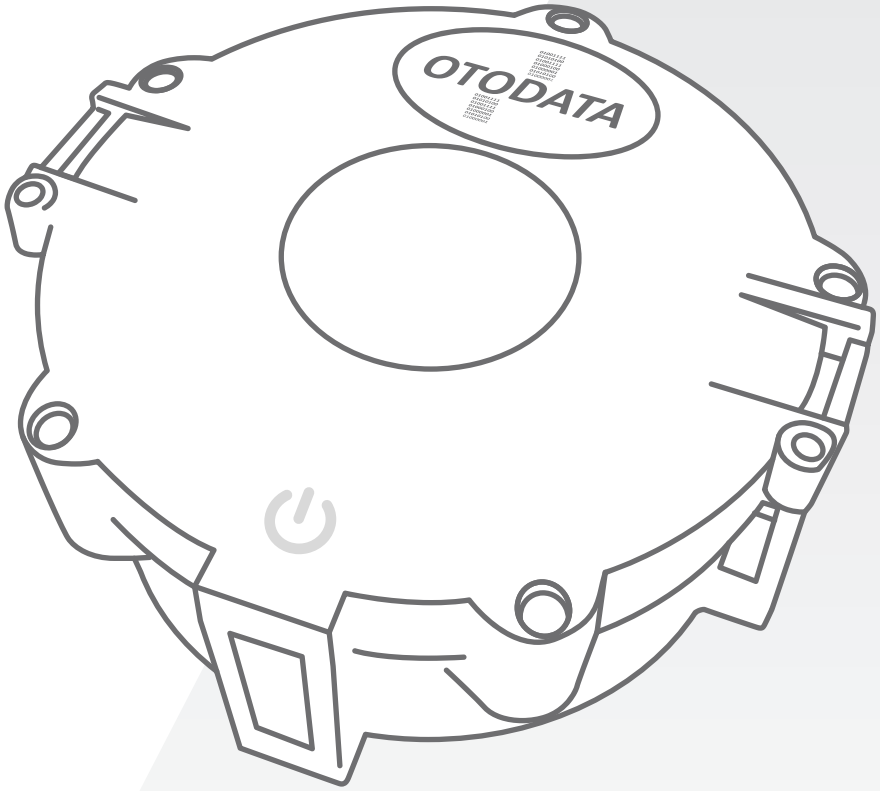
OTODATA

Installation Procedure

Wireless Radar Monitor

Distance Meter

Models: DM2700



GRA-0103-EN_000 IM_DM2700 2025-11-26

Support

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After-hour Emergency Support (EST)

+1 (833) 529-9499

Table of Contents

SAFETY AND WARNINGS

⚠ **The installation of this device is reserved only for properly trained personnel, and must be approved by the safety body having jurisdiction.**

⚠ **The plastic enclosure is a potential electrostatic hazard. Clean only with a damp cloth and do not mount in a high velocity dust laden atmosphere.**

⚠ **Batteries must be changed in a non-hazardous area or when the hazardous atmosphere is known not to be present.**

⚠ **The equipment must only be powered by battery packs supplied by Otodata Wireless Network Inc specifically those marked 4-5508 and carry the instruction to use on DM2700.**

⚠ **Ordinary locations evaluation was not conducted. The certificate holder is responsible for maintaining an ordinary locations certification in good standing by an NRTL.**

No Other Devices Required

Our radar monitor is fully autonomous.

No other device is required for our DM2700 Radar Monitor to connect to the Nee-Vo Portal.

Adjust Reporting Schedule

The Wireless Radar Monitor comes preactivated with a default reporting schedule that transmits data every Tuesday and Friday at 3 AM. Log in to the Nee-Vo Portal to adjust the data transmission frequency and other settings.

Scan the QR code or visit neevo.otodata.ca/#/signin

Specifications

Tank Leveling Monitor through Pulse Radar Technology

Radar Monitor

Models: DM2700-VSB0
DM2700-VSC0

Applications

Applications: Additives, Chemicals, Diesel Fuel, Gasoline/Petroleum, Hydraulic Fluid, Lubricants, Motor Oil, Waste Oil, Water and other hazardous/non-hazardous liquids

Measurement & Performance Specifications

Radar Range	>3.2 in (10 cm) to < 22 ft (6.75 m)
Radar resolution	Up to 2 mm
Measurement Range	Invasive: Aqueous: 0.14 m–6.75 m (0.46–22.15 ft) Hydrocarbon: 0.1–4 m (0.33–13.12 ft) Non-Invasive: Hydrocarbon: 0.1–3 m (0.33–9.84 ft) Aqueous: 0.14–2 m (0.46–6.56 ft)

Data Reporting & Interfaces

Reporting	Tank Level (Ullage) Default: 1 report every Tuesday and Friday at 3 AM EST with hourly logs After install: Daily reports at 3 AM EST with hourly logs
Data Interface	Tekelek Radar app & Rochester BLE app (iOS/Android) via Bluetooth
Automated Diagnostics	Echo Quality strength; Connection status; Battery level

Electrical Specifications

Power Source: Replaceable Lithium LiSOCl2 battery
Battery Life: Minimum 10 years

Communication Interfaces

Cellular	CAT-M1 as primary, 2G fallback, NV-IoT is 2nd fallback
Local Connectivity	Tank Level (Ullage) Default: 1 report every Tuesday and Friday at 3 AM EST with hourly logs After install: Daily reports at 3 AM EST with hourly logs
Positioning	GPS/GLONASS

Environmental Specifications

Temperature	Operating: -25°C (13°F) to 50°C (122°F) Storage: 0°C (32°F) to 30°C (86°F)
Relative Humidity	10 to 100%
Altitude Range	< 6500 ft (< 2 km) above sea level
Enclosure	Prevents condensation; requires vented tank
Environmental Protection	IP68, Outdoors

Certifications

Regulatory: FCC,IC

IECEx:
Ex ia IIB T4 Ga (-25°C ≤ Tamb ≤ +50°C) ;
Ex ia IIB T4 Ga (-30 °C ≤ Tamb ≤ +50 °C)

ATEX:
II 1 G Ex ia IIB T4 Ga (-25 °C ≤ Tamb ≤ +50 °C) ;
II 1 G Ex ia IIB T4 Ga (-30 °C ≤ Tamb ≤ +50 °C)

North American:
Class I, Zone 0, AEx ia IIB T4 Ga
Ex ia II B T4 Ga
Class I, Division 1: Groups C and D: T4 -25°C ≤ Tamb ≤ +50°C or -30°C ≤ Tamb≤+50°

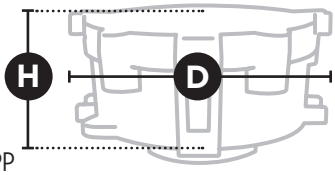
Physical Dimensions

Height: 49.4 mm (1.94 inch)
(does not incl. threading at base)

Diameter: 115 mm (4.53 inch)

Weight: 280 g (10 oz)

