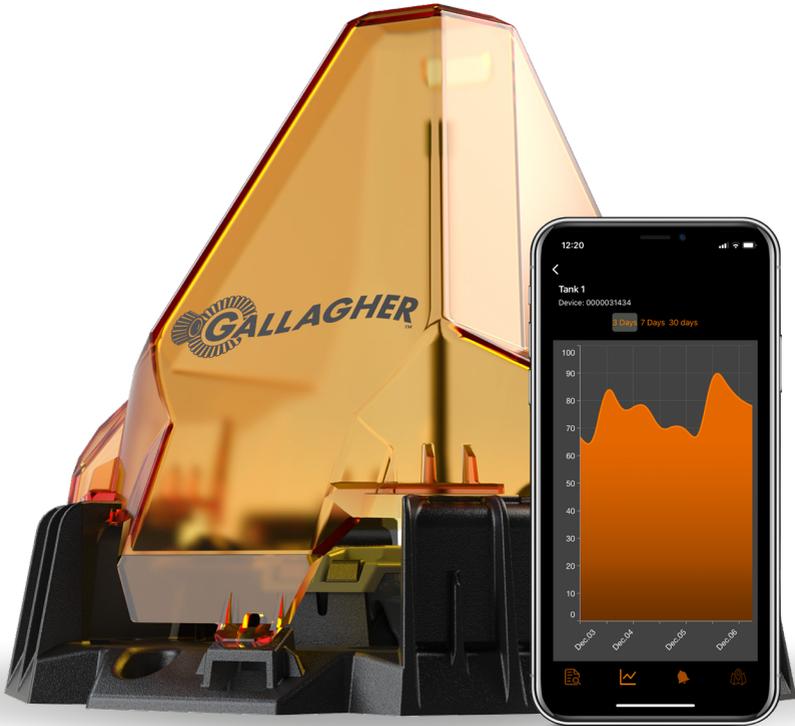# Satellite Liquid Monitoring System

Models 33101 & 33102

USER MANUAL v1.12 | 07/23

DISCLAIMER:

Whilst every effort has been made to ensure accuracy, neither Gallagher Group Limited nor any employee of the company shall be liable on any ground whatsoever to any party in respect of decisions or actions they may make as a result of using this information.

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PUBLISHED BY

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Gallagher Satellite Liquid Monitoring System User Manual
For Models 33101 & 33102
v1.12 | 07/23

Contents

SATELLITE LIQUID MONITORING SYSTEM

SECTION 1 — Getting Started

1.1 BOX CONTENTS

1 x Gallagher Universal Monitor (Micro Satellite)

1 x Protection Cover

1 x Cable Management Mounting Base

1 x 3 metre Liquid Level Sensor

1 x Quick Start Guide

1.2 HOW-TO-VIDEOS

Scan this QR code to:
- Watch how-to install and activate videos
- Read and download support documents

SECTION 2 — Setting up

2.1 ACCOUNT & SUBSCRIPTION SET UP

> **⚠ IMPORTANT!**
>
> Please complete this step in an area with good cellular or Wi-Fi reception, before heading out in field to install.

Account & Subscription Set Up Process

Scan this QR code to create your account and subscribe.

Information Required for Account Registration

To register your account, you will be asked to provide your business details and credit/debit card information. **The 1st year of subscription is included with the purchase of the device.**

While no payment will be taken at the time of registration, your subscription renewal payment will automatically be charged to your card in 12 months' time.

Please note that you will receive a notification before your current subscription expires.

Subscription Includes

The subscription provides access to the nano-satellite network, the mobile app, software updates, and text and email alerts. Subscribers can cancel at any time with 30 days' notice prior to the next annual subscription renewal date.

A subscription is necessary to activate your device and establish your account. **Please note, that you will require a subscription for each of your devices. For example, if you have bought three devices, then you require three subscriptions.**

2.2 APP DOWNLOAD & LOGIN

> **⚠ IMPORTANT!**
>
> Please download the app before heading out in field to install.

Scan the QR code or search for "Gallagher Liquid Monitoring App" in Google Play or Apple Store.

The Gallagher Liquid Monitoring App is powered by Agbot™

GET IT ON Google Play — Download on the App Store

Trouble accessing your account

Remember before attempting to log into the app, you must have an active subscription. Therefore, it is recommended to start your subscription first before attempting to log in to the app.

Check your login credentials: make sure that you are entering the correct username and password for your account. If you have forgotten your password, you can try resetting it by selecting "forgot password" on the login page of the app.

