SensorCheck™ *Application*

Mobile App User Guide

for **TDT1000 Transducer Diagnostic Tester**

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INTRODUCTION

The Airmar SensorCheck™ app is designed to work in conjunction with the TDT1000 Transducer Diagnostic Tester. SensorCheck app enables your mobile device to connect wirelessly with the TDT1000 for the purpose of testing marine transducers. The app tests for impedance characteristics and can compare them to the Airmar database to determine if the transducer is within factory specifications. **Before testing, read the entire TDT1000 Owner's Guide to understand best practices for testing transducers in the shop or the field.**

SensorCheck AND TDT1000 ARE DESIGNED TO:

- To find the Airmar Xducer ID® feature if it is present or identify a transducer with NO Xducer ID feature.
- To test a transducer's characteristics.
    - Acceptable minimum impedance range.
    - Acceptable frequency range.
    - Water-temperature thermistor function.
- To compare a transducer being tested to factory data.
- To determine a transducer as either:
    - "In Range" the transducer is functioning properly.
    - "Out of Range" the measured impedance does not match the factory data. This may indicate a problem with the transducer, the test set-up, or the test environment. *DO NOT remove/return the transducer without first contacting your customer service representative.*
- To summarize information about a transducer and the vessel in which it is installed.
- To store test history.
- To share test results.

NOTE: TDT1000 and SensorCheck app are only able to test the performance of transducers between 25 kHz and 500 kHz. Therefore, side imaging and ultra-high frequency imaging transducers are not able to be tested.

TDT1000 REGISTRATION

The first time a new TDT1000 connects to the SensorCheck app it will attempt to register the TDT1000. Registration is important in helping Airmar to track product performance data.

SensorCheck app: CONNECTIVITY TO THE INTERNET

A local, updated copy of the Airmar test database is downloaded to the SensorCheck app each time it connects to the internet. Tests can be performed without any connection to the internet, but new transducer models and updates to existing test data may not be available without an internet connection. If an Airmar transducer with the Xducer ID logo on the label is not recognized automatically by the SensorCheck app, make sure your mobile device is connected to the internet and all wiring leads are connected properly.

GETTING STARTED: CONNECTING TO TDT1000

The SensorCheck app is available for iOS and Android devices and can be downloaded from the Apple App Store or Google Play Store.

1. Go to the App Store (iOS) or Play Store (Android)
2. Search "Airmar" and download the free Airmar SensorCheck app.
3. Ensure Bluetooth is enabled on your mobile device. SensorCheck app uses Bluetooth® Low Energy (BLE) which does not require pairing. The app will automatically search for devices within range, so there is no need to open your device's Bluetooth menu.
4. Power the TDT1000 ON and bring it to within 1 foot (30 cm) of your mobile device.
5. Open the Airmar SensorCheck app.
6. SensorCheck app will display "Attempting to Connect" at the bottom of the screen until it has connected via Bluetooth. Once connected, the app will read "TDT1000 Ready."

NOTE: The SensorCheck app can only connect to one TDT1000 at a time. SensorCheck app should reconnect to the last known TDT1000 automatically. If another mobile device is in proximity and was previously connected to the TDT1000, it may be necessary to move the device away from TDT1000 or turn its Bluetooth off before connecting to the desired mobile device.

If SensorCheck App Does NOT Connect to TDT1000

NOTE: A successful connection between the SensorCheck app and the TDT1000 usually happens in less than 30 seconds. The TDT1000 will automatically power off in five minutes if there is no activity.

- Your SensorCheck app will indicate "Attempting to Connect". If it does not connect after 30 seconds, bring the mobile device and the TDT1000 closer together. Also ensure that the Bluetooth functionality of the mobile device is ON.
- The SensorCheck app can connect to only one TDT1000 at a time.
- If TDT1000 indicates it is "TDT1000 Ready" but tests do not begin, make sure another mobile device is not connected to the TDT1000. This is common in a shop environment with multiple technicians sharing the TDT1000.

