



ELECTRONIC DEVICES INC.

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## T3D User's Manual

### Function

Press and hold to select measurement function as indicated to left of display.

### Display

LED bargraph display shows resonant frequency, leakage, temperature and speed sender pulses.

### Multi-function Transducer Connection

Use for multi-function transducers to check speed and temperature.



### Power

Press to turn on.  
Turns off automatically.

### Sensitivity

Changes the sensitivity of the T3D to resonant points.

### Standard Transducer Connection

Used to test a piezoelectric transducer for resonance and leakage.

### **WARNING**

Connecting the transducer jack to a voltage source such as a depth sounder will damage the T3D.

### **QUICK START**

Connect the T3D to a piezoelectric transducer and turn it on by pressing the *power* button. After a few seconds the display should show one or more illuminated sections corresponding to the resonant points of the transducer. If no LED's turn on, the transducer element, cable, or connection is bad. The T3D will turn off after two minutes of operation. It can also be turned off by pressing both the *function* and the (-) *sensitivity* buttons.

## ADDITIONAL TESTS

Multifunction transducers may be tested for correct operation of the thermistor temperature sensor and speed paddle wheel by connecting them to the 8-pin *multi-function* connector. The 8-pin connector wiring is configured for the most popular multi-function transducers and is detailed at the end of this manual.

### FUNCTION button

The *function* button is used to select the resonance, leakage, temperature, and speed functions. When the *function* button is pressed the LED next to the active test function will light. Continuing to hold the button is down for about one second will advance to the next test function as indicated by the LED. To skip over any function, momentarily release the button then hold it down again until the function lights.

### XDUCER test

Select the resonance test using the *function* button. Connect the transducer to the T3D. If one or more segments light the transducer element is good. If no segments light up then the transducer element does not resonate and is probably defective.

### LEAK test

The leakage test is activated by holding the *function* button down until the segment next to *leak* flashes. An open circuit (> 10 meg ohms) will cause all segments to light. A short (<10 ohms) will light only the segment next to *0*. The scale is logarithmic, and a leakage resistance of 10K will light the lower five segments

### TEMP test

Press and hold the *function* button until the segment next to *temp* blinks then release it. In the temperature mode the first digit of the temperature is indicated by the flashing segment and the second digit by a steady segment. The readout is in degrees centigrade unless the °F button is held down for Fahrenheit reading.

### SPEED test

Press and hold the *function* switch until the segment next to *speed* lights. Rotate the speed paddle wheel and the 0 and 1 segments will light indicating the state of the output signal. Spin the paddle wheel rapidly and the bar graph lights progressively.

## Battery test

When the T3D is first turned on, all bar graph segments flash briefly to test the segments, followed by one segment. The position of this segment displays the battery voltage. If it illuminates at 6 or lower, change the battery. Replace with an alkaline 9 volt battery similar to EVER READY #522 or equivalent.

## CALIBRATION

To insure the best accuracy the T3D should be re-calibrated if the ambient temperature has changed by 30 degrees Fahrenheit or more relative to the last calibration. To calibrate the unit the power must be off and no transducer connected. With the unit in the power off condition, press and hold the *function* button then press the *power* button. Do not release the *function* button for three seconds. Successful calibration is indicated when all segments go out.

Multi-function connector wiring:

<u>pin</u>	<u>function</u>
1	Speed sensor signal.
2	Speed sensor +5 VDC power.
3	Transducer element.
4-5, 7-8	Ground connections.
6	Temperature sensor.

Pin 1 is at the five o'clock position as viewed from the front panel and the pins are counted in a counterclockwise direction.



## HOW IT WORKS

The 50 to 500 KHz internal sweep oscillator excites the transducer with a current source. As the frequency changes the phase difference is detected and displayed on the bargraph. Each segment represents a 50 KHz wide band of frequencies. The intensity of the segment relates to the amount of phase change in that band. While most transducers have three or more resonant modes, the correct resonant point usually is the brightest. The *sensitivity* buttons control the gain of the phase detector and can be used to adjust the display to better indicate the resonant points.

## WARRANTY INFORMATION

Unit will be repaired free of charge for one year from date of purchase providing there is no water damage or other evidence of improper use or handling. Purchaser must ship unit prepaid to address below; EDI will pay the return freight.

For repair ship to:

BBG Inc.  
1708 South Park Court  
Chesapeake, VA 23320  
ATTN: EDI Service Department

Please enclose a note describing the problem.

## ACCESSORIES FOR THE T3D

A series of molded adapter cables for the T3D are now available from Gemeco. These adapters will simplify the job of connecting the T3D to the most popular Airmar<sup>®</sup> transducers.

<u>Part Number</u>	<u>Usage</u>
EDI-10FUR	EDI Test Cable for Furuno <sup>®</sup> , DST, 10-Pin
EDI-6GAR	EDI Test Cable for Garmin <sup>®</sup> , DST, 6-Pin
EDI-7LOW	EDI Test Cable for Lowrance <sup>®</sup> , D&S, 7-Pin
EDI-6NAV	EDI Test Cable for Navman <sup>®</sup> , D&T, 6-Pin
EDI-8NAV	EDI Test Cable for Navman <sup>®</sup> , DST, 8-Pin
EDI-10NS	EDI Test Cable for Northstar <sup>®</sup> , DST, 10-Pin
EDI-9RAYA	EDI Test Cable for Raymarine <sup>®</sup> , D&T, A Series
EDI-RAY	EDI Test Cable for Raymarine <sup>®</sup> , D&T, DSM Series
EDI-7SIM	EDI Test Cable for Simrad <sup>®</sup> , DST, 7-Pin
EDI-9BB	EDI Test Cable for Sitex <sup>®</sup> , DST, Black Box
EDI-9BB	EDI Test Cable for Vertex Standard <sup>®</sup> , DST, Black Box

Please contact sales at [www.gemeco.com](http://www.gemeco.com) to order the above adapter cables.