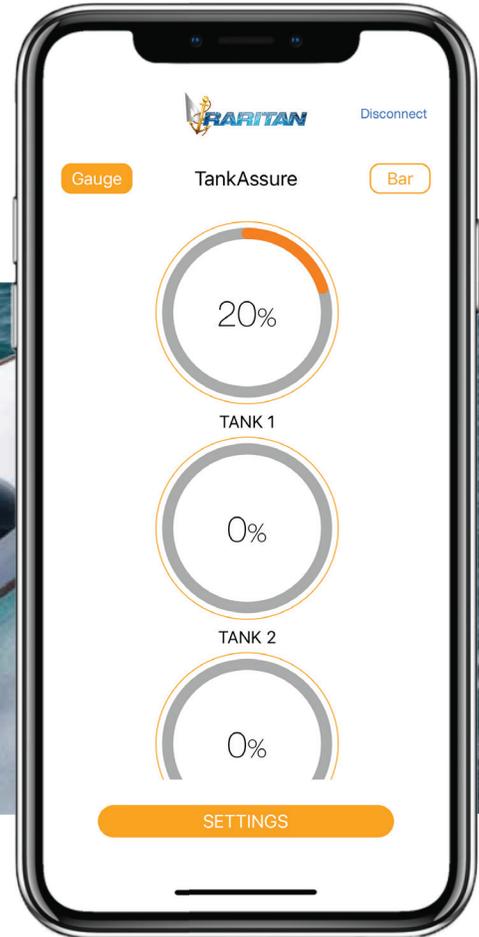


TANKASSURE®

With Blocked Vent Detection (BVD) Technology and Smartphone Capabilities

OPERATION, INSTALLATION AND DIAGNOSTIC INSTRUCTIONS



Link to
Online Warranty
Registration



Model and Serial Number:



856-825-4900
www.raritaneng.com

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TANKASSURE®

**With Blocked Vent Detection (BVD) Technology and Smartphone Capabilities
Model #15600**

OPERATION, INSTALLATION AND DIAGNOSTIC INSTRUCTIONS

 **WARNING:** *Raritan Engineering Company, Inc. recommends that a qualified person install this product. Equipment damage, injury to personnel or death could result from improper installation. Raritan Engineering Company, Inc. accepts no responsibility or liability for damage to equipment, or injury or death to personnel, that may result from improper installation or operation of this product.*

TANKASSURE® is a tank level monitor with Blocked Vent Detection (BVD) technology for up to four tanks.

Sensor can be used for sewage, grey water, and water tanks up to 40" (102cm) high.

TANKASSURE® works with a sensor installed from the top or side of tank. Blocked Vent, Tank Full and Tank Empty conditions are indicated by blinking LED Indicator Panel or Popup Screen on App.

Note: Irregular shaped tank levels in the phone app and on the wall switch monitor may not represent actual tank volume. Tank levels in the phone app are based on percentage of tank height, not volume.

Each System contains:

1. Wall Panel Control with Black Wall Control Cover and mounting hardware.
2. One TANKASSURE® Sensor Kit.
(Additional TANKASSURE® Sensor Kits, 15610, will be required for installations with more than one tank. One kit per tank)

**IT IS STRONGLY RECOMMENDED THAT YOU DOWNLOAD THE FREE
RARITAN APP.**

The APP makes it easier to calibrate your tank height as well as activating alerts. There are several other features available on the APP.

IMPORTANT: Read all instructions before proceeding with installation.

Wall Control Panel

Parts Included:

- Wall Panel Control (15621).
- Wall Control Cover: Black (221524B).
- One Submersible Level Sensor (15610).
- 15' (4.5 M) cable (15615).
- Top mount 1" NPT adapter (PLA18A).
- Uniseal® (640107).
- Wall Panel Gasket (STC563).

Note: systems with more than one tank will need additional TANKASSURE® Sensor Kits, 15610. Only one sensor per kit.

Tools Required:

- Screwdriver: Flat blade & Phillips-head
- Hole Saw 2 1/2"
- Jig Saw
- Drill with 5/64" (2mm) drill bit
- Wire Cutters / Strippers

Additional Materials Required:

- Stranded 18 AWG (1.0 mm²) 2 conductor cable (enough length to run from panel to power source).
- 3 Amp Fuse with Fuse Holder.

Specification:

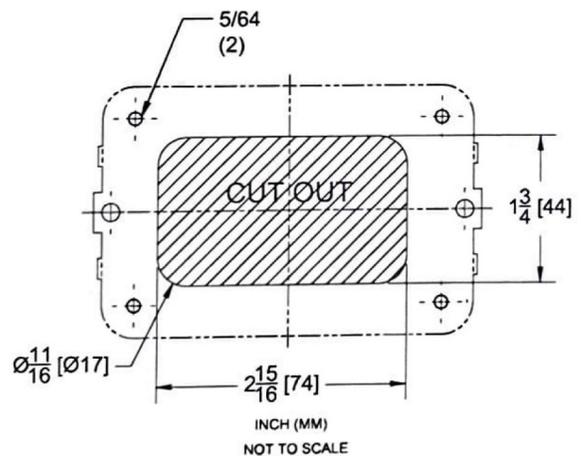
- Tank Type: Black, Grey, Fresh Water
- Tank Material: All
- Maximum Tank Height: 40" (102 cm)
- Voltage: 10-27 VDC
- Sensor Cable: 15' (4.5 M) long

Mounting Wall Control Panel

Note:

- Do not mount Wall Control Panel until calibration has been completed.
- Mount wall control panel in a central location to optimize maximum Bluetooth transmission distance.