PREPARING TO TEST

CAUTION: Do not connect or disconnect a transducer directly to the TDT1000. Damage may occur to your TDT1000.

1. Before testing any transducer, please refer to the TDT1000 Owner's Guide for directions on connecting a transducer using the correct OEM Test Cable or bare-wire breakout box. When the TDT1000 is connected to the transducer and the SensorCheck app has connected via BLE with the TDT1000, the app will display "Start Test." Press this button to begin the test.
2. SensorCheck will look for the Xducer ID feature to identify the connected transducer and to properly set the test parameters. If found, the SensorCheck app will retrieve the factory test data for the identified serial number from the Airmar server if connected to the internet or the standard test parameters for the specific part number. The test will begin automatically.
   - The grey plot line/curve represents the actual factory test data for that specific transducer. See section Interpreting Test Results screens below for more details.

NO XDUCER ID FEATURE

If the transducer being tested does not have the Xducer ID feature and subsequently no serial number is found automatically, the app will default to the bar code scanner as shown.

There are three ways to enter the serial number or part number for the app to reference.

- Scan the bar code located on the cable label to automatically enter the serial number.
- In the "search box," manually enter the serial number or Airmar part number found on the cable label located on the transducer cable. Or enter an OEM part number. SensorCheck app will also display the proper OEM Test Cable to be used.
- If an Airmar or OEM part number is known, that information can be entered by using the Part Number/Model drop-down menu, and entering the information.
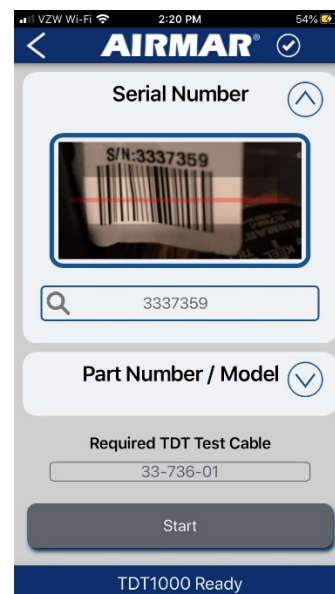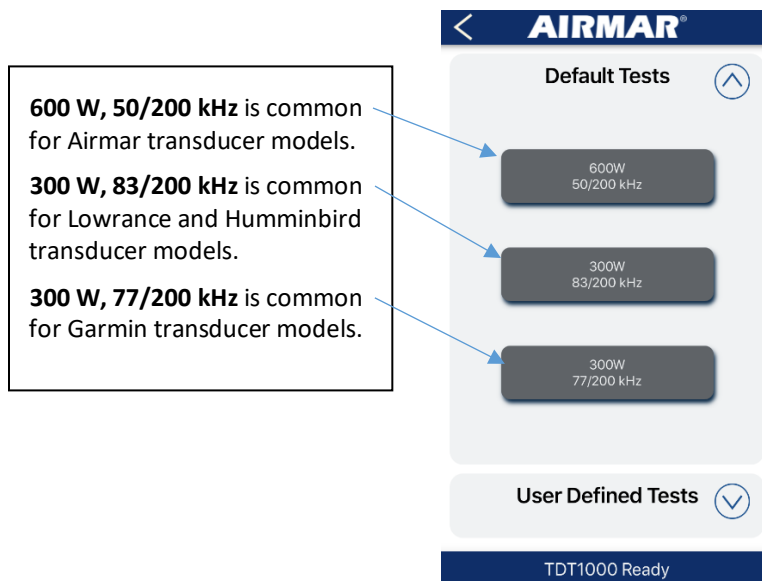
If you are unable to locate a cable label or bar code or you do not know what transducer model, there are two methods for identification and testing.

NOTE: A call to Airmar Tech Support is also suggested to help identify the transducer you are working with and to also suggest the best test to perform it.