Log in to the app

Once the app is installed, select "Get Started" and sign into your account using the same credentials that you created during the account and subscription setup.

The Gallagher Liquid Monitoring App

Upon launching the app, you will be directed to the **"Inventory Page"** which serves as the primary screen. From here, you can perform the following actions:

Configure and activate your device	View a map displaying your resources' locations
Manage settings	Perform a message optimization update
Monitor resource levels	Upload any pending activations

2.3 CREATE YOUR ASSET & ACTIVATE THE DEVICE

To activate the device, the app will step you through the process, which can be completed with or without a Wi-Fi connection or mobile data using "Offline Mode".

(!) You will need the asset measurements during this process to set the asset profile. The measurements which are required are the Height "Maximum Depth" in Metres and "Total Volume" in Litres of the asset being configured.

(!) To proceed with the upcoming steps, you will need a mobile phone that is NFC compatible.

It is essential to ensure that NFC is enabled on the phone to successfully complete the process.

Please refer to the NFC Troubleshooting section for instructions on how to enable NFC on your phone.

Following the instructions to add an asset to your app:

1

From the bottom of the Inventory page select "+ Add Device" and select an asset type. There are 6 asset types to choose from: water tank, cow trough, dam, irrigation, liquid fertiliser and diesel tank.
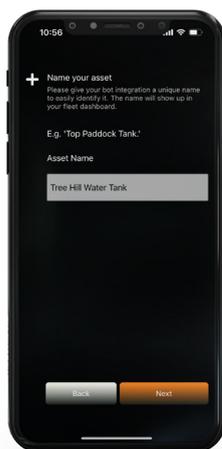
2

From the dropdown select "Sensor Type & Length" and tap "Next" The sensor length is indicated on the packaging.

3

To configure your asset profile, under Asset Settings, enter the asset dimensions for Height (Depth) in Metres or Feet and Total Volume in Litres or Gallons. Tap "Next".

4

Name your Asset. Give your asset a unique name to easily identify it. Tap "Next" E.g. "Workshop Diesel Tank': "Paddock 6 Water Tank"

⚠ This information is critical for accurate level calculations of your asset. Hence, it is important to ensure that the measurements provided are correct.

SECTION 3	Physical Installation

3.1 TOOLS REQUIRED

Before you head out to site, ensure you have the following tools which are not supplied with the product.

- ☑ Your phone with the app installed. The app can add a device without relying on Wi-Fi or cellular coverage. It has an 'Offline mode' and will automatically establish a connection once coverage is restored.

- ☑ 4 x 12 or 14 gauge tech screws, or the screws that are appropriate for the material you are mounting to.

- ☑ A drill with a 25mm (1 inch) hole saw or drill bit.

- ☑ Measuring tape (to measure your tank)

- ☑ Ladder

- ☑ Zip ties (optional)

> ****Additional tools may be required which are specific to the installation site****

3.2 SITE REQUIREMENTS

When deciding on a location to install your device it is important to understand how it operates. The system uses electromagnetic radio waves to communicate with the individual satellites that are part of a nano-satellite constellation. The device antenna facilitates the transmission and reception of these radio waves. The device calculates when these orbiting satellites will be transmitting through the section of sky visible to the device antenna and transmits the messages accordingly.

The system is not in contact with the satellites at all times; data is transmitted when the satellites are in view of the device. Therefore, the device must have a clear line of sight to as much sky as possible, in all directions, to maximise transmission opportunities.
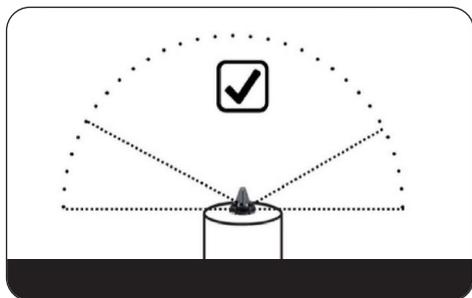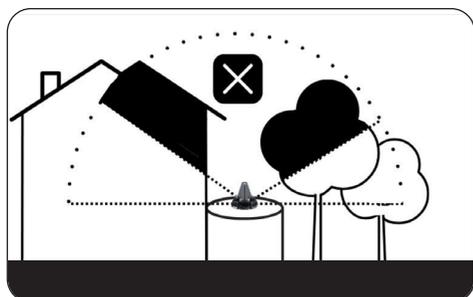

Example ideal site installation

⚠ The device must have a clear line of sight to as much of the sky as possible with no obstructions in all directions, this will maximise satellite transmission opportunities.
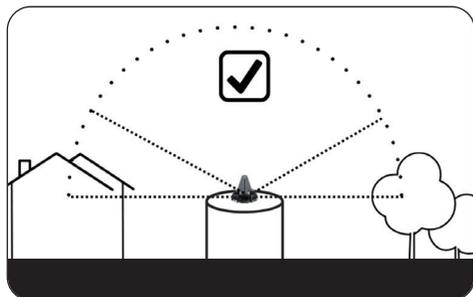
Example permissible site installation: obscured sky view below 30° of device horizon line

Satellite passes below a 30° angle to the horizon have a lower probability of transmission, therefore obstacles within this angle of the device are not preferred but are permissable (see the diagram).


