

Ultrasonic Thickness Gauge

Code: 86216

User Manual V1.02

Please read this manual carefully before using and reserve it for reference.

I. Product introduction

The ultrasonic thickness gauge is designed based on the pulse reflection ultrasonic measurement principle. It is professionally used to measure the thickness of the coating on the surface of non-metallic substrates such as plastic parts, wood, glass, and the thickness of the substrate itself. It can also measure the thickness of the coating on the surface of metal substrates and the thickness of the metal substrate itself.

The product conforms to the standard:

GB/T 37361-2019 Determination of the film thickness—Ultrasonic thickness gauge method

JJF1126-2004 Calibration Specification for Ultrasonic Thickness Gauge.

Working principle:

The probe emits a high-frequency ultrasonic pulse that travels through the coupling agent (with negligible delay) and enters the coating. Upon reaching the interface of coatings with different densities, part of the ultrasonic wave will be reflected to become a new ultrasonic pulse, while the remainder continues through the material. The new ultrasonic pulse is received by the probe's sensor. The instrument then processes the signal to determine the ultrasonic wave's propagation time within the coating and accurately calculates the coating thickness.

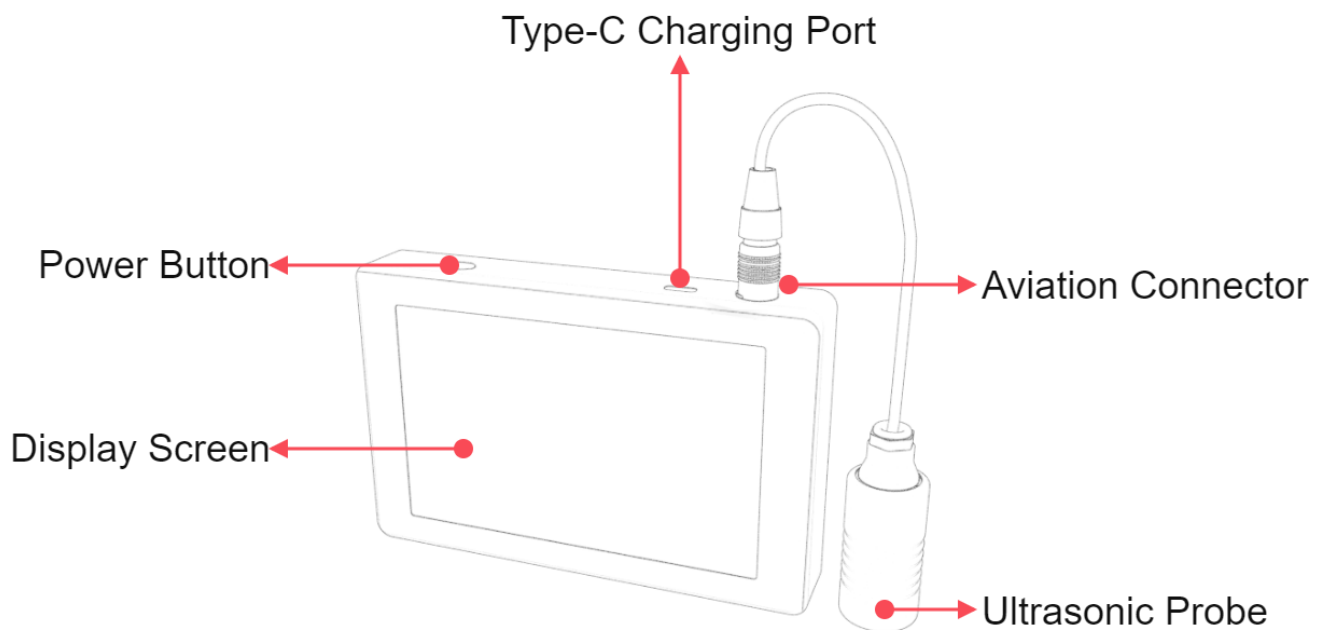
II. Parameter

Measuring Range	13-5500μm (epoxy coating), 300-14800μm (45# steel)
Resolution	1μm
Measuring Accuracy	$\leq \pm (3\%H + 2\mu\text{m})$, H is the standard value
Sound Velocity Range	1000~9999m/s
Minimum Measuring Area	Φ6mm
Probe Frequency	15MHZ
Display	800 * 480 dot matrix IPS color screen
Unit	μm/mil
System Language	Simplified Chinese, English
Host Size	141.7*91.1*22.6mm
Probe Size	Φ26*42.1mm
Weight	475g

Operation Temperature Range	0~40℃, 0~85%RH (no condensation)
Storage Temperature Range	-10~50℃, 0~85%RH (no condensation)
Supply Voltage	Rechargeable lithium battery 3.7V@4000mAh
Charging Interface	USB(Type-C)
Supply Voltage	DC5V
Operating Current	447mA
Operating Power Consumption	1475mW

