



CALYPSO

marine instruments

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ULTRASONIC WIRED

WIND INSTRUMENT AND DATA LOGGER

USER MANUAL

version 1.1
10.01.2018

www.calypsoinstruments.com



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1. Product overview

Congratulations, you are the owner of a brand new ULTRASONIC Wind Instrument and Data Logger.

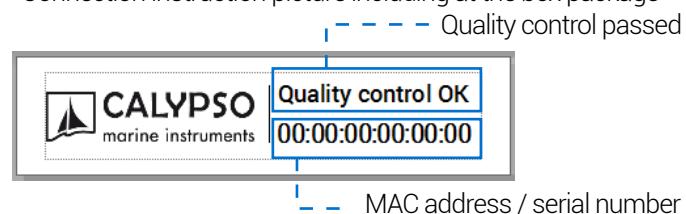
A powerful wired ultrasonic anemometer, easy to install, simple to use and compatible with iOS and Android.



2. Package content

The package contains the following:

- Ultrasonic Wired Wind Instrument + cable 1,5 meters for connection
- *Check other available measures at our website
- Serial number reference in the back of the packaging
- Quality control reference in the same place as the previous one (Both shown in the bottom image)
- Connection instruction picture including at the box package



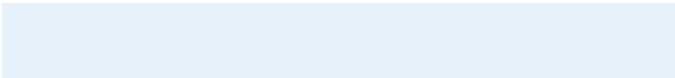
3. Technical specifications

Ultrasonic Wired model incorporates the following technical specifications:

3.1. Dimensions

·Diameter: 70 mm

·Height: 57 mm



3.2. Weight

·135 grams

3.3. Bluetooth

·Version: 4.1 or beyond

·Range: 50 m (open space)

The Ultrasonic Wired incorporates BLE technology (Bluetooth Low Energy).

BLE is the first open wireless communication technology, offering communication between mobile devices or computers and other smaller devices such as our new wind meter.

Compared to Classic Bluetooth, BLE is intended to provide considerably reduced power consumption and cost while maintaining a similar communication range.

Version
The BLE version is 4.1. It incorporates important developments for the user by facilitating the reconnection between their devices once they come out and re-enter the range of action.

Compatible devices
You can use our product with the following devices:

- Compatible Bluetooth 4.0 Android devices, Android 4.3 or 4.4
- iPhone 4S or beyond
- iPad 3rd generation or beyond
- Run the *Sailing Anemotracker App* to check compatibility and make sure your device is compatible.

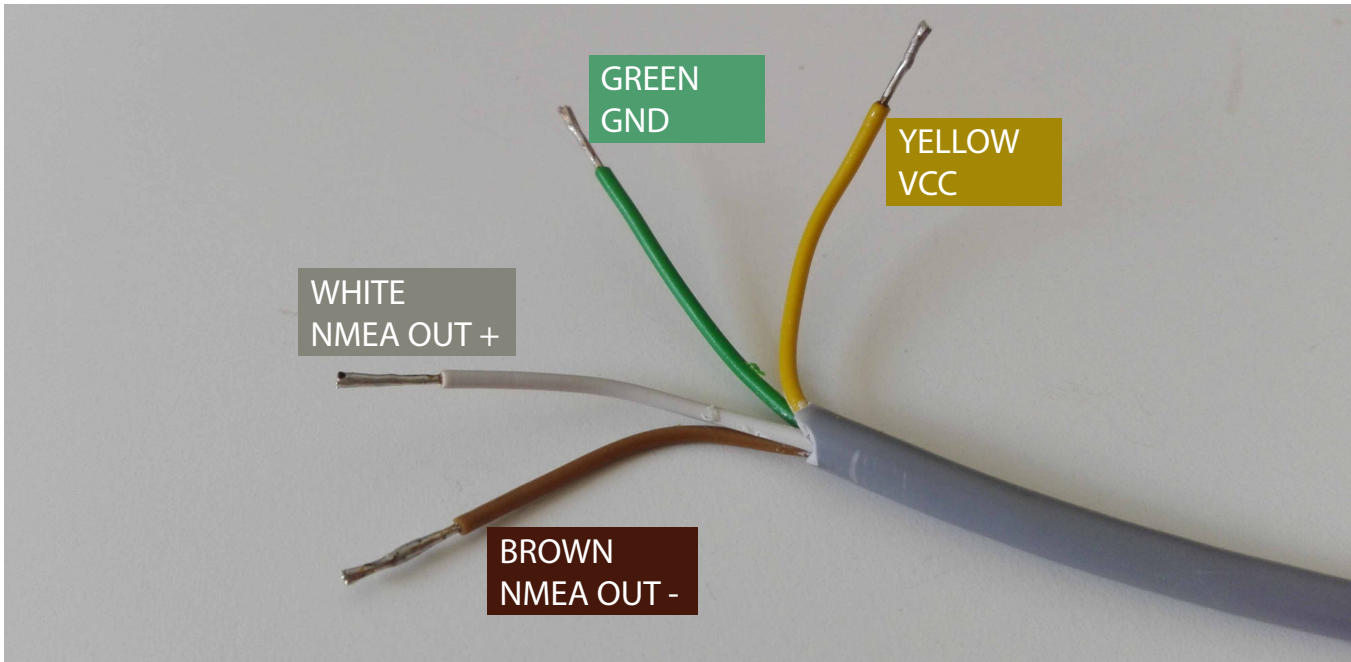
Range
The coverage range is around 50 meters when it is in an open space.