Housing Material:
UV-stabilized PVDF (Kynar) and PP



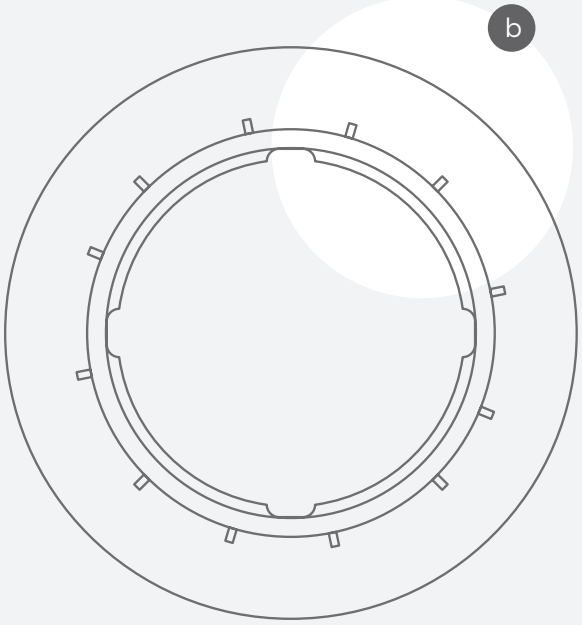
Miscellaneous

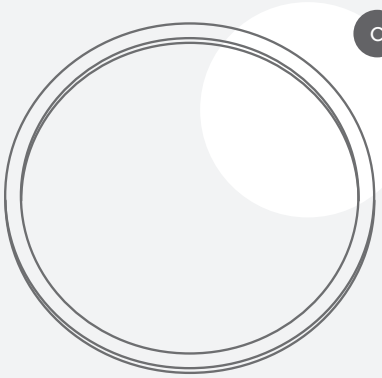
Mounting:
- Invasive (2 inch NPT)
- Non-invasive (adhesive pad for plastic tanks)

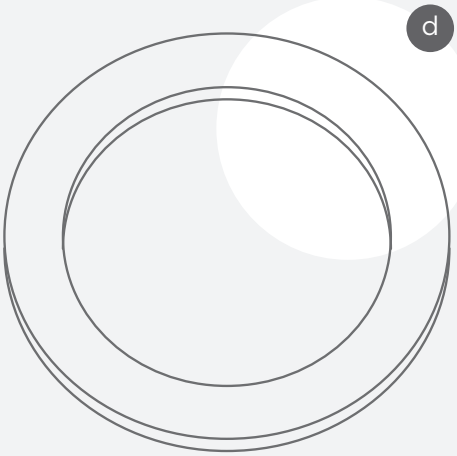
Box Contents

Your Distance Meter kit will contain the following items:

a. One radar monitor
b. One threaded adapter
c. One sealing gasket
d. One mounting ring (magnetic and adhesive)
e. One 2 x 5 mm magnet
f. One label with serial number (sticker)







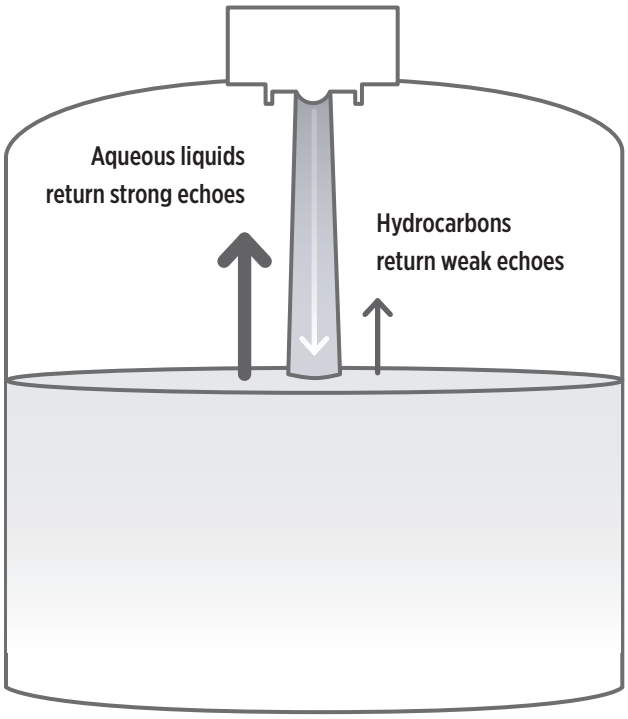
Understanding echo signal strength

It is important the basic composition of the liquid is known when installing and commissioning the device. This is because the strength of the radar echo is related to the type of liquid that is being measured.

Different liquid compositions have a varying ability to reflect radar signals back to the sensors.

Liquid Type	Mounting Type	Range
Aqueous	Invasive	0.14–6.75 m (0.46–22.15 ft)
Hydrocarbon	Invasive	0.1–4 m (0.33–13.12 ft)
Aqueous	Non-Invasive	0.14–2 m (0.46–6.56 ft)
Hydrocarbon	Non-Invasive	0.1–3 m (0.33–9.84 ft)

The echo signal strength can vary due to external factors such as condensation or whether the sensor installation is non-invasive (with the signal passing through the tank wall) or invasive. As such, it is important the sensor is installed as flat as possible.

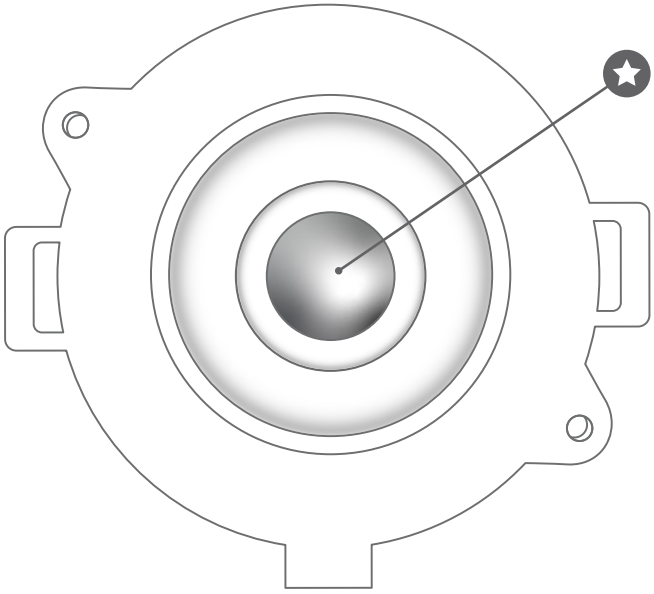


IMPORTANT

The tank should be vented to avoid build-up of condensation on the exposed part of the DM2700 enclosure (lens ★) inside the tank.

Heavy condensation will interfere with the radar's echo signal and significantly reduce the radar's range. As a result, tank level readings can become unreliable.

For tanks over 2 meters in height, it is strongly recommended to use an invasive mounting method.



How Tank Shape and Construction Impact Radar Performance

The tank's shape and construction material can negatively impact the radar's accuracy.

Below is a list of factors to consider prior to installation.

a. Metal tanks

Metal tanks can cause very strong signal echoes, specifically when "boxed in" (especially in the near zone).

