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Instruction Manual Goldtester

SAUTER TD GOLD 40

Version 1.3
05/2018
GB

PROFESSIONAL MEASURING

TD_GOLD_40-BA-e-1813

GB

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Version 1.3 05/2018

Instruction Manual Goldtester

Thank you for buying this SAUTER gold tester based on ultrasonic sound measuring method. We hope you are pleased with your high quality instrument and with its big functional range. If you have any queries, wishes or helpful suggestions, do not hesitate to call our service number.

Summarize:

Text of the Instruction Manual in HELP Menu

1 Main function of the KERN SSG Software for Gold Tester

With this software, the individual ultra sound velocity of your gold piece can be calculated.

Gold pieces as bars or coins are typically not made of pure gold with a sound velocity of 3240 meter per seconds (m/s). Often copper or other components are in small shares elements of gold pieces. This is necessary to obtain a better physical characteristics and it needs to be respected in the check of genuineness.

The components of the mixture of your gold piece can be taken off the expose that comes with the bar or the coin. Or it can be asked for at the manufacturer.

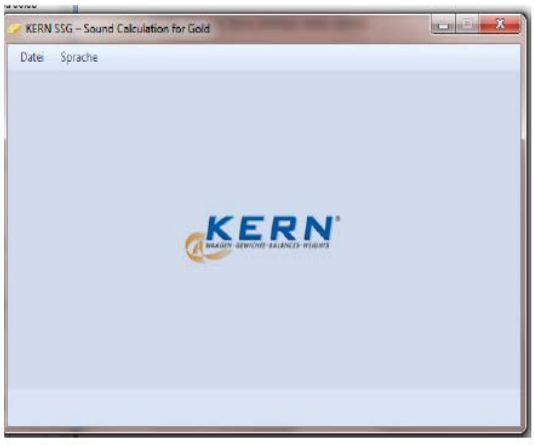
2 Start the software

Extract KERNSSG.zip

Start KERNSSG.exe

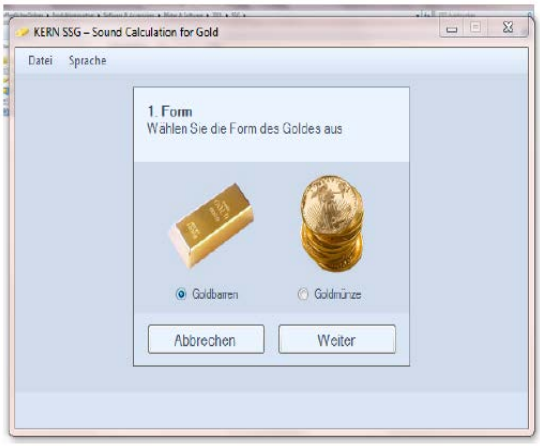
3 Start of the procedure

Please select „File“ then „New“



4 Choice of the outer appearance

Selection between gold bar and gold coin



5 Weight and Dimensions

Fill in the weight and the dimensions of the piece of gold (test object)

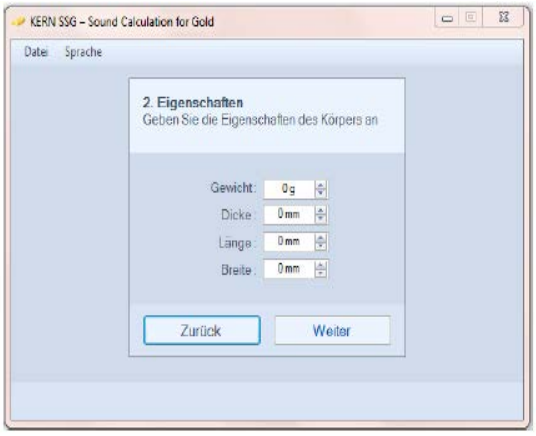
The following procedure for the measurements is recommended:

Determination of the weight: Type approved balance, e.g. KERN KB 650-2NM

* Turn the balance on
* Warm up for approx. 30 minutes
* Place the test object on the weighing pan
* Read the result in grams