1. Cut out cross-hatched area per FIG 1. Mark mounting holes using wall plate as guide.
2. After wiring and Calibration is complete, place gasket and secure control using mounting screws.
3. Install Black Wall Control Cover on Wall Control Panel.

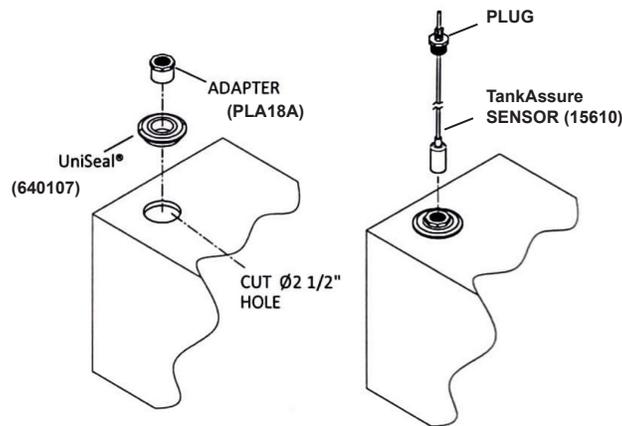


Installing Submersible Level Sensor

- Install Level Sensor in top or side of tank.

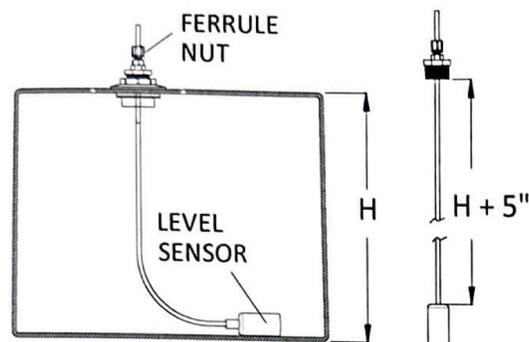
If tank does not have an existing 1" MPT fitting on top of tank, install Level Sensor Adaptor:

1. Cut 2 1/2" hole in top of tank.
2. Place UniSeal® in hole.
3. Install Adapter into UniSeal ®. Apply a lubricant (such as dish detergent) onto Adapter to aid in insertion if needed.



Installing Level Sensor

- Level Sensor should be installed where it is laying on its side.
1. Measure height of tank and add 5".
 2. Adjust depth of Level Sensor according to measurement as shown.
 3. Add thread sealant to plug.
 4. Lower the Level Sensor through Adapter Fitting.
 5. Screw plug into Adapter Fitting.
 6. Tighten Ferrule Nut.



IMPORTANT:

IT IS STRONGLY RECOMMENDED THAT YOU DOWNLOAD THE FREE RARITAN APP.

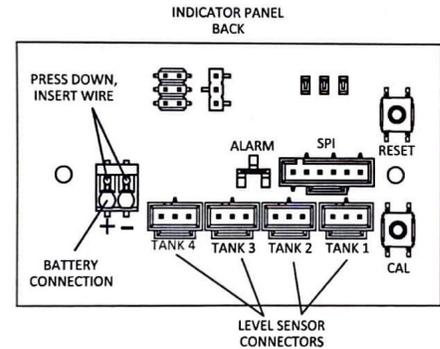
The APP makes it easier to calibrate your tank height as well as activating alerts. There are several other features available on the APP, such as monitoring in real time the levels of your tanks from anywhere in Bluetooth range.

Wiring

1. Connect Level Sensor to Panel.
(TANK 1, TANK 2, ...)

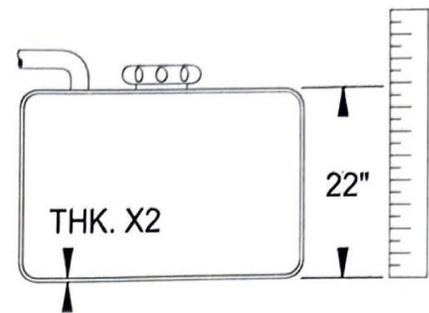
Note: Length of sensor cable assembly is 15'. Cable can be extended up to a total maximum of 50 feet using 18 AWG three conductor wiring.

2. Using 18 AWG Cable, connect Panel to battery. Strip wire 1/4". Install 3 Amp Inline Fuse.
(Not Included)



Calibration

- Calibrating tank height must be done for each tank connected.
- Calibration can be done either at the Indicator Panel or using app.



Determine Full Level Height (Step 1):

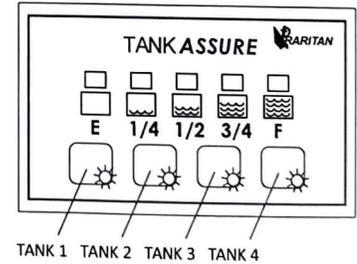
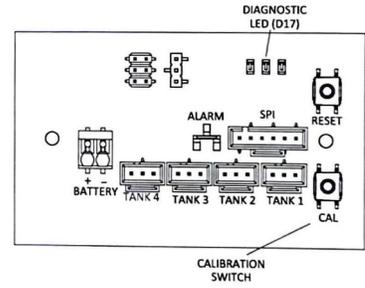
1. Measure height of tank.
2. Minus the thickness of tank wall X2.
3. Multiply by .9 (90%).
4. Round to nearest inch.

