SAFIERY

STAR-TANK

USER MANUAL
Software Version Update 3
User Setting of Tank Depth
Major Use of AI in Auto-calibration

Version Release November 20th 2024:
Version 3 which eliminates the need for multiple SKU's for different tank depths and includes an auto-calibration process after the tank depth is set. Over the Air Update process included in this release.

DIESEL FUEL MEASUREMENT IS ADDED to this manual
For Diesel Fuel, there is a limit of 500mm depth plus need for reflective thin metal plate under a non-metal tank. The firmware for fuel sensor is different but can be Over the Air Update of shipped firmware. Contact us for a copy. The calibration process with Cerbo is very different for fuel.

Tomorrow's Technology, Today

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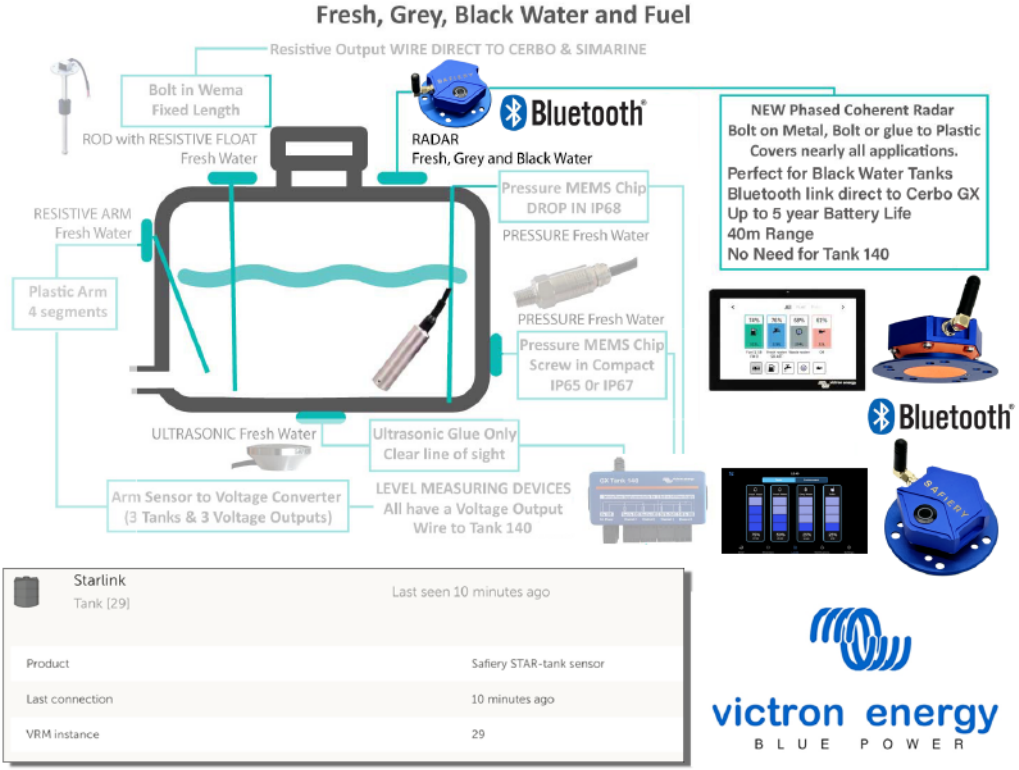
STAR-TANK

is a radar based tank level sensor

that mounts at the top of the tank

- Operates directly through non-metalic tanks - top mounted
- In metal tanks a hole is cut and an SAE 5 holt bolt pattern used (industry standard)
- Operates in Black and Grey Water. It is not affected by foam or gasses
- This model is battery operatedo operated with a target 5 year life.
- Unit has "Long Range Bluetooth" that we have tested to 100m line of sight and 40m through metal layers in a typical van build.



World`s First Battery Operated Radar tank Level Sensor - Bluetooth to Victron Cerbo GX

SPECIFICATIONS

This battery powered sensor:

- Bluetooth Connection to Victron GX models ONLY
- Battery Life 3-5 years (longer range and lower level tank, battery life 3 years. Shorter range and tank level typically 50% then 5 year)
- Battery CR2477 can be replaced with BR2477 or WT2477
- Bluetooth 5.3 Adv Output ONLY
- Deadband 30mm but this increases with the nominated tank depth below.
- Max Depth 200mm pre-set. User settings now set tank level at:
- 1) 0-500mm 2) 500-1000mm 3) 1000mm to 2000mm
- Repeatability 1mm
  Press button on top and reporting changes to 10 sec intervals for 10mins
- (during commissioning)
  After 10 mins at 10 sec reporting, interval changes to 60 second intervals

MOUNTING

The base of the Sensor has 2 sets of holes:

SAE 5 bolt hole

For Plastic Tanks:

- Glue Sensor to top of tank. The SAE bolt holes form the basis for the bonding.

