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Instruction Manual Ultrasonic Material Thickness Gauge

SAUTER TD-US

Version 2.1
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GB



PROFESSIONAL MEASURING

TD_US-BA-e-2321



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Instruction Manual Ultrasonic Material Thickness Gauge

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Note: It is strongly recommended to calibrate the new instrument before first use. This will result in a higher measurement accuracy from the beginning.

1. Functions

- The exclusive LSI microcomputer provides high measurement accuracy.
- The device has a high emitting power and a wide sensitivity spectrum in terms of sensitivity. It can recognize or assign sensors of different frequencies. It can also measure rough surfaces such as cast iron. It is used in almost all branches of industry.
- Suitable for measuring the material thickness of many materials, e.g. steel, cast iron, aluminium, copper, brass, zinc, quartz glass, polyethylene, PVC, grey cast iron, nodular cast iron.
- Automatic shutdown function to maintain power.
- Connectable to a PC for data transmission with RS232C cable and software, available as optional accessory.

2. Technical data

	TD-US
Display	4 digits, 10mm LCD display
Measuring range	1.2-225mm (45# steel)
Measurement uncertainty	$\pm 0,5\%$ n +0,1
Sound velocity	500-9000m/s
Ambient temperature	0-50°C
Humidity	$\leq 80\%$
Power supply	4x 1.5V AAA (UM-4) batteries
Size	120x62x30mm
Weight	Approx. 164g (without batteries)

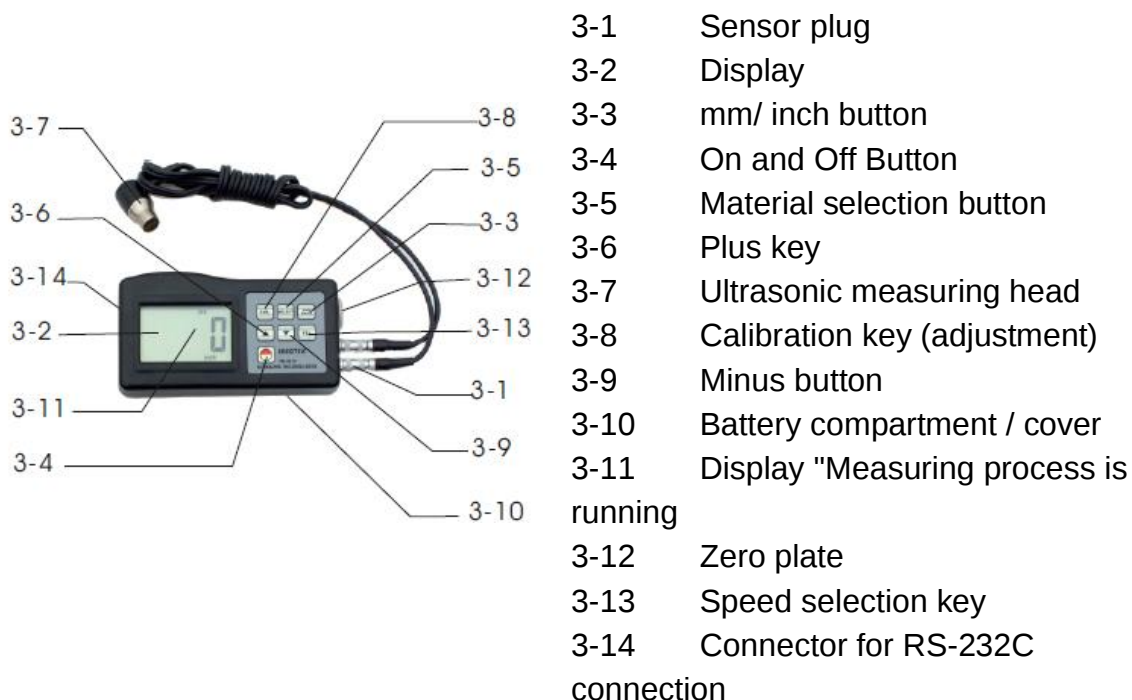
2.1 Scope of delivery:

- Instruction manual
- Batteries
- Ultrasonic sensor
- Glycerine
- Transport case

Optional accessories:

- Cable and software RS-232

3. Description of the control panel



4. Material selection

1. Switch on the device with the power button 3-4.
2. Select the material to be tested by pressing the material selection button 3-5, the display 3-2 will show the code 'cdxx' or 'xxxxx'. 'cd' is the abbreviation for code and 'xxx' is a number between 01 and 11, which, in the table below, stands for the material to be measured. 'xxxx' is a 4-digit number indicating the sound velocity for the material selected by the user. The 'cdxx' material relationship is as follows:

