R7800

REED INSTRUMENTS

Coating Thickness Gauge

WARRANTY 1 YEAR WARRANTY

Instruction Manual

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Introduction

Thank you for purchasing your REED R7800 Coating Thickness Gauge. Please read the following instructions carefully before using your instrument. By following the steps outlined in this manual your meter will provide years of reliable service. This coating thickness gauge is designed for non-invasive coating thickness measurements. The R7800 features zero or two point calibration, user adjustable high/low alarms and a USB interface to further analyze results in the software.

Product Quality

This product has been manufactured in an ISO 9001 facility and has been calibrated during the manufacturing process to meet stated product specifications. If a certificate of calibration is required please contact the nearest authorized REED distributor or authorized Service Center. Please note an additional fee for this service will apply.

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Safety

Never attempt to repair or modify your instrument. Dismantling your product, other than for the purpose of replacing batteries, may cause damage that will not be covered under the manufacturer's warranty. Servicing should only be provided by an authorized service center.

Features

- Automatically detects ferrous and non-ferrous substrates
- Easy-to-read color LCD display
- 360° screen rotation allows users to view measured readings from any angle
- Durable gauge and probe construction
- Zero and two-point calibration ensures measurement accuracy
- Single or multi-point mode allows a user to set tolerances and quickly identify whether a coating passes or fails
- Tri-color LEDs quickly indicate when measurements are below (red), above (yellow) or within set parameters (green)
- Internal memory stores up to 500 groups of data
- View stored data, charts or real-time measurement with software
- Low battery indication and auto shut off

Included

- Ferrous Substrate
- Non-Ferrous Substrate
- 5 Reference Films
- USB Cable
- Wrist Strap
- Sensor Cover
- Batteries
- Hard Carrying Case

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Specifications

Measuring Range:	0 to 1250µm 0.1 to 49.2mils
Accuracy:	0 to 1250µm: ±3% +1µm 0 to 49.21mils: ±3% +0.04mils
Resolution:	0 to 99.9µm: 0.1µm 100 to 1250µm: 1µm 0 to 4.99mils: 0.01mils 5.0 to 49.2mils: 0.1mils
Measurement Modes:	Single and Continuous
Display:	4-digit color LCD display
Resolution:	320 x 240 pixels
Backlit Display:	Yes (5 levels)
Min/Max/Average Readings:	Yes
Minimum Curvature Radius:	5mm (196.85mils)
Minimum Area Diameter:	20mm (787.40mils)
Minimum Substrate Thickness:	0.5mm (19.69mils)
Auto Shut-Off:	Yes (After 5 minutes)
Low Battery Indicator:	Yes
Power Supply:	2 x AA Batteries
Internal Memory:	Yes (Up to 500 groups)
PC Connectivity:	USB Cable
Software:	Yes
Product Certifications:	CE
Refresh Rate:	0.5 seconds (continuous mode)
Operating Temperature:	32 to 104°F (0 to 40°C)
Storage Temperature:	-4 to 140°F (-20 to 60°C)
Operating Humidity Range:	≤80%RH
Dimensions:	5.9 x 2.6 x 1.38" (152 x 65 x 35mm)
Weight:	6.35oz (180g)

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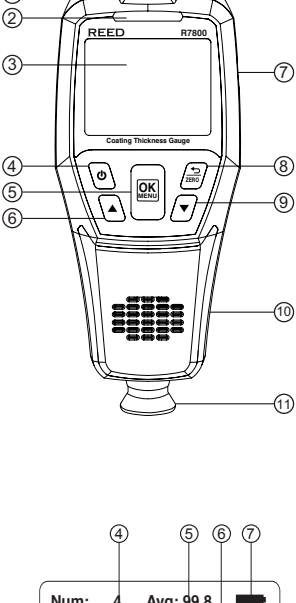
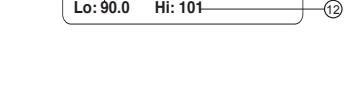
Instrument Description