Likewise, metal tank's with a domed top can cause unusual geometrical echo effects (particularly in the near zone).

b. In-tank obstructions

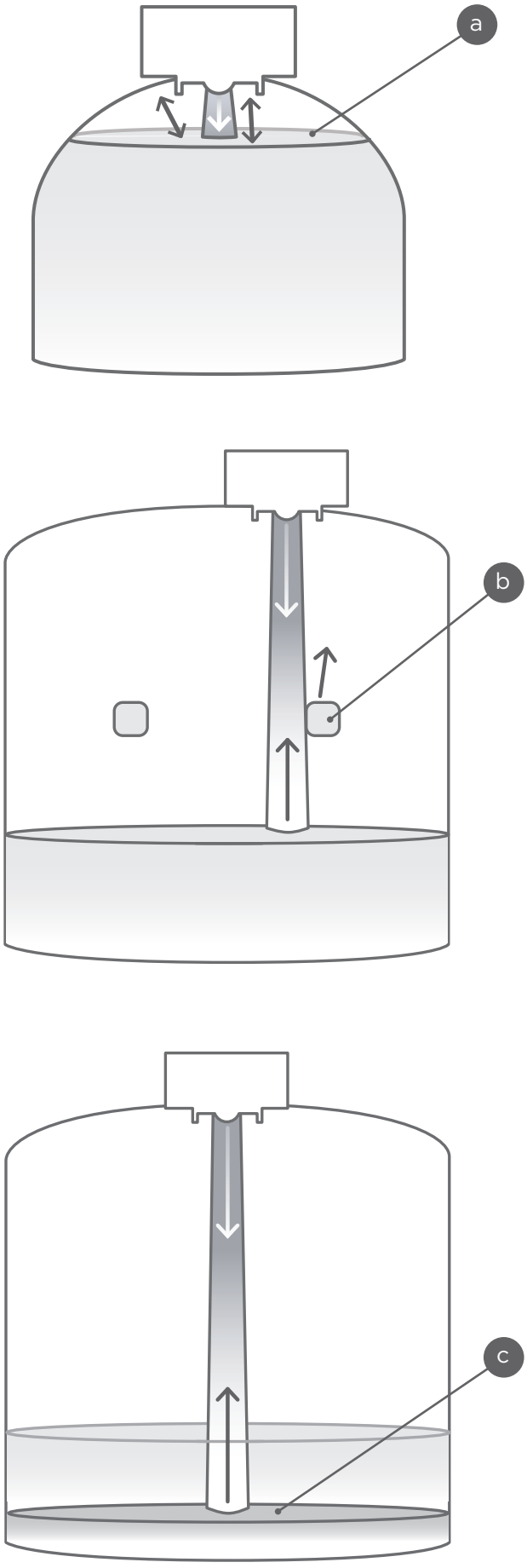
In-tank obstructions such as reinforcement bars can interfere with the Radar's signal and cause erroneous readings.

The Radar Monitor requires unobstructed access to the liquid's surface.

c. Water at bottom of tank

Liquids with a low dielectric constant like Kerosene allow the radar signal to pass through and reflect off the water below.

The water-level below the product should be taken into consideration when inputting the tank height and setting level reading alarms.



Pre-install Considerations

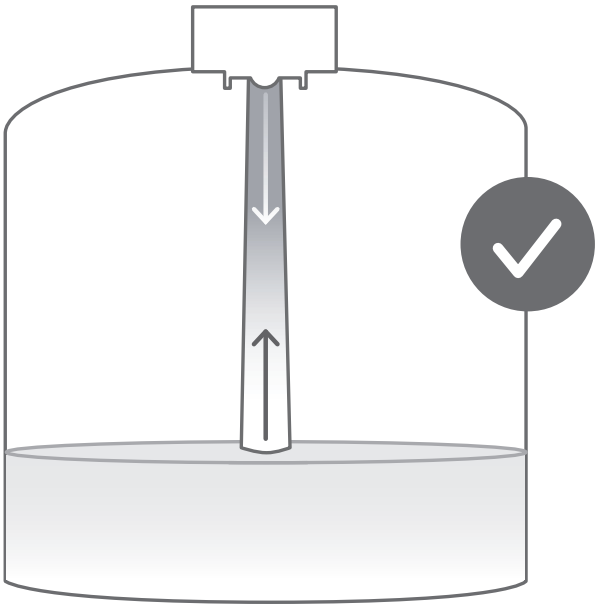
Sensor Alignment

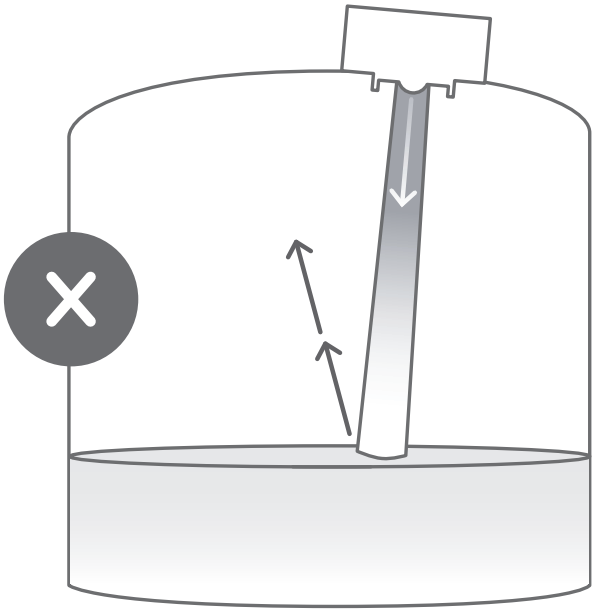
The Radar Monitor transmits a narrow "beam" of RF energy directly downward toward the surface of the liquid. The beam is then reflected back toward the radar sensor as an *echo.*

The *time of flight* (time it takes for the echo to reach the radar) is measured to determine the *ullage*.

In order to maximize the accuracy of level readings and minimize any potential erroneous readings:

- ensure the sensor is seated horizontally above the surface of the liquid,
- is located in a central location within the tank,
- the beam can pass straight down, unobstructed by in-tank elements such as reinforcing bars.





Preparation

1. Record the Radar Monitor's serial number

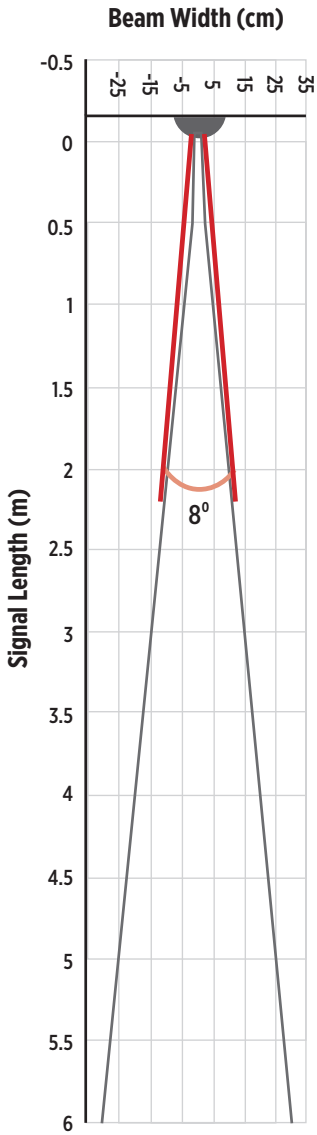
Ensure you take note of the Radar's serial number (S/N). This will be needed later when searching for the device on the Monitored Assets page in the Nee-Vo Portal.

