure to tap on Update Alerts at the bottom of the screen to save the change.

Note: Press the button on the LevelHub Gateway to update the Cloud when completed with all changes.

% Change Alerts

This feature enables an alert to be triggered when your tank level rises or falls by X% of full scale between successive points.

Trigger

Enter a percentage value as a trigger value. An alert will trigger when the level changes by the percentage entered (both above and below).

Schedule

Select when this function is active. Options are Always On or Worknights / Weekends / Holidays.

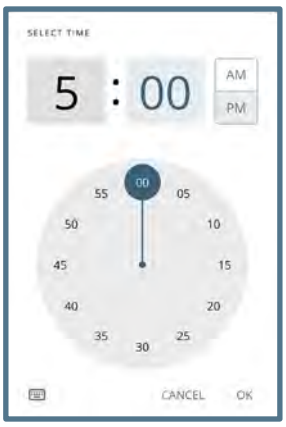
When selecting Worknights / Weekends / Holidays, the Work Days and Off-Work Hours can be selected to match your requirements. This will only appear when this option is selected.

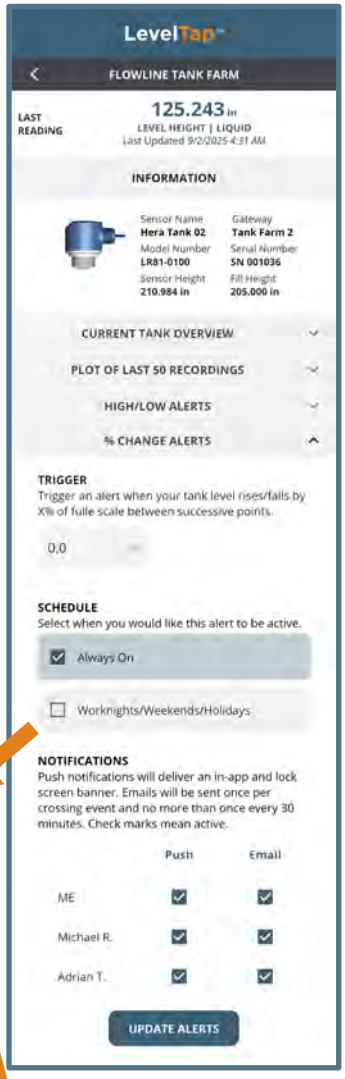
Work Days

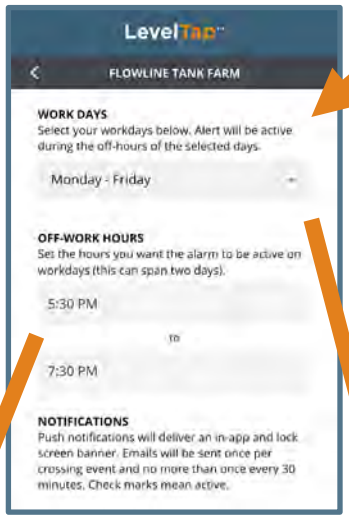
Select the working days. Alerts will be active during off-hours of the selected days. Click on Done to save.

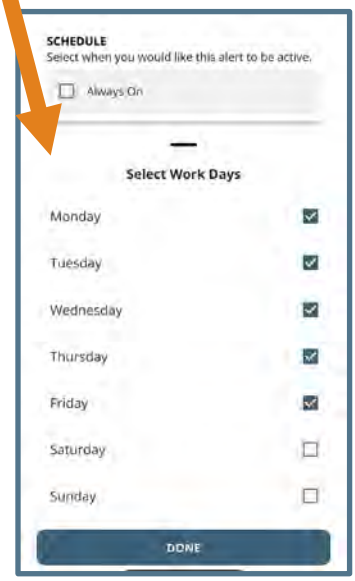
Off-Work Hours

Set the hours you want the alarm to be active on workdays (this can span two days). Using the app, set the start and stop times for Off-Hours. For the Start and Stop times, you will first select the Hour, tap OK, then select the Minutes and tap on OK again to save (see below). To change, tap on either Start or Stop times.