Cable Length:

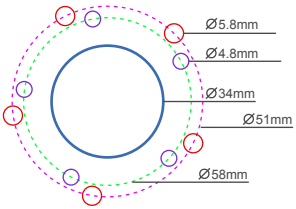
- No Cable. It is Battery powered and Bluetooth.

Connections:

- No Connections

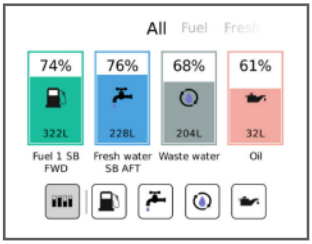
Simple Calibrations:

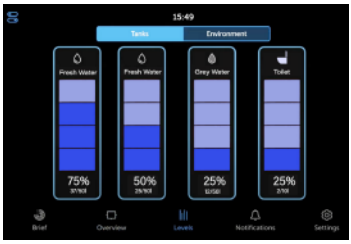
- Calibration needed from Display



ETSI

Safiery declares that this sensor is compliant with the
European commission radio equipment directive 2014/53/EU article 3.1 and 3.2.





Safiery STAR-Tank Radar Bluetooth Sensors

STAR-Tank sensor support is added to Venus OS. These radar tank level sensors use Bluetooth Low Energy. This wireless technology allows devices to be networked within a range of about 40 meters (with Bluetooth Adapter added to Cerbo GX, see below), while consuming significantly less power than ordinary Bluetooth technology.

The expected battery life is 5 years with tank measurement averaging 50%. Battery life is less at around 3 years if tanks average 10% level for example. The liquid level, temperature and sensor battery voltage are streamed wirelessly to the GX device.

STAR-Tank sensors feature phased coherent radar sensing for non-pressurized tanks. The tank level range is 2m as standard. This can be extended, consult Safiery. The top 30mm from the base of the sensor is a dead band. If the tank is 12mm thick fiberglass, then the deadband is 18mm below the top of the tank.

The sensors are attached directly on top of any non-metal tank including thick fibreglass tanks. For metal tanks, the sensor needs a clear view of the liquid. To achieve that, a 5 hole SAE pattern adapter is included into the base. To achieve an air tight seal, use “gas sealing tape” (generally pink) and wrap on the thread and screw into the base plate. This prevents gas from the tank passing through STAR-Tank.

For non-metal tanks, adhere the base plate. Then, screw the STAR-Tank module onto the base. STAR-Tank suits black water tanks, even with foam above the liquid line.

STAR-Tank has several machine learning functions for caibration using AI.

1. There are hundreds of reflected radar signals from the bottom and side of the tank. Our program selects the dominant value during the first 10 seconds of “setup” mode. It then retains the profile for your tank at the tank depth selected. Every time a different tank depth is selected using the setup mode, a different filtering profile is stored in memory.
2. The shape of these reflected signals changes with tank depth. By going through the setup process and nominating the tank depth changes the way we filter the reflected signals and select a dominant value.
3. The “Setup Mode” process described on the next page combines 1 and 2 above into a single process.

Safiery STAR-Tank Radar Operating Modes and Calibration

There are 4 Operating Modes for STAR-Tank for Fresh, Grey and Black Water:
1. Hibernation Mode (commonly called “off”)
2. Setup Mode (used to calibrate/setup and reports at 10 sec intervals for 10 mins)
3. Normal Mode with 60 second scan time automatically occurs 10minutes after being in setup mode.
4. Over the Air Update Mode (commonly call OTA) is a separate user initiated mode.

Before moving from Hibernation mode to Setup mode, there are two allowable positions for STAR-Tank in SETUP Mode. Either:

- Start with an empty tank or one containing a minimal amount of liquid and have STAR-Tank in its recording position.