- Open Menu in the SensorCheck app. Choose CUSTOM TEST. There are three "Default Tests" available to test the most common transducers. Choose the profile that you believe best matches the transducer. Begin the test by pressing the "Start Test" button that appears.

  NOTE: Default Tests will compare the transducer's results to factory default data.

600 W, 50/200 kHz is common for Airmar transducer models.

300 W, 83/200 kHz is common for Lowrance and Humminbird transducer models.

**300 W, 77/200 kHz** is common for Garmin transducer models.

- On the Default Tests screen near the bottom, tap "User Defined Tests". Create a custom test by filling in the parameters to test within. These tests can be saved for future use or deleted.

  o User Defined Tests can be accessed through the Custom Test Option.

NAVIGATING SensorCheck SCREENS

MENU SCREEN

Menu Screen is accessed from the icon in the upper left corner of your mobile device. The menu options are as follows:
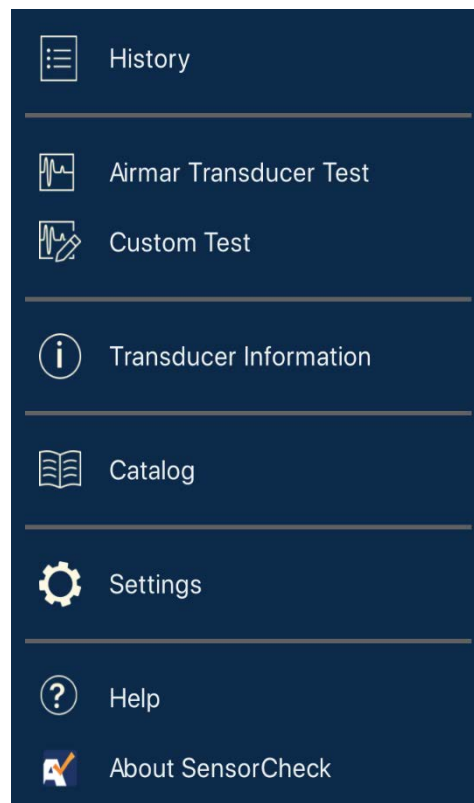
History: See all the tests performed by this device. Tapping a particular test opens the results page of that test. From there you can send it to a customer or delete the test from your device. Historical tests are also saved on Airmar's server for future reference.
IMPORTANT: Uninstalling the SensorCheck app will cause historical tests to be removed from your mobile device. They will NOT reappear on reinstallation. It is good practice to email test results to an office email for cataloging.

Airmar Transducer Test: This utilizes the mobile device camera to scan a barcode on a cable label. If a barcode or serial number is not present, manually enter the part number. Similar transducers can have different wiring based on the OEM needs, so make sure the correct part number is used, not just the model name.

Custom Test: If the transducer to be tested is of unknown origins/frequency, Custom Test offers predetermined default test parameters for common transducers. Choose the one you think best matches the transducer. Or scroll down to open User Defined Test, where you can set a custom test based on user defined information, such as Chirp or conventional, frequency, resolution, and impedance (see above).

Catalog: This links directly to Airmar's entire transducer catalog for reference.

Settings: This identifies the TDT1000 you are connected to. If multiple TDT1000 units are in the area, pressing the "Identify" button on the app screen will cause the FUNCTION light on the connected TDT1000 to blink. Pressing the "Forget Device" button will disconnect the TDT1000 from the mobile device.

- o **TDT1000:** Identify, register, or have your mobile device forget this TDT1000.
- o **Units:** Set the device for Celsius or Fahrenheit when presenting temperature data. Also choose meters or feet for measuring distance.
- o **Airmar Certified Installer:** If you are an Airmar Certified Installer, enter your ACI number and password. This information will be stored in SensorCheck app as well as Airmar's server for all tests performed on this mobile device.

Help: This links directly to airmar.com for reference help.

About SensorCheck app: This displays the current version of the SensorCheck app being utilized by this mobile device.

