

## RELEASE NOTE

<b>Product:</b>	Subsonus	<b>Release Date:</b>	22 October 2021
<b>Firmware Version:</b>	3.0		
<b>Release Status:</b>	Public Release		
<b>Download Link:</b>	<a href="https://www.advancednavigation.com/solutions/subsonus/#Software">https://www.advancednavigation.com/solutions/subsonus/#Software</a>		
<b>Manual:</b>	<a href="https://www.advancednavigation.com/solutions/subsonus/#Documentation">https://www.advancednavigation.com/solutions/subsonus/#Documentation</a>		

### 1. Release Description

Firmware 3.0 is a major release for Subsonus, released concurrently with Subsonus Tag Firmware 2.0. Introduced in this release is the option to select between the existing acoustic data protocol - now called “High Speed” mode, and a new acoustic data protocol - called “High Reliability” mode.

**Important Information:** This firmware release is not backwards compatible with older Subsonus firmware, or with Subsonus Tag firmware older than V2.0. It is necessary to update the firmware of all Subsonus and Tag units being used together.

If a Subsonus or Subsonus Tag unit is installed in such a way that its’ firmware cannot be updated (e.g. in a subsea installation) it is not recommended to update to this firmware.

In the event Subsonus FW3.0 has been installed on a unit, and another unit running an older incompatible firmware is discovered it is recommended to roll back the Subsonus firmware to FW2.4 (Available from Advanced Navigation website or from [support@advancednavigation.com](mailto:support@advancednavigation.com) )

#### 1.1 Compatible Firmware

<b>Subsonus</b>	Firmware 3.0 or later
<b>Subsonus Tag</b>	Firmware 2.0 or later

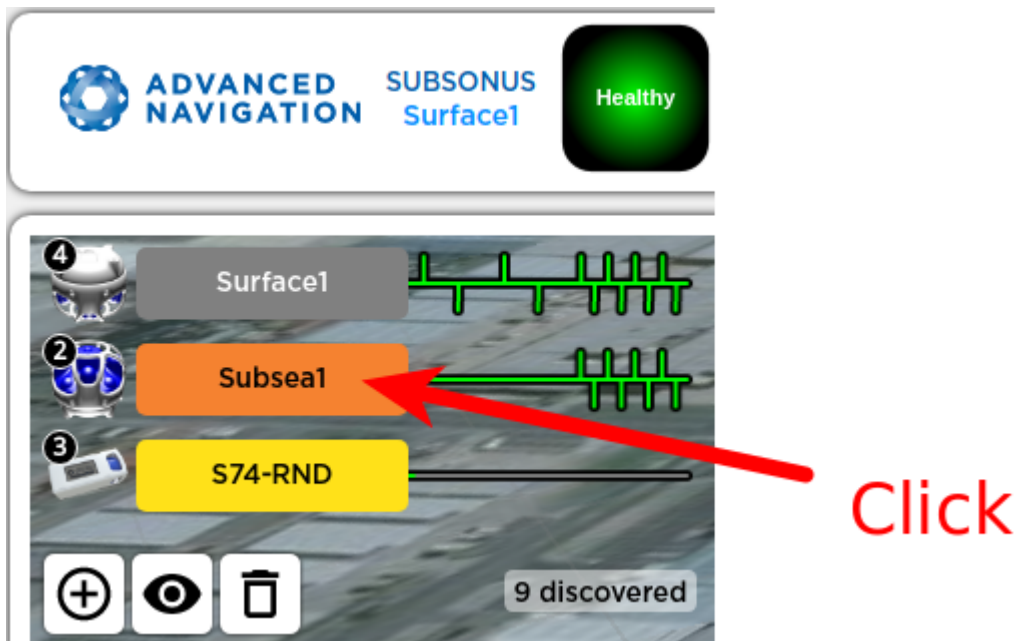
## 2. Selecting Acoustic Data Protocol

By default Subsonus has the Data Protocol set to 'Auto' mode. In this mode, Subsonus will automatically determine the optimal data protocol based on noise levels and detected multipath levels.

Should the User wish to, the data protocol may be selected. The data protocol is fully controlled from the master subsonus and can be set for each tracked target independently. To select the desired Data Protocol follow the steps detailed below;

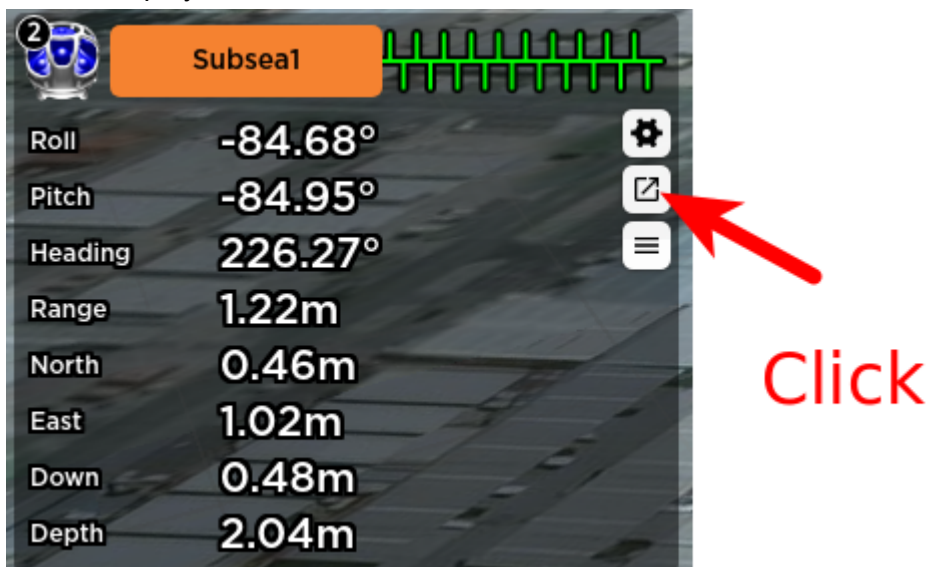
### Step 1:

On the main view click on the name of the device to modify:



### Step 2:

Open the Device Configuration Tab, the button will be visible when the mouse pointer is in the text display area.




