



Transducer Diagnostic Tester

Owner's Guide

TDT1000



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IMPORTANT

Before removing and/or returning an “Out of Range” transducer, please contact your service representative for additional product support.

WARNINGS

Follow the precautions below for optimal product performance and to reduce the risk of property damage, personal injury, and/or death.

WARNING: Lithium-ion batteries may be hazardous and can present a serious fire hazard if damaged, defective, or improperly used. Exposure to liquids, especially saltwater, can cause internal corrosion, damage to the cells, or to the battery management system. Batteries should be recharged within 24 hours of a full discharge. Do not charge at temperatures below 40°F (4°C).

CAUTION: The transducer must be connected to the TDT1000 through a Test Cable. Do NOT connect the transducer directly to the TDT1000.

CAUTION: You must have the correct Test Cable for the transducer being tested. Each OEM has specific Test Cables that work with their transducers. You must use the Test Cable that matches the brand of the transducer/instrument.

CAUTION: The transducer and Test Cable must be connected to the TDT1000 before starting a test. Do NOT connect or disconnect a transducer while testing is in progress. Doing so may damage the TDT1000.

CAUTION: Prolonged operation of the transducer in air may cause it to overheat, possibly resulting in failure.

IMPORTANT: To compare the test results of two transducers, they must both be tested in the same environment. Test results are very different when a transducer is tested installed in a hull in deep water compared to using a Test Block.

IMPORTANT: Please read the instructions completely before proceeding.

Introduction

The TDT1000 is a hand-held device used to check that a depth transducer is functioning properly by testing its impedance. The TDT1000 works with all Airmar transducers and most others.

When combined with the SensorCheck™ App on a wireless iOS or an Android device, it can be used to test a transducer's characteristics. Airmar transducers will be compared to the original factory test data. TDT1000 results can be shared with a boat owner, dealer, installer, or an Airmar technician.

How Impedance is Measured

Transducer impedance measurements are taken by applying a small voltage to the transducer at the frequency being measured. The impedance is calculated by comparing the voltage, current, and precise timing between voltage and current. While these measurements are in process, the transducer creates sound waves in the water.

TDT1000 Kit Contents

- TDT1000 diagnostic tester
- Power Charger with USB to micro USB connectors
- International Wall-plug Adapters for UK, Australia, and Europe
- Test Cable with breakout box for transducers with NO connector
- Test Block
- Carrying Case



Test Cables for Testing OEM and Mix & Match Transducers

A Test Cable compatible with the transducer brand and connector is required for testing. Test Cables are available for most transducer or instrument brands.

Test Cable

Part Number

Furuno Test Cable, 10M - FU connector	33-1328-01
Furuno/Si-tex Test Cable, 8M - F (Fuji) connector	33-1327-01
Furuno 12-pin Fuji connector	TDT-FJ12
Garmin Test Cable, 6M - A connector	33-1324-01
Garmin Test Cable, 8M - G connector	33-1325-01
Garmin Test Cable, 12M - G connector	33-1326-01
Koden Test Cable, 8M - A connector	33-1338-01
Lowrance Chirp Test Cable, dual 7FB - LR connector	33-1333-01
Lowrance Conventional Test Cable, 7FB - LR connector	33-1332-01
Mix & Match Test Cable, 1kW, 9F - A connector	33-1323-01
Mix & Match Test Cable, 600W, 5F - A connector	33-1389-01
Mix & Match Chirp Test Cable, 12M - MM connector	33-1390-01
Navico Test Cable, dual 9F - A connectors	33-1388-01
Navman Test Cable, 6M - A connector	33-1335-01
Raymarine Test Cable, 6/9F - A connector	33-1330-01
Raymarine Test Cable, 8M - RR connector	33-1329-01
Raymarine Test Cable, 11M - LTW connector	33-1331-01
Simrad Test Cable, 7M - A connector	33-1334-01
Si-tex Test Cable, 8F - A connector	33-1337-01

Where to Purchase Parts

Obtain Test Cables from the following:

Gemeco

USA

Tel: 803-693-0777

Email: sales@gemeco.com

Airmar EMEA

Europe, Middle East, Africa

Tel: +33.(0)2.23.52.06.48

Email: sales@airmar-emea.com

Preparing for a Test

Test Set-up

IMPORTANT: Test results taken on a TDT Test Block will be different from those taken on an installed transducer in the water.

