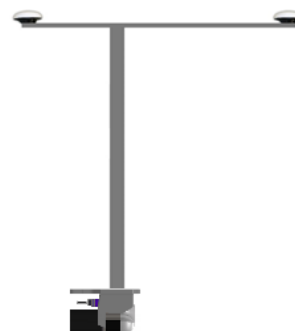


## NORBIT iWBMS Quick Start Guide

This section is provided for users who wish to quickly get to work with the iWBMS system. As a result, this section offers little in detail. Check the WBMS User Manual for further information.

1. Unpack your sonar system; inspect all cables and connectors for damage, dirt or moisture. Inspect the sonar for damage especially around the transducers for cuts or gouges. Check that all cables are at-hand and in good working condition.
2. The cables that are required for sonar operation included in the kit are.

Sonar/IMU Cable  
Network Cable  
Power Cable  
2 GNSS Cables  
Optional Serial Cable for RTK or DGNSS



3. The simplest way to mount the Norbit is to mount all components onto one pole. Having the Sonar/IMU wet end directly below the 2 GNSS antennas makes for easy setup. The cables for the iWBMS must be run through the centre of the mounting pole. The diameter should be a minimum of 5.8cm. For mounting methods reference the Norbit-WBMS-SonarMounting-Options document. Contact Norbit support if you do not have this document.
4. Be sure to mount the IMU and antennas in line with one another. Ideally the antennas should be mounted so that they are at least 2m apart and in line with the WBMS wetend. Assign the Antenna closest to the IMU as the primary and mark both ends of this cable to ensure proper connection to SIU. The GNSS antennas are secured with 5/8" bolts

The bracket is ~2cm thick. Be sure to have sonar mounting bolts of sufficient length to go through the pole mounting plate and the sonar bracket.

5. Configure static IP address for acquisition computer. The computer must have the same first 3 octets as the sonar system. 192.168.53.200 is a good choice and should not interfere with the sonar or Applanix IP address

☒ Use the following IP address:

IP address:	192 . 168 . 53 . 200
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	. . .

6. Install the WBMS software which can be located on the USB stick provided with the system. Follow all onscreen prompts for software installation.
7. Plug in all system cables into the SIU. Be sure to use caution so as not to bend pins in the cables or on the SIU. It is a good idea to mark both ends of the cable that are attached to you primary antenna. Ensure that your primary antenna is plugged into ANT 1 port. When plugging in the sonar/ IMU wet-end be sure to push in the cable and as you are screwing the collar into place, give them a wiggle to give a snug fit. This will allow it to be tightened more. It may also be a good idea to GENTLY use a pair of channel locks or similar to tighten the connection if your fingers are not able to give a finger-tight mating. NOTE: Wet-ends of cables are NOT wet mateable
8. Once all cables are plugged in it is now a good time to determine the offsets. For the POS-MV the sign convention is X (+ Forward), Y (+Starboard) and Z (+Down). Measure from the top centre of the iWBMS bracket to the base of primary antenna along all 3 axis. The axis should align with the IMU. Be sure to check your sign convention. Remember that your antenna will ALWAYS be a negative vertical value as it is above the IMU.
9. Turn the system on and turn on the Norbit GUI. You will enter in the offsets that you measured into the INS wizard in the GUI. Take note of which antenna was provided with your system. The antenna versions are shown below. Offsets from the top centre of bracket to sonar centre as well as base of antenna to antenna phase centre are static and handled by the Norbit GUI. When installed in a normal orientation there is no need to add any additional values to your measurements.

3rdPartySoftware  
Applanix  
Manual  
Reference  
Release Notes  
WBMS\_Installer



Trimble 540AP Antenna: 58mm (0.190ft)