3. Technical specifications

(continuation)

3.4. Power ·5-24 V

Ultrasonic Wired has to be connected as is shown below.



Data interface	RS422, RS485, Bluetooth 4.1
Data format	NMEA0183
Baud rate	4800/38400 (8n1) bauds
Voltage range	5-24V

3. Technical specifications (continuation)

3.5. Sensors

- Ultrasonic transducers (4x)
- Sample rate: selectable
- Thermometer
- Compass
- Gyroscope
- Accelerometer

Ultrasonic Portable combine different types of sensors which allows you to get information according to your needs.

Ultrasonic transducers (4x)

The Ultrasonic Portable has been designed to avoid any mechanical parts to maximize reliability and minimize maintenance.

The transducers communicate between themselves two by two using ultrasonic range waves. Each couple of transducers calculate the signal delay and get information about both, wind direction and wind speed.



Sample rate: selectable

Sample rate can be chosen through the application the range of data you want to extract.

Thermometer

Temperature data can be got using our App.

Compass

North position can be got through the needle that appears in Anemotracker App.

Gyroscope/Accelerometer

These sensors allow you to obtain information about the tilt angle of the boat.

3.6. Wind information

- Wind speed
- Wind direction

Wind speed

Range: 0 - 40 m/s

Resolution: $\pm 0,1$ m/s

Wind direction

Range: 0 - 360°

Resolution: $\pm 1^\circ$

*For more information about how to get each value, please visit our website and download latest full manual of Anemotracker App.

3.7. NMEA connection

·NMEA0183

NMEA sentences that NMEA CONNECT is able to send/transmit are the followings:

\$IIMWV,XX,R,XX.XX,N,A*CR\r\n

\$IIMTA,XX,C*CR\r\n

\$IIXDR,C,XX,C,TempAir*CR\r\n

\$HCHDM,XX,M*CR\r\n

\$HCHDT,XX,T*CR\r\n

\$HCHDG,XX,,,XX,W*CR\r\n

\$IIXDR,A,XX,D,ROLL*CR\r\n

\$IIXDR,A,XX,D,PTCH*CR\r\n

You can select NMEA sentences via Bluetooth.
Baudrate can also be selected.

3. Technical specifications (continuation)

3.8. Easy mount ·16 mm (M16×2 female thread)

You can mount your Ultrasonic in a simple way since it comes with a threaded lower part (16 mm M16×2 female thread).



A wide range of accessories can be used with the device

CARBON FIBER POLE

- 33 cm.
- 100 cm.
- 200 cm.



ALUMINUM POLE

- 33 cm.
- 100 cm.



(Check availability of other measures through our website).

*Please, visit our website and check accesories availables and their possible combinations.

3.9. Firmware ·Upgradable

You can update the Ultrasonic Portable firmware via Bluetooth.

How can I do that?

Follow the next steps:

1. To check the availability of the new firmware version, please visit our webpage and download the file.

2. Download and install Rigado Toolbox App on your device from Google Play or Apple Store.

3. Enter to the App pressing on its icon.

4. Select the correct Ultrasonic (taking into reference the serial number/MAC address). Then the App will try to connect with the unit.

5. The connection is successful when the word "CONNECTED" appears at the top.

6. Select "FIRMWARE UPDATE" - Select first option "Firmware Image File".

7. Select the correct file ending in ".bin" (there will be a reference on the web).

8. Then, data has been updated on the main screen.

9. Select "Activation Characteristic" - A pop-up window will appear on the main screen - select it.

10. Another pop-up window will appear on the main screen - you have to search the correct one (in which the combination "0000A00A" appears) - Select it.

11. Then, data has been updated on the main screen.

12. Select "Activation Command" - The keyboard will be uncovered to indicate command "01".

13. Press "BEGIN FIRMWARE UPDATE".

14. A new window will appear with the progress.

15. When the process is completed, a pop-up window will appear indicating the completed update and requesting the Bluetooth reset.