Example poor site installation: obscured sky view and restricted transmission

(!) Avoid placing the device in the following locations:

- Under or near tall trees or dense foliage
- Close to buildings
- Near metal or concrete structures
- At the bottom of deep canyons or valleys
- In close proximity to buildings, fences, poles or other structures
- In a mounted position that is at risk of flooding or submersion

- In close proximity to sources of RF interference such as high voltage power lines, mobile phone towers or radio towers
- Underneath or in close proximity to solar panels, weather stations or any other type of equipment that may share a mounting post/mast with the device.

Placing the device in any of the above situations may restrict or prohibit successful transmissions.
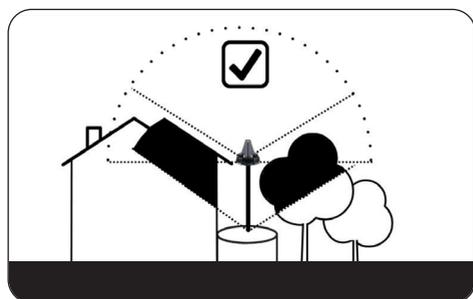
Example improved site installation: use of elevation for an improved sky view

The mounting pole has been used to raise the device above the obstructions around the tank and enable an uninterrupted view of the sky above 30° degrees in all directions. This will maximise transmission opportunities for the device.

3.3   INSTALLATION ON TANK

It is recommended to add your asset and activate your device via NFC on site, next to the tank. This is to enable accurate geolocation of your asset to the satellite. Wi-Fi is not required for these steps, you can use **Offline Mode** (see **Offline Mode** section in this User Guide) and then complete the process when you have Wi-Fi or mobile data.

Drill a hole for the sensor cable while being careful to position it above the overflow level. Ensure the hole is smooth so it won't damage the cable.

Align the hole on the tank with the sensor hole located on the mounting base, then fasten it in place using scews

Attach the sensor cable to the device.

Make sure the white dots on both the sensor cable connector and the device connector line up, as shown.

Carefully lower the sensor cable into the tank.

Secure the device into the mounting base.

Push the device onto the mounting base and it will lock securely with a clicking sound.

3.4 NFC ACTIVATION

⚠ It is essential to remove your phone case or any magnets from the back of the mobile phone before initiating the process. This step is crucial to ensure that no obstructions interfere with the NFC activation.

During the activation process, make sure that your phone and the device's NFC reader are in contact, remain stationary and aligned properly.

1 Select "Start" and you will be prompted to lay your phone, flat on the device. The NFC antenna on the device is located on the left side where the QR code or NFC icon is situated.

2 It is important to know where your NFC chip is located in your phone. This is dependent on the make and model of your phone. Please refer to the section called NFC Antenna Positions.

3 Dependent on which position your NFC Antenna is in your phone will depend on which position you place your phone on the device. Please ensure you wait 3 mins before trying another position.

4 You may feel a vibration when the NFC connection is made, do not move your phone, keep it stationary.

5 During the activation the app will show 'Device Activation in Process', ensure the back of your phone touches the device and is kept in the same position, for 10-30 seconds.
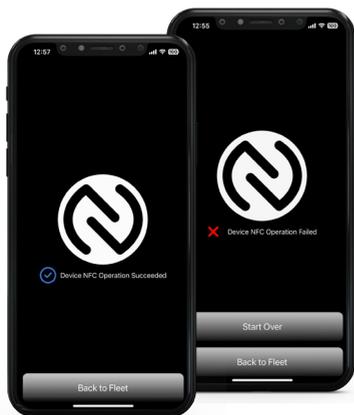
6 Do not move your phone until it displays one of the messages shown. If you receive 'Device NFC Operation Failed' see NFC Troubleshooting.
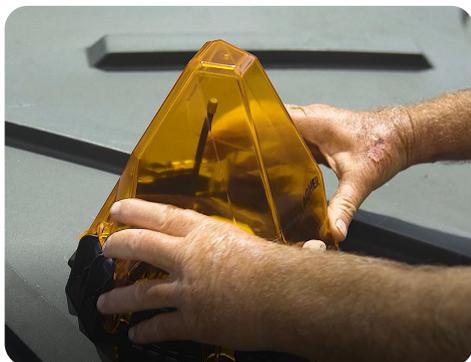
Attach the cover.

