
Coating Thickness Gauge
Model: AX-CTG10
User's Manual





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Introduction

AX-CTG10 coating thickness gauge adapts principles of electromagnetic induction and magnetic induced eddy current. It can measure the thickness of non-metal coatings on metal surface. Press the button to select magnetic metal or non-magnetic metal. It is a ideal instrument in manufacture, metal machining industry, chemical industry and commodity inspection, especially in automobile trading.

AX-CTG10 has been designed as a user friendly and economical way, with the function of LCD displaying and measurement data hold automatically. It has the advantages of easy operation, rapid measurement, safe usage and portability.

Battery Safety Instructions

- Please remove the batteries when clean the product.
- Remove the batteries before long term storage
- Please install the batteries properly as the instructions of the positive and negative charges
- Please dispose the batteries properly. High temperature will cause explosions and do not burn the batteries. Strap insulated tape around the battery charges to avoid unsafe contacts with other objects. Many countries have regulations about the batteries disposing. Please follow the local regulations of battery disposing.



Product Overview



- A. Display
- B. Metal type selection button
- C. Power on/ measurement button
- D. Measurement units selection / zero calibration button
- E. Detection sensor
- F. Detector protection cap

ILLUSTRATION OF DISPLAY SCREEN



- A: Measurement readings display
- B: Measurement working indicator
- C: Lock measurement result indicator
- D: Magnetic metal indicator
- E: Non-magnetic metal indicator
- F: Metric unit indicator
- G: British unit indicator
- H: Low battery display indicator

Operation Instructions

● Battery Install and Remove

The unit uses a CR2032 battery. When the screen displays low battery indicator “”, press the salient point on the battery cover on the back of the unit. Clockwisely rotate at 5 mins angle to screw the battery cover. Put the battery in the battery compartment with the negative end downward. Then cover up the battery cover and rotate in place counterclockwisely.

● Coating Thickness Measurement

1. Press the measurement button “C” to power on the unit and press the button “B” to choose metal type, then press button “D” to choose measurement units;
2. Remove the protection cap ahead of the unit;
3. Press the detector head on the measured surface, don't leave the target surface until the screen “SCAN” change to “HOLD”, the thickness of coatings on metal surface will display on the LCD screen.
4. If you want to repeat measuring, be sure to start after at least 1s.
5. Removing from the measured surface, the unit will power off automatically if no operation in 1 minute.

● Operation Notes

1. When the battery voltage is low, low battery indicator will display on LCD after turn on the unit or during the usage. Please replace the battery. Rotate the battery cover through a angle to remove the battery cover when replace the battery.
2. After every battery replacement, wait for about 15s to stabilize the power source, then power on the unit.
3. The measurement way of the unit is easy, free, rapid and direct. The measurement data will lose permanently after the unit power off.
4. Please put back the protection cap after use.
5. To ensure the measurement precision, zero calibrate before measurement. Choose iron base or non-iron base and keep measuring 5 times, then holding the button “D”, release the button when “CAL” shows on the screen. Leave the base plate until the screen displays 0.00. Then make measurement.

Notes: Calibration is not requested for each measuring. It is only needed when out of accuracy.

Factors Affecting the Measuring Precision

1. The magnetic nature of metal base

Measuring the thickness with magnetic method can be affected by the change of base metal's magnetic field (in practical application, the magnetic change of mild steel can be considered as slight). To avoid the effect of heat treatment and cold processing, we should calibrate the unit with the standard tablet which has the same magnetic nature with base metal specimen.

2. The electric nature of metal base

The conductivity of base metal has the effect on measurement. And the conductivity of base metal has connection with its composition and heat treatment method. Calibrate the unit with the standard tablet which has the same electric nature with base metal specimen.

3. The thickness of metal base

Every unit has a critical base metal thickness. If above this thickness, the measurement will not be affected by the thickness of base metal.

4. Edge effect

The unit is sensitive to the specimen's surface shape. Therefore, the result is unreliable if approaching the specimen's edge or inner corner.

5. Curvature

The curvature of the specimen has an effect on the measurement. And the effect is always increasing obviously with the decrease of curvature radius, Therefore, the measurement is not reliable for the flexible specimen.

6. Deformation of specimen

The detector can distort the specimen with soft coating. Therefore, the datum are unreliable that measured from these specimens.