16. Select "RESET BLUETOOTH"

17. The App directs you to the Bluetooth options. It connects again and you already have your unit updated!

If any error appears during the update process, please repeat all steps from the beginning.

*Tutorial video available at our website.

4. Functions

The Ultrasonic Portable will allow you to perform a great diversity of operations adapting to your needs.

It will provide you information about everything what is shown below through our application *Sailing Anemotracker App*, but the most important aspects that facilitate the unit are the followings:

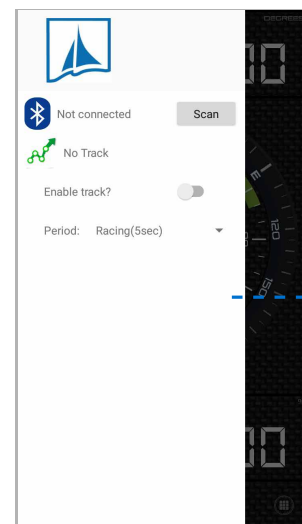
- The **Apparent Wind** is a value that comes thanks to the Ultrasonic Portable.
- The **Real Wind** is a value that facilitates the application thanks to the data collected by the anemometer and the crossing with the GPS of the connected device.
- All collected data can be stored in the memory of the application.

Below are some captures that refer to the data provided by the application.

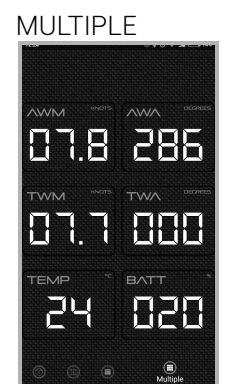


Screen that appears when you run the application.

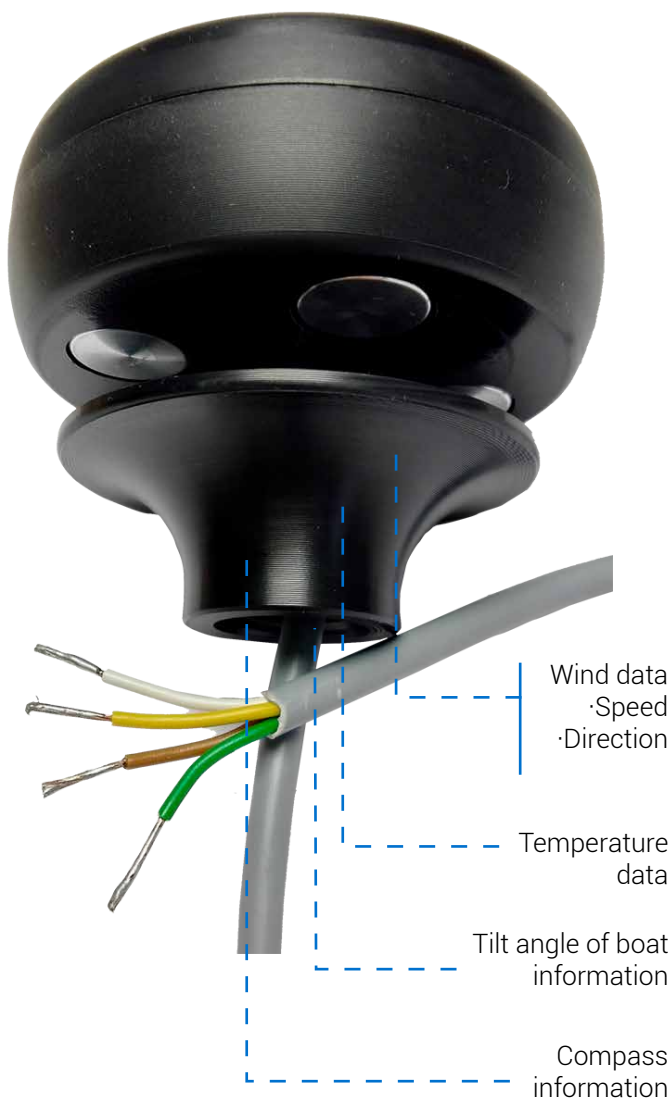
The menu appears at the bottom, with the four main buttons.



SETTINGS - Screen that appears sliding to the right.



*For more information to How to use Sailing Anemotracker App, please visit our website and download its latest version of user manual.



5. Application areas

Thanks to the great diversity of functions the product can perform, it can be adapted to different areas.