2. Evaluate what installation method is most suitable

Before installing the Radar Monitor, refer to the Signal Diversion Chart below to calculate whether there is enough unobstructed space in-tank for the Radar's beam.

This verification is especially necessary if the chosen port hole is close to the tank's wall as it could result in inaccurate readings should the Radar beam hit the interior wall or any other obstruction in-tank.

In the event that the only port hole available is not suitable, it may be necessary to create a new port hole.



Tank Hight		Distance from Wall	
Metric (m)	US (in)	Metric (cm)	US (in)
0.5	19	4.7	1.8
0.75	29	5.7	2.3
1	39	6.8	2.7
1.25	49	7.9	3.1
1.5	59	9.0	3.5
1.75	69	10.1	4.0
2	79	11.2	4.4
2.25	89	12.2	4.8
2.5	99	13.3	5.2
2.75	109	14.4	5.7
3	119	15.5	6.1

Installation Instructions

Physical Install

3. Install the Radar Monitor on tank

Invasive Installation ▲

Tanks which have a 2" threaded hole can be used to install the radar monitor directly. With the use of the sealing gasket and the radar monitor directly over the hole. No need to use the threaded adapter.

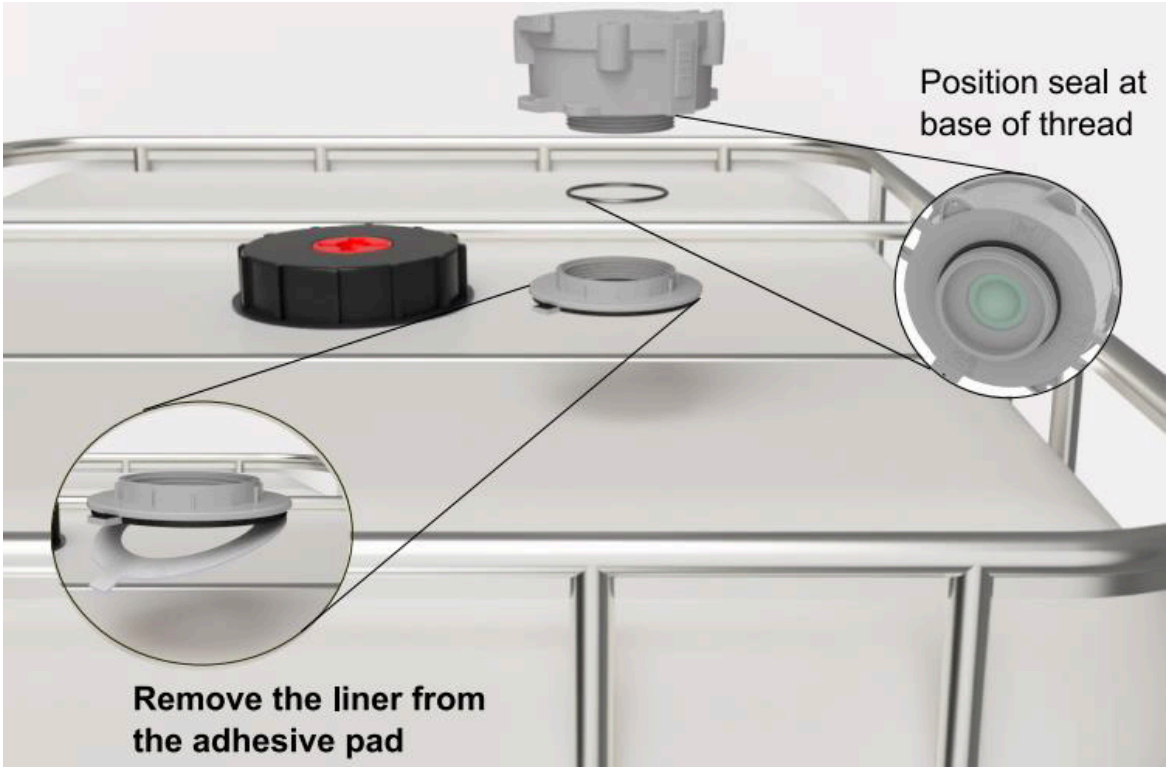
CAUTION: If you are drilling a hole into a filled tank, ensure the debris does not contaminate the fluid in the tank.

Non-Invasive Installation ▼

ONLY PLASTIC TANKS that do not have a 2" threaded hole available can use the included threaded adapter to attach to the top of the tank and screw in the radar monitor. No pre-drilled holes are required.

CAUTION:
1) Ensure to avoid installation where pools of standing water exist.

2) Measuring Aqueous liquids may cause condensation build up on the underside of the tank, under the monitor.



4. Finalize Installation in the Nee-Vo Portal

To ensure the Radar Monitor is installed, follow these validation steps using the Nee-Vo portal:

a. Log in to the Nee-Vo portal (neevo.otodata.ca/#/signin).

b. In the Nee-Vo Portal, select Tanks in the main menu, then Monitored Assets.

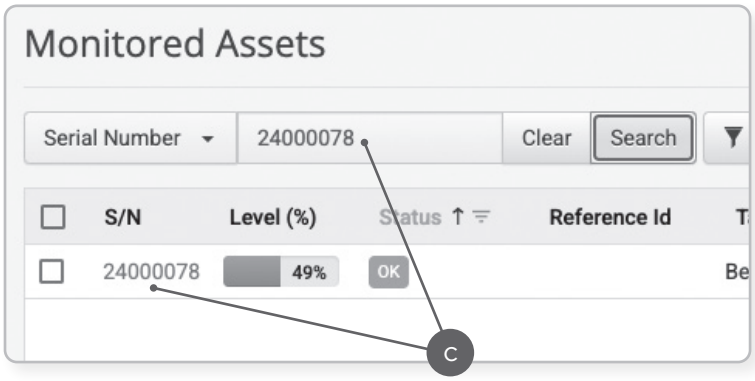
c. Enter the Radar Monitor's serial number (S/N) into the searchbar located in the upper left corner of your screen, and click Search. Click on the serial number from the search results.

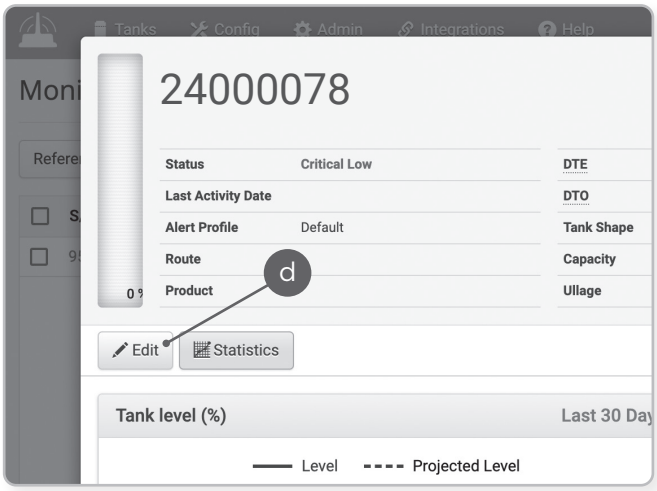
d. Click on Edit.