1. Wrist Strap Anchoring Point
2. LED Status Indicator
3. LCD Display
4. Power Button
5. Menu/Confirm/Calibration Button
6. Increase Value/Up/Lock Screen Button
7. USB Port
8. Cancel/Clear/Return Button
9. Decrease Value/Down/Quick Decision Mode Button
10. Battery Compartment (Back)
11. Sensor



Display Description

1. Low Limit Indicator
2. Measured Value
3. Minimum Value Indicator
4. Stored Measurements Indicator
5. Average Measurement Value
6. Maximum Value Indicator
7. Battery Level Indicator
8. Locked Screen Indicator
9. Substrate Type
10. Unit of Measure
11. Calibration Mode Indicator
12. High Limit Indicator



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Operating Instructions

Power ON/OFF

To turn the meter ON or OFF press and hold the power button for 2 seconds.

Note: If the buzzer is enabled, there will be an audible beep when the instrument is powered ON or OFF.

Measuring Procedure

Before each test session perform a Zero Calibration. See the *Zero Calibration* section for details.

1. During start-up the meter begins an initialization process and enters normal operation upon completion.
2. Select the closest reference film to the estimated coating thickness of the test area and perform a 2-point calibration on the appropriate substrate plate.
3. Proceed with the 2-point calibration. See the *Two-Point Calibration* section for details.
4. Once the 2-point calibration has been completed, proceed with testing.
5. Select 3-5 measuring points on the test surface.
6. For each measuring point, it is recommended to take 5 measurements and record the average value as indicated on the LCD display.
7. After each measuring point has been tested, the overall average value should be noted as the coating thickness value of the test piece.

Note: Lightly press the sensor against the substrate being measured. Keep the sensor in close contact with the surface of the substrate without the use of excessive force as it can cause measurement errors. If the measured value is greater than 1250μm and less than 1500μm, the LCD displays "OL" indicating it is over the measurement range. If the measured value is greater than 1500μm, the gauge will not respond.

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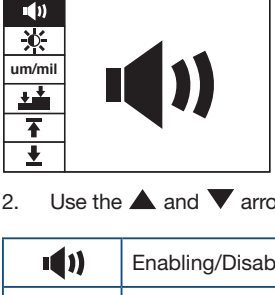
Setup Mode

1. Press the button to enter Setup Mode.



2. Use the ▲ and ▼ arrows to scroll through the following parameters.

	Enabling/Disabling Audible Beep
	Setting the Brightness
um/mil	Selecting the thickness Unit of Measure
	Selecting Calibration Mode
	Setting Higher Limit Value
	Setting Lower Limit Value
	Turning LED Indicators ON/OFF
	Factory Reset
	Selecting Continuous Measurement Mode
	Delete Recorded Data

3. Follow the instructions below to adjust each setting.

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Enabling/Disabling Audible Beep

1. Press the **OK** button when the audible beep icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to select between ON or OFF X.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Setting the LCD Brightness

1. Press the **OK** button when the brightness icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to increase or decrease the brightness level.
3. Press the OK button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Selecting the Thickness Unit of Measure

1. Press the **OK** button when the unit of measure icon **um/mil** is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to select between µm and mil.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Selecting Calibration Mode

1. Press the **OK** button when the calibration mode icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to select between zero and 2-point calibration.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup mode and resume normal operation.

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Setting Higher Limit Value

1. Press the **OK** button when the higher limit value icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to increase or decrease the higher limit value.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Note: If the higher limit value is exceeded while in normal measuring mode and LED indicators are enabled (See *Enabling/Disabling LED Indicators* for details), the LED warning light will flash yellow. When measurements are within set parameters, the LED warning light flashes green.

Setting Lower Limit Value

1. Press the **OK** button when the lower limit value icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to increase or decrease the lower limit value.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Note: If the lower limit value is exceeded while in normal measuring mode and LED indicators are enabled (See *Enabling/Disabling LED Indicators* for details), the LED will flash red. When measurements are within set parameters, the LED warning light flashes green.