Align the protective cover with "Gallagher" at the front. Then, rotate it to secure it firmly in position.

Photograph the device installation.

Refer back to the app – you will be prompted to take a photo of the installation including the surrounding area. This photograph will be sent to our Technical Support Team and will be used should you require assistance in the future.

Make sure the photo captures the device and the installation site.

In case there was no Wi-Fi or cellular coverage during the physical installation, the device registration will be automatically completed once coverage is restored.

⚠ **IMPORTANT!**

Level data will take approximately 24-72 hours to take its first reading.

Once the device has been activated, it will need time to process its GPS coordinates and to synchronise message schedule with satellite pass overs.

For technical support, go to
am.gallagher.com/Support/customer-technical-support

3.5 ABOUT NFC

What is NFC?

Most smartphones are equipped with NFC, which is a method of wireless data transfer called Near-Field Communication (NFC) that detects and then enables technology to communicate without the need for an internet connection.

The NFC chip in your phone is a passive scanner that only connects when it closely interacts with another NFC device or tag. Most iPhones are NFC enabled automatically, whereas NFC may need to be enabled on Android phones.

NFC tag reader supported iPhones:

- ✔ iPhone 7 and 7 Plus
- ✔ iPhone 8 and 8 Plus
- ✔ iPhone X
- ✔ iPhone XR
- ✔ iPhone XS and XS Max

- ✔ iPhone 11 , 11 Pro and 11 Pro Max
- ✔ iPhone SE (2020 model)
- ✔ iPhone 12, 12 Pro, 12 Pro Max and 12 Mini and onwards

(!) For all phones listed except the iPhone 7 & 8 reading the NFC tags is read automatically as soon as the iPhone screen is on without needing to toggle the NFC tag reader first.

NFC tag reader supported Android phones

If you have an Android phone, check under **settings > connections > tap NFC and contactless payments > tap the switch to turn NFC on.**

Also, check your quick menu screen but swiping down from top to bottom. Look for this icon and tap it to turn it on.
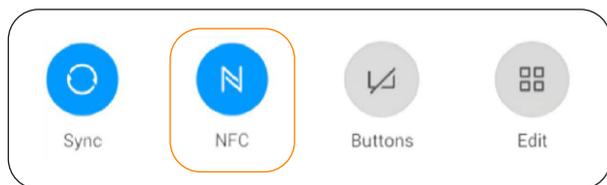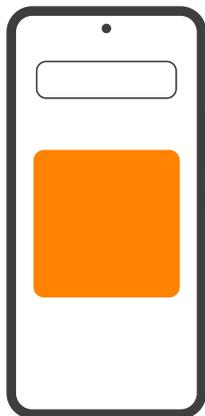

(!) The next steps will require you to use a mobile device that has NFC capabilities. Please enable your NFC before proceeding with the next steps.
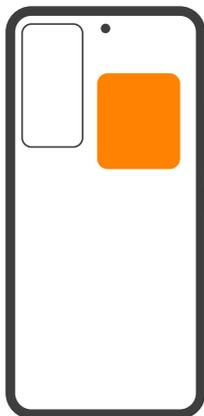
3.6 NFC ANTENNA POSITIONS
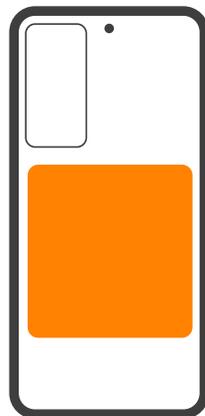
NFC antenna positions - Samsung

The most common NFC antenna positions for Samsung phones are outlined below.
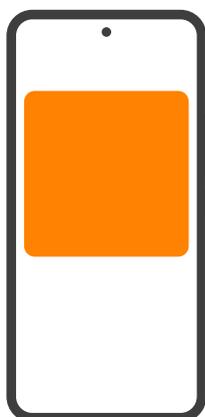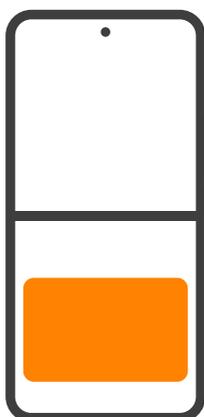
Samsung Galaxy S10,
S10+, S10e