Example:

$22 \text{ (Tank Height)} - .75 = 20.5$
 $20.5 \times .9 = 18.45$
 $18.45 \text{ (rounded to nearest inch)} = 18$
Full Level Height = 18 inches

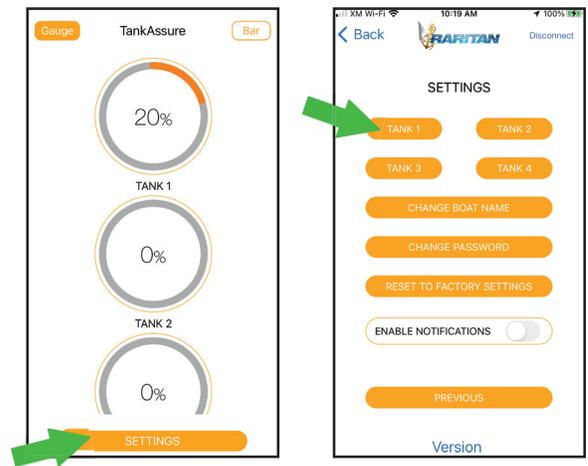
Calibration: Using Wall Panel Control

1. Press and hold the CAL switch for 3 seconds. The Diagnostic LED will begin blinking.
 2. On opposite side of panel, begin pressing the corresponding TANK switch (gold button on panel), one press per inch of Full Level Height determined from step 1.
 3. To save, press and hold CAL switch for 3 seconds. The Diagnostic will stop blinking.
- Calibration will “time out” if TANK switch is not pressed within 10 seconds. Note: Calibrating in a steady manner is recommended.
 - A Level Sensor must be connected to calibrate level.

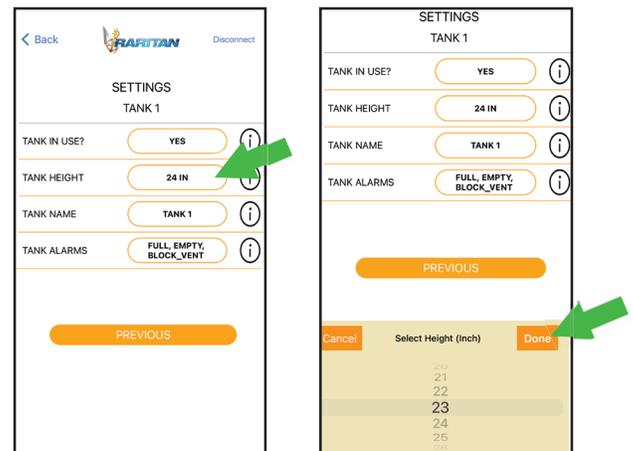


Calibration: Using Raritan App

To calibrate the tank height Open App. At the Gauge screen press Settings. At Settings screen select the Tank (1 ~ 4).



At Tank Settings Screen, press **Tank Height** button. From Popup screen scroll to select tank height (determined from Step 1, page 6). Then press **Done**.

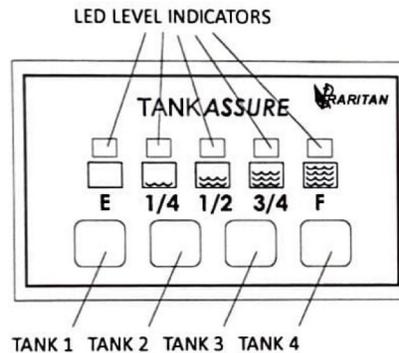


IMPORTANT: Read all instructions before proceeding with operation.

Press Gold Button for Tank 1 to check level. LEDs on panel indicate level in tank from empty to full (E to F). LEDs remain on for several seconds after the button is released. Follow with Tank 2, 3, 4 if connected.

Note:

- There is a 15 second averaging delay due to water movement within tank.
- Irregular shaped tank levels in the phone app and on the wall panel may not represent actual tank volume. Tank levels in the phone app are based on percentage of tank height, not volume.



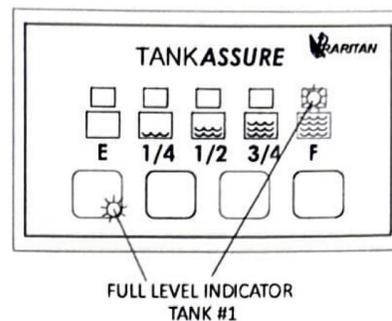
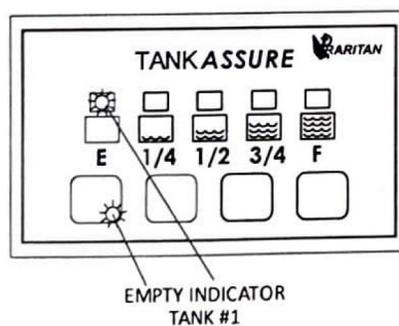
Tank Full / Empty Indication

When tank is full (or empty) the F (or E) LED and Tank Indicator LED will blink together at 5 blinks per second. Note: Factory default is at full.