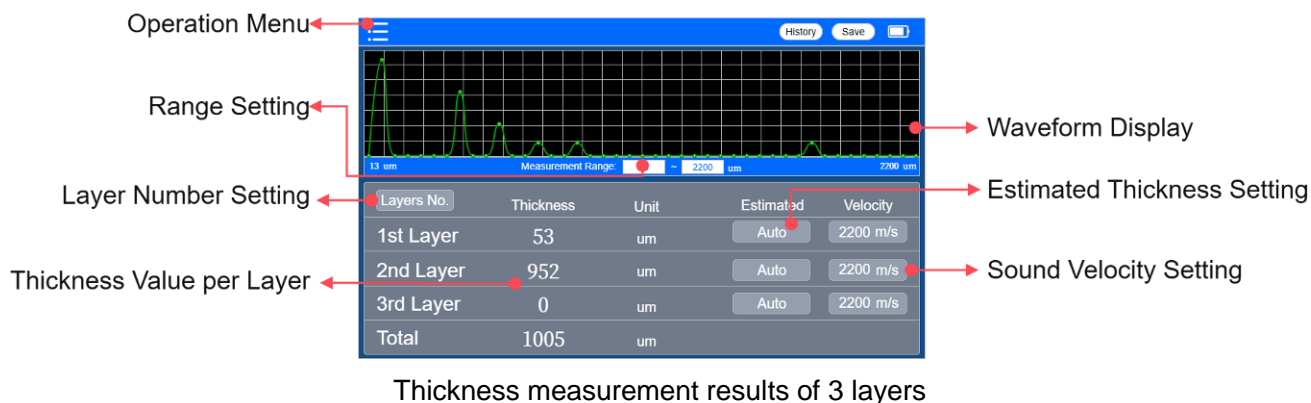
III. Operation

1. Instrument structure



2. Measurement

Apply the coupling agent evenly to the surface of the material to be measured. Firmly press the probe onto the coated surface and keep it steady. When the buzzer sounds, the measurement is complete, and the thickness of the material is displayed.



3. Parameter settings

Language: English

Zero Calibration

Continuous: OFF

Unit: um

Auto Off Setting

Reset

Power Off

Layers No.

Layers No.	Thickness	Unit	Estimated	Velocity
1st Layer	0	um	Auto	2200 m/s
Total	0	um		

Measurement Range Setting

Default Range(13~5500um) ☐

Custom Range(13~5500um) ☒ 13 ~ 5500 um

Estimated Thickness Setting

Automatic ☐

Estimated Thickness (13~25000um) ☒ 100 um

Sound Velocity Set

Set by Material > General Coating

Set by Thickness >

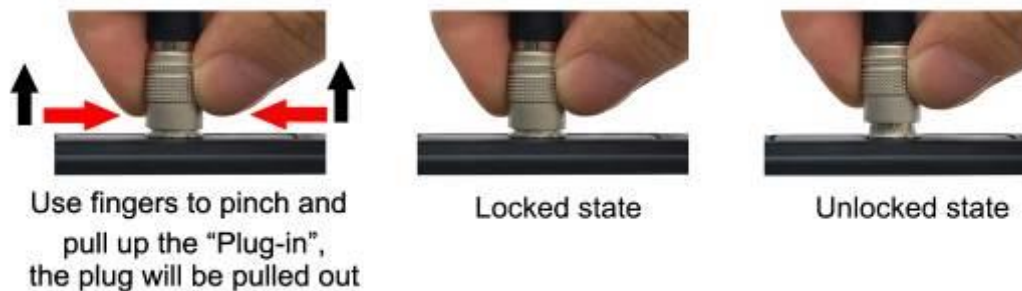
Manual Input >

Parameter setting process

- **Layers No.:** 1-3 layers can be set. Setting the correct number of layers will make the measurement more accurate.
- **Measurement range setting:** Reasonable setting of the measurement range can effectively avoid interference from stray peaks and improve accuracy.
- **Sound velocity set:** Accurately set the sound velocity of each layer of material and accurately measure the thickness of each layer.
- **Estimated thickness setting:** Set the correct estimated thickness so that the instrument can find the peak more accurately.
- **Menu bar:** Click the icon in the upper left corner to pop up the menu bar, where you can set: language, zero calibration, continuous measurement, unit, auto off setting, and reset.

3. Aviation plug connection

It cannot be rotated or pulled violently because the aviation plug connector has a spring limit. Please refer to the following figure below for correct operation:



IV. Precautions

1. The sound velocity is a key parameter for ultrasonic thickness measurement. Only by setting the correct sound velocity can an effective thickness value be obtained. It is recommended to use the material of known thickness and the same material as the object to be measured to set the sound velocity.
2. The probe should be kept in the center of the point to be measured, and the periphery of the probe should not be suspended outside the surface to be measured.
3. Please ensure that the sample is uniform and the surface is flat and clean, otherwise it will affect the measurement accuracy.
4. When the instrument has worked for a long time, it is recommended to perform reference calibration to avoid the influence of the external environment on the instrument.
5. The probe and standard block should be cleaned to prevent them from being corroded after using.
6. When measuring smooth coatings, water or detergent can be used as coupling agent. When

measuring rough coatings, please use the coupling agent configured by the manufacturer or similar thick liquids. Be careful whether the coupling agent will damage the coating.

7. Slight wear of the probe can be compensated by zero calibration.

V. Packing List

No.	Description	Quantity	Unit
1	Ultrasonic Thickness Gauge	1	pcs
2	Plastic Standard Test Piece	1	pcs
3	Charging Cable	1	pcs
4	User Manual	1	pcs
5	Calibration Report	1	pcs

VI. Service

1. The gauge has one-year warranty. If the gauge works abnormally, please send the whole gauge to our company for maintenance.
2. Provide users with spare parts and lifelong maintenance services.
3. Provide the users with the gauge calibration service.
4. Free technical support for long term manufacturer.