% Change Alerts

This feature enables an alert to be triggered when your tank level rises or falls by X% of full scale between successive points.

Notifications

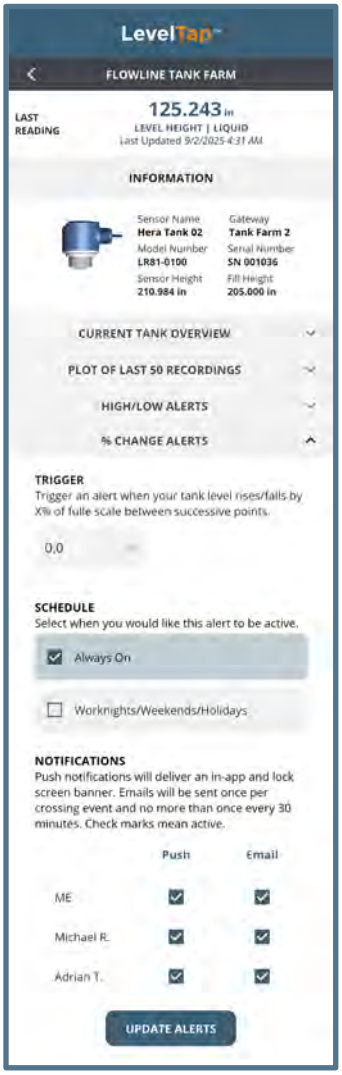
Push notifications will deliver an in-app and lock screen banner. Check marks mean the Push Notification and/or Email are active.

Note: Push Notifications and Emails will be sent once per crossing event.

Note: Only Site Owners will have access to add or remove Notifications to all on the list. Site viewers can only remove their own account.

Note: Be sure to tap on Update Alerts at the bottom of the screen to save the change.

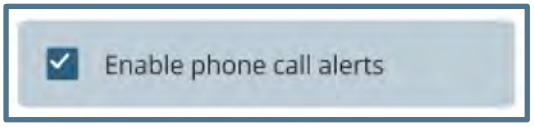
Note: Press the button on the LevelHub Gateway to update the Cloud when completed with all changes.

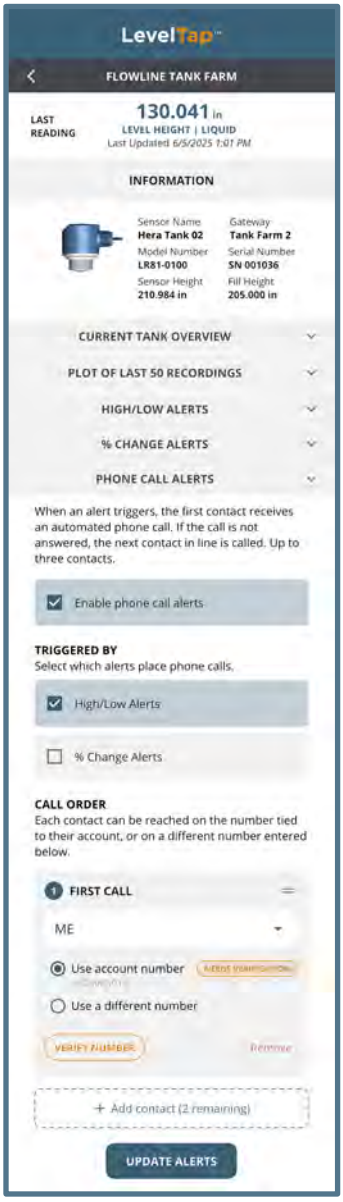


Phone Call Alerts

When an alert triggers, the first contact receives an automated phone call. If the call is not answered, the next contact in line is called. Up to three contacts may be assigned.