**Step 3:**

Select the "Tracking" tab:

The screenshot shows a web interface for configuring tracking settings. On the left is a sidebar menu for 'Subsea1' with a status icon (a blue and white helmet with a '2' in a circle). The menu items are: Subsonus, Network: **Connected**, Acoustic: **TCP Aided Tracking**, Device Information, Displayed Fields, Status Flags, **Tracking** (highlighted), Acoustics, Model, Filter Aiding, Alignment, Ethernet, and Sound Velocity. The main content area is titled '> Tracking' with the subtitle 'Configure the local tracking settings'. It contains three settings: 'Minimum Interrogation Period' set to 'Fastest', 'Track Device' checked with a blue checkbox, and 'Data Protocol' set to 'Automatic'. A 'Submit' button is located below these settings.

**Step 4:**

Select the Desired “Data Protocol” and press “Submit”

**Subsea1**  **> Tracking**  
*Configure the local tracking settings*

Subsonus  
Network: **Connected**  
Acoustic: **TCP Aided Tracking**

**Device Information**

**Displayed Fields**

**Status Flags**

**Tracking**

**Acoustics**

**Model**

**Filter Aiding**

**Alignment**

**Ethernet**

**Sound Velocity**

Minimum Interrogation Period:

Track Device:

Data Protocol:

**Click**

In Auto Mode the User is able to see which Data Protocol is being used by enabling the Data Protocol Display Field and monitoring the output in the display text area:

Enable Data Protocol Display:

1. Open the Device Configuration Tab, see above steps 1 and 2
2. Open the “Displayed Fields” tab and enable the checkbox for “Data Protocol”

**Subsea1**  
 Subsonus  
 Network: **Connected**  
 Acoustic: **TCP Aided Tracking**

Device Information

**Displayed Fields**

Status Flags

Tracking

Acoustics

Model

Filter Aiding

Alignment

Ethernet

Sound Velocity

**> Displayed Fields**  
 Configure what fields are displayed on the view

Field	Description
<input checked="" type="checkbox"/> Pitch	Rotation about starboard axis
<input checked="" type="checkbox"/> Roll	Rotation about forward axis
<input checked="" type="checkbox"/> Heading	Rotation about downward axis
<input checked="" type="checkbox"/> Range	Acoustic distance to object from this device
<input type="checkbox"/> Surface Distance	Distance to object from this device on the horizontal plane
<input type="checkbox"/> Bearing	Angle to object from this device, relative to north
<input checked="" type="checkbox"/> North	Distance north to object from this device
<input checked="" type="checkbox"/> East	Distance east to object from this device
<input checked="" type="checkbox"/> Down	Distance down to object from this device
<input type="checkbox"/> Inclination	Acoustic angle of slope between object and this device
<input type="checkbox"/> Azimuth	Acoustic angle to object relative to this device's heading
<input type="checkbox"/> Latitude	Geodetic WGS-84 latitude
<input type="checkbox"/> Longitude	Geodetic WGS-84 longitude
<input type="checkbox"/> Height	Geodetic WGS-84 height
<input checked="" type="checkbox"/> Depth	Depth below sea-level, with device-dependant pressure-correction
<input type="checkbox"/> Incline	Angle of slope (or tilt), elevation, or depression of the device with respect to gravity's direction
<input type="checkbox"/> Data Protocol	Method of acoustic communication this device is using.

Set to default

The active Data Protocol will be displayed in the text display area per device

**Subsea1**

Roll -83.24°

Pitch -84.89°

Heading 223.81°

Range 1.22m

North 0.47m

East 1.02m

Down 0.48m

Depth 2.04m

Data Protocol **High Speed**

## 2.1 High-Speed Mode

High-Speed mode is the standard acoustic protocol that Subsonus has historically operated on. This protocol utilises a proprietary phase-based signal encoding technique to deliver high data transmission rates while maintaining good levels of resilience to acoustic multipath and high background noise levels.

## 2.2 High-Reliability Mode

High-Reliability mode is a new acoustic protocol, introduced in this firmware release. This data protocol utilises MFSK signal encoding with high redundancy, which has been optimised to deliver acceptable data transmission levels while offering exceptional levels of resilience to acoustic multipath and high background noise levels.

# 3. Enhancements

## 3.1 Improved acoustic discovery time

This firmware changes the way devices are discovered and tracked from a Subsonus USBL. The user is now required to manually discover or add devices to be tracked. This change resolves a tracking startup delay issue experienced in the past that required a period of negotiation before the device is tracked. Previous tracked devices will now resume tracking instantly without any negotiation.

## 3.2 Address conflict resolution

In the event a user has accidentally deployed two or more devices with conflicting device addresses Subsonus allows these addresses to be manually changed from the surface unit via acoustics. This can be achieved by running an acoustic discovery then resolving conflicts without needing to remove the transponder from the water, potentially saving huge costs to the operation.

## 3.3 Adds support for Certus and Certus Evo

Network discovery and aiding from Certus and Certus Evo is now supported.