OR

- If the tank is not empty, point the STAR-Tank sensor into open air, ensuring there are no obstructions within at least 5 meters and follow the Setup mode with STAR-Tank pointing into open space. **Do not proceed with the calibration on a partially full tank with STAR-Tank on top of the tank.** After following Setup Mode below, then place STAR-Tank on a partially full tank.

THEN Enter Setup Mode:

1. Press and hold the button for 5 to 15 seconds, then release to enter SETUP MODE. The LED will indicate the following statuses:
   - Green: Button held for less than 5 seconds (not in Setup Mode).
   - Fast Flashing Red: Button held for 5 to 15 seconds (Setup Mode activated).
   - **Then Release the button before the 15secs is up.**

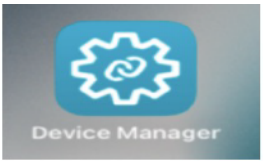
   The LED will now show the selected maximum tank depth as follows:
   - One Green Flash for 1 sec: Small Depth of 0-50cm.
   - Two Red Flashes for 2 secs: Medium Depth of 50-100cm.
   - Three Blue Flashes for 3 secs: Large Depth of 100-200cm.

   To change the depth, go back to step 1 above and repeat the 5 to 15sec press. Remember to release the button before 15 seconds. The calibrated tank depth will cycle through the three levels.

Once the level is nominated, the AI function is now complete. Every 10 seconds for 10 minutes, the LED flashes tank level status: Flashing purple means tank is absolutely full or some object under sensor is blocking it like a baffle or the tank is empty and DRY. Flashing red means the tank is close to full. Flashing green means tank level is 100cm or more below the sensor. In-between are the colours of orange to yellow.

Safiery STAR-Tank Radar Over the Air Update Mode

Entering OTA Mode



1. Download the following app, Device manager.
2. Once the app is installed, press the STAR-Tank button 10 times. The LED will start blinking purple, indicating you are now in OTA mode.
3. Open the app. In the Device Manager, you will see “Startank_DFU”. Select it.
4. You will enter a screen with four options. Select Image, which is the second option from the right.
5. Inside the Image screen, there will be a blue-highlighted option labelled Select File.
6. Select the zip file with the updated version.
7. Once selected, press the blue Start icon to begin the process.
8. A menu will appear. Select Upload Only.
9. Once the upload is complete, a message will display: Upload Complete.
10. Finally, recalibrate the sensor by going into SETUP MODE and complete setup

To Set to “OFF” or Hibernation Mode

11. Press and hold the LED for more than 15 secs.
12. Looking at the LED, it will indicate the following (0 < green < = 5 secs, 5 secs < Fast flash red < = 15 secs, Solid red < 15 secs) once 15 seconds has elapsed the LED will change to solid red until the button is released.
13. Let go of the button and you are now in Hibernation mode.

Automatically moving to “NORMAL MODE”

14. From “SETUP MODE” after 10mins, STAR-Tank atomatically moves to NORMAL MODE with 60 second reporting.

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Safiery STAR-Tank Sampling Rate and Approvals

To turn STAR-Tank off, press and hold the black button. The sensor will not use any battery capacity when turned off. .

The normal sampling interval for the long battery life is 60 seconds. Pressing the black button for 1-2 seconds will change the sampling time to 10 seconds for up to 10 minutes. Then the sampling reverts to 60 seconds.

Many tank level sensors use averaging to smooth out signal results.
We cannot do this with STAR-Tank as it would consume too much battery power. Every reading is a one shot result. The implications of this is that occasionally, you may see a flickering of value for 1 cycle.

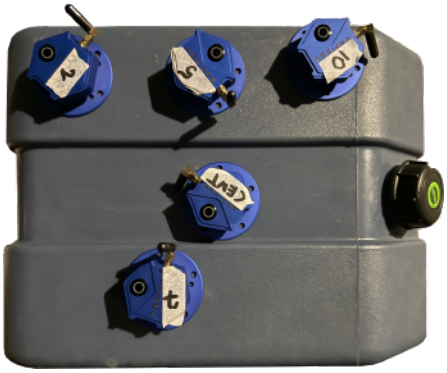
In future developments on the Victron side, the temperature value may be used to trigger the temperature relay function on the GX device with relays to initiate stirrers or heaters in tanks as well as notification of this.