Using the TDT1000, a transducer can be tested in one of three ways:

- **Good:** Test the transducer using the TDT Test Block in air.
- **Better:** Test the transducer using the TDT Test Block submerged in water. Bench testing with the TDT Test Block submerged in a tub of water will produce more consistent results than testing in air.
- **Best:** Test the transducer installed in a hull with the boat in at least 2m (6') of water.

Using the TDT Test Block

CAUTION: The Test Block must be clean. To clean the Test Block, use water ONLY.

CAUTION: Do not store anything on top of the Test Block. It may become permanently deformed. Always remove the transducer, clean the Test Block, and store it in the original carrying case.

Good: Test Using the TDT Test Block in Air

The Test Block simulates 1 to 2m (3 to 6') of water.

1. Ensure the transducer is connected to the TDT1000 with the proper OEM test cable.
2. Apply 30 to 40ml. (2 to 3Tbsp.) of water to the center of the testing surface.
3. Gently place the acoustic face of the transducer onto the Test Block.
4. Gently move the transducer from side to side to fully wet its acoustic face. *Be careful not to agitate the water.* Air bubbles in the water will interfere with transmitting and receiving signals.

Testing an Installed Transducer

The Test Block can be used to test an installed transducer while the boat is out of the water (Figure 1).

1. Wet the surface of the Test Block using a water-based lubricant.
2. Hold the Test Block firmly against the transducer.

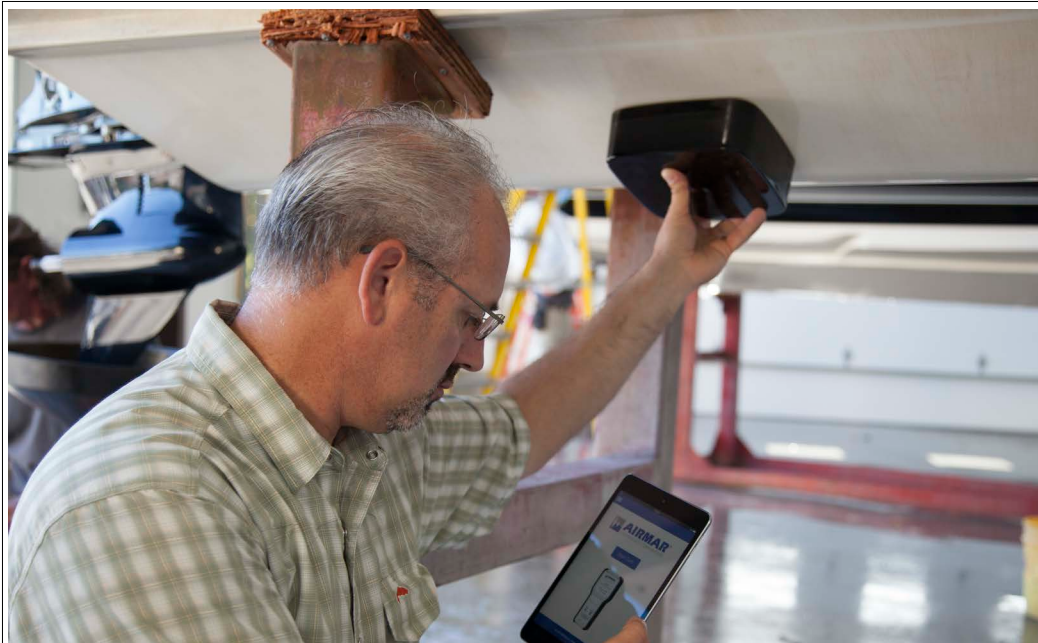


Figure 1. Testing an installed transducer

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Better: Test Using the TDT Test Block Submerged in Water

1. Place the Test Block in a shallow container such as a plastic storage bin (Figure 2).
2. Fill the container with enough water to cover the top of the Test Block by 2.5cm (1").
3. Carefully place the acoustic face of the transducer onto the Test Block.
4. Gently move the transducer from side to side to fully wet its acoustic face. *Be careful not to agitate the water.* Air bubbles in the water will interfere with transmitting and receiving signals.