Determine Full Level Height:

1. Measure height of tank.
2. Minus the thickness of tank wall X2.
3. Multiply by .9 (90%).
4. Round to nearest inch.

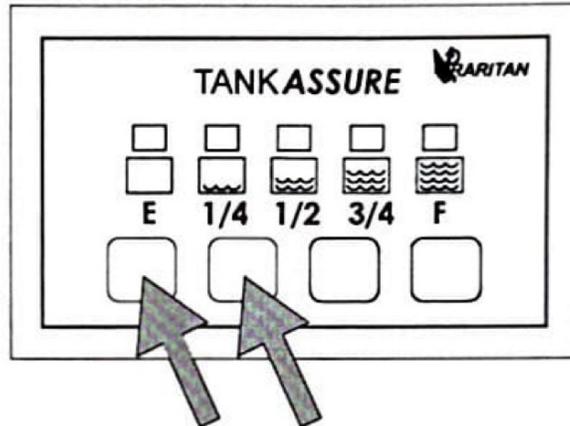
- (Example on Page 6)



Tank Indication: Full to Empty (or vice versa)

In order to adjust the tank indications, please follow the directions below:

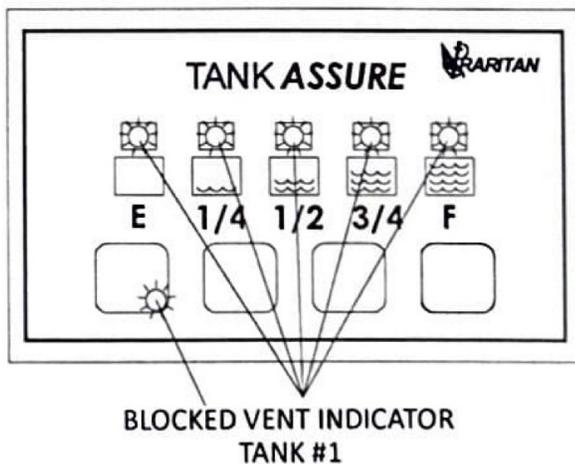
Press first two Gold Buttons together and hold for 5 seconds (all LEDs will blink 3 times). Then press Gold Pad for tank you want to change. Note: Factory default is at full.



BLOCKED VENT DETECTION (BVD)

Proper holding tank venting is essential for odor control. Proper venting is also critical to prevent tank expansion due to toilet flushing and collapsing during pump outs. If the vent becomes clogged TANK ASSURE® has built in Blocked Vent Detection (BVD) technology to provide a warning that there is an issue with vent.

When tank vent is blocked and pressure builds, due to toilet flushing, all LED Level Indicators will blink together at 5 blinks per second along with the Tank Indicator LED with blocked vent.



IMPORTANT

Panel will only display one type of alert at a time. Alerts are prioritized in the following order: **Blocked Vent, Full, Empty.**

Customization for all BVD notifications can be accessed through the **Raritan App**. Please refer to **Page 12** for directions.

APP ACTIVATION

IMPORTANT: Read all instructions before proceeding.

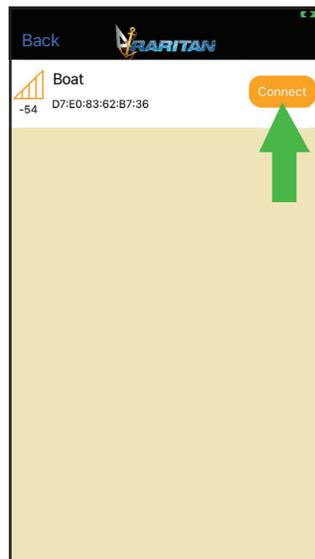
Install Raritan App from either Play Store (Android Devices) or App Store (Apple Devices) & allow all permissions..

Turn Bluetooth ON.

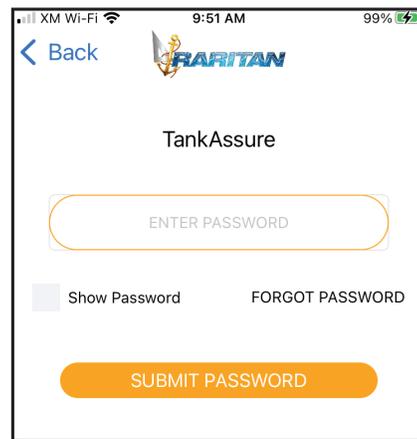
Launch Raritan App. Select TANKASSURE®



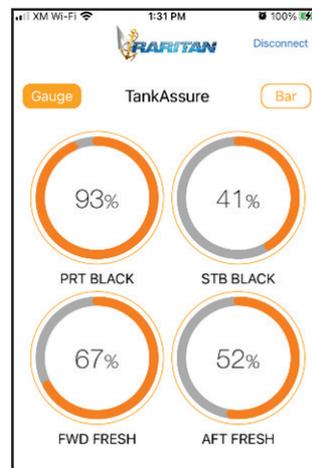
Select **Connect**.



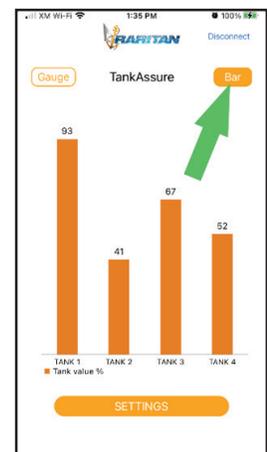
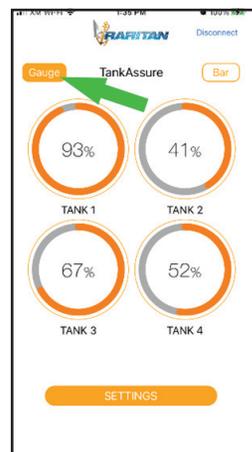
Enter Password (factory default is **raritan**) We strongly recommended password be changed to maintain privacy. See **Settings**.