TEST RESULTS SCREEN

Once a test has been completed with the SensorCheck app, the comprehensive test results will be provided on three pages. Use the graphics along the top of the page to navigate the results. Below are the three main screens.
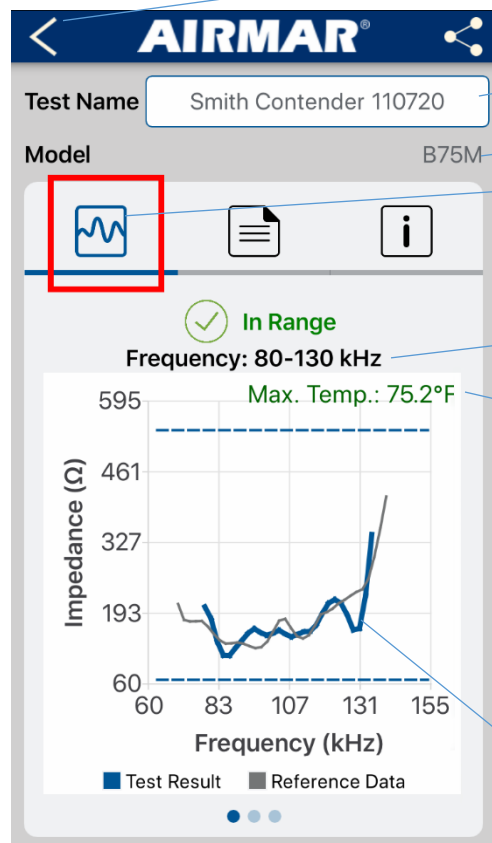
Back arrow: Access previous screens.

Symbol: Creates a PDF of test results for emailing or texting others.

Test Name: Cerate a user-defined test name. Use meaningful descriptors for easy searching later.

Transducer model: The name of the model tested.

Diagnostic pages: There are three pages of test data. Swipe left to access Test Summary information and Test Information. The blue bar beneath highlights the current page.

Frequency of the transducer tested. If a dual frequency model is tested, scroll down to view the second frequency's test results.

Maximum recorded temperature of the internal ceramic.

- GREEN indicates acceptable temperature (<40°C).
- ORANGE indicates recorded temperature between 40°C and 50°C and MAY be cause for concern.
- RED indicates temperature above 50°C and could have caused damage to the ceramic. Red does not appear if no Xducer ID feature was found in the transducer.

T**est results** of the transducer tested (blue line) compared to factory reference data for that transducer (grey line). For test interpretation, see section below called Interpreting Test Result Screens.

General information about the transducer tested and the cables used.

Installed by ACI: If this transducer has been installed and previously tested by an ACI, this will indicate YES.

Runtime: Total number of hours the transducer has been powered on since it was manufactured.

Water Temperature: Current reported temperature of the temperature thermistor. If thermistor is NOT working, N/A will appear.

TEST INFORMATION SCREEN

The test information screen requires that the installer/tester to provide useful information about the test results, test environment and the vessel it was installed on, as well as the electronics the transducer was connected to, if known.

ACI Number: This will auto-fill if you have entered your Airmar Certified Installer number into the field in Settings. If not, you may add or switch ACI numbers if test is performed by a different ACI. ACI numbers are not required but are helpful when looking up historical tests.

Serial Number: This will auto-fill if Xducer ID feature is detected. If not, you may enter this manually. The serial number is located on the transducer cable label.

Test Type: Indicate Not Specified, Pre-Install, Post-Install, Service, or Other. The Submit Warranty Information button at the bottom of this screen is only functional if the Post-Install option is chosen. See below.

Transducer Install Date: The date will auto-fill to the current date at the time of this test. The install date cannot be changed if Post-Install was chosen under Test Type.

Test Environment: Indicate if the test was performed with the transducer installed and, in the water, or if the TDT Test Block was used. See the TDT1000 User Guide for the recommended test environments to get the best testing performance.

