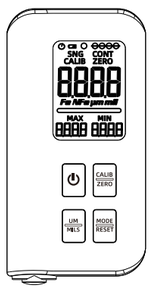
涂镀层测厚仪



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1. 产品概述

本测厚仪用于测量金属表面电镀层或涂层的厚度，具体可测量钢/铁等磁性材料表面的非磁性涂漆层厚度（如铬/油漆/陶瓷等），也可测量铜/铝等非磁性材料表面的涂层厚度（如油漆等）。本仪表内置精密探头，通过电磁感应和涡流效应自动检测基材属性并探测涂镀层厚度。

2. 应用领域

本仪器可以无损伤、快速、精密地测量涂、镀层厚度。广泛应用于制造、金属加工业、化工业、商检等检测领域，是材料表面处理工程必备仪器。可以稳定地工作于实验室、车间现场和户外。

3. 测量原理

本仪器采用电磁感应和涡流效应两种原理。可无损伤地测量金属性金属基材（如钢、铁及其合金）上非磁性涂镀层的厚度（如油漆、塑料、铜、铬、锌等），及非磁性金属基材（如铜、铝、锌、锡等）上的非导电涂镀层的厚度（氧化膜、塑料、油漆等）。

Fe（铁基）型探头即应用磁感应原理：当探头与带覆层磁性基材紧密接触时，探头与磁性基材组成闭合磁路，覆层厚度与磁路磁阻成对应关系，通过检测磁阻的改变达到测量此覆层厚度的目的。

NFe（非铁基）型探头即应用涡流效应原理：当探头与带覆层非磁性金属基材紧密接触时，探头使基材产生涡流，涡流对探头的反馈作用与覆层厚度成对应关系，通过检测此反馈量达到测量覆层厚度的目的。

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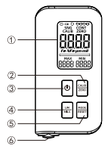
4. 产品描述

1、产品外观描述

序号	说明
1	显示屏
2	校准键/归零键
3	电源按键
4	单位切换按键
5	模式切换按键
6	测试探头



2、开关与按键说明

电源按键：长按1S开机/关机。

校准键/归键：
短按：归零(以当前读数作为参考0点)。
长按：进入校准模式。

单位转换键：短按um/mil进行切换。

模式转换键：短按单点测试与连续测试进行切换。
长按：清除用户校准数据

3、LCD符号说明

符号	说　明
	自动关机标识
	低电量提示
SNG	单次测试
CONT	连续测试
CALIB	校准模式
ZERO	校零标识
Fe	识别到铁基材料标识
NFe	识别到非铁基材料标识
μm	单位符号，1μm=0.001mm
mil	单位符号，1mil=0.0254mm
MAX，MIN	最大值，最小值

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	探头没有识别到信号
	探头识别到信号

5. 规　格

概述

1. 显示：LCD屏
2. 电池欠压指示：LCD显示 符号
3. 供电：内置3.7V 400mA 锂电池
4. 工作高度：最大2000米
5. 尺寸：111.9* 56.6 * 22.4mm
6. 重量：109.3g

技术指标

类型	Fe探头（铁基）	NFe探头（铝/铜等非磁性基材）
原理	电磁感应	涡流效应
测试范围	0~1500μm	0~1500μm
精度	±(3%+2μm)	±(3%+2μm)
分辨率	0.1μm	0.1μm
最小基材厚度	0.5mm	0.3mm
校准	零校准，多点校准	
单位	μm微米，mil密尔	
最小凸面曲率半径	1.5mm	
最小凹面曲率半径	25mm	
最小测量面积直径	6mm	
操作环境	温度：0~40℃（32~104℉）；湿度：20%~90%RH；无强磁场	

6. 操作说明

1. 长按 键1秒开机。
2. 短按 键，切换单次测试模式和连续测试模式，长按1s清除用户校准数据。
3. 短按 键，切换单位μm/mil。

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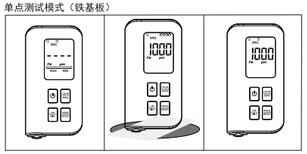
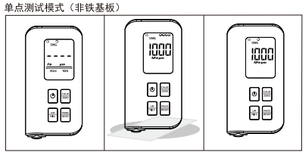
4. 将探头垂直接触并轻压于待测件，蜂鸣器响起，屏幕显示测量值。
5. 短按 键将测试的数据进行清零操作，长按进入用户校准界面。
6. 无任何操作，五分钟后将自动关机。