Figure 2. Testing using the Test Block submerged in water

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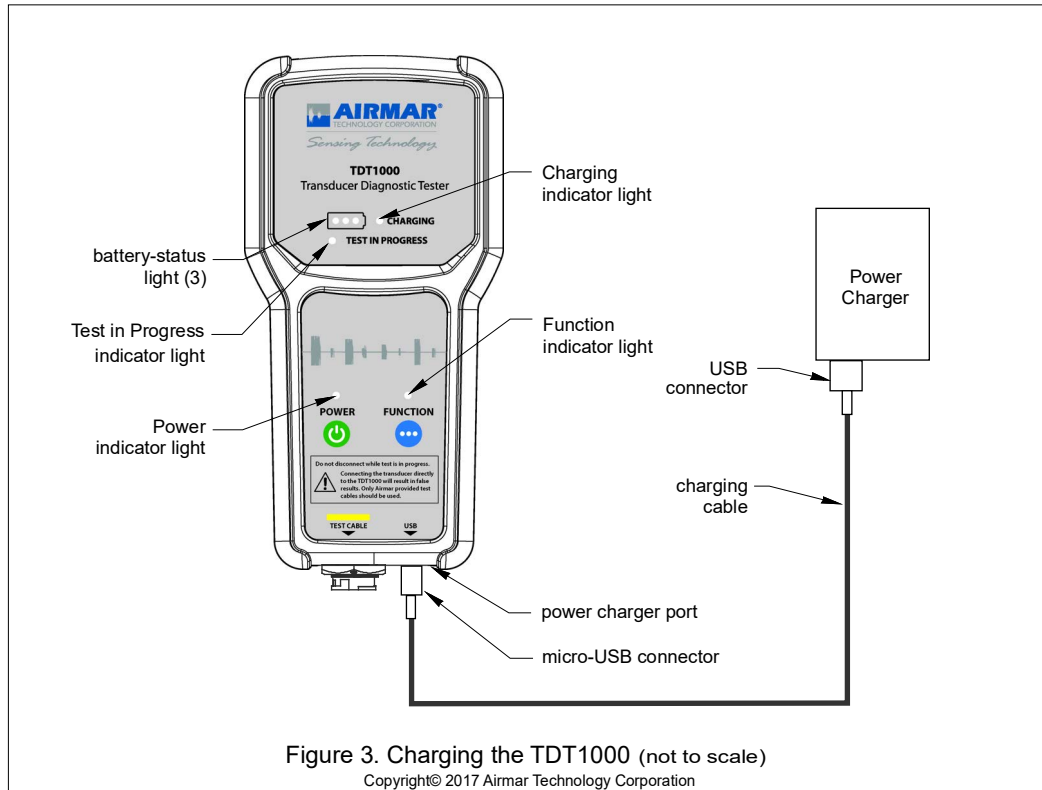
TDT1000 Set-up

Battery Check

Be sure the TDT1000 is charged *or* connected to a power supply before testing begins.

1. Power the TDT1000 ON by pushing the green **Power** button (Figure 3). The indicator light will glow green.
2. Check that at least one of the battery-status lights is illuminated green.

NOTE: The battery will stay charged for up to 4 hours of continuous use.



Charging

NOTE: It is time to recharge the battery when there is only one battery-status light illuminated.

1. Plug the USB connector on the charging cable into the Power Charger (Figure 3).
2. Plug the Power Charger into a power supply.
3. Plug the micro-USB connector on the charging cable into the USB port on the TDT1000.
4. When the TDT1000 is charging, the Charging light will glow amber.
5. When the TDT1000 is fully charged, the Charging light will no longer be illuminated. Disconnect the charging cable from the TDT.