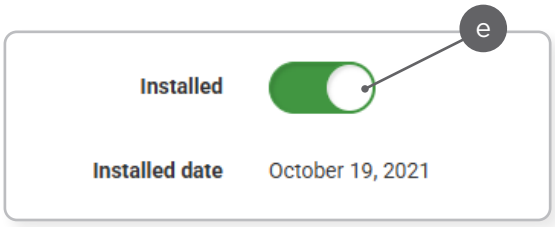
e. Ensure that the Installed switch is toggled ON.

IMPORTANT By toggling ON the *Installed* switch, the transmission schedule will increase in frquency from the default setting of *twice weekly* to one report daily (daily report will contain hourly logs).[1]

Additionally, when an alert profile is active, you will also receive transmissions based on thresholds you configure.







1 The very first report will only be available at the next scheduled transmission. By default, scheduled transmissions are sent every Tuesday and Friday at 3AM.

Tank Profile Setup and Configuration in the Nee-Vo Portal

IMPORTANT Before proceeding, ensure you've gathered the following data:

i. Outer dimensions of tank—*Width* and *Depth*.

Note: *Depth* (length) will usually be the longest measurement.

Note: If the tank is single-walled, dimensions should be measured from wall-to-wall. If the tank is double-walled or manifolded, you will need to measure dimensions from the welding line to the tank's wall.

ii. Tank's *Height*—measured by dip stick for maximum accuracy.

1. Creating a Custom Tank Shape

In the event that you are required to create a custom tank shape because no accurate formats exist, follow the steps below.

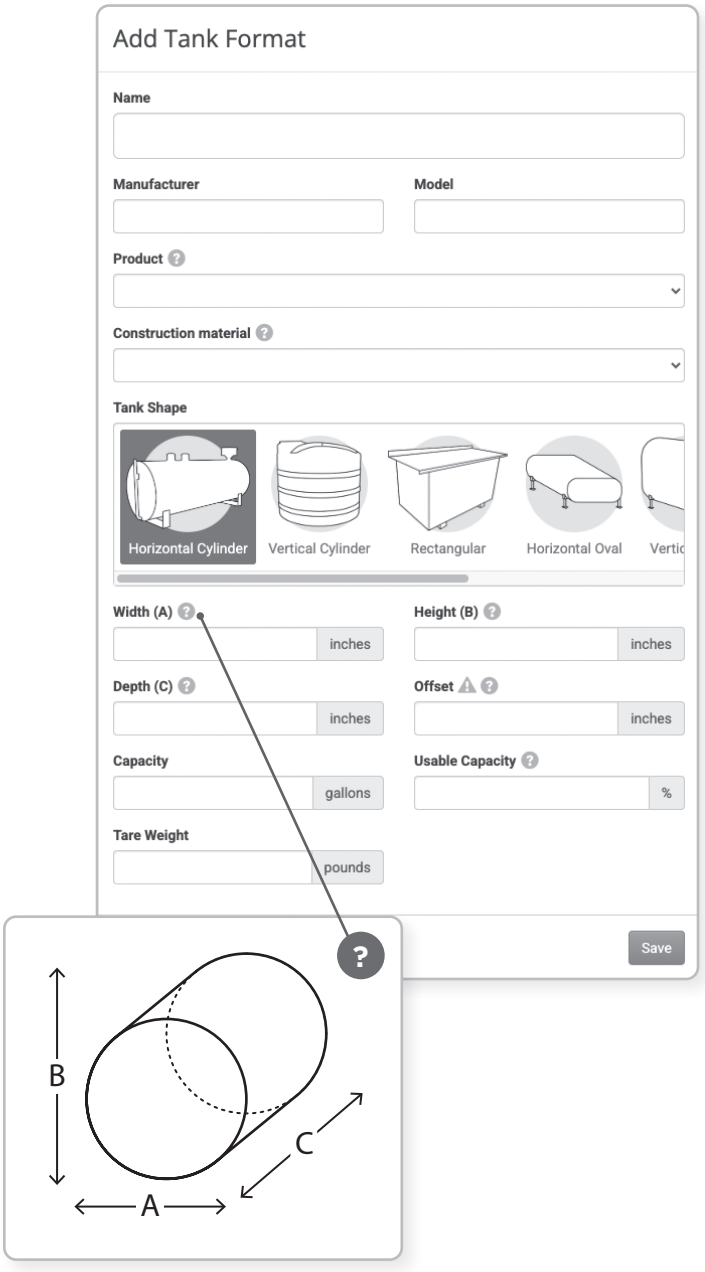
a. On the tank's *Details* page, click the Create button to the right of the *Tank Format* dropdown list, or click Config from the main menu, then Tank Formats.

b. On the *Tank Formats* page, click the Create a tank format button to the upper right of the screen.

c. On the tank format creation screen, input all pertinent information including the tank's *Construction Material,* its exact dimensions and a *Tank Shape*.

Note: Upon saving your new tank shape, some content will be *permanently locked* and unable to be edited (such as the *Product* and *Construction Material* fields). If you accidentally input the wrong information in a locked field, you will need to create a *new* Tank Format.

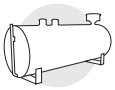
IMPORTANT Inputting a *Product* will make your tank shape exclusively available to tanks that are associated to that product. Example: If you choose *Propane* from the product dropdown list on the Tank Format creation screen, the tank shape will only appear as an option for tanks that are filled with propane. To avoid this, you may leave this field blank.



Tank Profile Setup and Configuration in the Nee-Vo Portal

Available Tank Shapes

When creating a custom Tank Format, you can use the following Tank Shape templates as a starting point.



Horizontal Cylinder

Width and *Height* are usually the same measurement.

Vertical Cylinder

Width and *Height* are usually the same measurement.

Rectangle

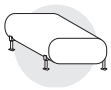
Cube, rectangular vertical, or rectangular horizontal shaped tanks fall into this category.

Note: Miscategorizing a rectangular tank as a *horizontal cylinder* will negatively impact the accuracy of the monitor's reading. Please avoid doing so.

Horizontal Oval

Width will be the smallest measurement.

Note: *Height* can sometimes be the longest measurement for this tank shape.



Vertical Oval

Height will be the smallest measurment.

Note: Width can sometimes be the longest measurement for this tank shape.

Horizontal Capsule

Dimension A: Diameter of the capsule, Dimension B: Radius of end cap, Dimension C: Total length end-to-end of capsule.