Samsung Galaxy S20
(+, Ultra), A50s, A51, A52,
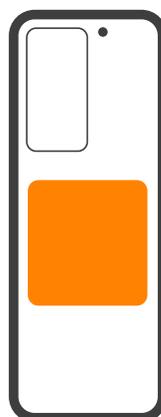A60, A70, A71, A8, Note10
(Lite, +)

Samsung Galaxy S21
(+, Ultra), S22 (+, Ultra),
S23 (+, Ultra), S20 FE,
Note 20 (Ultra)

Samsung Galaxy A32,
A42, A80

Samsung Galaxy Z Flip
3 and 4

Samsung Galaxy Fold,
Z Fold 2, Z Fold 3, Z Fold 4

NFC antenna positions - iPhone

The most common NFC antenna positions for iPhones are outlined to the right.
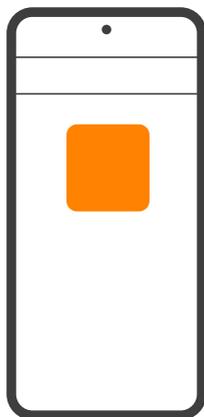
⚠ NFC requires enabling on these phone models.

iPhone 14 (Plus, Pro, Pro Max)
iPhone 13 (Pro, Pro Max)
iPhone 12 (Pro, Pro Max)
iPhone 11 (Pro, Pro Max)
iPhone XS, XS Max, XR, X

iPhone 8 (Plus)
iPhonne 7 (Plus)

NFC antenna positions - Google

The most common NFC antenna positions for Google phones are outlined to the right.

Google Pixel 7,
7 Pro
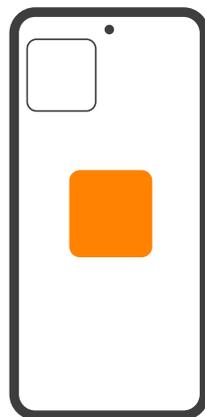
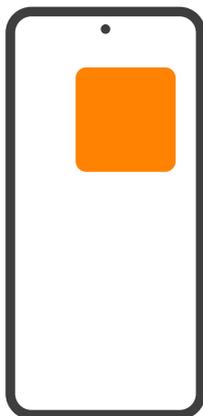Google Pixel 6, 6A,
6Pro, 5A, 4A

NFC antenna positions - Telstra

The most common NFC antenna positions for Telstra phones are outlined below.

ZTE T86 / Telstra Tough Max 3, ZTE Blade A7S 2020T / Telstra Evoke Plus 2

NFC antenna positions - general

If your phone make and model is not covered in the above diagrams, please refer to your phone's user manual.

3.7 NFC TROUBLESHOOTING

To prevent any challenges with NFC activation, or if you are experiencing challenges, please review the following instructions.

☑ If you have an older model phone, please check that your phone is NFC compatible.

☑ If your phone requires NFC to be enabled, this is predominantly relevant for Android phones or iPhones 7 or 8, check that NFC is enabled on your phone.

☑ Ensure that you have a subscription for your device. You require one subscription per device, e.g. three devices require three subscriptions.

☑ Remove your phone case or any magnets from the back of the phone before initiating the NFC process. This step is crucial to ensure that no obstructions interfere with the NFC activation.

☑ Ensure you are clear as to where the device's NFC antenna is, either on the QR code or on the NFC logo.

☑ Identify the location of your phone's NFC antenna, please see the diagrams provided, to carefully align it with the device's NFC antenna.

☑ Set yourself in a position to keep the device and phone touching and stationary. It may be helpful to place the device (and phone on top) on a flat surface for this step.

☑ If you already made one or more attempts to activate your device, please close out of the app. Then, go back into the app and check the pending activations, if the activation appears in this screen select "Retry" to push the activation to the Cloud. Please wait 3 minutes before starting the process again.