Nautic



- Cruising
- Daysailers
- Trainers and race officials
- Motorboats
- Others



Meteo



Industry



Energy



Agriculture



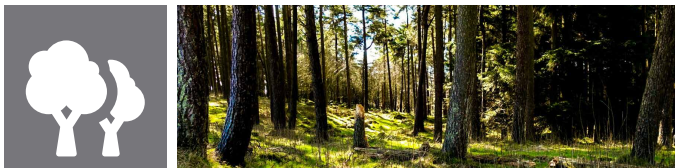
Cranes



Security



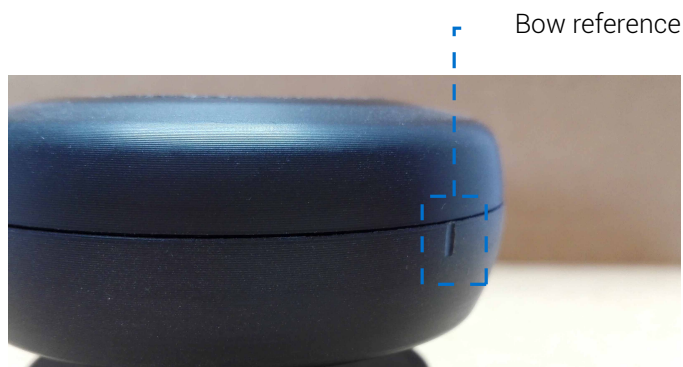
Forestry



6. Installation

6.1. Installing the unit

The Ultrasonic Wired has to be oriented to the bow taking as reference the mark that appears at the top (as shows at the image below).



As we describe you before, comes with a threaded lower part (16 mm M16×2 female thread) that you can adapt to your available accessories.

It is a standard measure, great variety of accessories in the market adapt to it.

*Please check our available accesories on our website.

6.2. Installing the App and testing the unit

Follow the next steps:

1. Make sure your device is BLE compatible*.

*Ultrasonic Wired works with Android 4.3 or 4.4 or iOS devices (4s, iPad2 or beyond).

2. Download and install *Sailing Anemotracker App* on your device from Google Play or Apple Store.



3. Once the App is installed start it and open the menu by a long press on the menu icon - the three vertical dots at the right lower end.

4. Press "Search Sensor" on the Sailing Anemotracker App and all Ultrasonics Wired within the range should show up identified by a unique number.

5. Select your device and connect.

If your device connects with the Ultrasonic Wired correctly, continue with the normal installation.

If not, please read the following lines.

Your device is compatible with the ULTRASONIC but you can not connect?

1. Make sure BT (Bluetooth) mode is running on your smartphone, Tablet or PC.

2. Make sure ULTRASONIC WIRED is not on Off mode. If the device has not been exposed to any source of light for an extended period of time it might be necessary to keep it under direct sunlight for a few hours. A cloudy day will work too.

4. Make sure no other device is linked to your ULTRASONIC WIRED.

Each unit can only be connected to a single device at a time. As soon as it gets disconnected, ULTRASONIC WIRED is ready to link to any other device with the Anemotracker app installed.

For further information please contact Calypso Technical Support.

7. Compatible Apps

We constantly work on making the product compatible with a great diversity of Applications.

The list below shows some apps that got to be compatible with our products. We are not responsible of third party bugs, updates, new releases, etc...Therefore, please check with each app developer current compatibility.

- Sailing Anemotracker App (our Own App)
- Vaavud App
- iRegatta
- eStela
- SailRacer



Our hardware is open source.

We are a hardware firm but we developed and maintain Sailing Anemotracker App to be used with our products. We realize that our users' diverse needs require tailored solutions beyond our imagination and that's why we decided from minute one to open our hardware to the world.

We encourage third party software and hardware firms to integrate our hardware on their platforms at their will.

Here you learn how to connect to our hardware. You can replicate the product signal so you don't need to get one to start playing right away.

We made communication as simple as possible; however, if you need support, do not hesitate to contact us either by email (info@calypsoinstruments.com) or phone (+34 901 955 109).

8. FAQ/troubleshooting

What about hardware and software compatibility?

Sailing Anemotracker App will run on iOS and Android devices. However, since Ultrasonic Portable uses Bluetooth Low Energy (BLE), the App will connect only when run on BLE devices. In other words, Ultrasonic Portable will connect to smartphones and tablets with BLE chipset running Android (4.3 and 4.4 or beyond) or iOS (iPhone 4s, iPad 3rd generation or beyond) using Sailing Anemotracker App.

Make sure your device is Android (4.3 and 4.4 or beyond) or iOS (iPhone 4s, iPad 3rd generation or beyond)! Otherwise, it will not connect to Ultrasonic Portable.

Sailing Anemotracker App will check automatically compatibility. Since the app is free, you will be able to download and make the compatibility check.

Drop us an email - info@calypsoinstruments.com - if you are not sure about your device compatibility.

There are more Apps compatible with ULTRASONIC PORTABLE, which you can find it here, and read more about our Open philosophy.

