HW-300S

Generic HW-300S Digital Coating Thickness Gauge User Manual

Model: HW-300S

1. Product Overview

The Generic HW-300S is a digital coating thickness gauge designed for precise measurement of non-conductive coatings on metal surfaces. It is capable of measuring the thickness of non-ferromagnetic coatings on ferromagnetic metals (e.g., iron, nickel, cobalt) and non-conductive coatings on non-ferromagnetic metals (e.g., aluminum). This device is commonly used for assessing paint thickness on automobile surfaces and coating thickness on various metal parts. It features a built-in magnetic induction (F-probe) and eddy current effect (N-probe) dual-principle probe, allowing it to automatically identify the measured metal substrate.

Figure 1: Front view of the HW-300S Digital Coating Thickness Gauge, displaying its screen and control buttons.

2. Safety Information

- Read this manual thoroughly before operating the device.
- Do not attempt to disassemble or modify the device. This may cause damage and void the warranty.
- Keep the device away from strong magnetic fields, high temperatures, and corrosive environments.
- Ensure batteries are inserted with correct polarity. Remove batteries if the device will not be used for an extended period.
- Avoid dropping the device or subjecting it to severe impact.

3. Product Components and Features

The HW-300S gauge is designed for user-friendly operation and accurate measurements.

- **HD Display:** Provides clear and easy-to-read measurement values and settings.
- **High Precision Probe:** Ensures accurate and consistent readings on various surfaces.
- **Anti-Slip Groove Design:** Enhances grip and stability during use.

- **Automatic Substrate Identification:** Automatically detects ferromagnetic (F) or non-ferromagnetic (N) substrates.
- **Multiple Measurement Units:** Supports micrometers (um), millimeters (mm), and mils.

Figure 2: Key features of the HW-300S gauge, including its display, probe, and ergonomic design.

4. Setup

4.1 Battery Installation

1. Locate the battery compartment cover on the back of the device.
2. Slide or open the cover.
3. Insert two (2) 1.5V AAA batteries, ensuring correct polarity (+/-) as indicated inside the compartment.
4. Close the battery compartment cover securely.

Figure 3: Diagram illustrating the dimensions of the HW-300S and the required 2x 1.5V AAA batteries for operation.

5. Operating Instructions

5.1 Power On/Off

- To power on, press the **Power button** (usually a central button with a power symbol).
- To power off, press and hold the **Power button**, or the device may automatically shut off after a period of inactivity (Auto Off function).

5.2 Unit Selection

Press the **um/mm/mils button** to cycle through the available measurement units: micrometers (um), millimeters (mm), and mils.

5.3 Taking a Measurement

1. Ensure the device is powered on and the desired unit is selected.
2. Place the probe of the gauge firmly and perpendicularly onto the surface to be measured.
3. The device will automatically detect the substrate type (ferromagnetic or non-ferromagnetic) and display the coating thickness reading on the screen.

4. Lift the gauge from the surface to prepare for the next measurement.

Figure 4: The HW-300S gauge in use, demonstrating how to measure coating thickness on a vehicle's painted surface.

6. Calibration

Regular calibration ensures the accuracy of your measurements. The HW-300S supports both zero calibration and multi-point calibration.

6.1 Zero Calibration

Zero calibration is performed on an uncoated metal substrate (e.g., bare steel or aluminum) to establish a baseline for measurements. Refer to the device's on-screen prompts or specific button combinations for initiating zero calibration.

6.2 Multi-point Calibration

Multi-point calibration involves measuring known thickness standards (calibration films) to adjust the gauge's accuracy across its measurement range. This is crucial for achieving high precision. The device typically comes with a set of calibration films of various thicknesses (e.g., 0.05mm, 0.10mm, 0.25mm, 0.50mm, 1.00mm, 2.00mm) and a standard aluminum substrate.

Figure 5: Calibration films and a standard aluminum block used for zero and multi-point calibration of the HW-300S gauge.

7. Maintenance

- **Cleaning:** Wipe the device with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Storage:** Store the device in a cool, dry place, away from direct sunlight and extreme temperatures. Remove batteries if storing for extended periods.
- **Probe Care:** Keep the probe tip clean and free from debris to ensure accurate readings. Avoid scratching the probe surface.

8. Troubleshooting

- **Device does not power on:** Check battery installation and ensure batteries are not depleted. Replace if necessary.
- **Inaccurate readings:** Perform zero calibration and multi-point calibration. Ensure the probe is clean and placed firmly on the surface. Verify the surface is clean and free of contaminants.
- **Display shows error:** Refer to the specific error code in the device's on-screen manual (if available) or contact support.

9. Specifications

Feature	Specification
Probe Type	F probe, N probe
Measuring Principle	Magnetic induction (F), Eddy current effect (N)
Measuring Range	0-2000um
Precision	±(3%+1um)
Resolution	0um-99.9um (0.1um), 100um-999um (1um), >1000um (0.01mm)
Zero Calibration	Supported
Statistics	Average, minimum, maximum, number of readings
Units	um, mm, mils
Minimum Convex Radian	5mm
Minimum Concave Radian	25mm
Minimum Measured Area	Diameter 20mm
Minimum Substrate Thickness	0.2mm (F probe), 0.05mm (N probe)
Maximum Measuring Speed	2 readings per second
Power Supply	2 x 1.5V AAA battery (not included)
Operating Environment Temperature	0-50°C
Operating Environment Humidity	20-90% RH (non-condensed)
Preservation Environment Temperature	-10-60°C
Preservation Environment Humidity	20-90% RH (non-condensation)
Dimensions	113mm x 53mm x 24mm
Weight	80g (without batteries)
Material	ABS

10. Warranty and Support

Information regarding specific warranty terms and customer support for the Generic HW-300S Digital Coating Thickness Gauge was not provided. Please refer to the product packaging or contact your retailer for details on warranty coverage and technical assistance.

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