Connecting a Transducer

All transducers must be connected to the TDT1000 through a Test Cable. If the transducer has a connector, you need a purchased OEM Test Cable. It must match the brand of the instrument and the number of pins in the connector of the transducer.

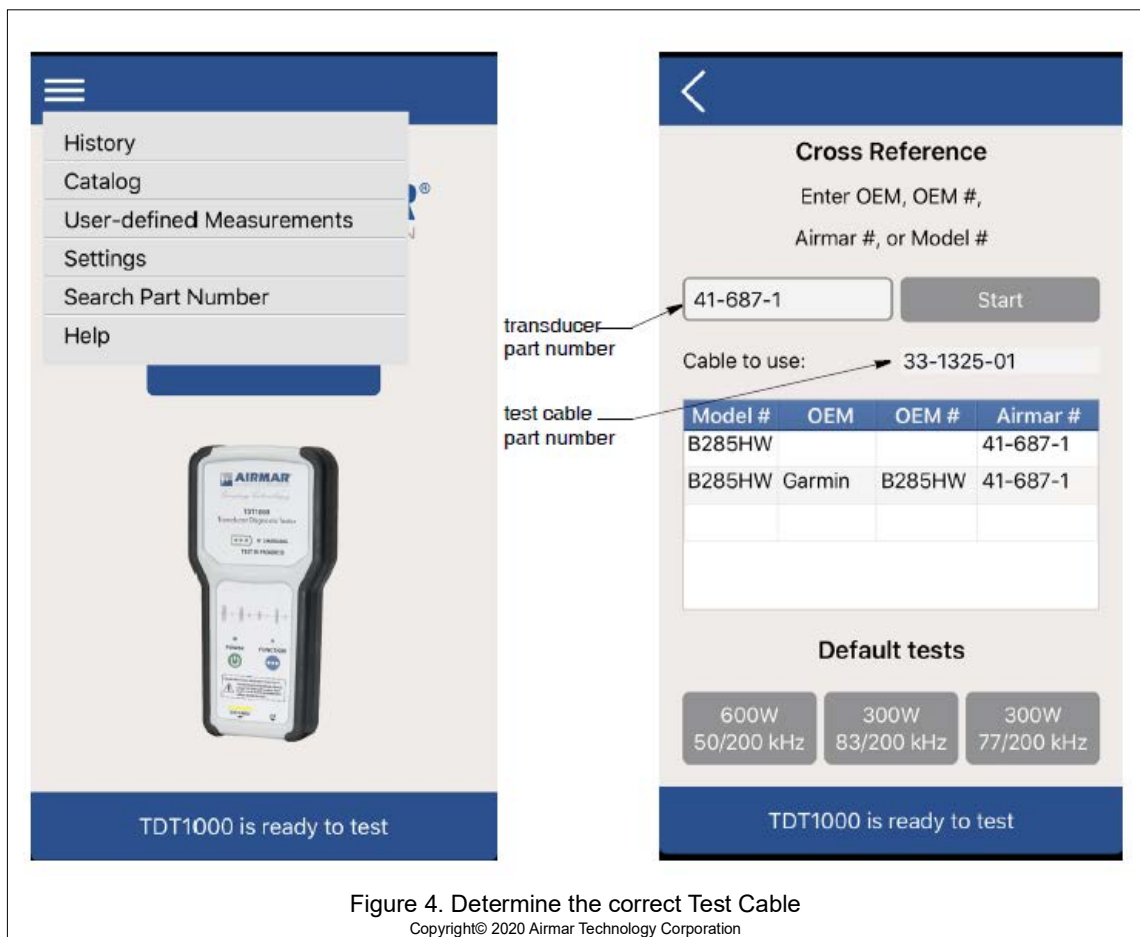
If the transducer terminates in bare wires, go to “Transducer with NO Connector.”

Transducer with Connector - Test Cable

IMPORTANT: Each OEM has specific Test Cables. Be sure you have the correct Test Cable. Many cables look alike or have the same connector.

Always use the SensorCheck app to determine the correct Test Cable.