Does it work offline?

Yes, ULTRASONIC will connect and will work fine with Anemotracker with no internet connection. However, the maps windows will not show any map since it needs internet connection to get map info.

How many devices can be linked to the same ULTRASONIC at the same time?

ULTRASONIC only allows one device linked at a time (Bluetooth standard). If one device is linked and you want to use a different device, you will need to first, disconnect the linked one and then connect the new one.

It is wise to go mobile onboard?

Your next smartphone will deliver better screen visibility, improved battery life, better and more apps on it, better data logging and sharing and overall better performance than the one you bought last year. But your hardware will remain at the top of your mast.



8. FAQ/troubleshooting (continuation)

How can I identify my ULTRASONIC WIRED among several units within my device BT range?

Each ULTRASONIC WIRED shows a unique ID when you it's paired with your device. The number should be printed on your box and/or the ULTRASONIC sticker. You can also write it down the first time you connect, since it will not change over the time.

What is the distance range of my ULTRASONIC WIRED?

The Bluetooth Low Energy radio chip integrated on the device has a nominal value of 50m. During in-house testing we have reached up to 80 m range on an open space, at the same level and keeping transmitter (ULTRASONIC) and receiver (Nexus 5) at the same positions along the test.

Range will depend upon transmitter-to-receiver direct visibility, your device antenna performance, electromagnetic environment (electrosmog), etc.

However, in all tests we run, we had no problem to get the signal from the top of the mast to the cabin, even to our berths.

Will my Sailing Anemotracker App get data from a boat close to mine when racing?

No! As any other bluetooth device, the communication is password protected. Once you paired your smartphone with your ULTRASONIC WIRED unit, no other smartphone can communicate with it

Is the ULTRASONIC wired firmware upgradable?

Yes, definitely. You will get new firmware updates via Bluetooth by means of an App with lots of new features and improvements.

What happen if my unit gets blocked?

The ULTRASONIC WIRED restarts after 10 minutes thanks to the system called "watchdog".

You simply have to reset the application again and it will work again correctly.

How can I update the firmware version of my unit?

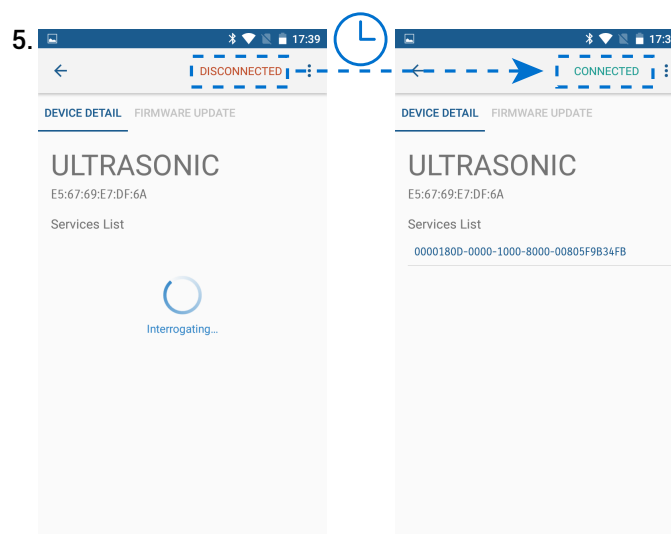
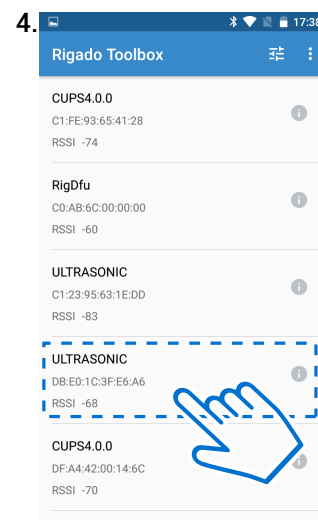
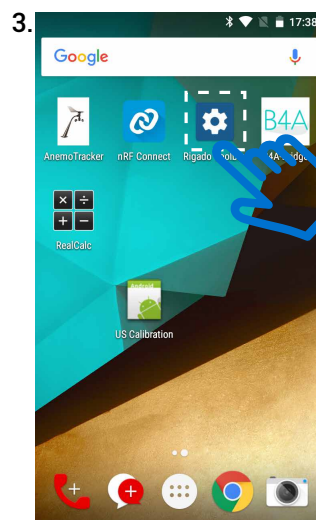
Please, go to chapter 3.9. *Firmware*, follow the steps that we indicated and rely on the following images if you wish.

Follow the next steps:

1. To check the availability of the new firmware version, please visit our webpage

www.calypsoinstruments.com

2. Download and install Rigado Toolbox App on your device from Google Play or Apple Store.



8. FAQ/troubleshooting (continuation)

6.