Determination of the length dimensions: Caliper

* Take the thickness dimension
* Read the result in millimetres

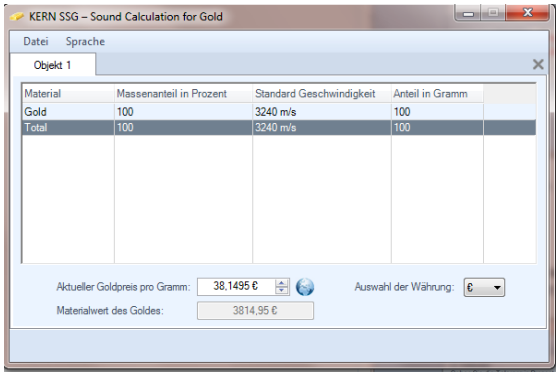


6 Safety level

Every measurement has its tolerance. A typical tolerance of e.g. 5% of the measured value represents a safety level of 95%. This tolerance is the value by which the measured value may vary from the real or true value. As in this procedure, two measured values are compared with each other, it is recommended to use a broad tolerance.

Factory-provided is this software with a safety level of 95%. This can be overwritten by any other value.

7 Material Composition

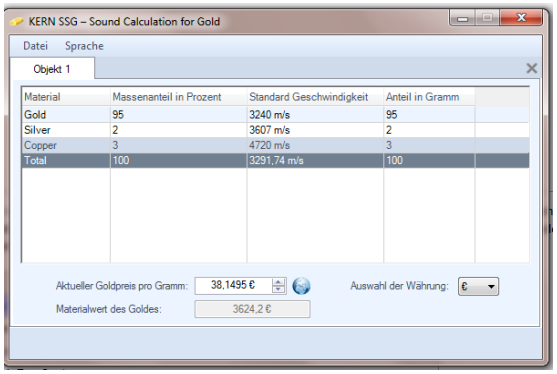


Pure gold bars or coins are rather uncommon. Typically, gold pieces are a composition of gold and other materials, e.g. to provide a higher stability. That means that other materials are added in the production process. Common are amongst others: silver and copper.

The exact composition of the gold piece can be seen in the exposé that typically is added with bars or coins. Alternatively, this composition can be inquired at the precious metals separation works, the mint or the refining establishment.

In this window, the composition is to be set in.

Please click into the line „new component“. Here please now select the first component of the composition – other than gold – and define the share of mass in percent of the composition. The software now adds automatically the relevant mass.
After adding all components, the software shows the exact and individual sound velocity of the test object.



This individual sound velocity is to be set into the SAUTER TD Ultrasound instrument.

8 Takeover of sound velocity to the instrument

Please turn the instrument on. Then please press the VEL key. Now a sound velocity appears, e.g. 5000 m/s. By pressing the arrow keys ▲ and ▼the sound velocity can the changed in 10 m/s steps. Please round the calculated sound velocity accordingly. By pressing VEL again, this setting is stored.

9 Measurement with the TD special gold

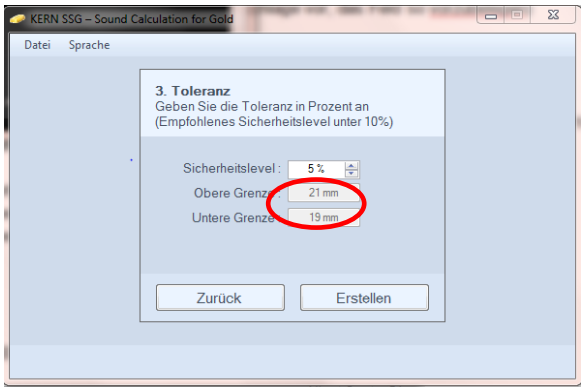
Please put a little bit coupling gel (ATB-US 03, can be reordered) onto the test object. Place the sensor on the gel, gently pressed by hand. The sensor has to be connected with the TD display unit.
If the connection is fine, in the display can now be seen:

((●)) This symbol shows the successful coupling. This means, that the ultra sound travels regularly through the material, is reflected and captured with its echo.

