

SHUAIGUO AR860

Smart Sensor AR860 Digital Ultrasonic Thickness Tester

User Manual

INTRODUCTION

The Smart Sensor AR860 is an intelligent handheld digital ultrasonic thickness tester designed for quick and precise measurement of material thickness. It operates on the ultrasonic measuring principle and is controlled by a microprocessor. This instrument is suitable for measuring materials that are good ultrasonic conductors, such as metals, plastics, ceramics, and glass.

Key features include auto calibration, sound velocity measurement, 12 preset sound velocities for different materials, coupling status indication, and data storage for 12 thickness measurements.

SAFETY INFORMATION

- Always operate the device in a dry environment.
- Ensure proper battery installation according to polarity markings.
- Do not attempt to disassemble or modify the device, as this may void the warranty and cause damage.
- Keep the probes and device clean and free from debris for accurate readings.
- Use appropriate couplant for measurements; the product does not include couplant.

PACKAGE CONTENTS

Verify that all items listed below are present in your package:

- 1 x Ultrasonic Thickness Tester (AR860)
- 1 x User Manual
- 1 x Storage Box
- 1 x Calibration Block
- 2 x Probes (dia 6 mm 5MHZ / dia 10mm 5MHZ)

Note: Couplant is not included in the package and must be acquired separately.



Image: The AR860 Ultrasonic Thickness Tester, user manual, calibration block, and probes neatly arranged within its protective storage case.

PRODUCT OVERVIEW

The AR860 features a clear digital display, intuitive button layout, and robust construction for industrial use.



Image: Front view of the AR860 device, showing the display screen, control buttons (VEL/DEL, INCH, Power, ALARM/RECALL, Light, ENTER/CAL), and the AR860 model designation.

Probes

The device comes with two probes of different diameters for various measurement applications.



Image: Two ultrasonic probes with their connecting cables, featuring different probe head diameters (5P ϕ 10 and 5P ϕ 6) for varied measurement requirements.



Image: A close-up view of one of the ultrasonic probes, showing its metallic tip and the '5P ϕ 6' marking on its yellow surface.

SPECIFICATIONS

Parameter	Value
Transducer	dia 6 mm 5MHZ / dia 10mm 5MHZ
Measurement Range	1.0-300.0mm (Steel)
Accuracy	$\pm(1\%H\pm 0.1\text{mm})$
Sound Velocity Range	1000~9999m/s
Minimum Limit for Tube Measuring	dia 15*2mm (steel) (dia 6) / dia 20*3mm (steel) (dia 10)
Thickness Data Storage	12 groups
Sound Velocity Measuring & Storage	12 groups
Power Supply	3 x 1.5V AAA battery (NOT included)

Device Dimensions	Approx. 270 x 180 x 80mm
Item Weight	Approx. 1 kg
Measurement Accuracy	0.1mm
Country of Origin	China



Image: Rear view of the AR860 device, displaying printed specifications including measure range, accuracy, velocity range, and 'Made In China' text.

SETUP

1. Battery Installation

Open the battery compartment cover on the back of the device. Insert 3 x 1.5V AAA batteries, ensuring correct polarity. Close the battery compartment securely.

2. Probe Connection

Connect the desired probe to the device's input port. Ensure the connection is firm to prevent signal loss during measurement.



Image: The AR860 device with an ultrasonic probe connected via its cable, ready for operation.

OPERATING INSTRUCTIONS

1. Power On/Off

Press the **Power** button to turn the device on or off. The device features an auto power-off function to conserve battery life.

2. Auto Calibration

The device includes an auto-calibration feature to ensure measurement accuracy. Refer to the on-screen prompts or the calibration block for specific steps. Typically, this involves applying couplant to the calibration block and pressing the **ENTER/CAL** button.

3. Sound Velocity Measurement (Inverse Method)

If the material to be measured is not listed in the manual or its sound velocity is unknown, use the inverse sound velocity method for accurate measurement:

1. Use a vernier caliper or micrometer to accurately measure the true thickness of the object.
2. On the AR860, select a random sound velocity setting and perform a thickness measurement on the object. The displayed value will be inaccurate.

- Adjust the displayed thickness value on the AR860 to match the true thickness measured in step 1. As you adjust, the sound velocity displayed on the device will change.
- Once the displayed thickness matches the true thickness, the corresponding sound velocity shown is the true sound velocity of the material. Press **ENTER** to save this sound velocity.

4. Thickness Measurement

Apply a small amount of couplant to the surface of the material to be measured. Place the probe firmly and flatly on the couplant-covered surface. The thickness reading will appear on the display. Ensure the coupling status indicator shows a stable connection.

5. Coupling Status Indication

The device provides an on-screen indicator to confirm proper coupling between the probe and the material. A stable indication ensures reliable measurements.

6. Data Storage and Recall

The AR860 can store up to 12 groups of thickness measurement data and 12 groups of sound velocity data. Use the **ALARM/RECALL** button to access and recall stored data.

7. Thickness Alarm Setup

Set high and low thickness alarm limits using the device's menu. The device will provide an alert if a measurement falls outside these predefined limits.

8. Backlight Function

Press the **Light** button to activate or deactivate the display backlight for improved visibility in low-light conditions.

9. Unit Conversion

Press the **INCH** button to switch between metric (mm) and imperial (inch) units.

MAINTENANCE

- Cleaning:** Wipe the device and probes with a soft, dry cloth after each use. Do not use abrasive cleaners or solvents.
- Storage:** Store the device and accessories in the provided storage box in a cool, dry place when not in use.
- Battery Replacement:** Replace batteries promptly when the low battery indicator appears to ensure accurate operation.
- Probe Care:** Ensure the probe tips are clean and free from damage. Damaged probes can lead to inaccurate readings.

TROUBLESHOOTING

Problem	Possible Cause	Solution
No display/Device won't turn on	Dead or incorrectly installed batteries	Replace batteries with new ones, ensuring correct polarity.

Inaccurate readings	Poor probe coupling, incorrect sound velocity, damaged probe, or dirty surface	Ensure sufficient couplant and firm probe contact. Verify sound velocity setting. Clean the probe and material surface. Replace damaged probes.
"----" or unstable reading	No coupling or weak signal	Apply more couplant. Press the probe more firmly and flatly against the surface. Ensure the material is suitable for ultrasonic measurement.
Low battery indicator	Batteries are low	Replace all three AAA batteries.

WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided at the time of purchase or contact your retailer. Keep your purchase receipt as proof of purchase.