CONNECTED

17:39

DEVICE DETAIL

FIRMWARE UPDATE

Firmware Image File

Tap to select the firmware image

Activation Characteristic

Tap to select the activation characteristic

Activation Command

Valid Hex Octets (A-F, 0-9)

BEGIN FIRMWARE UPDATE

7.

Reciente

17 abr.

temp1.apk

17 abr.

quickshortcutmaker-2-4-0.apk

16 abr.

com.sika524.an...shortcut (1).apk

16 abr.

com.sika524.an...ickshortcut.apk

16 abr.

Protocolo Comu...bracion BLE.pdf

12 abr.

Tickets mejoras...emotracker.pdf

7 abr.

pruebas.pdf

6 abr.

12.

CONNECTED

17:40

DEVICE DETAIL

FIRMWARE UPDATE

Firmware Image File

content://com.android.providers.downloads.documents/document/870

Activation Characteristic

0000a00a-0000-1000-8000-00805f9b34fb

Activation Command

Valid Hex Octets (A-F, 0-9)

01

8-9.

CONNECTED

17:39

DEVICE DETAIL

FIRMWARE UPDATE

Firmware Image File

content://com.android.providers.downloads.documents/document/870

Activation Characteristic

Tap to select the activation characteristic

Activation Command

Valid Hex Octets (A-F, 0-9)

BEGIN FIRMWARE UPDATE

17:40

DEVICE DETAIL

FIRMWARE UPDATE

Firmware Image File

content://com.android.providers.downloads.documents/document/870

Activation Characteristic

Choose the Activation Characteristic

00001800-0000-1000-8000-00805f9b34fb

Valid Hex Octets (A-F, 0-9)

BEGIN FIRMWARE UPDATE

13.

CONNECTED

17:40

DEVICE DETAIL

FIRMWARE UPDATE

Firmware Image File

content://com.android.providers.downloads.documents/document/870

Activation Characteristic

0000a00a-0000-1000-8000-00805f9b34fb

Activation Command

0101

BEGIN FIRMWARE UPDATE

14.

17:40

Searching for updater service...

CANCEL

10.

Choose the Activation Characteristic

0x00

READ, WRITE

Unknown Characteristic

0000A008-0000-1000-8000-00805F9B34FB

0x00

READ, WRITE

Unknown Characteristic

0000A00A-0000-1000-8000-00805F9B34FB

0x00

READ, WRITE

Unknown Characteristic

0000A00C-0000-1000-8000-00805F9B34FB

0x0000000051FD01003F270F002C2700200000

READ, WRITE

Unknown Characteristic

0000A00C-0000-1000-8000-00805F9B34FB

11.

CONNECTED

17:40

DEVICE DETAIL

FIRMWARE UPDATE

Firmware Image File

content://com.android.providers.downloads.documents/document/870

Activation Characteristic

0000a00a-0000-1000-8000-00805f9b34fb

Activation Command

Valid Hex Octets (A-F, 0-9)

BEGIN FIRMWARE UPDATE

14.

17:40

Transferring New Device Software

CANCEL

15-16.

17:43

Firmware Update Completed

Update completed! Please reset your phone's bluetooth.

RESET BLUETOOTH

Update completed! Please reset your phone's bluetooth.

CANCEL

8. FAQ/troubleshooting (continuation)

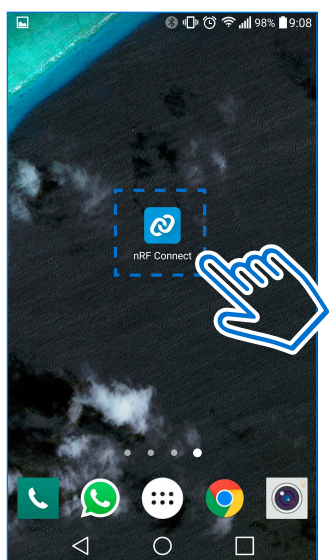
How can I recalibrate the compass of my Ultrasonic Wired?

Follow the next steps:

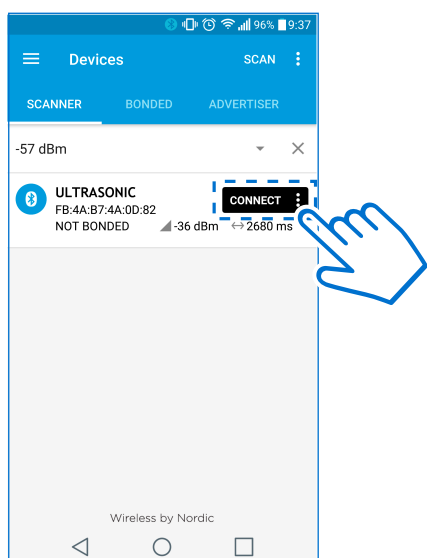
1. Download and install NRF Connect App on your device from Google Play or Apple Store.