No	Code	Material
1	cd01	Steel
2	cd02	Cast Iron
3	cd03	Aluminium
4	cd04	Copper
5	cd05	Brass
6	cd06	Zinc
7	cd07	Quartz glass
8	cd08	Polyethylene
9	cd09	PVC
10	cd10	Grey cast iron
11	cd11	Ductile Cast Iron
12	xxxx	Sound velocity

3. The Plus key 3-6 or the Minus key 3-9 is pressed to select the material code for measuring. Then the material selection button 3-5 is pressed to confirm. The measuring instrument changes to the measuring mode, '0' appears in the display. If a material code is selected without confirming this selection, the instrument will automatically return to the measuring mode after a few seconds. In this case, the meter will still retain the old material code before switching off completely.
4. A 4-digit number is shown on the display:
If the plus key 3-6 is pressed, it will display 'cd11' or if the minus key 3-9 is pressed, it will display 'cd01'. The 4-digit number represents the last ultrasonic speed defined by the user.
By changing the ultrasonic velocity, varying material properties can be compensated.
5. Once the material code has been selected and stored, it is stored in the instrument memory. As long as no change is made, the meter always uses this material code.
6. To enter the material code selection menu, press the selection button 3-5. To leave the menu again, press the selection button 3-5 again or wait until the device - after a few seconds - returns to the measuring mode and the display shows '0'.

5. Calibration (Adjustment)

1. A little contact gel is applied to the zero plate 3-12.
2. The calibration button 3-8 is pressed and 'CAL' appears in the display. CAL' is the abbreviation for calibration.
3. The sensor 3-7 is pressed onto the zero plate. The display "Measuring process in progress" ((•)) is shown when the measuring process has been successfully established by the transmit & receive process. The display shows '5.0' mm (target thickness of the zero plate) and 'CAL' alternately. As soon as the display value has stabilized, press the 'CAL' key 3-8 to confirm. Then the instrument switches back to the measuring mode.
4. The calibration (adjustment) is now completed and is automatically stored in the device.

6. Measuring procedure

1. The power button 3-4 is pressed to switch on the unit.
2. The mm/inch button 3-3 is pressed to select the correct measuring unit.
3. The sensor 3-7 is placed on the material surface to be measured, provided that the material code has been selected correctly. Make sure that the "Measuring process in progress" indicator is visible and the character **((-))** 3-11 appears. The display shows the measurement result.
4. The measurement result is retained until a new measured value is measured. The last value remains on the display until the instrument is switched off.
5. The device can be switched off either by pressing the on/off key or by the auto power off function, which becomes active one minute after the last key is pressed.

7. Measurement with adjustment of the ultrasonic speed

1. When the VEL- key 3-13 is pressed, the display shows the last stored ultrasonic speed.
2. **Material thickness measurement at known ultrasonic speed:**
The speed of sound can be adjusted by pressing the plus or minus key. This changes the value shown on the display up or down. The increase is initially 10m/s. If the Plus or Minus key is pressed down for more than 4 seconds, the increase is 100m/sec each time.
3. A little contact gel is applied to the material to be measured. Now the sensor 3-7 is pressed onto the surface to be measured. On the display the material thickness can now be read, provided that the coupling symbol appears on the display. If the ultrasonic velocity of a certain material is known, it is easy to measure the material thickness by using step 7b).
4. **Material thickness measurement at unknown ultrasonic speed:**
Take a material sample with known material thickness or material thickness. Repeat the 1st step (setting the ultrasonic speed) and 7c) until the measured value corresponds exactly to the known material thickness. In this case, the set value is the ultrasonic velocity of the material to be measured. Now any unknown material thickness of the same material can be measured.
5. To change the ultrasonic speed, press the VEL button 3-13. To enter the measuring mode, press this key again or wait until the instrument automatically displays '0'.
6. With the help of ultrasonic measurement, the material thickness or material thickness of any hard homogeneous material can be measured in the simplest way.

8. Battery replacement

1. When the battery symbol appears on the display, the batteries should be replaced.
2. The battery cover is stripped off the meter and the batteries are removed.
3. The batteries are inserted by observing the polarity when inserting them.
4. If the device is not used for a longer period of time, the batteries should be removed.

Note:

To view the CE declaration, please click on the following link:

<https://www.kern-sohn.com/shop/de/DOWNLOADS/>