REED

Model TM-8811

Digital Thickness Gauge with Velocity Function

Instruction Manual

microprocessor
DIGITAL METER

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REED
TM-8811 ● COUPLING

SELECT   CAL

◯   VEL   mm Inch

▲   ▼

ULTRASONIC THICKNESS METER

Table of Contents

For service (repairs or calibration) on this or any other REED product or information on other REED products, contact REED Instruments at info@reedinstruments.com.

Features

- Exclusive micro-computer LSI circuit & crystal time base offer high accuracy
- Digital display provides exact readings without guessing or errors
- Broad band receiving sensitivity means the meter can read probes of different frequencies
- Auto calibration
- Automatic material calibration
- Selectable metric or imperial
- Measures the thickness of steel, cast iron, aluminum, red copper, zinc, quartz glass, polyethylene, PVC, gray cast iron & nodular cast iron
- Display sound velocity at the touch of a button
- Automatic power off

Specifications

Measurement Range:	1.2 to 200 mm (#45 steel)
Accuracy:	±(0.5% + 0.1mm)
Resolution:	0.1 mm
Velocity Range:	500 to 9000 m/s
Display:	4-digit, 10mm high LCD
Power Supply:	4 x 1.5V "AA" alkaline batteries
Dimensions:	161 x 69 x 32mm
Operating condition:	Temperature 0 - 50°C
	Humidity <80%
Weight:	258g (with batteries)
Includes:	Ultrasonic sensor, carrying case & instruction manual

Meter Description

1 — Material selection button
2 — Power button
3 — Plus button
4 — Velocity button
5 — Sensor plug
6 — Coupling indicator $((\bullet))$
7 — Display
8 — Calibration button
9 — Ultrasonic sensor
10 — mm/inch button
11 — Minus button
12 — Standard block
13 — Battery compartment/cover
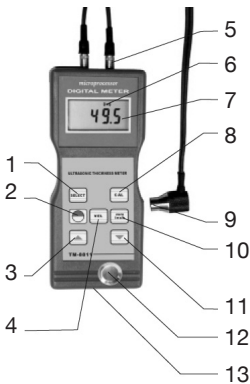
Operating Instructions

Measurement Procedures

1) Press the **Power** button (#2 above) to turn the unit on.
2) Press the **mm/inch** button (#10 above) to select the correct unit of measure.
3) Place the **Ultrasonic sensor** (#9 above) on the material surface being measured. Select the correct Material selection code (see the Material Selection instructions on page 5). Verify the coupling is okay by verifying that the **Coupling indicator** symbol $((\bullet))$ (#6 above) is on. The reading on the display is the measurement value.
4) The reading will be held until a new measurement is taken or until the unit is turned off.
5) There are two ways to turn the power off. Either manually, at any time by pressing the **Power** button or automatically, as the unit has the auto power off feature. This feature allows the unit to turn itself off after approximately 1 minute without button operation.

Material Selection

1) Press the **Power** button (#2 on page 4) to turn the unit on.
2) Press the **Material Selection** button (#1 on page 4) and the display (#7 on page 4) will show the code "cdxx" or "xxxx". The "cd" is the abbreviation for "code" and "xx" represents a number from 01 to 11. The "xxxx" represents a 4-digit number which is the sound velocity of the material being measured. The "cdxx" material relationship is as follows:

No.	Code	Material	No.	Code	Material
1	cd01	Steel	7	cd07	Quarz glass
2	cd02	Cast iron	8	cd08	Polyethylene
3	cd03	Aluminum	9	cd09	PVC
4	cd04	Red copper	10	cd10	Gray cast iron
5	cd05	Brass	11	cd11	Nodular cast iron
6	cd06	Zinc	12	xxxx	Sound velocity

3) Press the **Plus** button (#3 on page 4) or **Minus** button (#11 on page 4) to select the material code of what is being measured. Then press the **Material Selection** button (#1 on page 4) to confirm your selection. The display will show a "0" to indicate you've selected your material. If you select a material code but do not confirm the selection, the code will automatically change to "0" after several seconds.
4) To select the Sound velocity code, simply continue pressing the Plus or Minus buttons until you see a 4-digit number in the display. The 4-digit number represents the last sound velocity measurement taken. When selecting this velocity, you can measure the thickness of the same material as the last.
5) It is not necessary to select the material code once the material code is confirmed (it is automatically stored to the memory of the meter) unless the material to measure is different from before.

Calibration Procedures

1) Drop a little oil on the 5 mm **Standard block** (#12 on page 4).
2) Press the **Calibration button** (#8 on page 4), the "CAL" symbol will be shown on the Display. "CAL" is the abbreviation for calibration.
3) Place the **Ultrasonic sensor** (#9 on page 4) on the **Standard block** (#12 on page 4). Verify the coupling is okay by verifying that the **Coupling indicator** symbol **((•))** (#6 on page 4) is on. "5.0" mm (or "0.197" inch) and "CAL" will be shown in the display. When steady, press the "CAL" button to confirm and then the unit return to the state of measurement.
4) The calibration result will automatically be saved to the unit once confirmed. It is not necessary to calibrate often unless you suspect the accuracy of measurements is off.

Measuring Sound Velocity

1) Press the "VEL" button (#4 on page 4) and the display will show the last velocity measurement.

How to measure the thickness by the known velocity?

2) The velocity can be changed by pressing the Plus or Minus buttons to the velocity value. The increment is 10m/s every time when pressing the Plus or Minus buttons. The increment is 100m/s if pressing the Plus or Minus buttons for more than approximately 4 seconds.
3) Drop a little oil onto the material to be measured and place the Ultrasonic sensor onto the surface. The reading on the display is the thickness if it is properly coupled. Therefore, if we know the velocity of a certain material, it is easy to measure the thickness.

How to measure the velocity with a sample for which you know the thickness?

2) Find a sample for which you know the thickness.
3) Repeat steps 2 & 3 above until the measurement value is the same as the known thickness. Therefore the set value is the velocity of the material to be measured, by which you can measure any unknown thickness of the same material.
4) To browse the velocity, press the "VEL" button. To stop browsing, press the "VEL" button again or wait until the meter automatically shows "0".
5) By using the velocity measurement, it is easy to measure the thickness of any hard materials.

Battery Replacement

1) When the low battery symbol appears in the display,
   it is time to replace the batteries.
2) Open the Battery cover (#13 on page 4) and remove the batteries.
3) Install 4 new AA batteries verifying you are following the correct polarity.

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