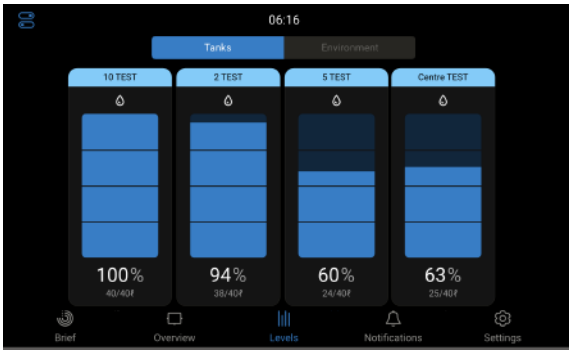
To connect STAR-Tank sensors to the GX device via Bluetooth, the GX device needs Bluetooth functionality. Although GX products already have built-in Bluetooth, this internal function may be disabled if the processor gets too hot.
Safiery recommends installing a Nano USB Bluetooth adapter from the list below.

USB Bluetooth adapter				
Insignia (NS-PCY5BMA2)	Logilink BT0037	TP-Link UB400(UN)	Kinivo BTD-400	Ideapro USB bluetooth adapter 4.0
Ewent EW1085R4	Laird BT820	Laird BT851	-	-

This radar tank level sensor is approved with FCC for USA. It is compliant with European commission radio equipment directive 2014/53/EU article 3.1 and 3.2. and is CE and UKCA approved.

Safiery STAR-Tank Radar Sensor Positions and Calibrated Depth





STAR-Tank uses reflected radio waves at 60GHz. It is therefore important that the sensor is away from the edge of the tank and free from baffles. The test setup above is a nominal 40L tank with 25L of water in it.

1. The Centre Test Sensor is reading correctly as the range for the bottom of the tank is set correctly at 35.6 cm in this example.
2. Test Sensor 5 was calibrated at same bottom reading then lifted up to the raised side section of the tank which is 9 mm higher. This meant the distance to the water inside was 9 mm longer. At 40L for 356mm depth, the volume per mm is approx 0.1124 L. So raising 9 mm will reduce the aparent volume by 9 x 0.1124 = 1.011 L.
3. Test Sensors 2 and 10 are too close to the edge. The Frenzel lens is set to give a 30 degree cone of trasmission. The side is interferring with this giving a 100% reading for Sensor 10 and 94% for Sensor 2 which is a little further from the edge..

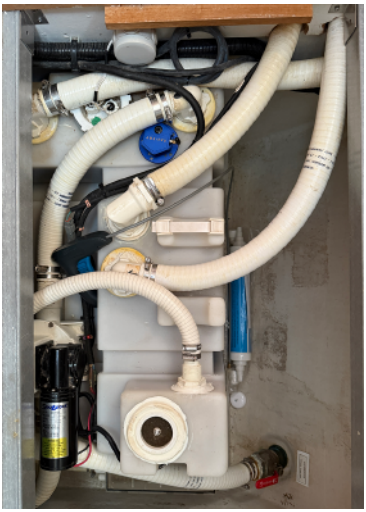
If the tank is a shallow tank of say 200-250mm depth, the standard STAR-Tank sensor will show fluctuations when full as the top dead band is a percentage of full scale setting. For a nominal 1m calibrated sensor: the top deadband is about 50mm. The sensor is 16mm above the bottom of the housing leaving 34mm below top of tank.

Generally, full tank accuracy is not important. But if this irritates you, then set the tank level in the Cerbo to Full at a value greater than 0. Here is a guide.

20~50 cm Depth	50~100 cm Depth	100~ 200cm Depth
Dead band 9-15mm When tank is full. But won't read past 500mm	Dead band 30-35mm When tank is full. But won't read past 1,000mm	Dead band 50-70mm When tank is full. But won't read past 2,000mm