The **Gauge** screen is displayed. All tank levels in use are displayed.



There are two styles of level indicators to choose: **Gauge** and **Bar**. Select button at top right or left to select style. Levels are indicated as percentages.

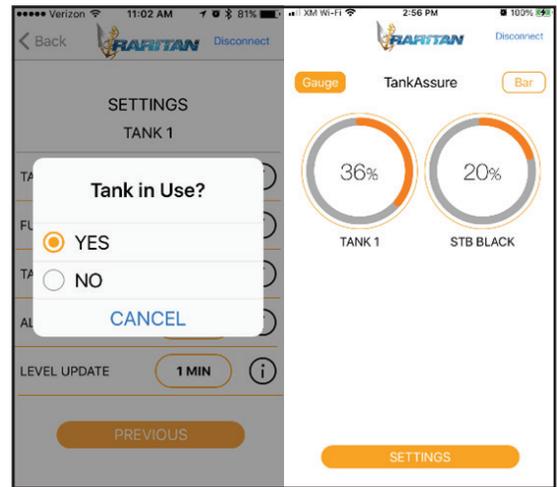


Removing Unused Display Gauges.

At **Settings** screen select the **Tank (1 ~ 4)**.

App is default to four tanks displayed. If there are only, for example, two tanks installed, unused tank displayed can be removed. Tank displays removed can be later added.

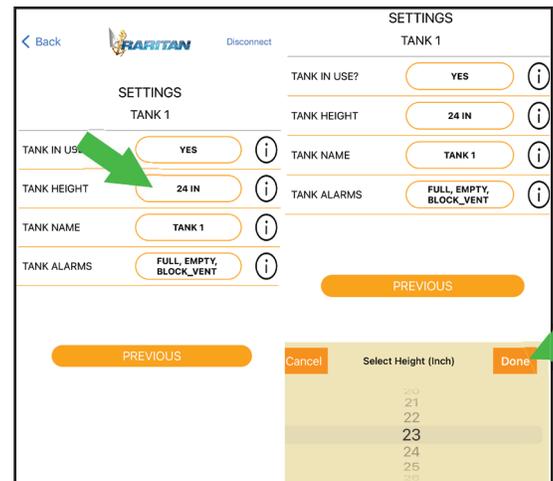
Select **Tank In Use?** button. Select **Yes** or **No**.



Tank Height

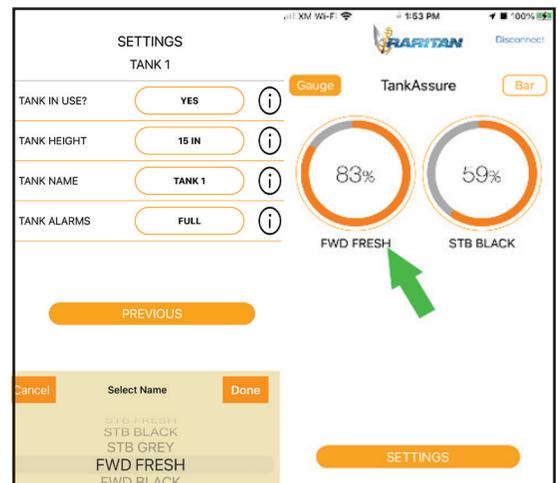
To calibrate the tank height Open App. At the Gauge screen press Settings. At Settings screen select the Tank (1 ~ 4).

At Tank Settings Screen, press **Tank Height** button. From Popup screen scroll to select tank height (determined from Step 1, page 6). Then press **Done**.



Changing Tank Name

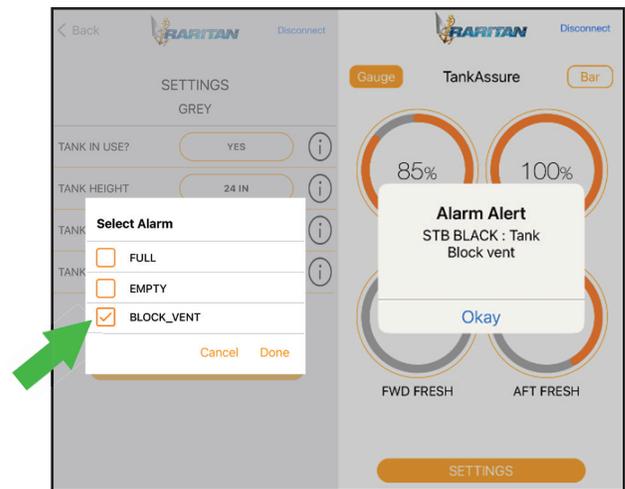
Name of tank can be changed to better describe its use and location. Select from available names.



Setting Tank Alarms

Alerts can occur when tank is Full, Empty, or has a Blocked Vent Condition. Multiple alerts may be set for each tank. Uncheck all for no alerts.