1. Open the SensorCheck app.
2. Select the three horizontal bars in the upper left corner (Figure 4).

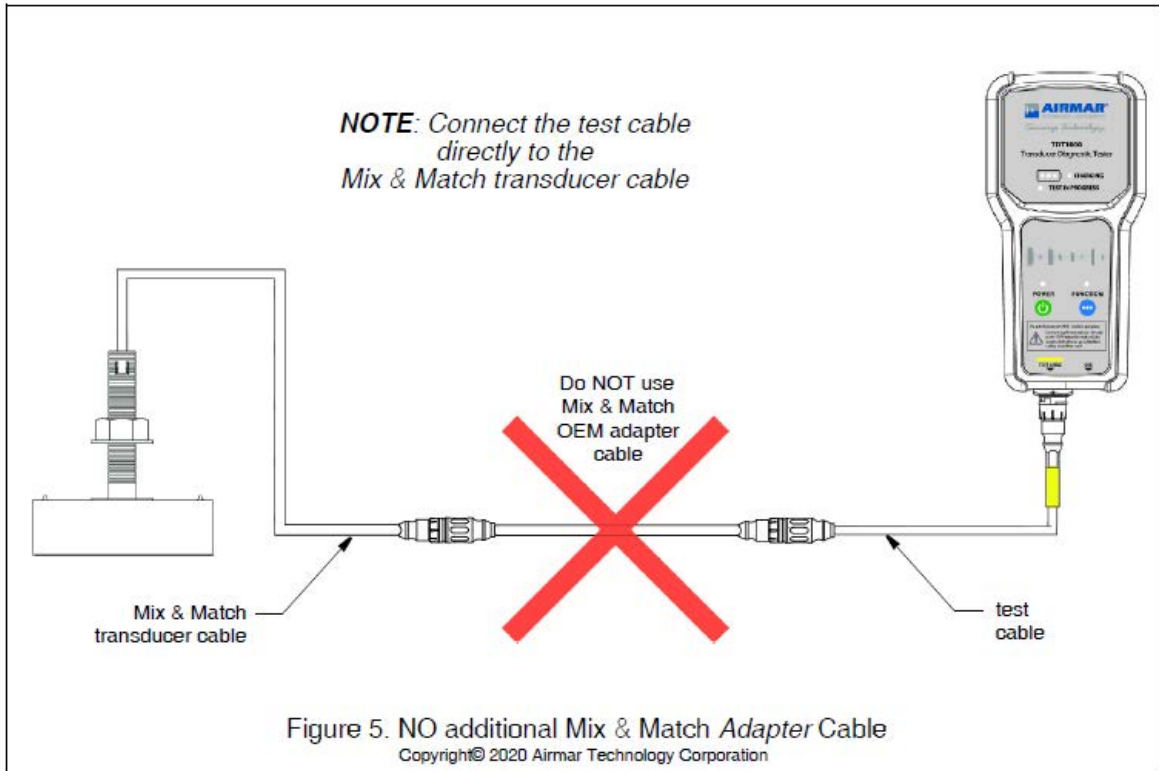


3. From the drop-down menu, select “Search Part Number.” this will bring up the search field.
4. Input the Airmar part number located on the transducer tag. As you enter this number the app will display the correct test “Cable to use” part number for that transducer.

Mix & Match Transducers

IMPORTANT: Connect Mix & Match transducers to the TDT1000 using only the Mix & Match **Test Cable**. Do NOT connect through an additional Mix & Match Adapter Cable (Figure 5).