Safiery STAR-Tank Radar Sensor Positions

BLACK Water Tank



This position did NOT work

This position did work

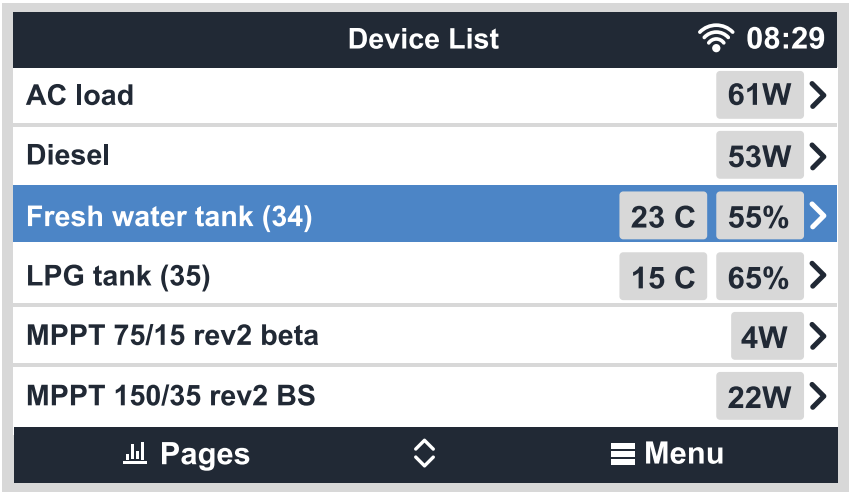
FRESH Water Tank

This position did work

This position works
on ALKO ribbed 95L tank

This video Shows how to setup STAR-Tank for different Max Tank Depths

Safiery STAR-Tank Radar Bluetooth Sensors



The installation of the STAR-Tank sensor is very simple. First, however, the sensor must be installed according to Safiery's installation instructions.

Then the installation and configuration is done in the GX device as described

1. Make sure Bluetooth is enabled in the Bluetooth sensors menu (enabled by default).
2. Go to Settings → I/O → Bluetooth sensors menu.
3. Move the Enable slider to the right to enable Bluetooth sensors.
4. To find your STAR-Tank sensor, scroll down until you see them.
5. To activate the sensor, move the slider to the right. It should now appear on the Device List.
6. Repeat steps 1..5 for more than one sensor.

GO TO VICTRON CERBO OR EKRANO GX MANUAL FOR SETUP PROCESS.

Using STAR-Tank on Diesel Fuel Tanks

There are major differences in the electromagnetic properties of water and diesel fuel. Water has a high dielectric constant (~80) compared to diesel fuel, which has a much lower dielectric constant (around 2-3). Radar systems, especially those using phased coherent radar, rely on the reflection of electromagnetic waves off the surface to calculate depth. The dielectric constant influences the radar wave's ability to propagate through and reflect off the surface.

In diesel fuel, the special fuel firmware of STAR-Tank works quite differently to water: STAR-Tank bounces the signal off the bottom of the tank and reads the reflected surface from the returned bounced signal. The limitations are that a metal tank is needed. The depth has to be less than 500mm so the reflected signal is never more than 1000mm. If the tank is non-metal, a thin metal reflector is needed under the tank.

Because the level is the inversion of the signal the “full” and “empty” values on the Cerbo will be the inversion of water. This means full will be a bigger value than empty as the signals travels further. The range will be quite small and the values will not relate to any physical depth. They are a computed calculation.

Follow the instruction on page 6 of the start tank manual for OTA with the Diesel Fuel file. Then follow the setup to calibrate the sensor.

Step-by-Step Instructions for Setting Up Your Star Tank Sensor

1. Initial Calibration in Open Air:
   Follow the calibration instructions on page 4 of the Star Tank manual with the sensor out of the tank.
2. Prepare the Tank:
   Make sure the tank is completely empty (or as close to empty as possible).
3. Mount the Sensor on the Tank:
   Place the calibrated sensor back on top of the empty tank.
4. Configure the Sensor in the Cerbo Device:
   Open the Cerbo device settings.
   Enable the sensor under the I/O settings.
5. Record the Empty Value:
   Go to Device List → Tank Sensor → Setup.
   Note the “Sensor Value” currently displayed.
   Enter this value into the field labelled “Sensor value when empty.”
6. Fill the Tank and Record the Full Value:
   Fill the tank completely with the intended hydrocarbon liquid.
   Check the “Sensor Value” again.
   Enter this new reading into the “Sensor value when full” field.
7. Set the Tank Capacity:
   Input the total volume of the tank into the “Capacity” field.

Once these steps are completed, your sensor and Cerbo device should reflect the tank’s liquid level.

