



Sauter GmbH

Ziegelei 1
D-72336 Balingen
e-mail: info@kern-sohn.com

Phone : +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.sauter.eu

Instruction Manual Ultrasonic Material Thickness Gauge

SAUTER TB-US, TB-US-RED

Version 2.1
04/2023
GB



PROFESSIONAL MEASURING

TB_US-BA-e-2321



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Instruction Manual Ultrasonic Material Thickness Gauge

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Attention: The model TB 200-0.1US-RED has no freely selectable measuring range. The stored materials can be measured. Therefore, please read the relevant sections only.

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

- Wide measuring range and high resolution
- 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.

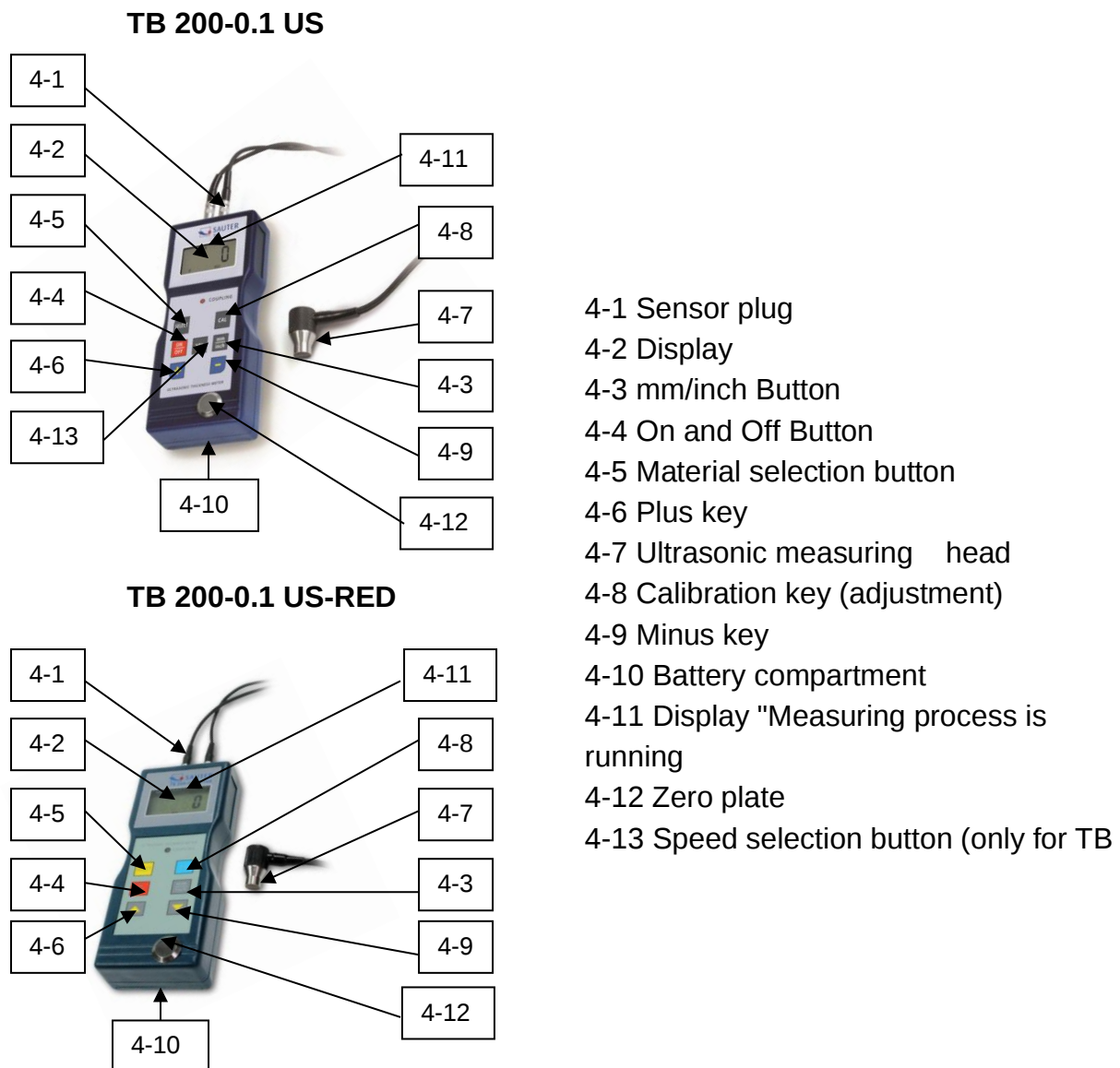
2. Technical data

	TB-US	TB-US-RED
Display	4 digits, 10mm LCD display	
Measuring range	1.5-200mm (45# steel)	
Resolution	0.1mm / 0.001 inch	
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 AA (UM-3) batteries	
Size	160x68x32mm	
Weight	Approx. 210g (without batteries)	

3. Scope of delivery:

- Transport case
- Operating instructions
- Ultrasonic sensor
- Ultrasonic contact gel
- 4x 1.5V AA batteries

4. Description of the control panel



5. Material selection

1. Switch on the device with the power button 4-4.
2. Select the material to be tested by pressing the material selection button 4-5. The display 4-2 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 4-6 or the Minus key 4-9 is pressed to select the material code for measuring. Then the material selection key 4-5 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: When the plus key 4-6 is pressed, it displays 'cd11' or when the minus key 3-9 is pressed, it displays 'cd01'. The 4-digit number represents the last sound velocity defined by the user. By changing the speed of sound, 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'.

6. Calibration (Adjustment)

1. Put a little oil on the zero plate 4-12.
2. The calibration button 4-8 is pressed and 'CAL' appears in the display. CAL' is the abbreviation for calibration.
3. The sensor 4-7 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. Once the display value has stabilized, press the 'CAL' key 4-8 to confirm. The instrument then switches back to the measuring mode.
4. The calibration (adjustment) is now completed and is automatically stored in the device.

7. Measuring procedure

1. The power button 4-4 is pressed to switch on the unit.
2. The mm/inch key 4-3 is pressed to select the correct measuring unit.
3. The measuring head 4-7 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 ((-)) 4-11 is displayed. 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, one minute after the last key has been pressed.

8. Measuring with adjustment of the ultrasonic speed

Attention: This chapter does not apply to devices of the TB 200-0.1US-RED series!

1. When the VEL- key 4-13 is pressed, the display shows the last stored sound velocity.

2. **Coating thickness & material thickness measurement at known sound velocity:**

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. A little oil is applied to the material to be measured. Now the US measuring head 4-7 is pressed onto the surface to be measured. On the display the material thickness can now be read, provided that the coupling is good. If the sound velocity of a certain material is known, it is easy to measure the material thickness.

3. **Layer thickness & material thickness measurement at unknown sound velocity:**

Take a material sample with known material thickness. and adjust the speed of sound as described in 2. and 3. is repeated until the measured value corresponds exactly to the known material thickness. In this case, the fixed value is the sound velocity of the material to be measured. Now any unknown material thickness of the same material can be measured.

4. To change the speed of sound, press the VEL button 4-13. To enter the measuring mode, press this key again or wait until the instrument automatically displays '0'.
5. With the help of ultrasonic measurement, the layer material thickness of any hard, homogeneous material can be measured in the simplest way.

9. 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/>