Vessel Name: Document the vessel the transducer is installed on. Using the boat name or customer name is also helpful for looking up test history.

Vessel Size: Indicate the size of the vessel. This is helpful if there are performance issues in the future. Airmar Support Technicians will find this information helpful.

Echo Sounder Brand: Choose from popular brands.

Echo Sounder Model: Choose from popular models based on the brand chosen above. This information is valuable to Airmar Support Technicians if future issues arise.

Test Notes: Add relevant information pertaining to the installation that would be helpful in the future when servicing this vessel.

Submit Warranty Information: The Warranty submittal button only functional if the following has been done:

- o Test Environment field is filled,
- o Post-install option is chosen in Test Type,
- o A valid ACI number has been entered.

INTERPRETING TEST RESULTS SCREEN

Before leaving the Airmar facility, every transducer is tested, and its performance is documented and stored on Airmar's server. The SensorCheck app keeps an abridged copy of the database on your device. It will function without an internet connection if necessary. However, for full access to factory data, be sure your mobile device has an active internet connection.

The test equipment and environment used at the Airmar factory is highly controlled. The TDT is optimized for quick results in many different environments, so some difference between factory test and TDT test data should be expected. These differences are accounted for in the boundaries applied to the data by SensorCheck. However, it does not mean that a test which is "Out of Range" indicates a malfunctioning transducer. Many variables in the field test environment can affect results. A savvy technician will alter the test environment variables until they are convinced that all options have been covered and only then can an "Out of Range" test result be believed. Below are some of the common reasons a false "Out of Range" result may occur.

- Transducer is being tested in the air or a bucket of water instead of in deep water or on the TDT Test block.
- The incorrect TDT Test Cable is being used.
- Bare wire connections to break-out box are attached incorrectly.
- Air bubbles between the transducer face and the TDT Test Block are affecting the test.
- The boat location is directly over concrete in a shallow water harbor or near a surface that is reflecting acoustic energy.
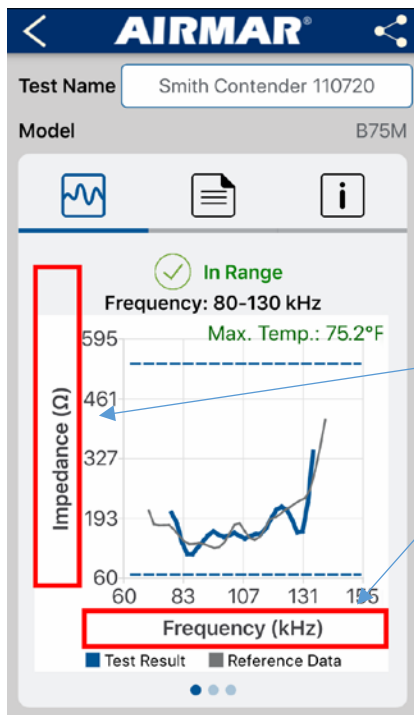- Transducer manually selected is different model number from the transducer being tested.

IMPORTANT: If your are consistently getting "Out of Range" results from your tests after altering test variables, email or call Airmar Tech Support **BEFORE** leaving the vessel or test location. A technician can advise you on the results and perhaps save you from having to return to the vessel.

- **TDT1000@airmar.com**
- Phone: 1-833-224-8324
- Hours of operations: 8 AM to 5 PM Eastern Standard Time

CAUSES FOR POOR TRANSDUCER PERFORMANCE

- The transducer was hit by an object in the water.
- The boat scraped the bottom.
- The transducer overheated. This may have been caused by the following:
  - Prolonged operation of Chirp transducer while out of the water
  - Applying too much electrical power
  - Installing an in-hull transducer in a hot location such as an engine room
- The transducer has reached the end of its working life.

The SensorCheck app will display the maximum and minimum Impedance and Frequency ranges in the X and Y axis of the display. The grey line is the factory data that the recent test results are compared against. Your test results are in blue, assuming the results fall within the Max/min test box indicated by the dotted lines.