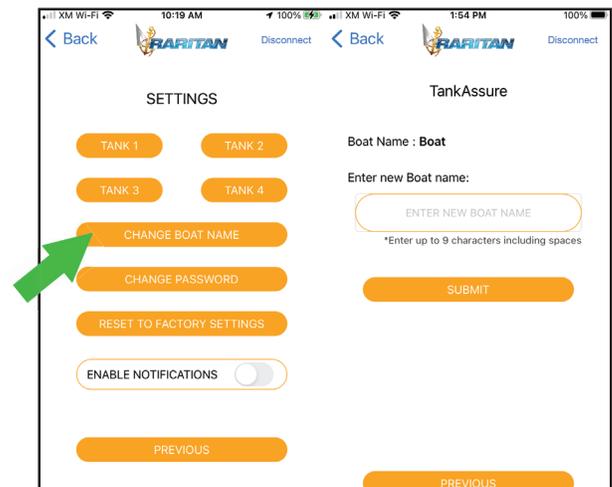
Alerts will occur on your screen when in the Raritan App. Press **Okay** to clear **Alarm Alert** from Display.



Adding / Change Boat Name

Assigning your boat name should be done to differentiate your system from any other nearby systems when connecting App to TANKASSURE®.

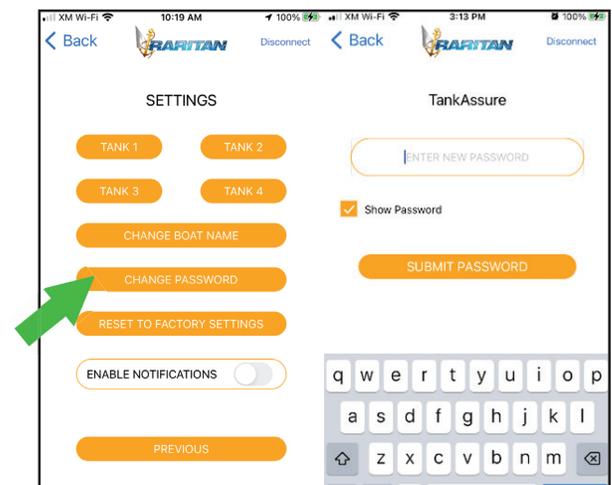
Note:
9 character limit



Change Password

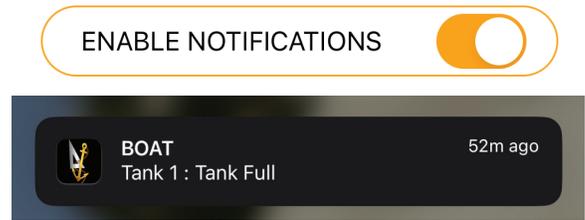
Prevents others from changing tank settings.

Note:
8 character limit



Enable Notifications

Push notifications can be enabled on the settings screen. Press the button to toggle on/off.

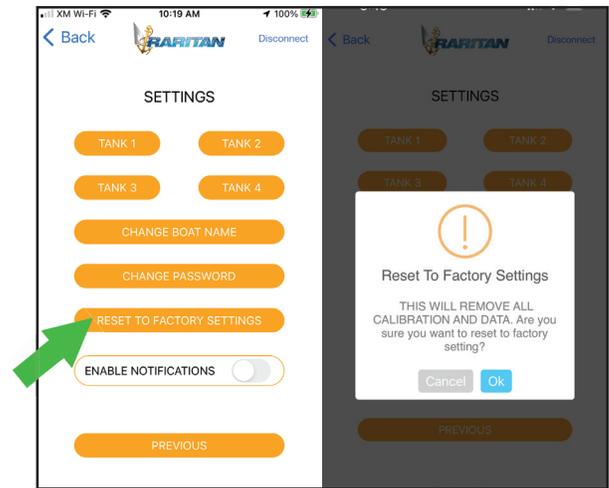


Reset To Factory Settings

You will be prompted with “CANCEL” or “OKAY” before confirming the factory reset.

Note:

When resetting to factory settings, all calibration is lost. Password will be reset to default password: **raritan**.



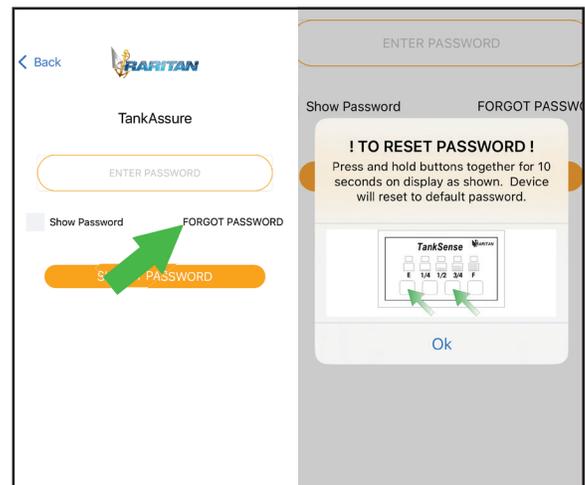
Forgot Password

If password is lost or forgotten, the password can be reset to default password.

1. Press “Forgot Password” on the home screen.
2. Follow instructions to “CANCEL” or “OKAY” to reset password.

Note:

Password will be reset to **raritan**.



Closing App

To close the App, press **Disconnect** at upper right of screen. App will also disconnect when outside of systems Bluetooth range.

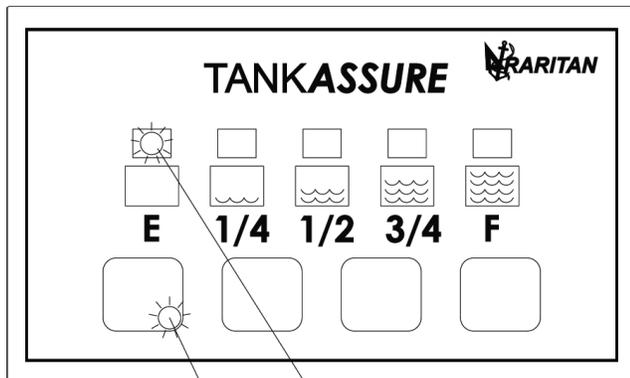


TROUBLESHOOTING

WARNING: HAZARD OF ELECTRIC SHOCK - Before beginning any work on the sensor, be sure that all power has been turned off.