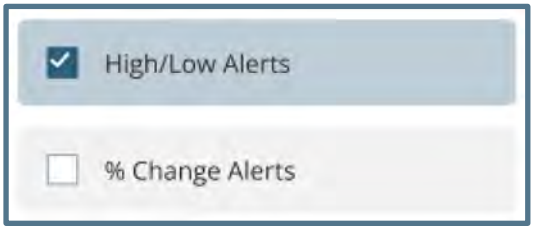
Click on the Check Box to enable phone call alerts.





Triggered By

Select which alerts place phone calls. Choose between High/Low Alerts and/or % Change Alerts.



Call Order

Each contact can be reached on the number tied to their account, or on a different number entered below. Use Pull Down to select who will be called. Select either the phone number associated with the account or enter a different number after selecting Use a different number. To add additional contacts, tap on + Add Contact.

When all information has been entered, tap on Update Alerts to save information.

Phone Call Alert Message – High/Low Alert

When High/Low Alert is selected and an alert occurs, the following message is sent via a phone call:

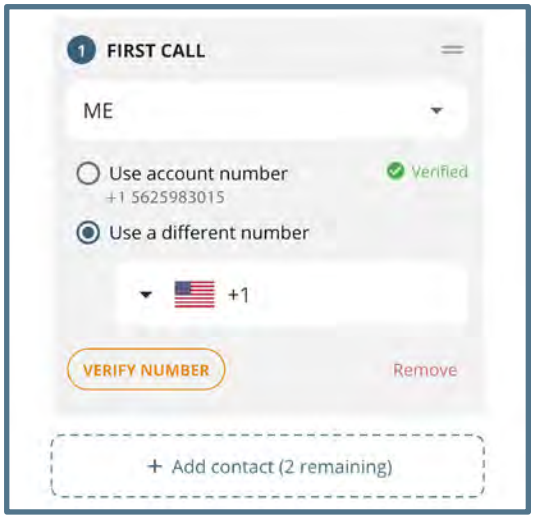
*Sensor [**Sensor Name**] at site [**Site Name**] has crossed the [**Alert Type**] level threshold. The current reading is [**Current Level Reading**] [**Units**].*

Phone Call Alert Message – % Change Alert

When % Change Alert is selected and an alert occurs, the following message is sent via a phone call:

*Sensor [**Sensor Name**] at site [**Site Name**] has changed more than [**Threshold**] percent between readings. The current reading is [**Current Level Reading**] [**Units**].*

SELECTING PHONE NUMBERS

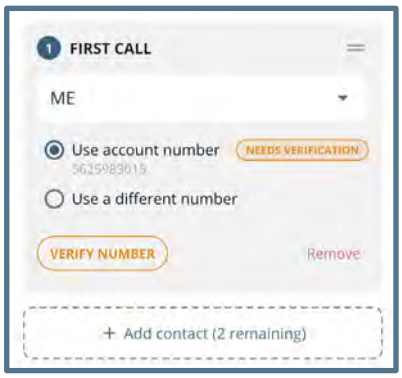


Within the Pull-Down, select the person who will receive the first phone call when an alert occurs. Use the Radio Buttons to select the phone number that is associated with the account or select a different number.

Tap on +Add Contact to add up to three contacts that will be called when an alert occurs.

VERIFYING EMAIL ADDRESS

Note: All phone numbers must be verified prior to sending a Phone Call Alert.



Phone Verification can be performed by tapping on Verify Number or by editing your account in the LevelTap App. A 6-digit verification code will be sent to the phone number via text.

Enter the new phone number and tap on Send Code.

The phone will receive a text message with a 6-digit code. Enter the code and tap on Verify.

There is a 60-second timer to enter the verification code. If this expires, tap on resend Code to send a verification code.