OUT OF RANGE TEST RESULTS

Results can be "Out of Range" for many reasons and does not always mean that a transducer is not working properly. Typical "Out of Range" results look like those shown below. The impedance or frequency falls outside of the required specification. Note the very high impedance on the graph. The SensorCheck app will always show where your test results have plotted on the graph. If this is significantly different than the reference data, you can tap the screen once and see where the reference data is plotted on the graph.

Test results are outside of the Min/Max box. The default screen shows you where the actual test data plotted in the graph.

Tapping once on the screen will show where the reference data is positioned in the graph. Note how the Impedance scale changes to reveal a significantly high impedance of the tested transducer. The Min/Max box is indicated by the double heavy dotted line at the bottom of the results area on screen to the left.
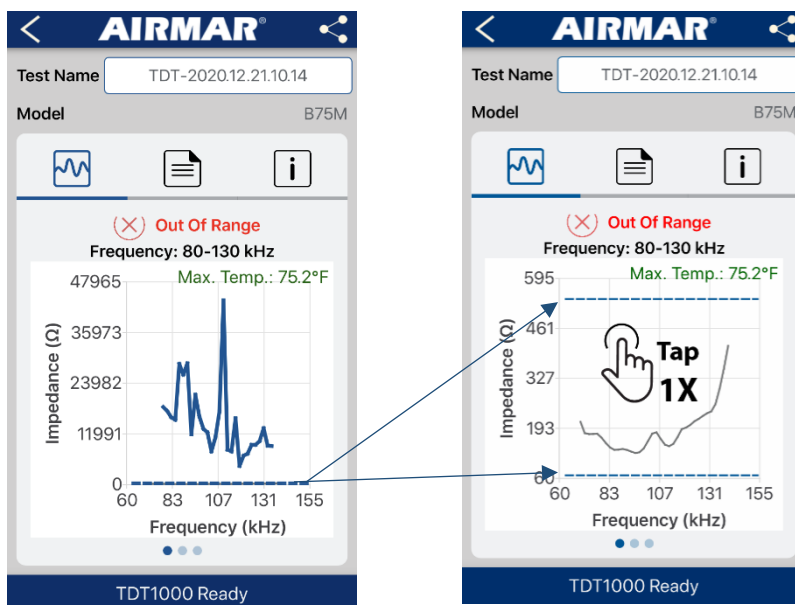
OUT OF RANGE RESULTS WITH NO Xducer ID DATA SHOWING ON SCREEN

When the test results return "Out of Range," note if the data normally transmitted by Xducer ID feature is present in the results. Xducer ID feature should transmit the following data:

- Serial number
- Model
- Water temperature
- Run time in hours
- Part number

Often the reason for an "Out of Range" result where Xducer ID data is not shown is the following:

- Using an improper OEM test cable
- Mismatched wires in the breakout box is a common cause of missing Xducer ID data.

SHARING TEST RESULTS

Completed test results are easily shared from your mobile device by simply touching the upper right icon. This feature opens the communication possibilities on your mobile device. A pdf of all test results screens will be delivered to the recipient for reference. This is also a great way to deliver questionable test results to the Airmar Tech Support team prior to leaving the vessel.

Tap here to open the communication function to share test results via text or email from your mobile device.
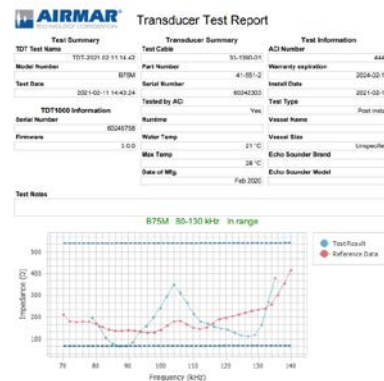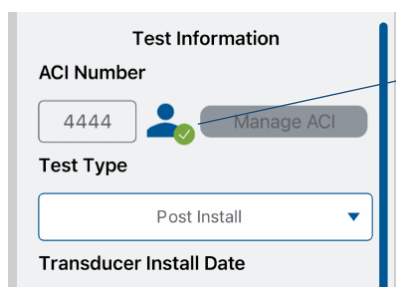
CHANGING/EDITING A TEST IN HISTORY

If you are not an Airmar Certified Installer, you can access and modify tests in the History section of the main Menu. If you are an ACI and signed into the SensorCheck app, editing the tests you have performed on the mobile device are also easily accessed.