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Enabling/Disabling LED Indicators

1. Press the **OK** button when the LED alarm icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to turn the LED alarm ON or OFF.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Factory Reset

1. Press the **OK** button when the factory reset icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to turn the factory reset ON or OFF.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Selecting Continuous Measurement Mode

1. Press the **OK** button when the continuous measurement mode icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to turn the continuous measurement mode ON or OFF.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Note: When Continuous Measurement is turned on, the gauge will continuously measure until it is powered off.

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Delete Recorded Data

1. Press the **OK** button when the delete recorded data icon is selected in Setup Mode.
2. Use the ▲ and ▼ arrows to turn the delete recorded data mode ON or OFF.
3. Press the **OK** button to confirm selection.
4. Press the button to exit Setup Mode and resume normal operation.

Maximum, Minimum, and Average Values

Minimum, maximum and average values are displayed during the measuring process. To clear and reset values to zero, press and hold the button for 2 seconds.

Quick Decision Mode

The Quick Decision Mode is intended for quick measurement taking and analyzing. While in normal operation, press and hold the ▼ arrow to enter Quick Decision Mode. Use the ▲ and ▼ arrows to select between single-point/multi point setup. Press the button to enter the selected mode and follow the steps below to configure.

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Single-Point Decision Configuration

1. Press the ▲ and ▼ arrows to set the target thickness value, and press the ENTER button to confirm selection.
2. Press the ▲ and ▼ arrows to set the tolerance value, and press the ENTER button to confirm.
3. Use the gauge to measure the coating thickness of the measured object.
4. The screen displays the measured value and whether or not the thickness passes or fails ("PASS" or "FAIL").
5. Press the ZERO button to return to the single-point analyzing setup screen or hold the ZERO button to exit and resume normal operation.

Multi-Point Decision Configuration

1. Press the ▲ and ▼ arrows to set the target thickness value, and press the ENTER button to confirm selection.
2. Press the ▲ and ▼ arrows to set the tolerance value, and press the ENTER button to confirm.
3. Use the gauge to measure the coating thickness of the measured object. After measuring the same position 3 times, the gauge will automatically display the average value of all 3 measurements under point A.
4. Change measurement position. After measuring the same position 3 times, the gauge will automatically display the average value of all 3 measurements under point B.
5. Proceed by measuring positions C, D, and E the same way as positions A & B.
6. After the measurements are complete, the screen displays the average value of all 5 points and whether or not the thickness passes or fails ("PASS" or "FAIL").
7. Press the ZERO button to return to the multi-point-point analyzing setup screen or press and hold the ZERO button to exit and resume normal operation.

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Zero Calibration

While in normal operation press and hold the button to enter the selected calibration mode from the Setup Mode. See *Setting Calibration Mode* for details.

Calibration Mode	Icon	Description
Zero Calibration		Simply place the sensor on an uncoated metal substrate for zero calibration.
Two-Point Calibration		Place a standard coating thickness film with a known thickness on an uncoated substrate for calibration to obtain a more accurate measurement result for testing.

Zero Calibration

1. When Figure 1 appears on screen, place the instrument vertically on the uncoated substrate.
2. Lift up after approximately 2 seconds. Zero will be displayed (as shown in Figure 2).
3. When completed, the gauge will automatically exit the zero calibration mode and resume normal operation.

Note: At any time, you can press the button to cancel the calibration and resume normal operation.

Figure 1

Figure 2

continued…

Two-Point Calibration

1. When Figure 3 appears on the screen, place a standard coating thickness film with known thickness (e.g.: 500µm) on top of an uncoated substrate.
2. Place the gauge vertically on both the thickness film and uncoated substrate.
3. Lift the instrument after approximately 2 seconds and the measured value will be displayed (as shown in Figure 4).
4. Press the ▲ and ▼ arrows to adjust the value to the actual thickness of the standard coating thickness film (as shown in Figure 5).
5. Press the button to confirm adjustment.
6. Figure 6 will now appear on the screen, prompting users to place the instrument vertically on the uncoated substrate again.
7. Lift the instrument after 2 seconds. Zero will be displayed (as shown in Figure 7).
8. When completed, the gauge will automatically exit the two-point calibration mode and resume normal operation.