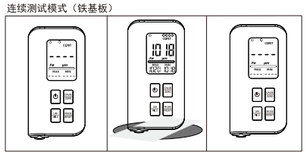
单点测试模式（铁基板）



单点测试模式（非铁基板）



连续测试模式（铁基板）



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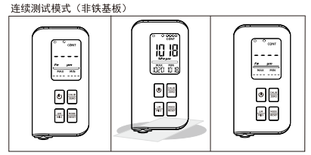
连续测试模式（非铁基板）



7. 用户自校准

仪器校准主要用于仪器测量精度的微调，当仪器探头有微小磨损/环境温度比较恶劣/待测材料比较特殊时，都会碰到测量值有微小偏差的问题，此时需要用户对仪表做简单的校准，操作如下：

首先取出仪表自带的两块校准基片（重的为铁基片/轻的为铝基片）平放于水平桌面上，标准厚度片有5片（50μm /100μm /250μm / 500μm /1000μm），根据具体要求进行校准。

开机状态下，长按 键进入，屏幕显示CALIB即为校准模式，仪器探头测量平放的基板上（铁基板/铝基板），若发现数值不为零，在保持接触稳定的情况下，按 键发现屏幕数值为零，此时零点完成校准，提起仪表，再次测量核对校准结果。同理，可以依次进行50μm /100μm /250μm /500μm /1000μm的校准，校准完成后长按 键，退出校准模式。

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8. 保养与维修

1. 用户须知：
用户应避免碰撞、重尘、高温、潮湿、强磁场等过度恶劣条件下使用本仪器，否则将损伤仪器。如果仪器使用中测量值偏差大，请首先检查是否电池电量不足，尝试重新开机，如果不能排除故障，请联系经销商，请务自行拆装机器，否则影响保修服务。

*定期使用湿布和少量洗涤剂清洁仪表外壳，请勿用研磨剂或化学溶剂。

2. 电池充电
如果LCD 出现 “ ” 符号，应充电后再使用，否则会影响测量精度。

1）关断仪表电源；
2）取下电池盖，使用USB线充电，充电过程中，红色指示灯亮起，充满后为绿色指示灯；
3）充电过程中仪表不允许开机和使用。

Coating thickness gauge

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1. Product Overview

This thickness gauge is used to measure the thickness of electroplating or coating on metal surface. It can measure the thickness of non-magnetic coating layer on the surface of magnetic materials such as steel/iron (such as chromium/paint/ceramic, etc.), and can also measure the coating thickness on the surface of non-magnetic materials such as copper/aluminum (such as paint, etc.). The instrument has a built-in precision probe that automatically detects the properties of the substrate and the thickness of the coating through electromagnetic induction and eddy current effects.

2. Application Area

The instrument can measure the thickness of coating and coating quickly and precisely without damage. Widely used in manufacturing, metal processing industry, chemical industry, commodity inspection and other testing fields, is a necessary instrument for material surface treatment engineering. Can work stably in laboratory, workshop site and outdoors.

3. Principle Of Measurement

The instrument adopts two principles of electromagnetic induction and eddy current effect, which can measure the thickness of nonmagnetic coating (such as paint, plastic, copper, chromium, zinc, etc) on gold metal substrates (such as steel, ir-on and their alloys) without damage, and the thickness of non-conductive coating (oxide film, plastic, paint, etc.) on non-magnetic metal substrates (such as copper, aluminum, zinc, tin, etc.).

The principle of magnetic induction is applied to the Fe type probe: when the probe is in close contact with the coated magnetic substrate, the probe and the magnetic substrate form a closed magnetic circuit, and the thickness of the co-ating corresponds to the magnetic resistance of the magnetic circuit, and the purpose of measuring the thickness of the coating is achieved by detecting the change of the magnetic resistance.

The NFe type probe applies the principle of eddy current effect: when the probe is in close contact with the coated non-magnetic metal substrate, the probe causes the substrate to generate eddy current,and the feedback effect of eddy current on the probe corresponds to the thickness of the coating, and the purpose of measuring the thickness of the coating is achieved by detecting the feedback amount.

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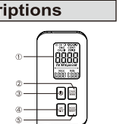
4. Product Descriptions

1. Part Name

No.	Description
1	Display screen
2	Calibrate/Zero
3	Power button
4	Unit switch
5	Mode switch
6	Sensor



2. Button Description

Power button: Long press 1s：Power ON/Power OFF.

Calibration key/Zero Button:
Short press：Zero (using the current reading as the reference zero point).
Long press 1s：Calibration mode.

Unit button: Short press：μm/mil.

Mode button:
Short press：Switch between single mode and continuous mode.
Long press 1s：Clear user calibration data.