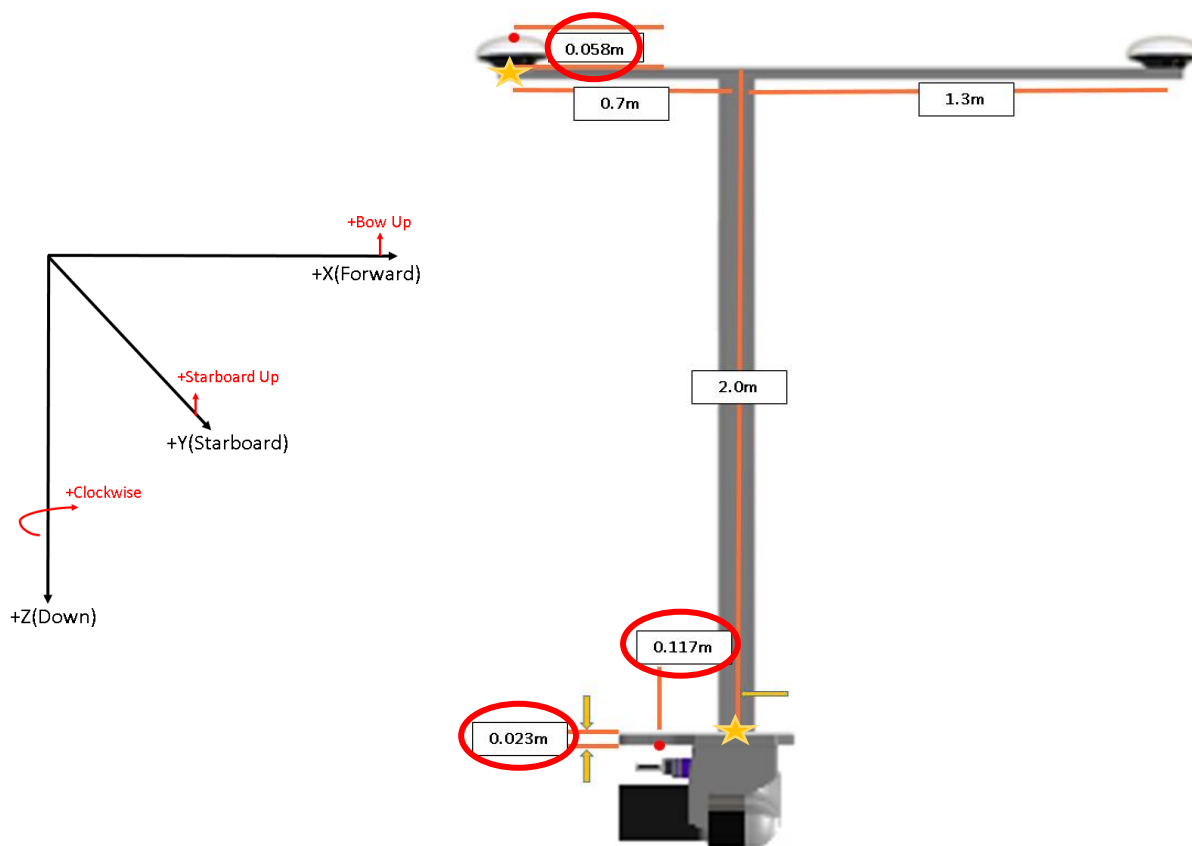


Trimble 382AP Antenna: 66mm (0.217ft)

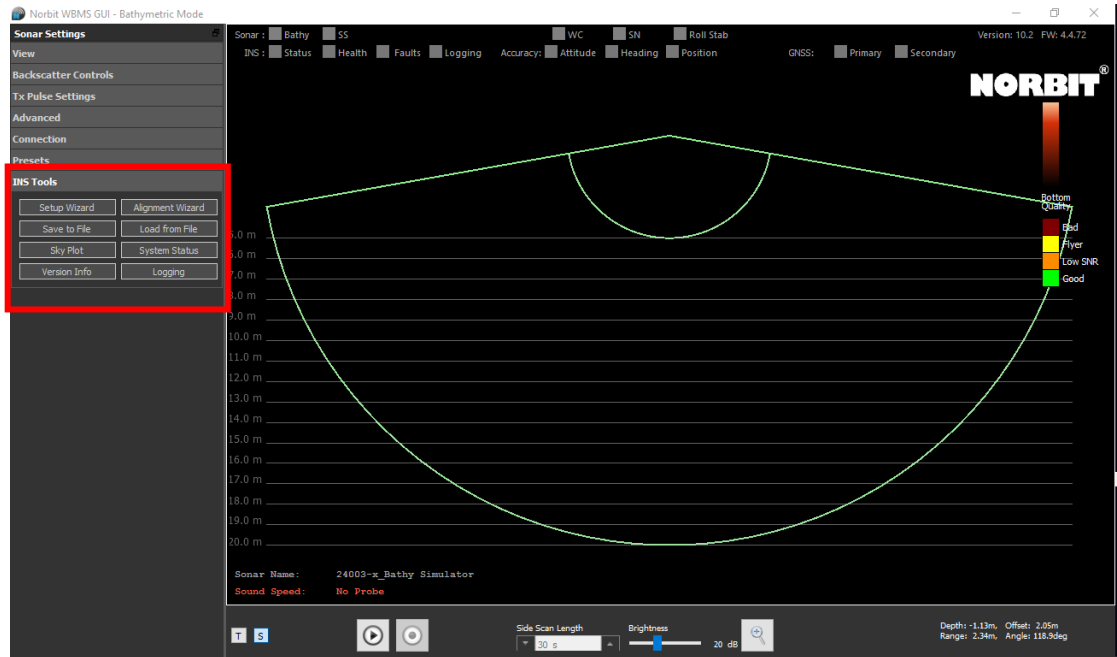
The below table shows measurements from a fictitious vessel from the top centre of the bracket to the base of the primary GNSS antennas. These values will be entered into page 2 of the INS setup wizard.

