

## **Introduction**

It is a kind of eddy current electrical conductivity Tester, which is designed for quick & convenient measurement of material property, such as material separate、quality control、material state check and so on. It uses the electromagnetism testing principle. Testing objects focus on non-ferromagnetic material.

### **I 、 Principle**

Eddy current exam is an NDT method established on the basis of electromagnetic induction principle; it is suitable for the conductive materials. Put the conductor in the alternating magnetic field, if inductive current exists, namely eddy current. On account of the change of each conductor's own factors (for example: conductivity, magnetic conductivity, shape, size and flaw, etc), will cause the change of the current, so we can use this phenomenon to judge the conductor's character or state and whether flaw exists.

Eddy current test is to put the conductor close to the alternating current coil, the coil establishes alternating magnetic field, this alternating magnetic field transits the conductor, and has the electromagnetic induction with it, establishes eddy current in the conductor. The current in the conductor also can produce its own magnetic field and can change the alternating magnetic field to be strong or weak, then causes the change of the voltage and R resistance. Therefore if the conductor's surface or the near surface has flaw or the metal material changes, the intensity and the distribution of the eddy current will also change, so as the change of the voltage and R resistance, according to this change, the eddy current may indirectly know about the flaw in the conductor and whether the performance of the metal material changed.

### **II 、 Features**

- ★The Tester uses 60 KHz (aviation industry standard) to inspirit.
- ★The testing data can be read in two kinds of unit: %IACS and MS/m.
- ★Its big typeface, the back light illumination designs are advantageous for users to take the testing data even in low light condition.
- ★It uses the high property battery to make sure it keeps more running time, and because of its mini-size, it is easy to carry and to grasp hold.
- ★The design of the Tester is more advantages: user can replace the probe in the outdoor, don't need to return to the company to adjust the probe into matching the Tester.
- ★It can hold measurement data.

### **III、 Technical paraTesters**

**Note: The conductivity measurements automatically rectified to the value at 20°C.**

Measurement technology	Eddy current	
Operating frequency	<b>60KHz</b>	
Display screen	240X320 pixels TFT-LCD	
L*B*H	180*90*39 mm	
Instrument case	Anti-intense impact, water-proofing polyester; Toolbox.	
Weight	300g	
conductivity standard block	Verify and guarantee temperature compensation.	
Measuring range	6.9%IACS—110%IACS(4.0MS/m—64MS/m)	
Distinguishing rate	0.1% IACS	
Probe compensated	0.3mm	
Measuring accuracy	0°C to 50°C ±0.1%IACS~±0.3%IACS	
Temperature compensation	Automatic compensation to the value of 20 °C.	
Normal work environment	Relative humidity	0~95%
	Operating temperature	0°C~50°C
Data storage	Can store 1000 measurement data.	
Probe	<b>DiaTester: 12mm</b> Applicable to minimum measuring area Diameter at 60KHz is12mm.	

## IV、Applications

★ Test the conductivity of aluminum, copper and other non-ferrous magnetic metal in the processing industry.

★ In the aerospace and automotive industries, monitor the process of heat treatment, the strength and hardness of aluminum alloy.

★ Test the conductivity aluminum when it has not been oxidized.

★ Test the purity grade of materials.

★ Test materials resistivity.

★ Material Thermal Performance analysis.

## Composition and Installment

### I、Accessories

Instrument Host, Standard probe, Probe cable, Conductivity standard block, Power adapter, Insulation sleeve, Suitcase, Instrument manual.

### II、Composition

## 1、 Exterior structure

The keys and exterior structures just like the chart shows: █



Illuminate:

- ①: Instrument Host
- ②: Probe cable
- ③: Standard probe
- ④: Conductivity standard block
- ⑤: Power adapter
- ⑥: Suitcase

Entire instrument chart

## 2、 Faceplate of instrument & key-press



Illuminate:

- ① LOCK: Locks key
- ② F/R: Toggle key
- ③ CAL: Calibrate key
- ④ ON/OFF: Power key

## Functions and Operating Instructions

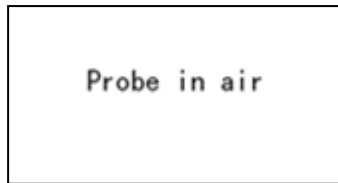
### I、 Switch:

- 1、 Under the off condition, press the key “ON/OFF” , enter the testing surface.
- 2、 Under the on condition, press the key “ON/OFF” for 3 seconds, close the tester.

## II、 Calibration:

Please to calibrate before using the instrument everytime and warm boot for fifteen minutes before calibration.

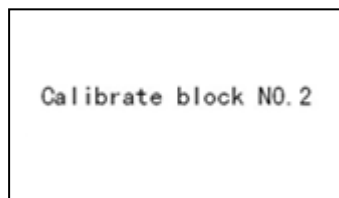
- 1、 Under the test screen, press the Calibration key (CAL) , then the screen will show as following:



- 2、 Put the probe in the air for 3 seconds( far from the magnetic materials), then press key (CAL) to complete the calibration in air(this moment, please make the probe remained in air for 3 seconds), then start to calibrate the NO.1 standard block, screen will show as following:



- 3、 Make the probe a full contact with the NO.1 standard block(the low value one—Aluminum block) for 3 seconds, and then press key (CAL) to complete the calibration of NO.1 standard block (this moment, please make the probe remained on block NO.2 for 3 seconds), then start to calibrate the NO.2 standard block, screen will show as following:




- 4、 Make a full contact between the probe and the NO.2 standard block ((the high value one—Copper block)for 3 seconds, and then press key (CAL) to complete the calibration of NO.2 standard block (this moment, please make the probe remained in situ for 3 seconds),then the calibration is OK, the system will automatically return to test interface.

**III、 Test :** After calibration, return to the test surface, screen shows as following:



Illuminate:

- 1、: Reflect the power of battery.
- 2、Probe 1: the number of probe.
- 3、20°C: It means the conductivity measurement result automatically rectifies for 20°.
- 4、101.30 and 58.75 : Conductivity value.
- 5、%IACS and Ms/m: Measurement unit.

#### IV、 Lock:

Under the test screen, press the key (HOLD) : Conductivity value will be paused.

Then press the key (HOLD) again, it will return the test screen.

V、 F/R: When the instrument is equipped with multiple probes, it is used to switch the probe number.

#### VI、 How to charge the battery

1、 For the new product, in order to achieve the best use of battery performance, when battery the first time, it is necessary to deplete the battery power naturally at first, then with the distribution of this product to charge the battery charger, the charging time is about 14 hours.

##### 2、 Charging Method

- (1) Putting 220V or 110V AC into the special adapter of product.
- (2) Pulling the DC plug into Charging jack which on the left of the equipment top.
- (3) When charging are finished, firstly pull out of the DC plug of the adapter, then pull out of the plug on the adapter.

#### Products use and maintain

- I、 In order to prevent electric shock or catch fire, please use the suitable power adapter.
- II、 Avoid to drop and hit the instrument.
- III、 Please keep the instrument clean and dry, please check the probe and standard block weather are damaged or corrupted before using.
- IV、 Please do not operate in wet, explosive, chemic or high temperature environment.

V、Do not voluntarily replace the spare part, if the product is abnormal or has suspicious breakdown, please contact with technology department or serviceman of our company for help.