SITE CONFIGURATION INFORMATION

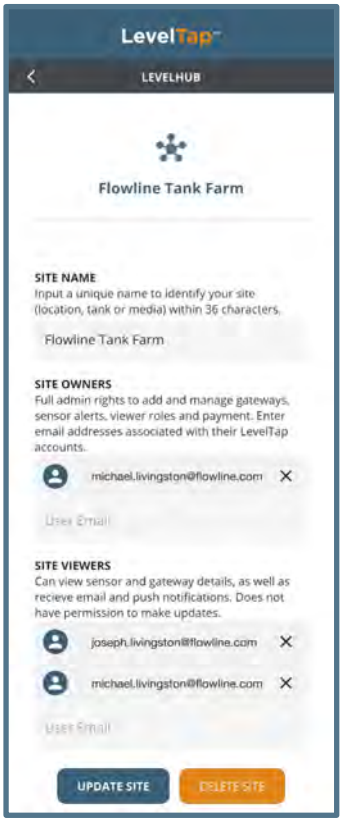
To access configuration information, use the LevelTap App.

- On the Site you want to view, Tap on the icon in the upper right corner.

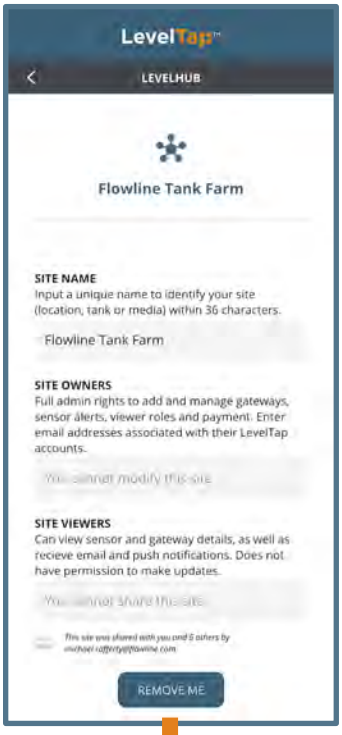
The Site Name, Site Owners and Site Viewers will appear.

Site Owners can change the Site Name, add and remove either the Site Owners or Site Viewers as well as Delete the site. When changing the Site Name or adding Site Owners/Viewers, be sure to tap on Update Site to save the changes.

Site Owner Screen



Site Viewer Screen



Note: Site Viewers will not be able to make any changes on this screen except to be removed (tap on Remove Me).

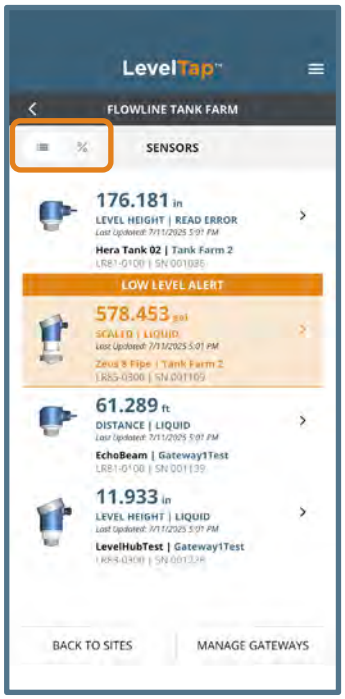
ALERTS

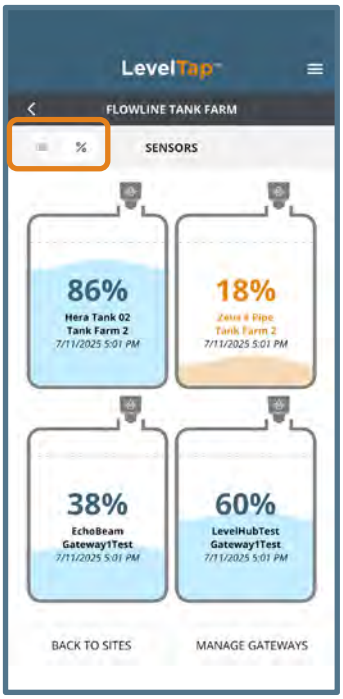
LevelTap App will show any Alert (High or Low) that occurs by changing the background to Orange.

SITES

From the Sites Screen, any time there is an Alert the Site(s) with an Alert will appear in Orange. Tapping on that Site will show more information about the Alert.

SENSOR SCREENS





From the Sensor Screen, the Sensor that has an Alert will appear in Orange. The Alerts can be seen as a list or as a graphic. Tapping on that Sensor will show more information about the Alert.