4.1 GENERAL FEATURES
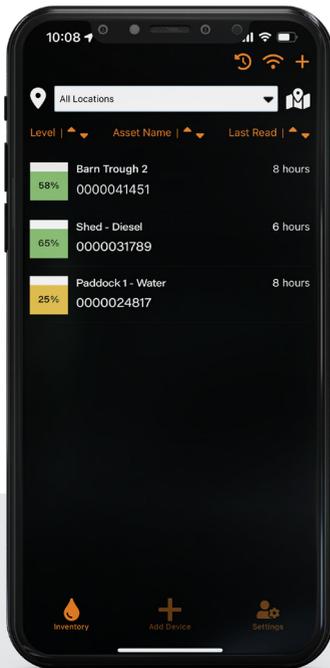
Main inventory page

On this page, you can view all installed assets, current asset levels at each location and when the last message was updated for each asset.
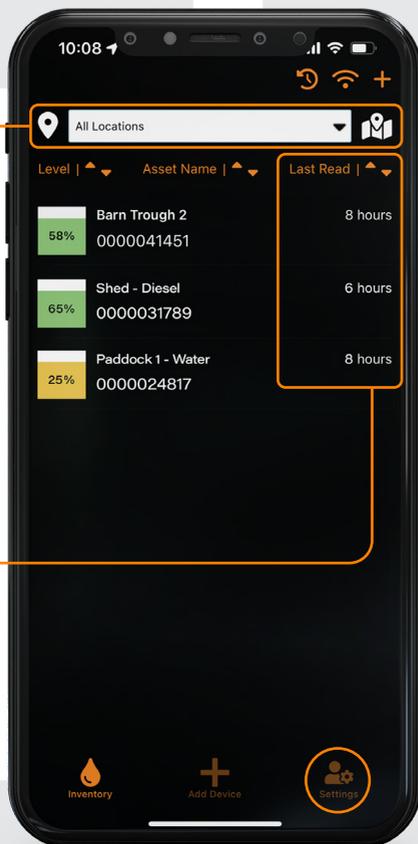
Asset detailed view

Select an asset from the Inventory Page to view a detailed historical view of the selected assets' fill levels. At the bottom of the page, you can choose the data period to display.

Location dropdown

The location dropdown lets you view a list of all locations within your account and allows you to select a particular asset to show in the inventory list.

Wi-Fi symbol

The Wi-Fi symbol appears on the top right corner of the inventory page. This indicates if your phone currently has an active data signal.

Signal is Active

Signal is Not Active (Offline Mode)

10:08

All Locations

| Level | ▲ ▼ | Asset Name | ▲ ▼ | Last Read | ▲ ▼ |

58%	Barn Trough 2 0000041451	8 hours
65%	Shed - Diesel 0000031789	6 hours
25%	Paddock 1 - Water 0000024817	8 hours

Inventory   Add Device   Settings

Data range

The last 3 Days, 7 Days or the last 30 days. In the top right-hand corner, you can see when the last data message was received.

Settings

Here you can set the app language, toggle between tenancies, log out of your account or update satellite data.
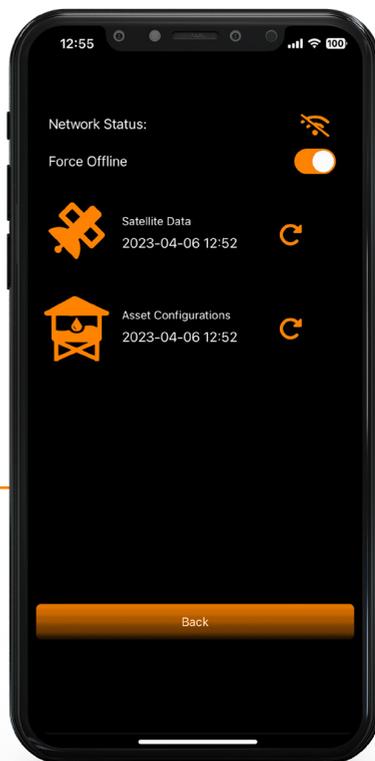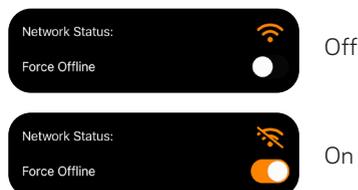
4.2 OFFLINE MODE

The app has a feature called "Offline Mode", which allows for activation flow to be completed without a Wi-Fi connection or mobile data. This feature is useful for installations in remote areas.

Offline Mode activates automatically when the phone is not connected to Wi-Fi or mobile data. In the areas where mobile service is available but does not work reliably, we recommend forcing the app into Offline mode.

The activation process can be completed offline, and the information will be submitted later once the phone is connected to Wi-Fi or mobile data.

Offline Mode:

Network Status:
Force Offline — Off

Network Status:
Force Offline — On

Completing activations post offline mode

1 Complete the standard activation process.

2 Once your mobile phone has Wi-Fi or mobile data. Open the app, from the "Inventory Page" select the circular arrow 🕙 in the top right corner. On this page, you will see a list of any pending activations that were completed in "Offline Mode".
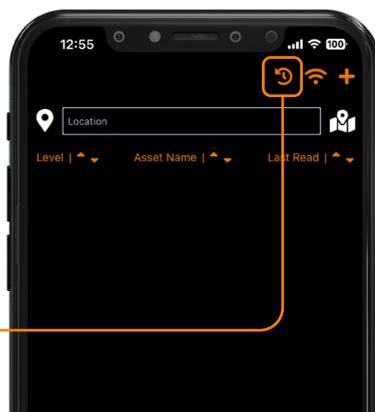
3 Select "Retry" to upload the information to the cloud and complete the process.