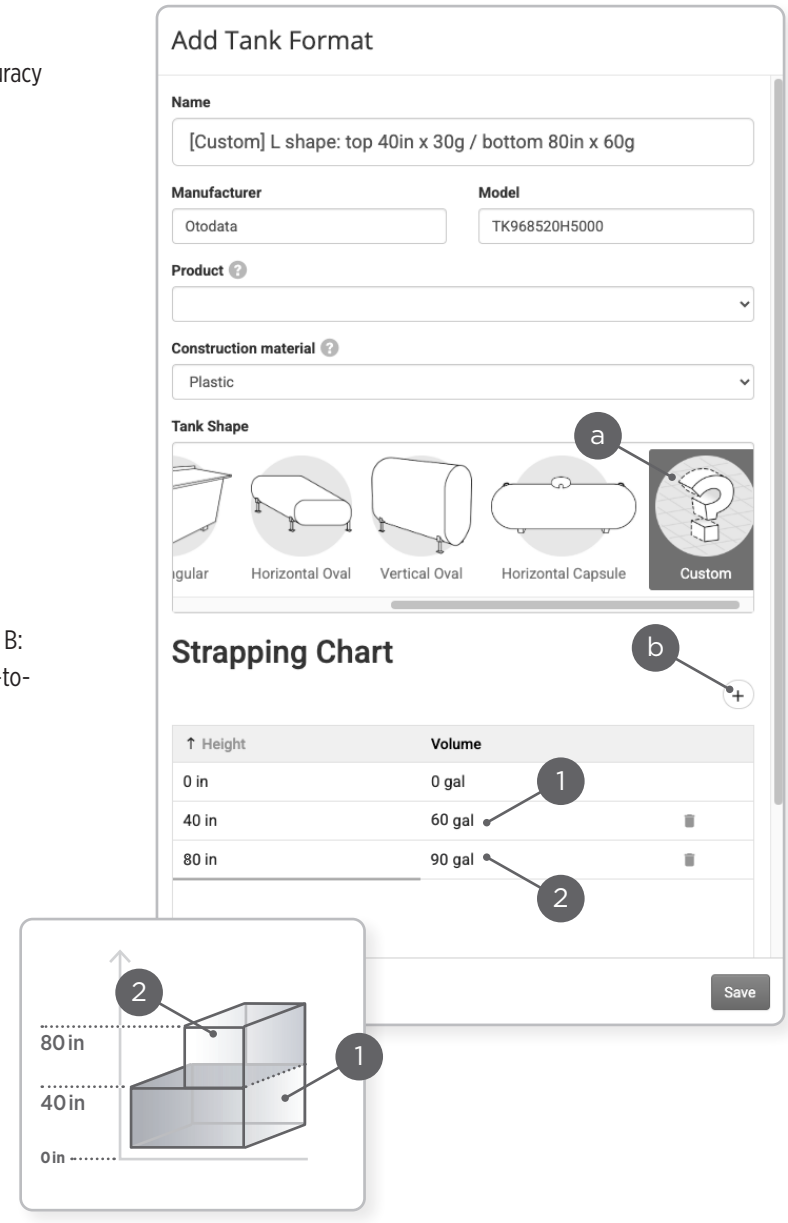
How to Create a Custom Tank Shape

For irregular shaped tanks, you will be required to create a custom shape.

a. In the Tank Shapes section, select the question mark icon (?) from the list.

b. In the Strapping Chart section, click the plus button above the table to create a new row and input the tank's Height and Volume (capacity) for each distinct section of the tank. Example: Top section 1, Bottom section 2.

c. Once done, click Save.



Tank Profile Setup and Configuration in the Nee-Vo Portal

2. Tank Setup and Configuration

a. In the Nee-Vo Portal, select Tanks in the main menu, then Monitored Assets.

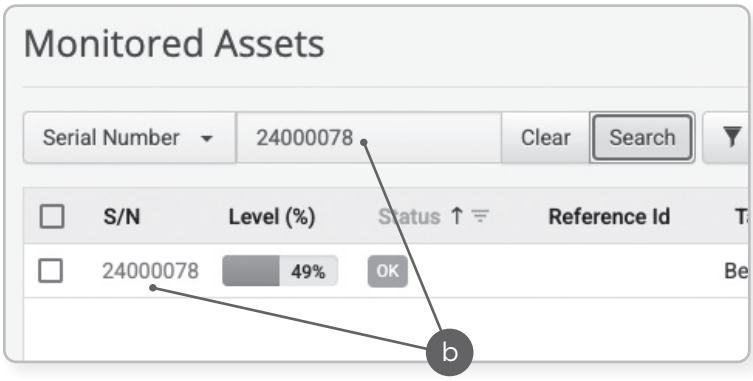
b. Enter the Radar Monitor's serial number (S/N) into the searchbar located in the upper left corner of your screen, and click Search.

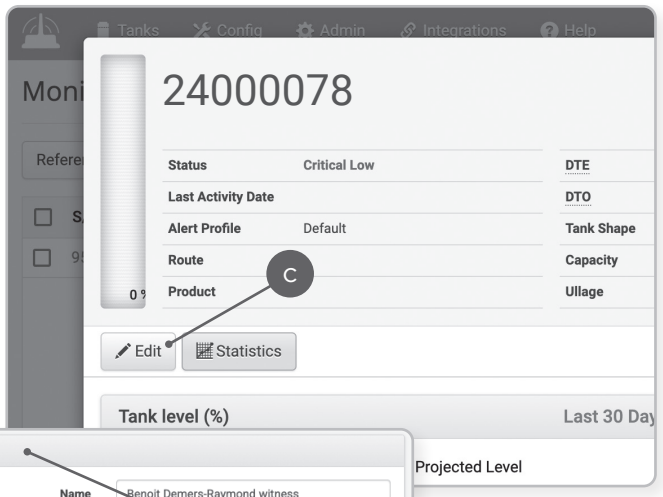
Once found, select the device from the list by clicking its serial number (S/N). This will open the *Details* page.

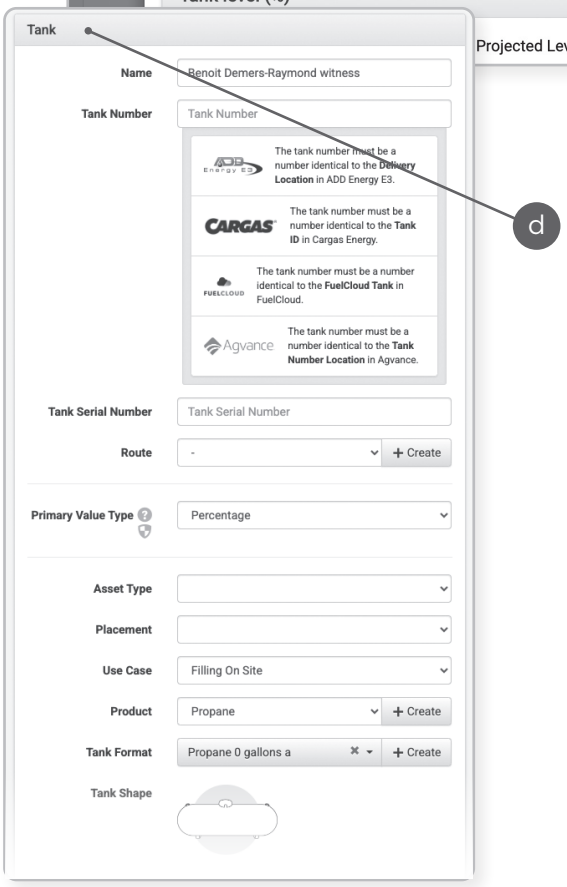
c. Click the Edit button.

d. Scroll down to the *Tank* section and carefully input all necessary information such as the tank's serial number, the tank's format, the product in-tank, its location, and more.