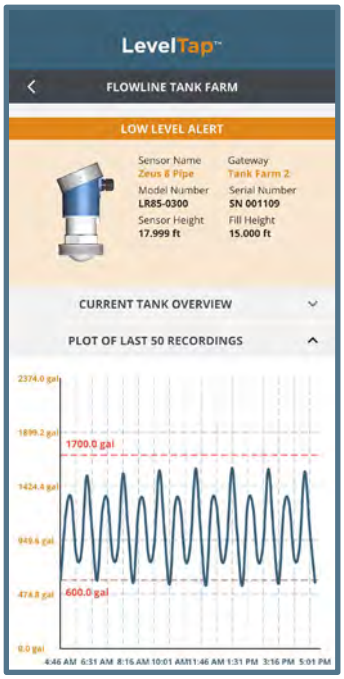
SENSOR SCREENS (CONTINUED)

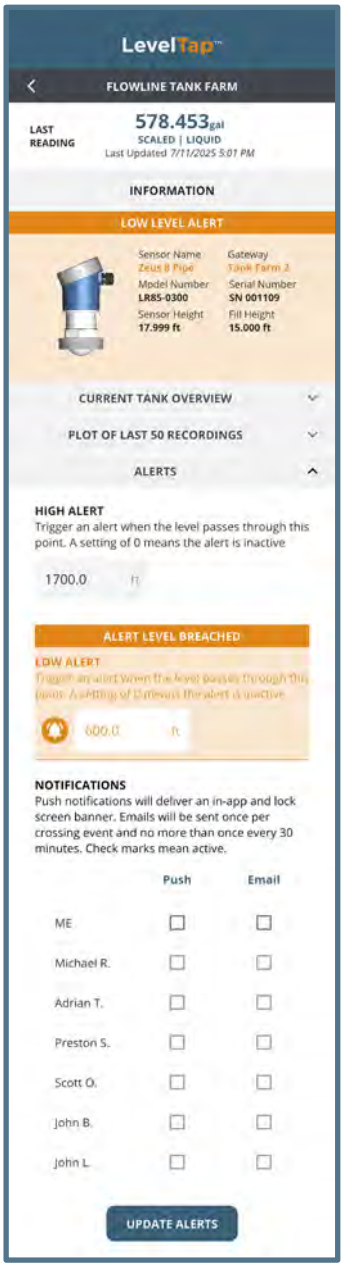
Information Section: Provides the Type of Alert (High or Low), Sensor Name, Gateway Name, Model Number, Serial Number, Sensor Height and Fill-Height information.

Current Tank Overview: Provides the percentage of full in a graphic as well as showing how the Sensor Height and Fill Height are measured.

Plot of Last 50 Recordings: Provides a graphic image of the last 50 readings from the sensor.

Alerts: Lists the High and Low Alert settings with the active alert shown in Orange. The list of those on the notification list are also shown.