Comparison of Technologies to Radar used by STAR-Tank

Resistance	Pressure	Ultrasonic	Radar
Passive measurement of resistance as a magnetic ring slides up and down a hollow shaft with resistors embedded internally.	Active measurement of pressure in a tank using a silicon wafer that “bends” under pressure and creates a signal. Resultant signal may be voltage, NMEA, CAN or or Bluetooth data.	Active measurement of distance from under a tank (or above tank for Some) to the air-water interface point. Resultant signal may be voltage, NMEA, CAN or or Bluetooth data.	Active measurement of distance from top of tank to air-liquid interface point. Resultant signal may be voltage, NMEA, CAN or or Bluetooth data.
Above Tank with height access to remove the unit of similar height of tank.	Side of tank as close to bottom as possible. Needs a threaded boss on tank to screw into.	Below tank must use a couplant of grease or glue. Cant have intermediate layer.	Above tank for non-metal tanks can sit directly on top of tank (glue) and for metal tanks, needs hole with SAE 5 bolt pattern.
20-30mm Accuracy	Varies with quality but typically 20mm	Varies with quality but generally average	High accuracy of 1mm is achievable.
No active power. Just 2 wire to resistance	3 wire of power and voltage value and ground.	3 wire of power and voltage value and ground or battery Bluetooth.	Battery operate Bluetooth. CAN/NMEA powered 12V coming in future model.
N/A	N/A	3-5 years battery life	5 years Battery Life Enhanced by AI
Stainless steel components	Stainless steel components	Plastic and embedded sensor	Billet machined Aluminium and embedded liquid proof radar sensor.

Comparison of Ultrasonic and radar tank Sensors to STAR-Tank

	Mopeka	Gobus C	STAR-Tank
TECHNOLOGY	Sonar (ultrasonic)	Radar	Phased Coherent Radar
PLACEMENT	Below tank Flat 12mm	Above tank 65mm required	Above tank 30mm required
ACCURACY	Affected by foam and temperature	High	High
POWER	Battery	12/24V	Battery
CALCULATED BATTERY LIFE	3-5 years	N/A	5 years Enhanced by AI
WARRANTY	1 year	Not listed	5 years excluding battery for above non-metallic tanks. 1 year for application in metal tank with SAE 5 bolt hole.
VICTRON INTEGRATION	Bluetooth ADV	Voltage/Resistance	Bluetooth ADV
PRICE POINT IN EUROS Subject to change	Euro 65	Euro 350	Euro 175 Approx
AVAILABLE NOW	Available now	Available now	Available

STAR-Tank uses Phased Coherent Radar

In Phased Coherent Radar, a series of short-duration radio frequency pulses are transmitted towards the water line from above. These pulses are reflected back and received by the radar system's antenna. The received signals are then processed and analyzed to determine the depth.

The term "coherent" refers to the radar system's ability to maintain a constant phase relationship between the transmitted and received signals. This coherence allows for more accurate measurements and improved signal processing techniques, such as coherent integration, which enhances the radar's sensitivity and range resolution.

STARSHIP™ is a 2024 DAME Design award finalist.

This is a family of 10 products that make a whole integrated system using Wireless Open Protocl and in addition NMEA 2000 connectivity to the digital switching controllers.

Functionality of STARSHIP - What it does

Devices connected in a marine world have defined protocols such as NMEA 2000 for wired connectivity. However, for non-essential, comfort and convenience devices like lighting, air-conditioning, fans, and appliances there is now a connectivity alternative with wireless digital switching.

This alternative Wireless connectivity can be in parallel with the wired system. STARSHIP offers two layers of wireless communication, both with Open Protocols as well as preserving NMEA 2000.

More and more devices and appliances have inbuilt wireless connectivity, because more advanced functions can be selected using wireless connectivity to purposeful Apps. However, it isn't practical nor customer focused to require a collection of Apps to fully operate these devices.

So sometime in 2019, Apple, Google, Amazon, and Samsung agreed to commit to a common standard for IOT devices and appliances that any of their platforms would connect with using one native app on the smartphone or tablet. The Standard was published in December 2022 and is called "Matter".

Matter is a published open protocol with IPv6 endpoints. Once provisioned, it does not require the internet. It has a high encrypted security feature and uses conventional WiFi and/or ethernet between devices.

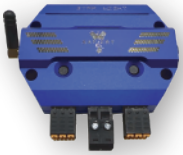
STARSHIP is compliant with Matter but with a significant difference: It also has integration of both Wired NMEA2000 and Long Range Bluetooth (uses 802.15.4 transport layer). This means a light can be turned on and colour changed from an MFD display then turned off or the colour changed using wireless STAR-Switches in a cabin.

However, the really important functionality is the automation. Apart from convenience of one "Home Control" app for multiple devices (currently over 2,000), there is the Energy Management Automation that is particularly useful. Matter includes this as well as battery monitoring such that load shedding of devices can be done when energy needs to be conserved. Simply departing a boat can trigger automation that turns off all non-essential devices.