(Z) Top centre of bracket to base of antenna	2.000m
(X) Top centre of bracket to base of primary antenna	0.700m
(Y) Top centre of bracket to base of primary antenna	0.000m
Antenna separation	2.000m

Offsets circled are added automatically to your measurements. You must measure between the stars (top centre of bracket to base of primary antenna) in all 3 axis and enter those values into the INS setup wizard

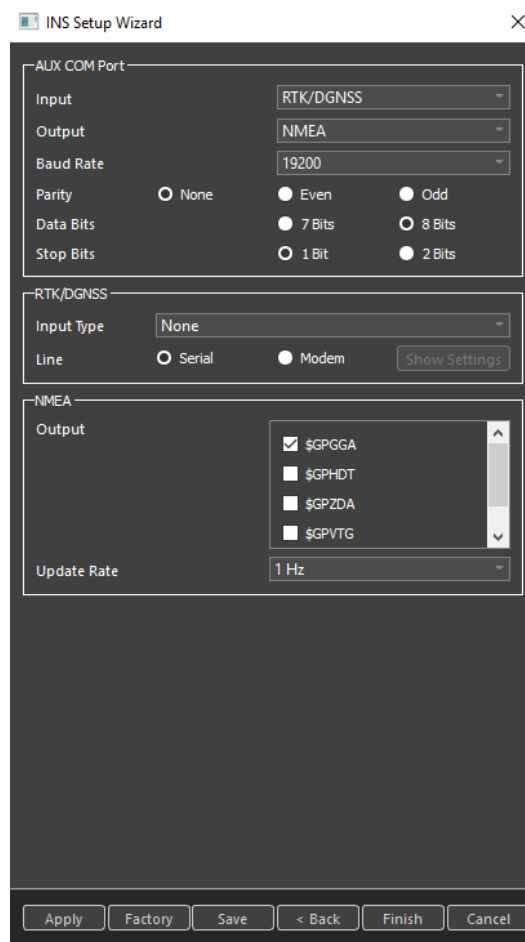


Now you are ready to enter in these values into the INS wizard. Open up the INS Tool dropdown and click on Setup wizard. The first page will contain the static values of the system. Measurements will be entered on page 2.



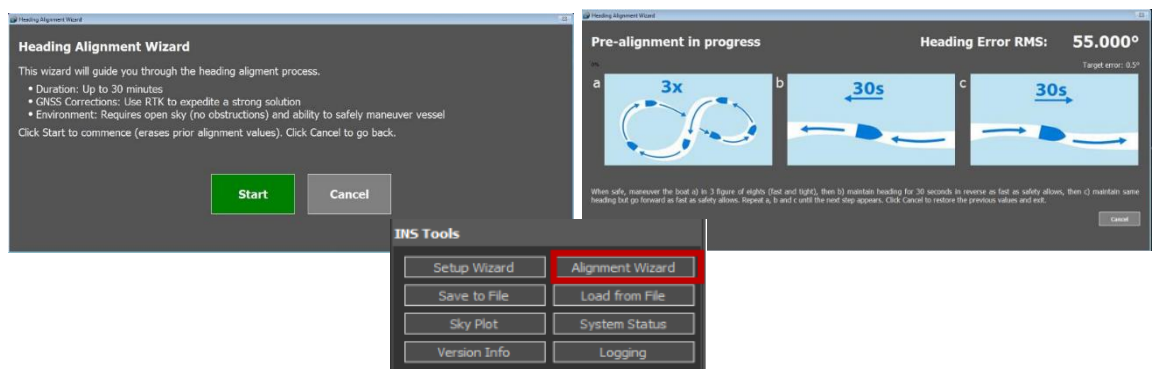
The screenshot shows the INS Setup Wizard dialog box. The 'Measure Point' section is highlighted with a yellow box. The 'Measure Point to Antenna Bottom' section contains three input fields: '+Fwd' with '-0.70 m', '+Stbd' with '-0.00 m', and '+Down' with '-2.00 m'. The 'Plan View' and 'Profile View' buttons are at the bottom.