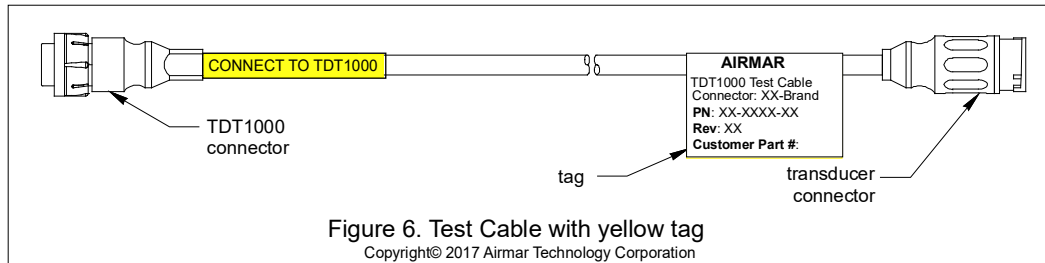
In most cases, the dedicated OEM connector and the equivalent Mix & Match version are identical. However, there are some exceptions that are not obvious when using the transducer. Best practice is to connect a Mix & Match transducer using the dedicated Mix & Match TDT1000 *Test Cable*, rather than connecting the transducer with an OEM *adapter* cable.



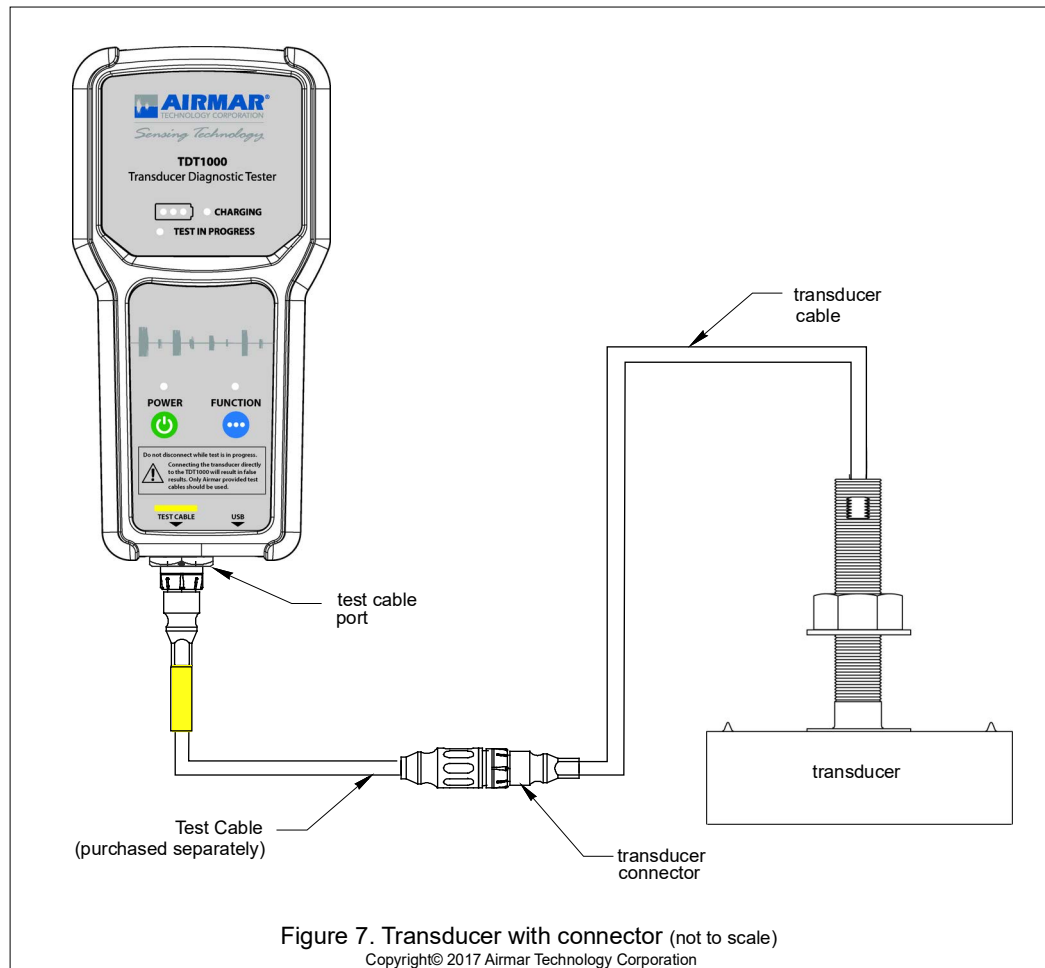
Connecting

IMPORTANT: All Test Cable tags have a yellow label near the TDT1000 connector that reads “Connect to TDT1000.”