 Pending Activation

This icon will show when the device activation has been performed offline (all data captured).

 Successful Activation

This icon will show when device activation has been submitted successfully

---

 Activation Error

This icon will show when an error has occurred during submission. Please submit the error to Customer Support by using the "contact Support" button available.
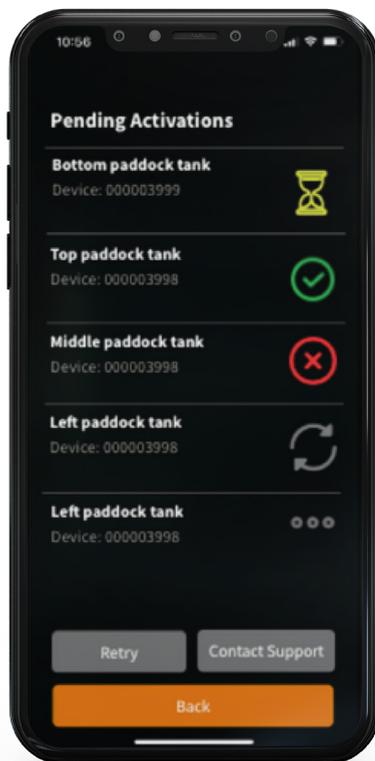

 Submission in Progress

This icon with show when the device activation is being submitted

---

○○○ **Incomplete Activation**

This icon will show when the asset has been configured and the device has been activated , but no images were taken. Clicking on this icon resumes activation flow.

4.3 SETTING ALERTS

From the main inventory page, select the asset for which you want to set alerts. This will open the graph page for that asset:

1 At the bottom of the graph page, you will see a bell icon. Click on this icon to open the alert page.

2 On the alert page, you will see four thresholds that can be set. The first two thresholds are for increases in the fill level, which are labelled "very high" and "high." The next two thresholds are for decreases in the fill level, which are labelled "low" and "very low." Enter the fill percentage for each threshold. We recommend adding a buffer to the percentage you select to account for the time it takes for the next satellite pass over.

3 To receive notifications, you can enter your email address and/or mobile number in the corresponding section. In the "Send Email" section, enter the email address where you would like to receive notifications. You can add multiple email addresses by separating them with a comma.

4 In the "Send SMS" section, enter the mobile number where you would like to receive notifications. You can add multiple mobile numbers by separating them with a comma.

5 Once you have entered all the necessary information, click on "Save" to confirm your settings. You have successfully set alerts for your asset. If the fill level of your asset reaches any of the thresholds you set, you will receive an email and/or an SMS notification.

4.4 MAP VIEW

From the main inventory page, select the asset for which you want to set alerts. This will open the graph page for that asset:

1 At the bottom of the graph page, you will see a map and pin icon. Click on this icon to open the map view page.

2 On the map view page, you will see a map with red pins where your assets are located. When clicking on one of the pins, it will display the name, fill level of the asset in percent and the address of the asset. You can navigate the map by moving it with one finger on the screen. You can zoom in and out by using two fingers in a pinching movement. Depending on the software of your phone, the map will either be powered by Apple Maps or Google Maps.

⚠ If the device fails to provide a map view of your assets, you will receive the error message "GPS data not found".

The following provides the most common reasons the map view might fail:

• Your phone does not have a mobile data or a Wi-Fi connection. Make sure your phone is connected and try again.

• The GPS information on the device has not been updated. The satellites collect the GPS information about once a week. If you have activated your device at one location and then moved it to another, you will have to wait up to a week for the GPS data to be updated. Even if the map shows your device at a different location than you expected it to be, it does not mean that the device has been moved.

SECTION 5   Troubleshooting
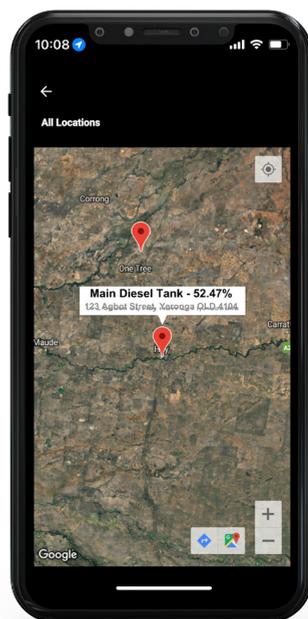
5.1 SATELLITE UPDATE

If you have activated your device and it has been more than 72 hours without receiving any readings/data through your app, it is recommended to update the satellite information.