3. Display symbols

Symbol	Explanation
	Auto shutdown function indication
	Low battery
SNG	Single mode
CONT	Continuous mode
CALIB	Calibration mode
ZERO	Zero correction mark
Fe	Iron-based materials
NFe	Non-iron based material
μm	unit symbol. 1μm=0.001mm

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mil	Unit symbol,1mil=0.0254mm
MAX，MIN	Maximum,Minimum
	Sensor has no signal
	The sensor has a signal

5. Specifications

Overview

1. Display: LCD
2. Battery low voltage indication: LCD display symbol.
3. Battery: 3.7V 400mA
4. Operating altitude：≤2000m.
5. Boundary dimension: 111.9* 56.6 * 22.4mm
6. Weight: 109.3g

Technical index

Type	Ferroprobe（iron-based materials）	Non-ferrousprobe (Aluminum/copper,etc Non-magneticsubstrate)
Theory	Electromagnetic induction	Eddy current effect
Testing range	0~1500μm	0~1500μm
Precision	±(3%+2μm)	±(3%+2μm)
Resolution ratio	0.1μm	0.1μm
Minimum substrate thickness	0.5mm	0.3mm
Calibration	Zero calibration,Multi-points calibration	
Unit	μm，mil	
Minimum convex radius of curvature	1.5mm	
Minimum radius of curvature of concave surface	25mm	
Minimum measuring area diameter	6mm	
Operating environment	Temperature: 0~40℃（32~104℉）,humidity: 20%~90%RH,No strong magnetic field.	

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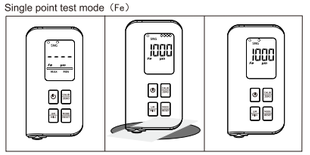
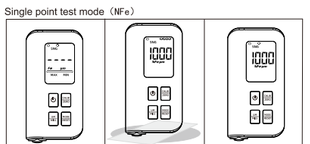
6. Operation Instructions

1.Press for 1 second to power on.
2.Press the short button to switch between single point test mode and continuous test mode, and hold down for 1s to clear user data.
3.Press the short to change the unit μm/mil.
4.Touch the probe vertically and press it lightly on the part to be tested. A buzzer sounds and the screen displays the measured value.
5.Short press to clear the test data, and long press to enter the user permission screen.
6.No operation, after five minutes will automatically shut down.

Single point test mode（Fe）



Single point test mode（NFe）



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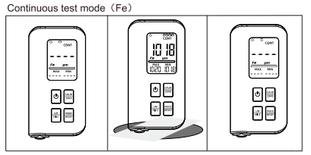
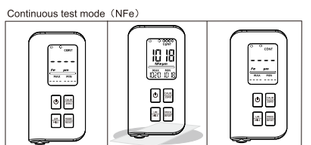
Continuous test mode（Fe）



Continuous test mode（NFe）



7. User Self-calibration

Instrument calibration is mainly used to fine-tune the measuring accuracy of the instrument. When the instrument probe has small wear/the ambient temperature is harsh/the material to be measured is special, it will encounter the problem of small deviation of the measured value. At this time, the user needs to do a simple calibration of the instrument, and the operation is as follows:
First of all, take out two calibration substrates (heavy iron substrate/ light aluminum substrate) that come with the instrument and put them on the horizontal table. There are 5 standard thickness slices (50um/ 100um /250um/500um/1000um), and calibrate according to specific requirements. When the device is started, press and hold the key to enter, and the screen displays CALIB as the calibration mode. If the value of the probe is detected on the flat substrate (iron substrate or aluminum substrate), press the key when the contact is stable and the value of the screen is found to be zero, then the calibration is complete. Lift the instrument and measure again to check the calibration result. In the same way, you can perform 50um/ 100um/ 250um /500um/ 1000um calibration in sequence. After the calibration is complete, hold down the key to exit the calibration mode.

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8. Maintenance

1. User notice:
Users should avoid collision, heavy dust, high temperature, humidity, strong magnetic field and other excessive harsh conditions to use the instrument, otherwise the instrument will be damaged. If the measurement deviation of the instrument in use is large, please first check whether the battery is insufficient, try to restart, if you can not troubleshoot, please contact the dealer. Please disassemble the machine by yourself, otherwise the warranty service will be affected.

2. Battery Charging
1) If " "symbol appears, it means the battery needs to be charged.
2) Remove the battery cover and use a USB cable to charge. During the charging process, the red indicator light will light up, and when fully charged, it will turn green.
3) The meter is not allowed to be turned on and used during charging.