7. Surface roughness

The base metal and the surface roughness degree has effects on the measurement. The effect increases as the roughness degree increases. The rough surface can cause the system error and accidental error. When make every measurement, add the measuring times on different positions to avoid the accidental error. If the base metal is rough, select several positions to calibrate the unit's zero point from the base metal which is uncoated and has the similar roughness, or calibrate the unit's zero point after using the liquor which has no corrosion to the base metal to dissolve the coating

8. Magnetic field

The strong magnetic field produced by the all kinds of surrounding electrical equipments can severely disturb the thickness measurement with magnetic method.

9. Attached materials

The unit is sensitive to the attached materials which obstruct the detector to touch with the coating surface closely. So, the attached materials must be removed to make sure the detector touches with the measured specimen directly.

10. The detector's pressure

How much pressure the detector takes on the specimen will also affect the readings. So, keeping the pressure constant is necessary.

11. The detector's orientation

The detector's placing method has influences on the measurement. During the measurement, make the detector vertical to the specimen's surface.

Rules that must be followed when use the instrument

1. The feature of base metal

For the magnetic method, the magnetism and surface roughness of standard tablet's base metal should be similar to the specimen's base metal.

For the eddy method, the electric nature of the standard tablet's base metal should be similar to the specimen's base metal.

2. The thickness of base metal

Check if the base metal's thickness exceeds the critical thickness. If not, we can calibrate as the ways in "CAUTIONS"

3. Edge effect

Don't measure the specimen's mutation position, for example, edge, hole and inner corner.

4. Curvature

Don't make measurement on the curved surface of specimen.

5. Reading times

Pick up some readings in every measurement area as every reading is different and the coating thickness exists local differences. It's also the same when the surface is rough.

6. Surface clearness

Before measurement, clear away any materials on the material, for instance, dust, grease and corrosive. But, any coating materials can't be removed.

Maintenance

1. Tool service must be performed only by qualified repair personnel. Performed by untrained repair personnel could result in injury.
2. To avoid damages to the instrument, do not use it near following places:
 - a. Environment has vapor and dust;
 - b. EMF places (Electro-magnetic fields: such as arc welders, induction heaters) ;
 - c. Static environment;
 - d. Heat shock (by abrupt temperature changes, allow 30 minutes for unit to stabilize before use.);
 - e. Keep the unit away from high temperature objects. Keep clean and avoid shock and wet. Using the wet sponge or soft cloth touching soapy water or clear water to clean the unit.

• Trouble shootings

Problems	Causes	Solutions
No display on the screen	Battery runs down	Check and replace the battery
Show “  ”	Low battery	Replace the battery
Show “---”	The thickness is beyond the range	Choose the target which is within the range

CAUTIONS

- Handle with care and do not let the unit drop down.
- Do not disassemble the unit to avoid failure.
- Please put back the protection cap when not in use.
- Do not place the unit together with corrosive gases or objects.
- Please keep clean and keep away from water.
- Avoid dust and water, which may stain the unit.
- Don't immerse the product into water, which will result in damage to product.
- Please remove the battery, if it is not for use for a long time.

Technical Specifications

Product name	Coating thickness gauge
Model	AX-CTG10
Measure target	Non-metal coating thickness on the metal surface
Measuring ability	0~1.25mm nonmetal coating on metal surface
Measuring precision	2%RDG \pm 0.02mm(2%RDG \pm 1mil) (steel and aluminum only)
Power supply	one 3V CR2032 button battery
Working current	<10mA
Auto power off time	No actions in 1 min if leave the measured object
Minimum diameter of base	Φ 10mm
Critical thickness of base	0.5mm
Display resolution	0.02mm/1mil
Operation temperature	-5 $^{\circ}$ C \sim +40 $^{\circ}$ C
Working humidity	5% \sim 95%RH non-condensing
Storage environment	-20 \sim 60 $^{\circ}$ C, <85% RH (w/o battery)
Dimensions	80mm \times 42mm \times 24mm
Weight	About 36 g (w/o battery)
Attachment	1pcs of Iron base and 1pcs of aluminum base

WARRANTY

The product is warranted to be free from defects in materials and workmanship for a period of one year from the date of purchase on the basis of providing relevant card.

The warranty does not apply to the following conditions:

- Unauthorized disassembling the device will void the warranty.
- We are not responsible for any damage resulting from abrasion, water, dropping or disassembling.

Tips: Most parts of the product could be recycled, please refer to your local regulations for disposing of them instead of throwing into the dustbin.