To complete a satellite update, follow these steps:

1   Place the device on a flat surface. This is important as the "Satellite Update" can take 2-3 minutes and the phone and unit must remain stationary during the process.
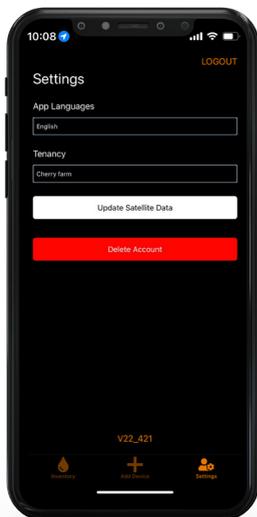
2   Open the app and go to "Settings", click on "Update Satellite Data" to start the network information update process.

3 Press the blue "Refresh" button and wait for the pop-up to say "File Saved Successfully", then press "Update Device" to start the process.

4 For **iPhones**: put the phone's top side against the edge of device where the QR code/NFC icon is located (dependent on model). The top frame of the phone should be touching or close to the base of the antenna. You will feel a vibration when the phone connects - do not move your phone.

For **Android**: this position may vary depending on what device you have. First, try the position used for iPhones, as previously shown. If this does not work, wait 3 minutes before trying the second position: place your phone horizontal to the antenna until you feel a vibration. Refer to the NFC troubleshooting section for more information for your specific phone make and model.

5 If the phone is in the correct location, it will begin updating the satellite data.

Network Information Update in Progress. Please keep your phone on the device.

6 Leave the phone in this position until the update process is finished. This should take approximately 2-3 minutes - keep the device stationary.

Once the green circle is filled, you will see the message **"Network Information Updated Successfully"** - you can then remove your device.

Network Information Update in Progress. Please keep your phone on the device.

5.2 MESSAGE OPTIMISATION

This feature optimises the messages between the devices and satellites.

To complete the message optimisation, for your device:

1 Launch the app.

2 From the "Inventory Page" select the"+" in the top right corner.

3 Hold your phone in the correct position against the device to complete the NFC update.

4 When your mobile phone is in the correct position, it will vibrate to indicate it has connected with the device.

5 Ensure your phone is kept still during the process.

6 You will receive a message "Success" once the process has been completed successfully.

5.3 ASSET PROFILE UPDATE

If you have set the asset dimensions incorrectly, it is very easy to update this information.

1 Launch the app.

2 From the "Inventory Page" select the asset which you would like to update the profile for.

3 This will open the graph page for that asset. At the bottom of the graph page select the magnifying glass icon.

4 This will open the "Asset Settings Page" update the dimensions.

5 Select "Save".

5.4 ACTIVATION NOT AT INSTALLATION SITE OR MOVING THE DEVICE TO A NEW LOCATION - Reactivate for GPS Co-ordinates Update

Once the device is activated, it records the GPS coordinates of its location to determine its position relative to the satellites and their paths.

However, if the device is activated at a location different from its current installation site, it is recommended that a "Message Optimisation" is performed on the device to update the GPS coordinates for the current installation site.

To complete the "Message Optimisation" process, please refer to the appropriate section.

SECTION 6 | Specifications

6.1 TECHNICAL INFORMATION

The device was designed to have a battery life for 7 years of autonomous operation (battery life depends on transmission frequency and deployment conditions). Please contact Customer Support if you have further questions.

The Satellite Liquid Monitoring System has the following certifications:

AUS/NZ: RCM
FCC 2ATKL-M2-24
IC 25148L-M224

6.2 REGULATORY INFORMATION

Warranty and product lifespan - extended manufacturer's defect warranty. Refer to terms and conditions on our website **am.gallagher.com**

6.3 PRODUCT DIMENSIONS

Device measures 11O x 85 x 150 mm
Enclosure measures 235 x 246 x 220 mm
Cable mounting bracket measures 256 x 256 x 63 mm
Sensor Cable length is available at 3 metres/9.8 feet or 8 metres/26.25 feet

SECTION 7 | FAQ

7.1 GENERAL QUESTIONS

For helpful videos and FAQs, please visit website: **am.gallagher.com**

7.2 SUPPORT

am.gallagher.com/support/customer-technical-support