

ULTRASONIC THICKNESS GAUGE RUM-7400

1. FEATURES

- * Used the exclusive Micro-computer LSI circuit and crystal time base to offer high accuracy measurement .
- * With high power of emission and broad band of receiving sensitivity, the gauge can match probes of different frequencies. That makes it easy to measure the rough surface, even cast iron. It is widely used in almost all kinds of industries.
- * Applicable to measure the thickness of many materials, e. g. Steel, Cast iron, Aluminum, Red copper, Brass, Zinc, Quartz glass, Polyethylene, PVC, Gray cast iron, Nodular cast iron.
- * Bidirectional measurement, for materials within measurement range, thickness is measurable with know velocity, Conversely velocity is measurable with know thickness.

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

- 4.3 Press the Plus key 3-6 or Minus key 3-11 to select the material code to measure and then press the Material Selection key to confirm. The display

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- * Automatic power off to conserve power.
- * Can communicate with PC computer for statistics and printing by the optional cable and the software for RS232C interface .

2. SPECIFICATIONS

- Display: LCD
 Range: 0.75~400mm (45# steel)
 (Depend on Probe)
 Resolution: 0.1 mm / 0.01mm / 0.001inch
 Accuracy: $\pm (0.5\%n+0.1)$
 Sound velocity: 1000 ~9999 m/s
 With: Bluetooth interface
 Power supply: 4x1.5VAAA (UM-4) battery
 Operating condition:
 Temp. 0~40°C
 Humidity <80%
 Size: 140x72x34mm
 Weight: about 185g (not including batteries)
 Accessory:
 Carrying case.....1 pc.

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- Operation manual.....1 pc.
 Ultrasonic sensor.....1 pc.
 Optional accessories:
 Cable & software for RS232C

3. FRONT PANEL DESCRIPTIONS



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- 3-1 RS232C interface
- 3-2 Power key
- 3-3 Display
- 3-4 Battery Cover
- 3-5 Calibration key
- 3-6 Plus key
- 3-7 Material Selection key
- 3-8 Sensor Plug
- 3-9 Ultrasonic Sensor
- 3-10 0.1mm / 0.01mm / inch conversion key
- 3-11 Minus key
- 3-12 Velocity / Thickness key
- 3-13 Standard Block

4. MATERIAL SELECTION

- 4.1 Press the power key 3-2 to turn on the unit.
- 4.2 Press the Material Selection key 3-7 and the display 3-3 will show the code `cdxx` or `xxxx`. `cd` is the abbreviation for `code` and `xx` is one number among 01~11. `xxxx` is a 4-digit number which is the sound velocity of material defined by the user.. The `cdxx`-material relationship is as follow.

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will show `0`. If you select a material code but do not confirm the selection, the code will automatically change to `0` after several seconds. In such case, the meter will still reserve the material code before exiting.

- 4.4 A 4-digit number will be shown on the Display. Press the Plus key 3-6 when displaying `cd11` or press the Minus key 3-11 when displaying `cd01`. The 4-digit number is last sound velocity to define by the user. By selecting this velocity, you could measure the thickness of the same material as last.
- 4.5 It is unnecessary to select the material code once the material code is confirmed (automatically stored to the memory of the meter) unless the material to measure is different from that before.
- 4.6 To browse the material code selected, if only press the Select key 3-7. To quit

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browsing, if only press the Select key 3-7 again or wait till the code automatically change to `0` after several seconds or the meter will automatically return to measurement state if measuring.

5. CALIBRATION

- 5.1 Drop a little oil on the 5 mm standard block 3-13 .
- 5.2 Press the Calibration key 3-5, the `CAL` be shown on the Display. `CAL` is the short for calibration.
- 5.3 Press the sensor 3-9 on the standard block. The coupling symbol ((●)) is on if coupling well. The calibration is completed while a beep sounds.
- 5.4 The calibration result will be auto-saved to the unit once confirmation. It is unnecessary to calibrate often unless you suspect the accuracy of measurement.