> Note: If you cannot find an accurate option in the *Tank Format* dropdown list, you will need to create a custom tank shape. See following step.







Tank Profile Setup and Configuration in the Nee-Vo Portal

3. Review level data report to validate installation

a. Log into your Nee-Vo Portal account and navigate to Tanks > Monitored Assets.

b. On the *Monitored Assets* page, click the Actions button in the upper right of your screen. Then Set Predefined View.

Select Level Sensor (default) from list, then click Confirm.

c. On the *Monitored Assets* page, click the Columns button in the upper right of your screen, and select S/N (Otodata's serial number) from the dropdown menu.

d. Search for the Radar Monitor via it's Otodata Serial Number.

i. Ensure *Serial Number* is selected from the dropdown menu to the left of the search bar.

ii. Then input the device's unique 8-digit serial number into the search bar and click Search.

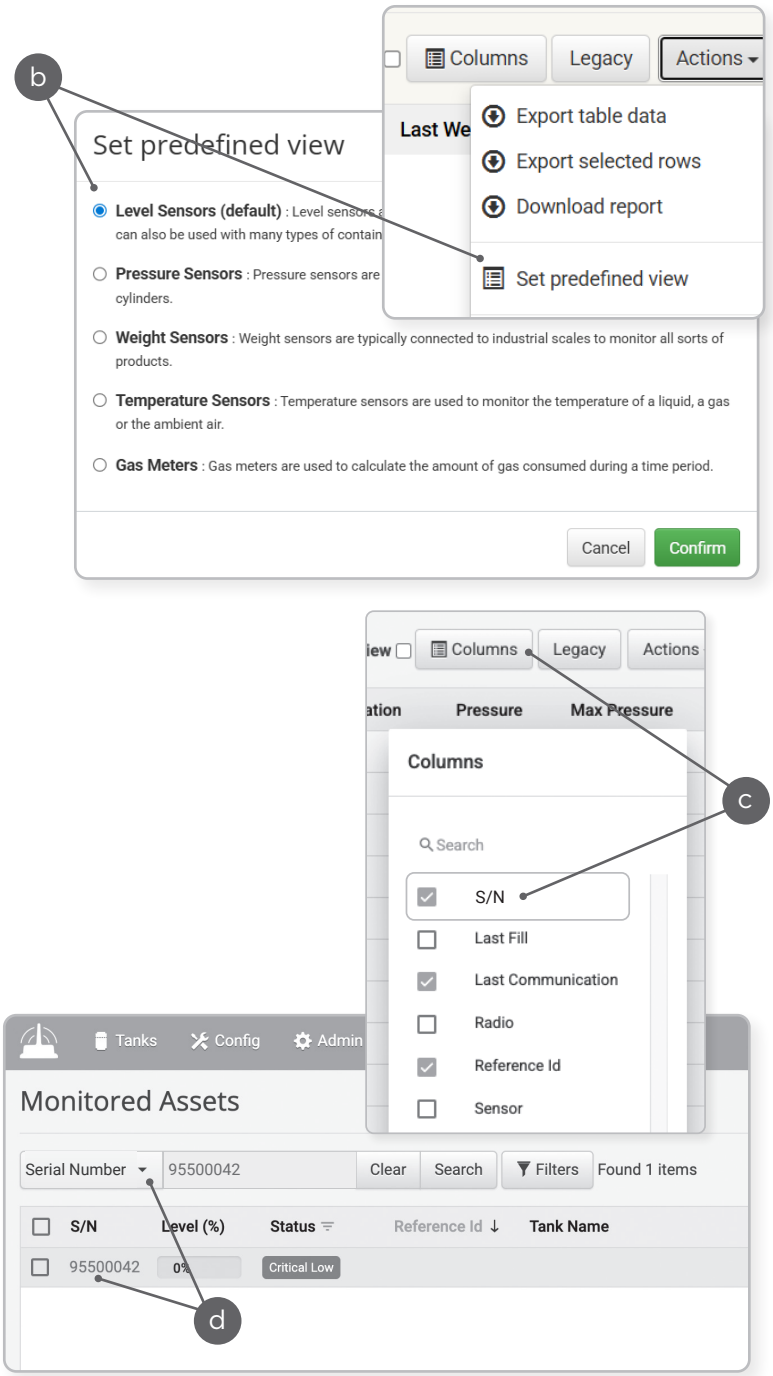
iii. Once found, select the device from the list by clicking its serial number. This will open the *Details* page.

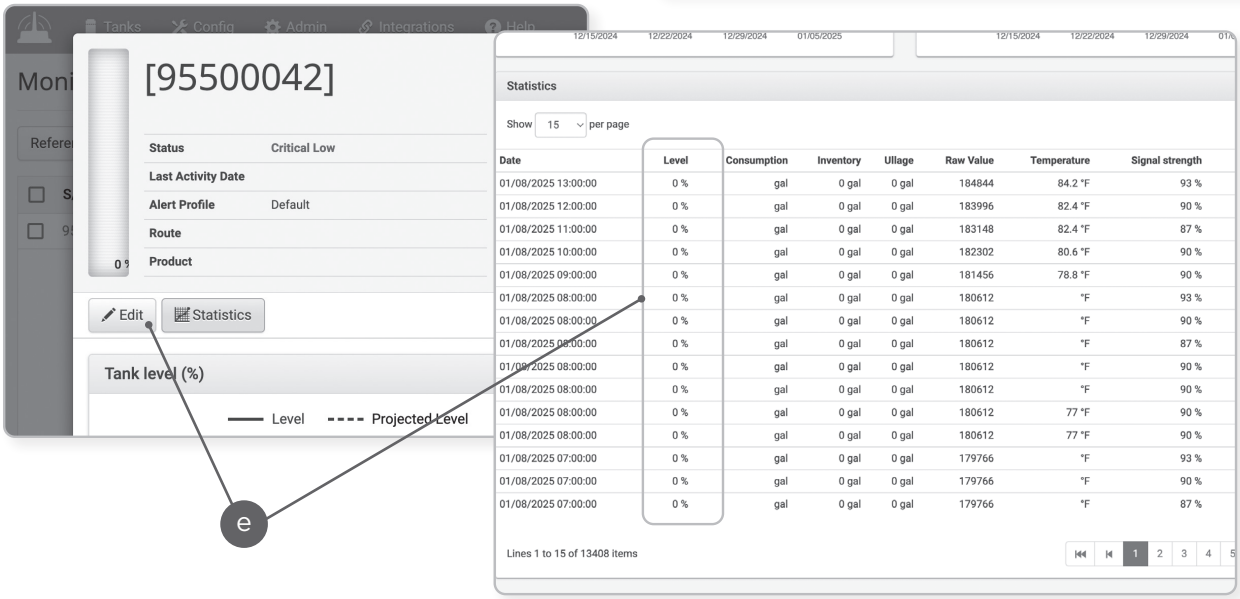
e. Review tank's Statistics.

i. On the *Details* page, click the Statistics button.

ii. Scroll down to the Statistics table to see a detailed list of all received readings.

A successful installation will produce decreasing Level (%) readings and a sharp increase when filled.