Value (mm) This number indicates the thickness in mm of the test object

10 Interpretation of the measured value

The measured value of the TD ultrasound instrument shall be within the tolerances calculated by the SSG software.



If the measured value of is below or above the tolerance range, it is recommend to perform a second measurement at another position of the gold piece. At a bar, this second measurement could be taken at different sides.
If then there are still differences, which are out of the tolerance range, there is a suspicious fact, that there might by a false core.

11 Alternative measurement procedures

The most traditional procedure to check the genuineness of gold pieces is the determination of density in a liquid.
Here we offer at www.kern-sohn.com in the segment “Laboratory balances” attractive instruments and solutions.

12 Instruction Manual of TD-US as a base for using TD GOLD 40

12.1 Features

* The exclusive Micro- computer LSI offers high measurement accuracy.
* The instrument offers high power of emission and a wide spectrum of receiving sensitivity.
* Sensors of different frequencies can be identified.
* Rough surfaces, even cast iron, can be measured.
* It is used in almost all kinds of industries.
* Convenient to measure the thickness of many materials, e.g. steel, cast iron, aluminium, red copper, brass, zinc, quartz glass, Polyethylene, PVC, grey cast iron, nodular cast iron.
* Automatic power-off to preserve batteries.
* Data transfer to PC possible. Cable and software can be obtained as optional accessory.

Annotation: It is strongly recommended to calibrate the new instrument before the first use, as described in paragraph 5. By doing this it will be achieved a much better measurement result right from the start.

12.2 Specifications

Display: 4 digits, 10mm LCD

Range: 1.2-225mm (45# steel)

Resolution: 0.1mm / 0.001 inch

Accuracy: ± (0.5%n+0.1)

Sound velocity: 500 to 9000m/s

Power supply: 4×1.5V AAA (UM-4) battery

Operating conditions: Temperature: 0 to 50°C

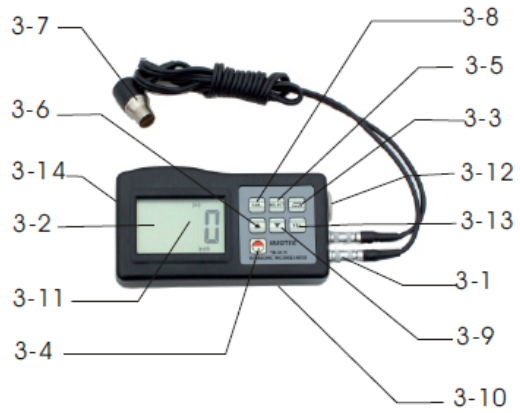
Humidity: <80%

Dimensions: 120 x 62 x 30mm (4.7 x 2.4 x 1.2 inch)

Weight: about 164g (batteries not included)

Accessories: Carrying case
Instruction manual
Ultrasonic sensor

12.3 Front panel description



3- 1 Sensor plug
3- 2 Display
3- 3 mm/ inch key
3- 4 Power- key
3- 5 Material selection key
3- 6 Plus- key
3- 7 Ultrasonic sensor
3- 8 Calibration key
3- 9 Minus- key
3-10 Battery compartment/ cover

3-11 Coupling indicator
3-12 Base plate
3-13 Velocity key
3-14 RS-232C interface

12.4 Material selection

a) The instrument has to be switched on by the Power- key 3-4.
b) The code `cdxx` or `xxxx` will be shown on the display 3-2.
`cd` is the abbreviation for `code` and `xx` is a number among 0.1 and 11 which stands for the material to be measured as shown in the scale below.
.`xxxx` is a 4-digit number describing the sound velocity of the material defined by the user.