In businesses where mobile devices for testing are shared, there may be a need to edit or modify a previously performed test by someone other than the original tester.
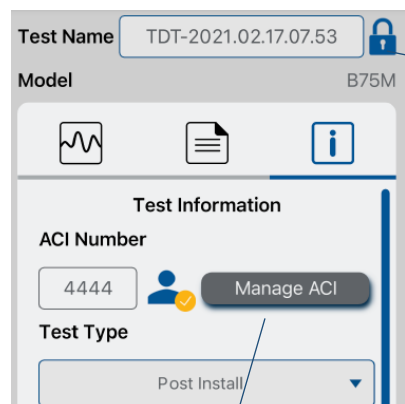

When ACI 4444 is signed into the SensorCheck app and references a test in History, the icon has a green check and edits can be made.
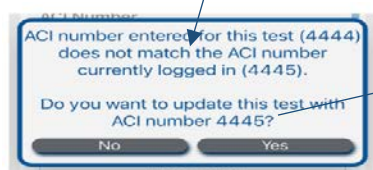
If ACI 4445 is logged into the SensorCheck app and references a previous test performed by ACI 4444, a lock icon appears next to the test name indicating it cannot be modified by anyone other than the original tester (ACI 4444) without managing the ACI sign-in information.

A message will appear providing opportunity to update the test file with ACI 4445. This will unlock the test and enable ACI 4445 to make modification to the test in History.

TROUBLESHOOTING

TDT100 does not turn ON

- Be sure the unit is fully charged.
- Confirm the charging light is lit when plugged into power.
- It may take a full charge cycle before the unit will power ON.
- Mobile device does not connect to the TDT1000
- Be sure the mobile device is Bluetooth LE enabled. Older devices may not be LE enabled.
- Is the TDT1000 connected to another mobile device? Only one Bluetooth device can connect to the TDT1000 at a time. Be sure the last device to connect to the TDT1000 is out of range if that device is different than the one intended for use.

The SensorCheck app connects to TDT1000, but test will not start:

- Make sure the SensorCheck app is not connected to a different TDT1000. This can be common in a shop environment. The SensorCheck App will connect to the last TDT1000 it was connected to prior.

Transducer results are "Out of Range":

- Submerge TDT test block in water deep enough to cover the surface of the block.
- Be sure there are no air bubbles between the transducer and the test block. Wipe the acoustic face of the transducer with a soft cloth to remove dirt or bubbles from the transducer's acoustic window.
- Move the transducer more toward the middle of the test block.
- Perform the test in deeper water if the boat is in shallow water.
- Make sure the boat is not over concrete or ledge. Also be aware that vertical, hard surfaces reflect acoustic energy, so can affect results.
- Check any bare-wire connections to ensure they are correctly attached.
- An incorrect TDT Test Cable is being used.

*Call Airmar Tech Support <u>before leaving the vessel</u> or before removing any transducer. Airmar may be able to help troubleshoot or provide an RMA number. They may save you a return trip to the vessel.

SOFTWARE UPDATES

Airmar may release updated versions of the SensorCheck software. These revisions will be automatically updated on your device through the App Store or Google Play Store.

<div style="border:1px solid black; text-align:center;">

Contact Information

By Email:

TDT1000@Airmar.com

By Phone:

1-833-224-8324

8 AM to 5 PM Eastern Standard Time

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