STARSHIP is the only DC powered Matter compliant device available. Layer on to that the 2 other communication methods. We envision a future where most appliances and lighting will be available under the WiFi standard protocol.

DUAL Layers of Wireless Control

Plus one Layer NMEA Wired Control

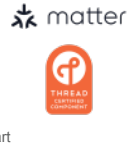


THREE LAYERS of COMUNICATION with CONTROLLERS

Each Layer Operates independently

WiFi using Matter Open Protocol

- No Internet Required
- Compatible with:
  Apple, Google, Amazon, Samsung
- Uses their native Home Control app
- Over 2,000 Compliant Devices to Connect
- Automation on Smart Phone - arrive / depart
- Energy Management with Load Shedding



Long Range Bluetooth

- 40m + typical range
- Battery operated Switches
- 4-6 year life
- Up to 6 switches control one device
- Easy configuration of Master/ Sub-master
- Double press feature for alternate colour
- Inexpensive and simple to deploy.

CAN / NMEA

- Wired Connection
- MFD Control

The Bluetooth connectivity uses the new long-range 802.15.4 transport layer. Results are 100m range line of sight and 40m through metal skins. This is used for the wireless physical switches and the Radar Tank Monitoring. They operate independently of the other communication methods with high encrypted security. They are battery operated with a minimum of 4 year life.

Simplified Interoperability with any Smartphone's Native Home Control

Amazon, Apple, Google, and Samsung committed to a common standard for interoperability in 2022 called "Matter". It works seamlessly with over 2,000 devices including fridges, air conditioners, fand, lights, and more, all from a single app on any of these smartphones.

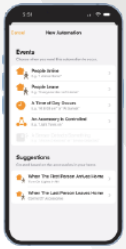
STARSHIP™ is a Matter compliant system designed specifically for 12V DC devices in a marine environment. The clever part by Safiery was integrating CAN/NMEA functionality and long-range Bluetooth devices into one system.

Simplified Smart Automation and Convenience

STARSHIP™ automation capabilities simply follows the home control automation available on your Smartphone.

As you approach your boat, lights can automatically adjust based on the time of day, and non-essential systems can shut down when you leave. With AI integration, your system becomes even smarter, offering voice control and real-time language translation based on your smartphone's settings.

The Smartphone does the "programming"previously programmed by engineers into digital control systems. Time and cost is avoided and user flexibility is at new heights.

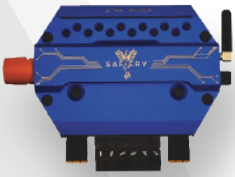


Combines Old with the New

Wired and Wireless to Reduce Cost

The user benefit of this architecture: a system can be completely delivered with NMEA & wireless switching. When the user wishes to add automation, Smartphone App control or remote cloud monitoring, they simply install Matter as an overlay network. The user can redefine switch modes, and scene automation without programming by others. This enhances utility at reduced overall cost.

The commercial benefit to the boat builder is a significant reduction in installation complexity: Installation time, cabling cost and weight, commissioning time and troubleshooting time are all at an absolute minimum. Simplicity of use allows for end user changes at minimum cost.



STAR-POWER

(IP54)
150A
6 x 30A
6 x 10A Dimmable
2 Control Inputs
CAN/ NMEA / RVC

STAR-LIGHT

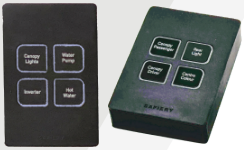
(IP 54)
40A
12 x 10A Dimmable
H-Bridge Capability
2 x RGBW Colour Capability
CAN / NMEA / RVC

STAR-ROVER 4

(IP68)
40A
4 x 10A Dimmable
H-Bridge Capability
1 x RGBW Colour Capability
CAN / NMEA
70mm x 50mm x 22mm

STAR-ROVER 2

(IP68)
20A
2 x 10A Dimmable
H-Bridge Capability
CAN / NMEA
55mm x 32mm x 15mm



STAR-SWITCH

(IP22)
Secure Wireless
4 buttons
Can be custom engraved
Panel and Surface Mount
5 year battery life