- Set up COM port settings for RTK if desired. Typically NEAM output is only required for RTK if using NTRIP. For input type under RTK/DGNSS select none. This will allow the system to utilize GLONASS in the solution.



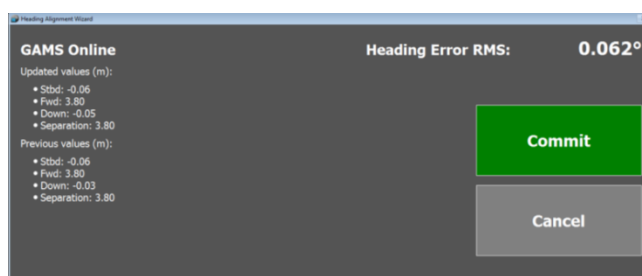
The screenshot shows the 'INS Setup Wizard' window. It has three main sections: 'AUX COM Port', 'RTK/DGNSS', and 'NMEA'.  
 - 'AUX COM Port': Input is 'RTK/DGNSS', Output is 'NMEA', Baud Rate is '19200'. Parity is set to 'None', Data Bits to '7 Bits', and Stop Bits to '1 Bit'.  
 - 'RTK/DGNSS': Input Type is 'None', Line is 'Modem'.  
 - 'NMEA': Output is a list with '\$GPGGA', '\$GPHDT', '\$GPZDA', and '\$GPVTG' checked. Update Rate is '1 Hz'.  
 At the bottom are buttons: 'Apply', 'Factory', 'Save', '< Back', 'Finish', and 'Cancel'.

- After completing the INS setup wizard you will be prompted to run a heading alignment (GAMS) calibration. You may choose to complete the calibration or conduct it at another time. If choosing to conduct it at this time simply follow the onscreen directions. If you choose to conduct it later simply hit the cancel button.



The screenshot shows two windows. The 'Heading Alignment Wizard' window on the left provides instructions and has 'Start' and 'Cancel' buttons. The 'INS Tools' window in the center has a red box around the 'Alignment Wizard' button. The 'Heading Alignment Wizard' window on the right shows 'Pre-alignment in progress' with three steps (a, b, c) and a 'Heading Error RMS: 55.000°'.

Once you decide to conduct the calibration simply go to INS tools and select the Alignment wizard and follow the onscreen directions. Once completed you will be given the results, if acceptable click commit and the results will be saved to the Applanix system. Run a calibration anytime the system is re-mounted. Also conduct a patch test after each calibration.



The screenshot shows the 'GAMS Online' window. It displays 'Updated values (m):' and 'Previous values (m):' for Stbd, Fwd, Down, and Separation. The 'Heading Error RMS' is '0.062°'. There are 'Commit' and 'Cancel' buttons.

12. While acquisition software will be different from one another in hardware setup procedures there are some common interface parameters that can be discussed here.