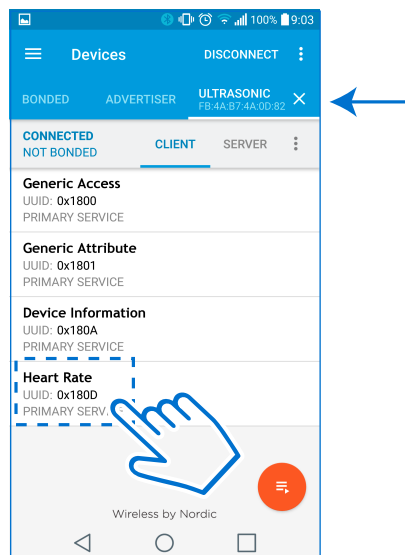
2. Enter to the App pressing on its icon.



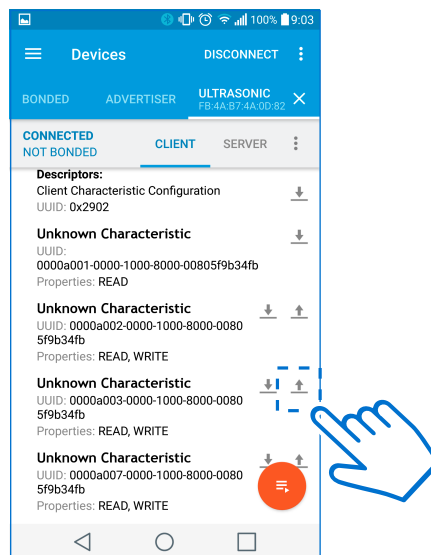
3. Search your Ultrasonic in the list which appears at main screen (at "SCANNER" tab) and press "CONNECT".



4. If the connection has been successful, the identification of your ultrasonic will appear in the upper tab. Then, press "Heart Rate" section.



5. Search "Unknown Characteristic UUID: 000a003-0000-1000-8000-0080" and press the up arrow located at the right.



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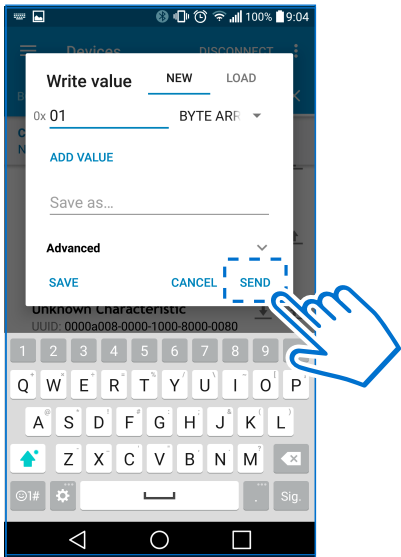
ULTRASONIC WIRED
USER MANUAL

8. FAQ/troubleshooting

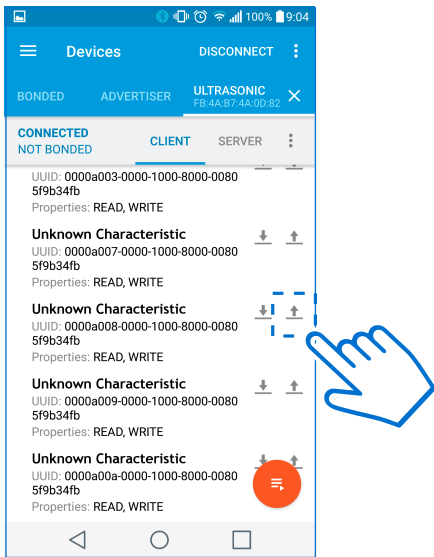
(continuation)

How can I recalibrate the compass of my Ultrasonic Wired?

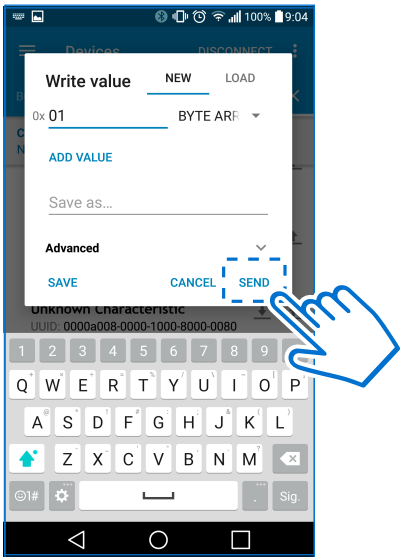
6. Write "01" and press "SEND".