Tank Profile Setup and Configuration in the Nee-Vo Portal

An Alert Profile outlines the specific point at which an alert is triggered.

4. Create and Assign a Custom Alert Profile to the Radar Monitor

IMPORTANT When using radar monitors, *always* create a custom Alert Profile.

Figure 1. By default, alerts will be triggered at 0% (Empty), 20% (Critical Low), 30% (Low), 95% (High),[1] and 98% (Critical High). A Fill Detection alert will activate if the level increases by more than 15%, and a Rapid Draw alert will trigger if consumption exceeds 5% within 60 minutes.

4.1. From the Details Page

a. On the *Monitored Assets* page, find and select your Radar Monitor from the list to open the *Details* page. (See 3.d. for more information.)

b. Click on Edit.

c. Navigate to the *Alert Profile* section under *Monitor* and click Create to set up a new *Alert Profile.*

Fill in your preferred settings[1] and click Save.[2] It will be automatically assigned to your Radar Monitor.

4.2. From the Alert Profiles Page

a. Click on Config in the main menu, then select Alert Profiles.

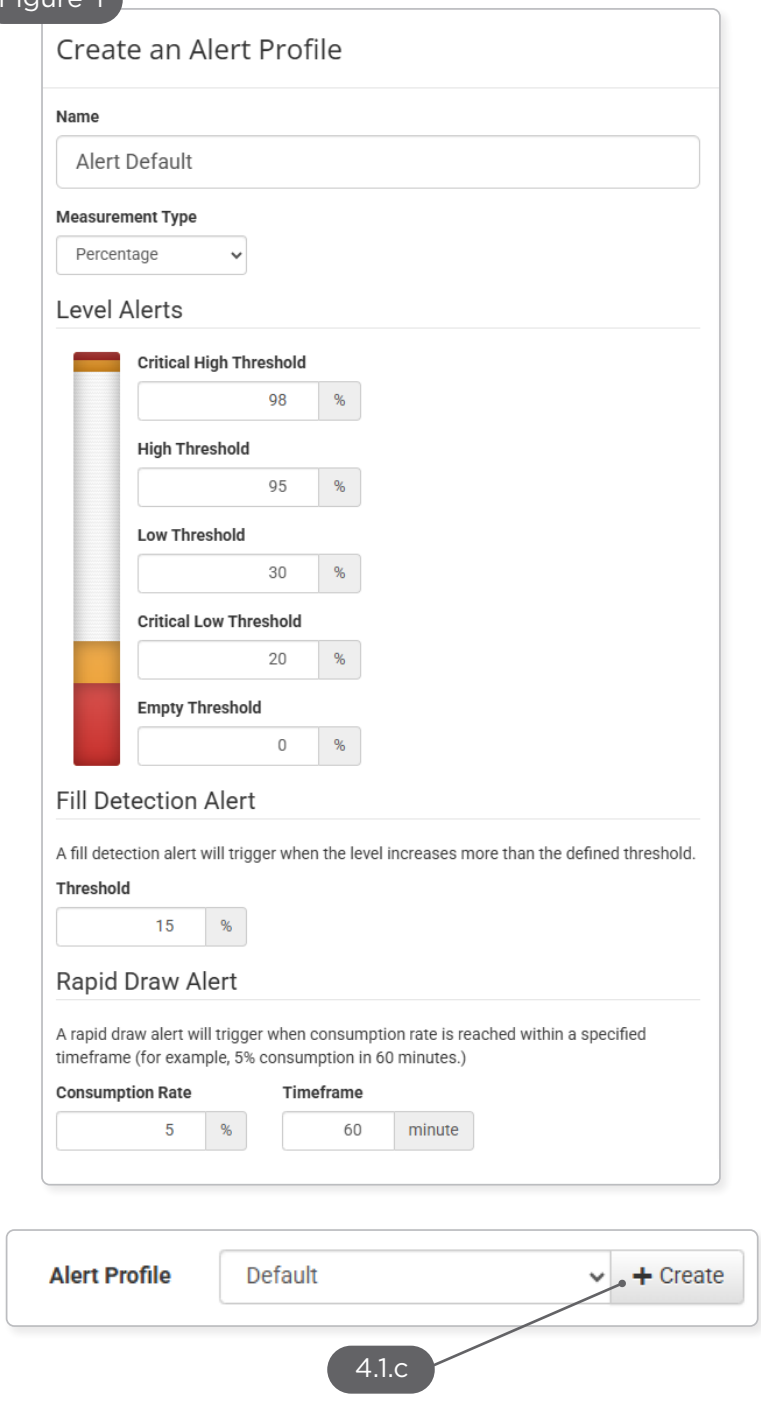
b. Then click the + Add a Profile button in the top right corner of the screen.

Fill in your preferred Alert Profile settings and click Save. Your Alert Profile will now be listed on the *Alert Profiles* page where it can be edited, and assigned to a tank or sensor.

c. On the *Monitored Assets* page, find and select your Radar Monitor from the list to open the *Details* page. (See 3.d. for more information.)

d. Navigate to the *Alert Profile* section under *Monitor* and select your new *Alert Profile* from the list. Be sure to scroll down after you're done to click Save and apply your change.

Figure 1



1 For the Radar Monitor, we recommend the *High* threshold is set to at least 20cm below the top of the tank which is typically around 90% (but be sure to confirm the actual tank size).

2 Your Alert Profile will also be listed on the Alert Profiles page where it can be edited, and assigned to any tank or sensor.

Understanding Your Sensor's Status

On the Monitored Assets page, there is a Status column that shows the current condition of each Monitor. This status helps quickly identify whether the radar monitor is communicating properly, if there are any active alerts, or if an intervention is needed.

Reference the legend below to help troubleshoot issues.

Status	Definition	Icon
Not Installed	The monitor is not yet installed.	Not installed
Critical High	Reading is above the Critical High threshold set in the alert profile.	Critical High
High	Reading is above the High threshold set in the alert profile.	High
Low	Reading is below the Low threshold set in the alert profile.	Low
Critical Low	Reading is below the Critical Low threshold set in the alert profile.	Critical Low
Empty	Reading is below the Empty threshold set in the alert profile.	Empty
Rapid Draw	Sudden consumption spike detected — exceeds rate and timeframe set in alert profile.	Rapid Draw
Fill Detection	Reading increase exceeds fill detection threshold — likely a tank fill.	Fill Detection
Inactivity Detection	No change in readings during the timeframe set in the monitor's settings.	Inactivity Detection
Comm Trouble	No reading received in the last 82 hours, indicating possible communication issues.	Comm Trouble
Waiting for Reading	Monitor is active but hasn't reported a reading yet.	Waiting for Reading
OK	Reading is within normal range (between Low and High thresholds).	OK

Members can watch step-by-step installation videos and shop online

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Members can purchase monitors and accessories like gauges, leads, mounting equipment and more via our online store.

IMPORTANT

Please take a moment to carefully read the installation instructions included with your monitors, and ensure you understand and respect local regulations.

ABOVE-GROUND TANKS	UNDERGROUND TANKS
Do not install monitors under lids.	**Plastic lid suggested. Metal lids will obstruct signal.**

Reading installation instructions will ensure maximum monitoring performance on all your tanks and installations.