1. Each OEM has specific Test Cables. Be sure you have the correct one. Check the test-cable tag to be sure it matches the brand of the instrument and number of pins in the transducer connector (Figure 6).



2. If the transducer is connected to an instrument, disconnect it.
3. Plug the transducer connector into the Test Cable (Figure 7).
4. Plug the Test Cable into the test cable port on the TDT1000. Twist and lock the connector.



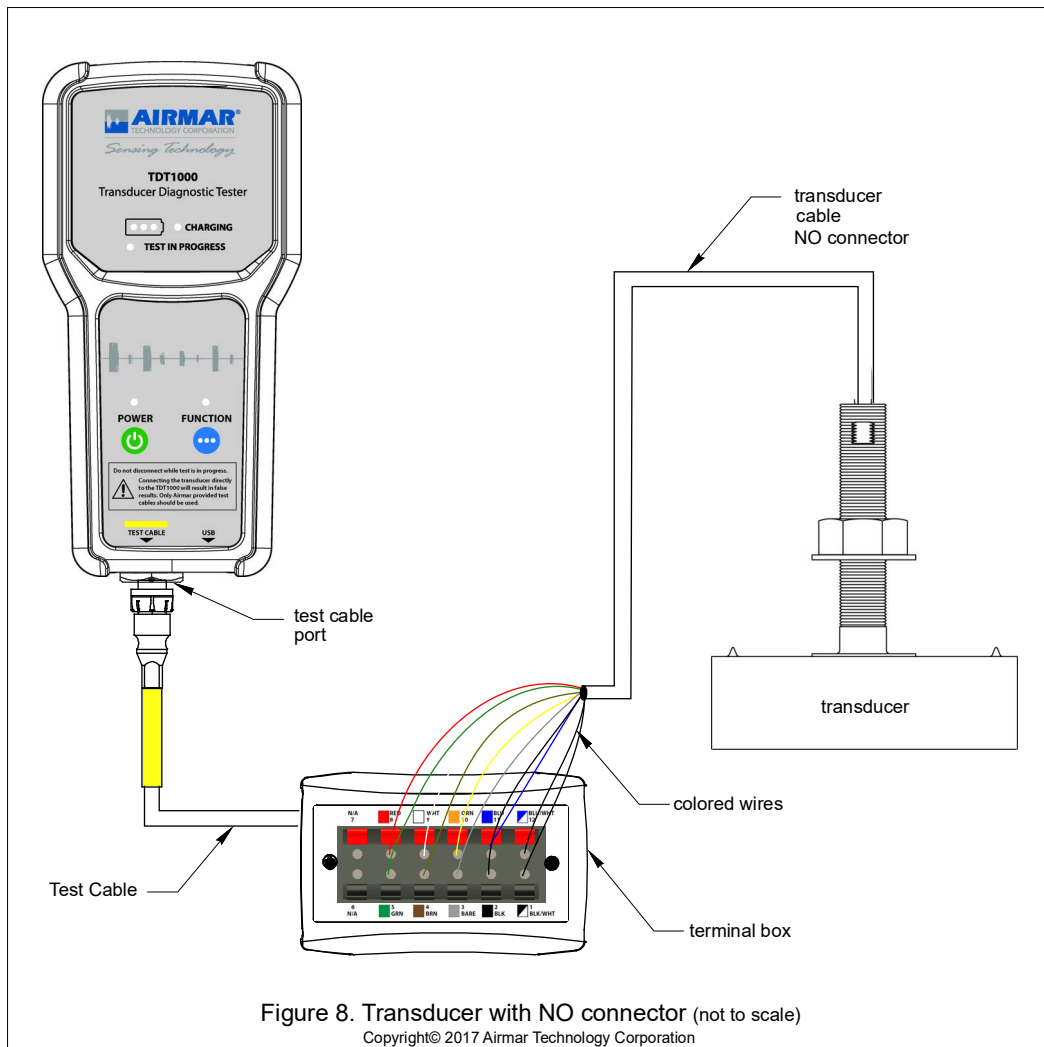
Transducer with NO Connector

For transducers with NO connector, use the supplied Test Cable that terminates in a breakout box to connect to the TDT1000.