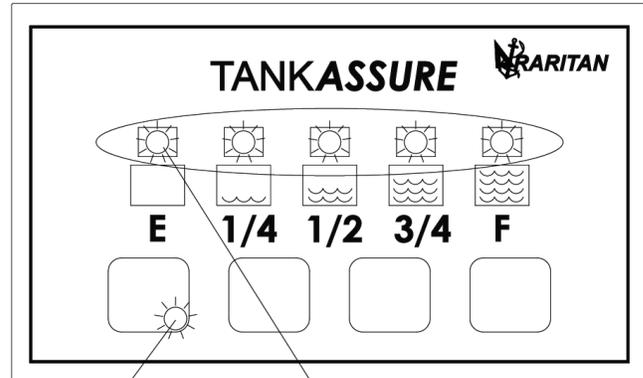
NOTE: The following information reflects the most probable causes and solutions to problems although not every possible cause and solution is provided. Any questions regarding servicing or operation of the TankAssure should be directed to our Technical Support Department in Millville, NJ. Please have model and serial number available before calling.

PROBLEM	POSSIBLE CAUSE	SOLUTION
<ul style="list-style-type: none"> Empty indicator blinking for 10 seconds. Tank indicator solid for 10 seconds. 	<ul style="list-style-type: none"> Level sensor not connected. Bad level sensor connection. 	<ul style="list-style-type: none"> Connect level sensor. Check level sensor connections.
<ul style="list-style-type: none"> All indicators blink 5 times. Tank indicator solid for 5 seconds. 	<ul style="list-style-type: none"> Level sensor not calibrated. 	<ul style="list-style-type: none"> Calibrate full level height.



EMPTY INDICATOR
TANK #1

Empty Tank



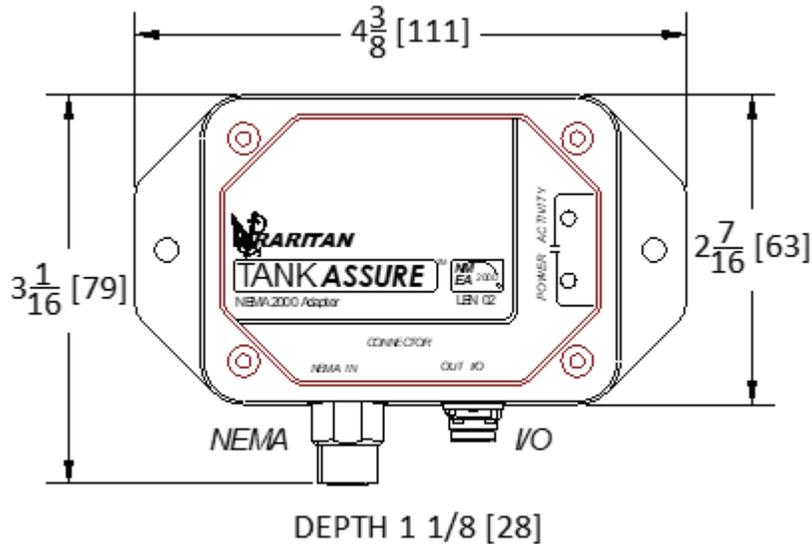
TANK #1
INDICATOR

ALL INDICATORS

Full Tank

Introduction

Congratulations on your purchase of the Raritan TankASSURE NMEA 2000 ® Adapter (N2K Adapter). The N2K Adapter is NMEA 2000 ® certified and fully compliant with the NMEA 2000 ® standard. The N2K Adapter extends the function of your TankASSURE ® by converting and sending measurement data and alerts to the NMEA 2000 ® network. Once installed and set up, operation is fully automatic.



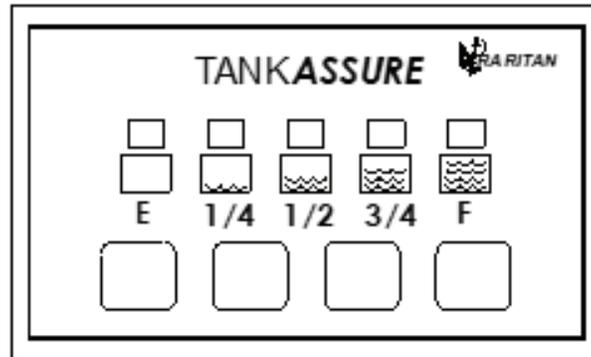
Installation and Setup

The N2K Adapter may be installed in any orientation within 10 feet (3m) of the TankASSURE ®. Connect the cable provided between the TankASSURE ® and N2K Adapter. Using standard NMEA cabling (not included), connect N2K Adapter to the vessels NMEA 2000 ® backbone. The N2K Adapter derives power from the NMEA 2000 ® connection and will power up immediately upon connection.