STAR-SWITCH WALL

(IP22)
Secure Wireless
4 buttons
Wall Surface Mount
4 year battery life

STAR-SWITCH

(IP65)
NMEA 2000 / CAN
8 or 12 buttons
Interchangeable Icons

STAR-TANK

(IP66)
Phased radar liquids level
Fresh / Black / Grey / Fuel
Long Range Bluetooth
AI Auto-aligns Tank-Radar Filter
Connects to Victron Cerbo
5 year battery life

STAR-SWITCH SP8

(IP67)
NMEA 2000
8 buttons
Rubberised Tactile Buttons
Will be Wireless 2025 - 20yr life

STAR-TOUCH

(IP22) 7 in Touch Screen
Secure Wireless
- Digital Switching
- Victron System (WiFi)
- STAR-Tank

80
Millionths / Sec

ADVANCED FUSELESS

All STARSHIP™ Controllers
Short Circuit Protect in 80 us
European sourced MOSFETS
Integrated Intelligent Design

victron energy
BLUE POWER

Each Layer of communication goes DIRECT to Controller

THERE IS ZERO MIDDLEWARE

Absolute Simplicity

Sets a new benchmark in lowest installed cost

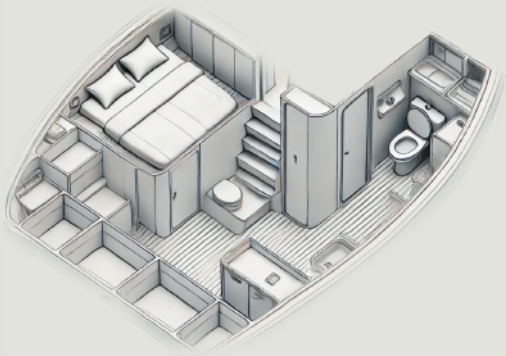
Typical Cabin Configuration

Using STAR-Light Wireless

Affordable: Switches Euro 48 / STAR-Light 330
Durable: Anodized Aluminium Controllers

From DC Switchboard

- 8mm² Positive
- 8mm² Negative
- Max current 40A
- Breaker at Switchboard "Main Cabin"



From STAR-Light (12 x 10A)

1. Under cupboard floor light White
2. Under cupboard floor light Blue (LED Strip is integrated white/blue)
3. Reading Spot White His side
4. Reading Spot White Her side
5. 12V Fan
6. USB Outlets both sides
7. TV raise/lower using H Bridge 1
8. TV raise/lower using H Bridge 2
9. Overhead light (s)
10. Head Overhead light
11. Vanity Sink Light
12. Spare

Simplicity and Savings

NO Fuses from STAR-Light to all circuits out

NO Breakers in Cabin

Only one cable pair to cabin

LED's can be Switch/Dim positive or negative

Has 2 x RGBW Colour Capability

Switches are all battery wall mounted /portable

Switches can be Engraved

Switches can switch any devices elsewhere on boat

7 in Wireless Display show batteries and all devices

Wireless
STAR-SWITCH
either side of bed

- Floor Light (one press White, double press Blue)
- Reading Lights "His" On Second switch "Hers"
- Underwater Lights
- Bathroom Light

Wireless
STAR-SWITCH
bathroom

- Overhead Lights
- Vanity sink Lights (one press white, double press Natural, Tripple press warm white) Popular for ladies skin tone with makeup
- Rear Deck Aft light

Wireless
STAR-SWITCH
portable

- TV Raise
- TV Close
- Fan
- Any other

CONTACT / SUPPORT

GET IN TOUCH

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FAQ on Support

1. Signal is showing 100% and LED is purple. If install on top of tank without penetration, ensure tank is NOT metal nor has a metal liner. Ensure it is not positioned above a baffle. Move the sensor and try again. Ensure sensor is at least 200mm in from vertical edge.

2. Sensor shows it is reading but Cerbo can't detect. Ensure there is a Nano Bluetooth receiver in the USB receiver on the Cerbo. This must be the 2nd or 3rd slot away from the HDMI cable as the first one is reserved for power only to the Touch Screen.

3. Reading is showing full or empty when it is neither. Adjust the minimum and maximum level values in the Cerbo setup display. On the setup display you will read the tank depth "actual value' in cm.
The Min and max values must be either side of that value.

4. How do I calibrate accurately? If the tank is a regular shape, start with it empty and press button for the initialization described in this manual. Then fill the tank to 95% and check the full value limit. There is a 30mm deadband from the bottom of the sensor. When the liquid is within this zone, it will read
100% full.

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