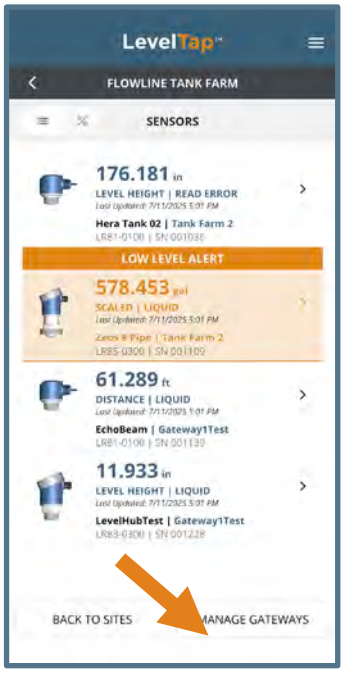


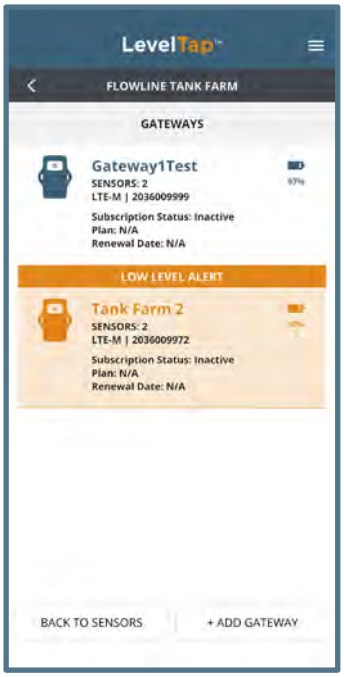
GATEWAY SCREENS

From the Sensors Screen, tap on Manage Gateways.

From the Gateways Screen, the Gateways where a sensor is in Alert will appear in Orange. Tap on the Gateway to view more information.

From the Information Screen, you can still view the Configuration settings for the Gateway. The type of Alert will be identified in Orange.





MOUNTING LEVELHUB

Because of the small and compact design (along with the IP67 rating), LevelHub is simple and easy to mount. The orientation of the gateway does not matter if it is within the Bluetooth range of the sensors.

CELL SIGNAL

The LevelHub Gateway periodically transmits LTE-M cellular data over the T-Mobile network in US and Canada or the Vodafone network in Europe and UK to Flowline's secure AWS cloud server. Cell signals, while generally reliable, are subject to variations and can be affected by several factors, including location and building materials. Factors like building materials (concrete, metal) and the gateways location inside a building can interfere with signal strength, potentially leading to weaker reception in certain areas.

Factors Affecting LTE-M Signal Strength:

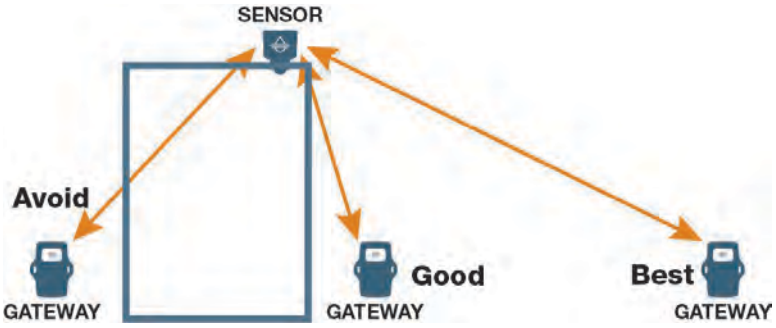
- **Distance from the cell tower:** As you move further away from the cell tower, the signal strength typically decreases.
- **Obstacles:** Buildings, trees, and other obstructions can weaken the signal.
- **Network conditions:** The overall network load and congestion can impact signal strength.
- **Device antenna:** The type and condition of the device's antenna can influence signal reception.
- **Frequency:** Different frequency bands used for LTE-M can have varying signal penetration and propagation characteristics.

BLUETOOTH RANGE

Bluetooth range is typically 26.2’ (8m) with a direct line of sight without obstructions. There are factors that can affect the range of the Bluetooth signal which include:

- **Obstacles:** Walls, skids, tanks and other objects can reduce range.
- **Interference:** Other electronic devices/electromagnetic environments can also interfere with signal.
- **Distance:** The further apart the devices are, the weaker the signal becomes.
- **Transmitter Power and Antenna Gain:** The output power of the transmitter and the sensitivity of the receiver, as well as the design and quality of the antennas, all play a role in determining range.