1. Connect each striped or solid colored wire in the transducer cable to the matching colored terminal in the breakout box. Follow the color code on the breakout box label.

NOTE: If the transducer's connector has been cut off, (i.e. The transducer was sold with a dedicated connector, but now it terminates with bare wires.) start by connecting the solid and striped wires to the corresponding terminals in the breakout box. If the test results do not look correct, try swapping the solid and striped pairs and testing again. Transducers built for OEMs can have unique wire-colors to meet their specifications.

2. Visually inspect all the wires. There should be no frayed strands or loose ends to cause shorting. Do NOT include colored insulation inside a terminal. Check to be sure each wire is held firmly within its terminal.
3. Connect the Test Cable to the TDT1000 at the test cable port (Figure 8).



About Airmar's SensorCheck™ App

The SensorCheck app will interface with the TDT1000:

- To find the Airmar Xducer ID® feature if it is present.
- To identify a transducer with NO Xducer ID feature.
- To test a transducer's characteristics.
 - Acceptable minimum impedance range.
 - Acceptable frequency range.
- To compare a transducer being tested to Factory Data.
- To judge a transducer as either:
 - **In Range** - The transducer is functioning properly.
 - **Out of Range** - The transducer may not be functioning properly, or there may be a problem with the test set-up or the instrument. Do NOT remove/return the transducer. Contact 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.

Download SensorCheck App

Airmar's SensorCheck app can be installed on any wireless iOS or Android device.

1. Go to the Apple App Store or Google Play Store.
2. Search on the word Airmar.
3. Download the free SensorCheck app (Figures 9 and 10).

NOTE: The SensorCheck app can be connected to only one TDT1000 at a time.



Figure 9. SensorCheck app icon
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Figure 10. SensorCheck QR Code
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4. Power on the TDT1000. The LED glows green.



5. Open the SensorCheck app on your device and connect to the TDT1000 via Bluetooth.
6. The SensorCheck app opens the **Register your TDT1000** screen.



Figure 11. Register your TDT1000
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7. Click the **Now** button to begin registration. The **Product Registration** web page opens.

Figure 12. Product Registration
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8. Enter your **Name**, **Email**, and **Company** information and press **Register**. An email confirmation is sent and registration is complete.

Troubleshooting

TDT1000 will not turn on:

- Make sure unit has been fully charged.
- Confirm charging light is lit.
- It may take a full charge cycle before the unit will power on.

SensorCheck app cannot find or connect to the TDT1000:

- Confirm that the device you are connecting to the TDT1000 is compatible with Bluetooth LE.
- Only one device running SensorCheck can connect at a time to the TDT1000.
- Confirm no other devices are connected to the TDT1000.
- Power off the TDT1000 and restart the Bluetooth search.

Test results indicate the transducer is out of range:

- Consult the Owner's Guide. Results may vary based on the test environment.
- Vary the test environment to see if the results bring the transducer into range.
- Verify that you are using the correct test cable.

If using the test block, ensure there is no air between block and

Replacement Parts

Lost, broken, or worn parts should be replaced immediately.

<u>Part</u>	<u>Part Number</u>
TDT1000 Kit	33-762-01
AC-DC Power Adapter Kit	33-739-01
Power Charger with USB to micro USB connectors	
International Wall-plug Adapters for UK, Australia, and Europe	
Test Block: small	33-758-01
Test Block: large	33-759-01
Test Cable with breakout box for transducers with NO connector	33-736-01
Carrying Case	ACC-TDT1000-CASE
Quick Start Guide	17-632-01
Owner's Guide can be found at www.airmar.com/tdt1000 .	17-615-01
SensorCheck™ app guide can be found at www.airmar.com/tdt1000 .	17-615-02

Customer Service

For training and support, contact Airmar Technical Support at tdt1000@airmar.com.

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Trademarks

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SensorCheck™ is a trademark of Airmar Technology Corporation.

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