Note: At any time, you can press the button to cancel the calibration and resume normal operation.

Figure 3

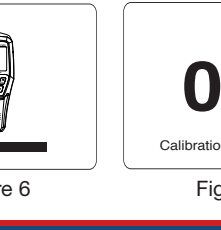

Figure 4

Figure 5

Figure 6

Figure 7

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Calibration Verification

While in normal operation, measure the standard coating thickness film. The measured value of the instrument should be within the indicated accuracy on the coating thickness film. If it is out of tolerance, recalibration is required.

Note: If the calibration result is inaccurate try restoring the factory settings and recalibrating.

Locking Screen Auto-Rotation

The instrument has a built-in gravity sensor, which automatically rotates the display during testing. This feature allows users to read the measurement values in any direction. To lock the screen auto-rotation, hold the ▲ arrow while in normal operation to turn auto-rotation function ON/OFF. When disabled, the lock screen symbol 🔒 appears on the screen.

Data Upload

Connect the R7800 via the included cable to a USB port on your PC, to download the recorded data and generate reports or view the data in real-time.

Note: The USB interface cannot power the gauge or charge the batteries.

Software Installation

Visit www.reedinstruments.com/software to download the R7800 software.

Full specifications and Operating System compatibility can be found on the product page at www.reedinstruments.com.

If you have specific questions related to your application and/or questions related to software setup and functionality please contact the nearest authorized distributor or Customer Service at info@reedinstruments.com or 1-877-849-2127.

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Battery Replacement

When the "▭▭▮" icon appears on the LCD, the batteries should be replaced.

1. Remove the screw with a Philips screwdriver and open the battery cover.
2. Replace the 2 x "AA" batteries.
3. Secure the battery cover back and tighten the screw.

Applications

- Verification of paint thickness
- Automotive industry
- Plating thickness
- Industrial manufacturing
- Metal processing
- Aerospace
- Scientific research

Accessories and Replacement Parts

- **CA-52A** Soft Carrying Case
- **R8888** Deluxe Hard Carrying Case
- **R9050** Coating Thickness Calibration Kit

Don't see your part listed here? For a complete list of all accessories and replacement parts visit your product page on www.reedinstruments.com.

Product Care

To keep your instrument in good working order we recommend the following:

- Store your product in a clean, dry place.
- Change the battery as needed.
- If your instrument isn't being used for a period of one month or longer please remove the battery.
- Clean your product and accessories with biodegradable cleaner. Do not spray the cleaner directly on the instrument. Use on external parts only.

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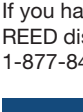
Product Warranty

REED Instruments guarantees this instrument to be free of defects in material or workmanship for a period of one (1) year from date of shipment. During the warranty period, REED Instruments will repair or replace, at no charge, products or parts of a product that proves to be defective because of improper material or workmanship, under normal use and maintenance. REED Instruments total liability is limited to repair or replacement of the product. REED Instruments shall not be liable for damages to goods, property, or persons due to improper use or through attempts to utilize the instrument under conditions which exceed the designed capabilities. In order to begin the warranty service process, please contact us by phone at 1-877-849-2127 or by email at info@reedinstruments.com to discuss the claim and determine the appropriate steps to process the warranty.

Product Disposal and Recycling



Please follow local laws and regulations when disposing or recycling your instrument. Your product contains electronic components and must be disposed of separately from standard waste products.

Product Support

If you have any questions on your product, please contact your authorized REED distributor or REED Instruments Customer Service by phone at 1-877-849-2127 or by email at info@reedinstruments.com.

Please visit **www.REEDINSTRUMENTS.com** for the most up-to-date manuals, datasheets, product guides and software.

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