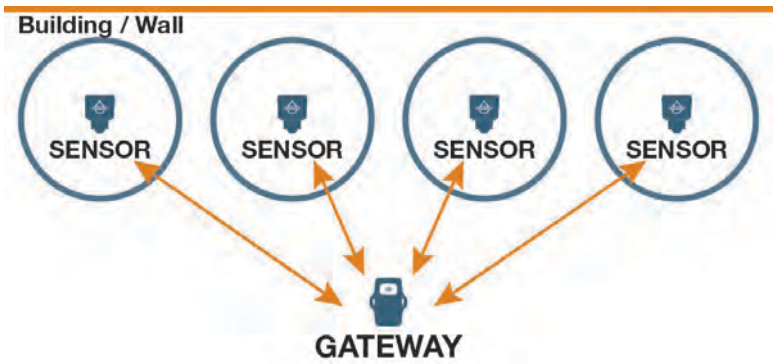
Side View

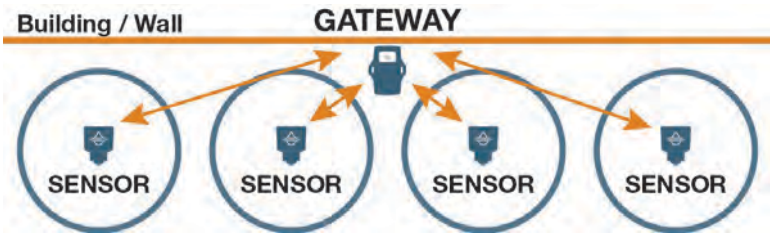


LevelHub should be installed as close to the sensors as possible to enable the best Bluetooth signals between the devices. Line of sight will ensure optimum signal transmission. If possible, avoid positioning Gateway on the opposite side of the tank from the sensor.

Top View

Ideally position Gateway in a location where all tanks are within line of site. Even if line of site is not possible, moving the Gateway away from the tanks will improve the Bluetooth signal.





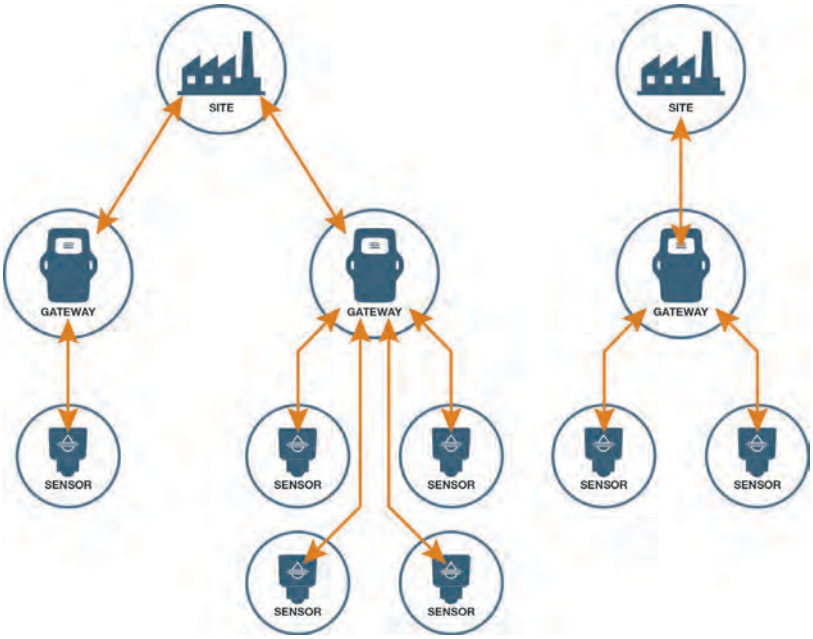
Avoid positioning Gateway against a large wall or against a building (specifically metal) which could directly affect the Bluetooth signal.