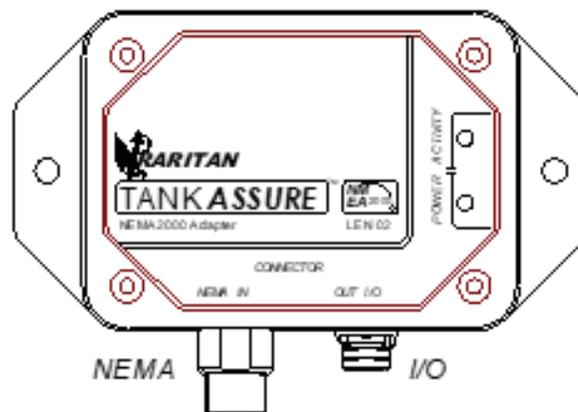
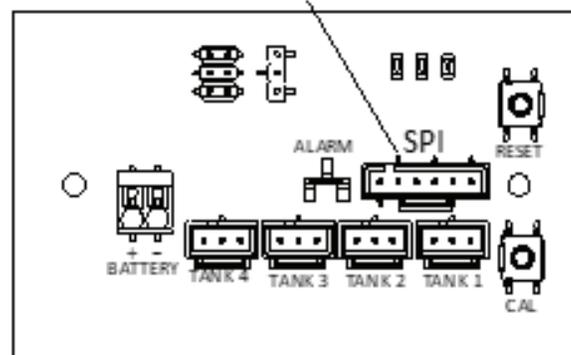
Please be sure the TankASSURE ® unit is configured, connected, and powered on before connecting the NMEA 2000 ® drop cable.

Standard procedures for NMEA 2000 ® setup are used. No setup is required unless there is a need to change the device instance or installation descriptions.

Installation and Setup: Reference Images



N2KA I/O CABLE CONNECTION



Operation

N2K Adapter operation is fully automatic.

When the N2K Adapter is powered up, if there are no problems, both LEDs, Power and Activity, will flash rapidly a number of times and then the green power LED will stay on.

During normal operation, the N2K Adapter will request measurement data and alerts from the TankASSURE® unit and, upon receiving the information, converts it to standard NMEA 2000® PGNs and sends the PGNs to the NMEA 2000® network.

Firmware Update

In the event an N2K Adapter firmware update is required, please follow this procedure:

1. Remove power from the N2K Adapter by disconnecting the NMEA 2000® cable.
2. Remove the N2K Adapter cover.
3. Connect a micro-USB cable to the connector on the N2K Adapter circuit board and a Windows 7 or above computer USB port.
4. Assure the firmware update file is available on the computer desktop or known folder.
5. Connect the NMEA 2000® cable to power up the N2K Adapter.
6. The green Power LED will start flashing slowly indicating the N2K Adapter is in firmware update mode.
7. A virtual drive window will open on the computer desktop.
8. Delete the file in the virtual drive window and click OK.
9. Drag the firmware update file into the virtual drive window. The new firmware will be loaded and the N2K Adapter will restart.
10. When the virtual drive window opens again, disconnect the micro-USB cable and NMEA 2000® cable.
11. Replace the N2K Adapter cover.
12. Connect the NMEA 2000® connector and resume operation.

LIMITED WARRANTY

Raritan Engineering Company warrants to the original purchaser that this product is free of defects in materials or workmanship for a period of one year from the product's date of purchase. Should this product prove defective by reason of improper workmanship and/or materials within the warranty period, Raritan shall, at its sole option, repair or replace the product.

1. TO OBTAIN WARRANTY SERVICE, Consumer must deliver the product prepaid, together with a detailed description of the problem, to Raritan at 530 Orange St., Millville, N.J. 08332. When requesting warranty service, purchaser must present a sales slip or other document which establishes proof of purchase. **THE RETURN OF THE OWNER REGISTRATION CARD IS NOT A CONDITION PRECEDENT OF WARRANTY COVERAGE.** However, please complete and return the owner Registration Card so that Raritan can contact you should a question of safety arise which could affect you.
2. **THIS WARRANTY DOES NOT COVER** defects caused by modifications, alterations, repairs or service of this product by anyone other than Raritan; defects in materials or workmanship supplied by others in the process of installation of this product; defects caused by installation of this product other than in accordance with the manufacturer's recommended installation instructions or standard industry procedures; physical abuse to, or misuse of, this product. This warranty also does not cover damages to equipment caused by fire, flood, external water, excessive corrosion or Act of God.
3. **ANY EXPRESS WARRANTY NOT PROVIDED HEREIN, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH BUT FOR THIS PROVISION MIGHT ARISE BY IMPLICATION OR OPERATION OF LAW, IS HEREBY EXCLUDED AND DISCLAIMED.** ALL IMPLIED WARRANTIES SUCH AS THOSE OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, IF APPLICABLE, AS WELL AS ANY IMPLIED WARRANTIES WHICH MIGHT ARISE BY IMPLICATION OF LAW, ARE EXPRESSLY LIMITED TO A TERM OF ONE YEAR. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG A LIMITED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.
4. **UNDER NO CIRCUMSTANCES SHALL RARITAN BE LIABLE TO PURCHASER OR ANY OTHER PERSONS FOR ANY SPECIAL OR CONSEQUENTIAL DAMAGES, WHETHER ARISING OUT OF BREACH OF WARRANTY, BREACH OF CONTRACT, OR OTHERWISE.** SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.
5. No other person or entity is authorized to make any express warranty, promise or affirmation of fact or to assume any other liability on behalf of Raritan in connection with its products except as specifically set forth in this warranty.
6. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



530 Orange Street
Millville, NJ 08332 USA
Telephone: 856-825-4900
FAX: 856-825-4409
www.raritaneng.com