The `cdxx` material relationship is as follows:

Nr.	Code	Material
1	cd01	Steel
2	cd02	Cast iron
3	cd03	Aluminium
4	cd04	Red copper
5	cd05	Brass
6	cd06	Zinc
7	cd07	Quartz glass
8	cd08	Polyethylene
9	cd09	PVC
10	cd10	Grey cast iron
11	cd11	Nodular cast iron
12	xxxx	Sound velocity

c) The Plus key 3-6 or the Minus key 3-9 has to be pressed to select the material code to measure. Then the material selection key 3-5 has to be pressed to confirm. The instrument changes into the measuring mode and on the display occurs `0`.
If a material code is selected without confirming this selection, the instrument will automatically change back into the measuring mode after a few seconds.
In this case the primary material code will still be stored before switching off.

d) A 4-digit number will be shown on the display by pressing the Plus key 3-6 when displaying `cd11`or the Minus key 3-9 has to be pressed when displaying `cd01`.
The 4-digit number is the last sound velocity being defined by the user. By changing velocity, varying qualities of materials can be compensated.

e) If the material code has once been selected and saved, it is stored in the memory of the instrument. As long as no modification is done, the instrument will always raise (use) this material code.

f) To get into the menu selection of the material code, the Material selection key 3-5 has to be pressed. To quit the menu, material selection key has to be pressed again or it has to be waited until the instrument- after a few seconds- changes back into measurement mode. On the display appears `0`.

12.5 Calibration

a) 5.1 A little bit contact gel has to be dropped onto the base plate 3-12.

b) The calibration key 3-8 has to be pressed and `CAL` appears on the display. `CAL` is the abbreviation for calibration.

c) The sensor 3-7 has to be pressed slightly on the base plate. The coupling symbol **((•))** (measurement in action) occurs, if the measuring procedure has been established successfully by the process of ultrasound sending and receiving.
On the display appears`5.0mm` or 0.197 inch (debit thickness of the base plate) and `CAL` in turn.
As soon as the value is stabilized, the `CAL` key 3-8 has to be pressed to confirm. Then the instrument changes back to the measuring mode.

d) Like this, calibration has been finished and automatically saved in the instrument.

12.6 Measurement procedure

a) The Power key 3-4 has to be pressed to switch on the instrument.

b) The mm/ inch key 3-3 has to be pressed to select the correct measurement unit.

c) The sensor 3-7 has to be placed onto the material surface to be measured, providing that the material code has been selected correctly.
Assure yourself that coupling is fine and the symbol **((•))** 3-11 is active. The measurement result will be shown on the display.

d) The measurement result is saved until a new measurement is performed. The last value is conserved on the display until the instrument is switched off.

e) The instrument can be switched off by either by the Power- on/ Power- off key or by Auto Power off function, one minute after the last key operation.

12.7 Measuring by sound velocity setting

a) By pressing the VEL- key 3-13, the last saved ultrasound velocity is displayed.

b) Measuring of coatings & materials by a known thickness:

Ultrasound velocity can be adjusted by pressing the Plus- or the Minus- key. By doing this, the value shown in the display is changed higher or lower. First the increase is 10m/ s. If the Plus- or Minus- key is pressed for longer than 4 seconds, the increase is 100m/ s.

c) A little bit gel has to be dropped onto the material to be measured. Now the sensor 3-7 is pressed onto the surface to be measured. The reading on the display is the thickness, assumed that coupling is well.

If velocity of a special material is known, it is easy to measure the thickness with the help of step 7b).

d) Measuring of coatings & materials with an unknown thickness:

A test material of known thickness has to be selected.
Step 7.b) (velocity setting) and 7.c) has to be repeated until the measured value is exactly the same as the known thickness. In this case the set value is the velocity of the material to be measured. With this, any number of unknown thicknesses of the same material can now be measured.

e) To change velocity, VEL- key 3-13 has to be pressed.
To return into the measuring mode, this key has to be pressed again or it has to be waited until the instrument automatically shows `0`.

f) By using velocity measurement, the coating thickness or the thickness of any hard And homogenous materials can easily be measured.

12.8 Battery replacement

a) If the battery symbol appears on the display, batteries should be replaced.

b) The battery cover has to be removed from the instrument and the batteries have to be taken off.

c) Batteries have to be installed, paying carefully attention to polarity.

d) If the instrument is not used for a longer period, batteries should be removed.

Annotation:
To have a look at the CE Declaration of Conformity, please click onto the following link: https://www.kern-sohn.com/shop/de/DOWNLOADS/