TROUBLESHOOTING OVERVIEW

Problem	Solution
Sensors not listed when assigning to LevelHub Gateway	Make sure the sensor is paired with the LevelTap App. Go to the paired and unpaired screen in the LevelTap App to confirm the sensor is paired. Also, check that the Gateway is in the best location to connect to a sensor.
Sensor displays N/A after completing the set up for LevelHub	There is a delay (when LevelHub is first activated) to allow the new configuration / connections to be uploaded into the cloud. The gateway will be active after 0:00 UTC (4:00 pm PST / 7:00 pm EST). Be sure to press the LevelHub Gateway button once upon completion of the configuration.
Cannot change the High or Low Alert Level	Alerts (both High and Low) can only be changed by the Site Owner for the site. To identify the Site Owner, go to the Sites page (on the LevelHub or Web App), tap on the icon in the upper left corner, tap on Site Settings. At the bottom will be the email address for the Site Owner.
Cannot add an Email address to the Site Share	Make sure the person with the Email address has downloaded LevelTap on their Smartphone and set up an account with the App.
Cannot pair to transmitter	Move closer to the transmitter. Line of sight with the transmitter works best. Make sure no other user devices are currently paired to the transmitter. Only one Smartphone can be paired to the transmitter at a time.
What is the PIN code to pair the sensor to LevelTap	The Sensor PIN Code is the manufacturer's date code (6-digit) located on the label in the upper right corner.
Cannot see Accept or Update buttons	Make sure your font size is not too large on your Smartphone.
LevelHub is having difficulty completing a set up function	When setting up the LevelHub Gateway, you must be online. Spotty wi-fi signals can affect the set up. An option is to turn off wi-fi and use a cellular connection.
Cannot connect to LevelHub Gateway after setup.	Only assigned LevelTap accounts can connect to the LevelHub Gateway. The accounts are assigned by the Site Owner (using the email address linked to the account). Make sure the App is logged in with an account associated with the Gateway.
How do I see who is/are Site Owner(s)?	To see the Site Owner(s), first go to the Sites Screen. On the Site in question, tap on the small icon in the upper right corner. Scroll to the bottom of this screen to see the site owners.
I want to read Gallons or Liters on the LevelHub Site?	The sensor must be configured to Gallons (or Liters) to read volume on the LevelHub site. You will need to configure the sensor using the Volumetric Level section under the Advanced Menu.
I just added a Gateway and it does not appear on my list?	Back out to the original LevelTap section in the App and then tap on the LevelHub button on the bottom of the screen. This will allow the App to sync the Gateway to the App.

LEVELHUB HIERARCHY

Sites are typically a specific physical location, but multiple sites can be in the same location as well. Gateways are the actual LevelHub devices. Sensors are the physical sensors that are connected (via Bluetooth) to a specific Gateway. A Gateway can have from 1 to 4 sensors attached to it. Always check that the sensor is in Bluetooth range of the Gateway.



Note: A sensor can be assigned to multiple gateways.

WHEN TO PRESS THE BUTTON

The following are the only times the button is to be pressed.

Scan and Upload

This function will force the Gateway to perform an immediate Level Data (SCAN) followed by a Transmission (UPLOAD). This is the best method to force a SCAN and UPLOAD.

Click the button once on LevelHub.

Note: Do not hold down the button.

A green LED will flash while the sensor connects to the network.

A solid green LED will appear for 1-2 seconds indicating a successful connection.

A solid red LED will appear for 1-2 seconds for a failed connection.

Activate LevelHub

A new LevelHub must be activated. Activation enables the device to interface with the local 5G network.

Note: This step is only performed when activating the Gateway and never has to be performed again.

To activate, press and Hold main button for 5+ seconds.

A green LED will flash while the sensor connects to the network.

A solid green LED will appear for 1-2 seconds indicating a successful connection.

A solid red LED will appear for 1-2 seconds for a failed connection.

If the solid red LED appears, wait 30 seconds before attempting activation again. If this red LED continues, the location of LevelHub may be in a location that is not accessible to the 5G network. Moving the sensor to another location would address this issue.

REBOOT

This function is used when a Flowline representative provides instructions requiring a reboot of the Gateway.

Note: Only perform the Reboot when advised by a Flowline representative.

Press and hold the button for 5+ seconds.

A blue LED will flash for 10 seconds (rebooting).

A green LED will flash while the sensor reconnects to the network.

A solid green LED will appear for 1-2 seconds indicating a successful reboot.

If the operation ends with a solid red LED, this indicates the operation failed.

To correct:
1) Wait 5 minutes and retry.
2) Verify signal condition's / change location and retry.
3) Contact Flowline support.

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 www.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 www.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.)