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6. MEASURING PROCEDURE

- 6.1 Press the power key 3-2 to turn on the unit.
- 6.2 Press the 0.1mm/0.01mm/inch convert key 3-10 to select the right measurement unit and resolution.
- 6.3 Press the Sensor 3-9 onto the material surface to measure on the premise that the material code selected is right. Be sure that coupling is well and the symbol (●) is on. The reading on display is the measurement value.
- 6.4 The reading is held till a new measurement value is coming. The last value is held on the display till the power is off.
- 6.5 2 modes to turn off the power.
Manual off at any time by pressing the power key or Auto power off after about 10 minutes from last key operation.

7. MEASURING BY VELOCITY SETTING

- 7.1 Press the VEL / THK key 3-12 and the display shows the velocity set last time.
- 7.2 How to measure its thickness by the velocity known?

The velocity can be changed by pressing the plus key or minus key to the value of known velocity. The increment is 10m/s every time when pressing the plus or minus key. And the increment is 100m/s if depressing the key for more than about 4 seconds.

- 7.3 Drop a little oil onto the material to measure and press the Sensor onto the surface. The reading on the display is the thickness if coupling well. So if we have known the velocity of a certain material, it is easy to measure the thickness by 7.2.
- 7.4 How to measure the thickness by a sample of known thickness?
Just get a sample of known thickness. Then repeat 7.2 and 7.3 till the measurement value is totally same as the known thickness. In such a case, the set value is the velocity of the material to measure, by which you can measure any unknown thickness of same material.
- 7.5 To browse the velocity, just press the

VEL / THK key 3-12. To quit browsing, just press the VEL / THK key 3-12 again or wait till the meter automatically show `0`.

- 7.6 By use of velocity measurement, it is easy to measure the thickness of any hard materials.

8. BATTERY REPLACEMENT

- 8.1 When the battery symbol appears on the display, it is time to replace the batteries.
- 8.2 Slide the Battery Cover away from the instrument and remove the batteries.
- 8.3 Install batteries paying careful attention to polarity.

9. Common Material Sound Velocity

Material	inch/ μ s	mm/s	mm/ μ s
Aluminium	0.250	6305	6.305
Bismuth	0.086	2184	2.184
Brass	0.173	4394	4.394
Calcium	0.109	2769	2.769
Cast Iron	0.18(apprx)	4572	4.572
Constantane	0.206	5232	5.232
Red Copper	0.184	4674	4.674
Epoxy Resin	0.100 (apprx)	2540	2.54
Cupronickel	0.187	4750	4.75
Glass	0.223	5664	5.664
Flint Glass	0.168	4267	4.267
Gold	0.128	3251	3.251
Ice	0.157	3988	3.988
Iron	0.232	5893	5.893
Lead	0.085	2159	2.159
Magnesium	0.228	5791	5.791
Mercury	0.057	1448	1.448
Nickel	0.222	5639	5.639
Nylon	0.102(apprx)	2591	2.591

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Material	inch/ μ s	mm/s	mm/ μ s
Paraffin	0.087	2210	2.21
Platinum	0.156	3962	3.962
Plexiglass	0.106	2692	2.692
Polystyrene	0.092	2337	2.337
Ceramics	0.230(apprx)	5842	5.842
PVC	0.094	2388	2.388
Silex Glass	0.222	5639	5.639
Vulcanized Rubber	0.091	2311	2.311
Silver	0.142	3607	3.607
Ordinary Steel	0.233	5918	5.918
Stainless Steel	0.223	5664	5.664
Sitaili Hard Alloy	0.275(apprx)	6985	6.985
PTFE	0.065	1422	1.422
Tin	0.131	3327	3.327
Titanium	0.24	6096	6.096
Tungsten	0.210	5334	5.334
Zinc	0.166	4216	4.216
Water	0.158	1473	1.473

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