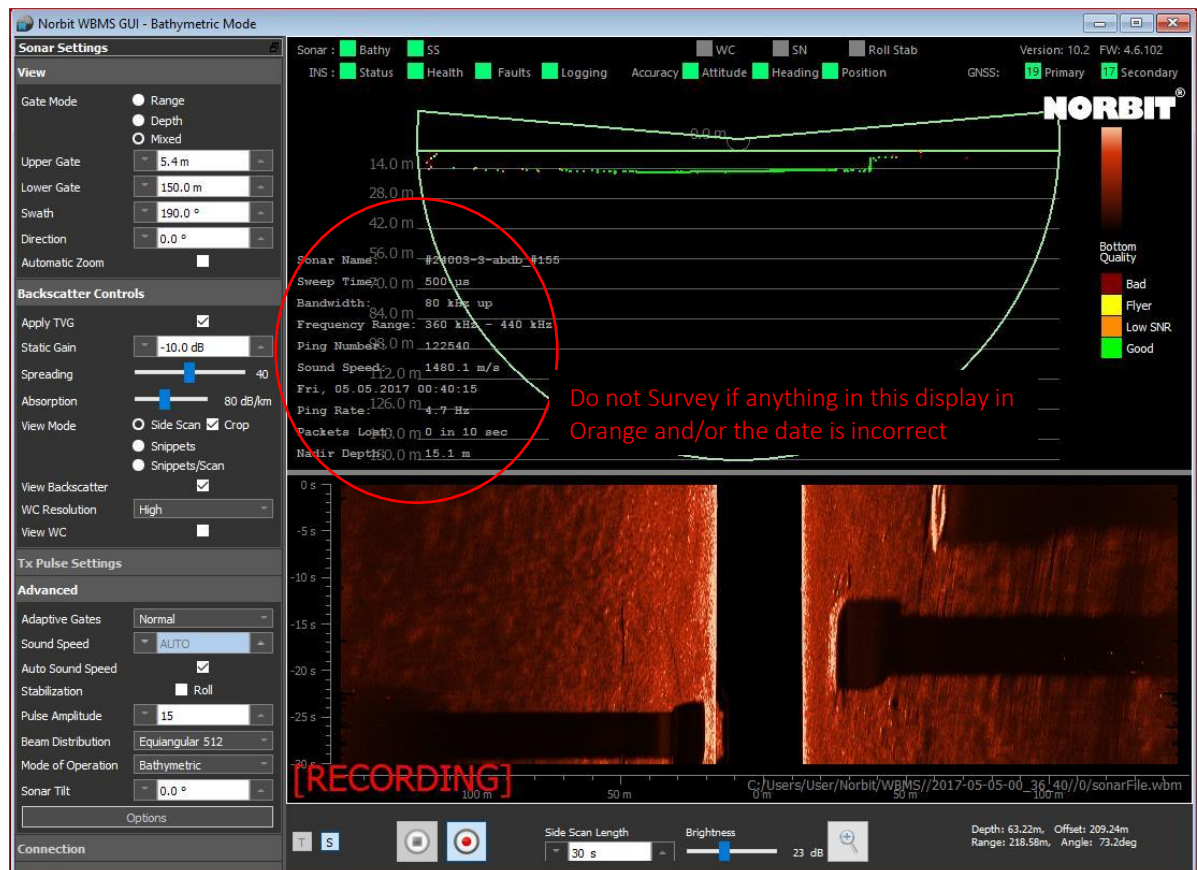
The WBMS (sonar) will interface using a Reson 7125 driver or if using Hypack 2017 the Norbit driver. If using Hypack 2018. The connection will be network with the local host IP address of 127.0.0.1 port 7000; this will be the same for all acquisition software.

The PosMV will utilize a POS-MV network driver. The connection should be UDP with the IP address of 192.168.53.100 port 5602.

In the simplest setup there would be no offsets in the acquisition software as all position and attitude information is output at the sonar reference point. So, both sonar and INS have the same offsets. If utilizing a tide station for vertical control then the draft of the sonar will need to be entered into the acquisition software. In cases such as this all offsets for all systems will be the same.

NOTE: If you will be utilizing the NORBIT without RTK please contact NORBIT support or refer to the NORBIT manual for additional guidance on the utilization of COR offsets for heave calculations.

13. Next click the play button next to T and S on the lower screen of the GUI. This will start the sonar pinging. Once energized set the lower gate to below your seafloor depth and adjust the swath width as desired. All settings default to auto and require little adjustment. Water column and sidescan display in the GUI can be found under the backscatter tab. Data will be output from the sonar without these being checked as long as the data is requested by the acquisition software.



### Other Items to note.

- Logging of RAW INS data is started automatically upon opening the GUI. To find the file name and save path simply hover the mouse over the logging indicator.
- INS Information can be viewed by hovering the mouse over the attitude, heading or position indicators.
- INS Status indicator colour will indicate correction status. RED = No additional correctors, ORANGE = DGPS & GREEN = RTK