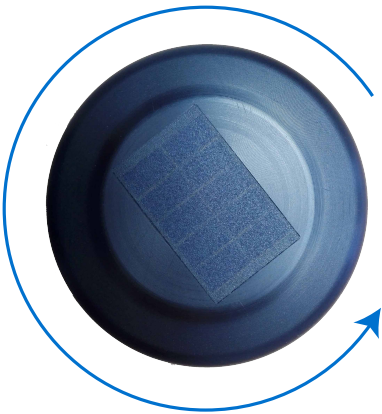
7. Search "Unknown Characteristic UUID: 000a008-0000-1000-8000-0080" and press the up arrow located at the right.



8. Write "01" and press "SEND".



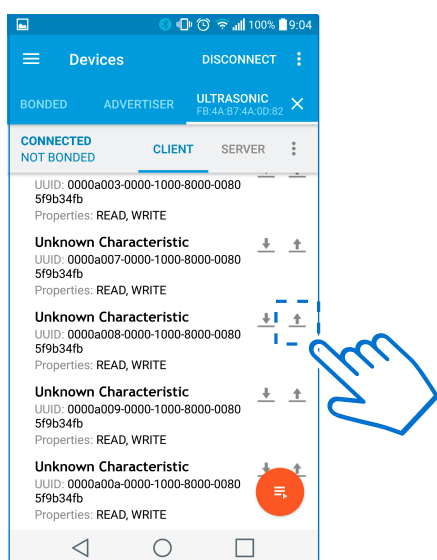
9. Rotate the device 360 degrees as slow as possible, repeat it for 3 times. If your unit is mounted on the mast, make a few rounds with the boat.



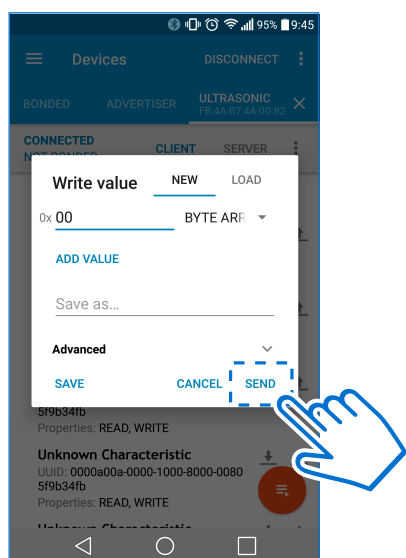
8. FAQ/troubleshooting (continuation)

How can I recalibrate the compass of my Ultrasonic Wired?

10. Search "Unknown Characteristic UUID: 000a008-0000-1000-8000-0080" and press the up arrow located at the right.



11. Write "00" and press "SEND".



Now, the compass of your device is already calibrated.

12. Exit the App by pressing "back" at your device.

9. General information (continuation)

9.2. Maintenance and repair

The ultrasonic does not require great maintenance thanks to the avoiding of the moving parts in this new design.

The only maintenance you have to do is to clean the solar panel with a wet tissue a few days before using it and place it in a light source / solar to get the battery full of charge.

Before using it, make sure that the device has enough battery to work without problems. You can get that information directly through the application.

Transducers must be kept clean and aligned. Impacts or incorrect impulsive handling may lead to transducers misalignment.

The space around the transducers must be empty and clean. Dust, frost, water, etc... will make the unit stop working.

Rinse with freshwater and let dry.

9.3. Warranty

Warranty is void in case of non-following the instructions of use, repair or maintenance without written authorisation.

This product is for leisure purposes exclusively. Any wrongful use given by the user will not incur in any responsibility of Calypso Instruments. As well, any harm caused to ULTRASONIC wired by a mistaken use will not be covered by the guarantee. Using assembly elements different from those delivered with the product will void the guarantee.

Changes on transducers position/alignment will avoid any warranty.

For further information please contact Calypso Technical Support through info@calypsoinstruments.com or visit www.calypsoinstruments.com.

9. General information

9.1. General recommendations

The Ultrasonic Portable has been calibrated with accurate, following the same calibration standards for each unit.

Regarding to mount the unit

As we describe you before, you have to prepare the mast head for the mechanical installation. Align the North mark of the Ultrasonic in order to have it heading to the bow. Then install the sensor in a location free from wind perturbation, usually on the mast head.

Other important aspects

·Do not attempt to access the transducer area with your fingers.

·Do not attempt any modification to the unit.

·Never paint any part of the unit or alter its surface in any way.

If you have any questions or doubts, please contact directly with us. We will be glad to assist you in any time.

Calypso Marine Instruments team thanks you for your confidence.



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