Material thickness measurement

In cases, when the walls of the item to be measured are not accessible for traditional calliper gauges, the ultrasonic measuring equipment can be used.

This measurement is based on the following principle: Ultrasonic waves are directed onto one side of the material to be measured. They move with a defined speed through the material and are reflected on the other side. The measuring device measures the time required to do this and with this, calculates the thickness of the material.

In this way the wall thickness of, for example, ship's hulls, pipes, tanks and components in sites or machines can be determined.

Ultrasonic measuring equipment can be used to measure all hard and homogeneous materials, such as metal, glass and hard plastics. This method can not be used to measure materials as, e.g. concrete, asphalt, teflon or wood.

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Product specialist
Material thickness measurement

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Quick-Finder

Readout [d] mm	Measuring range [Max] mm	Model SAUTER	Price excl. VAT, ex works €	Page
0,01	30	**TN 30-0.01EE**	**890,–**	60
0,01	60	**TN 60-0.01EE**	**1200,–**	60
0,01	80	**TN GOLD 80**	**690,–**	58
0,01	80	**TU 80-0.01US**	**1170,–**	62
0,01	80	**TN 80-0.01US**	**620,–**	59
0,01 | 0,1	100	**TO 100-0.01EE**	**1390,–**	61
0,01 | 0,1	230	**TU 230-0.01US**	**1170,–**	62
0,01 | 0,1	300	**TU 300-0.01US**	**1260,–**	62
0,01 | 0,1	230	**TN 230-0.01US**	**620,–**	59
0,01 | 0,1	300	**TN 300-0.01US**	**710,–**	59
0,1	80	**TN 80-0.1US**	**560,–**	59
0,1	200	**TB 200-0.1US**	**210,–**	56
0,1	200	**TB 200-0.1US-RED**	**270,–**	56
0,1	225	**TD 225-0.1US**	**370,–**	57
0,1	230	**TN 230-0.1US**	**560,–**	59
0,1	300	**TN 300-0.1US**	**660,–**	59

Ultrasonic thickness gauge SAUTER TB-US

Reliable material thickness gauge for daily use

Features

- External sensor for difficult-to-access measurements
- Base plate for adjustment incorporated
- Auto-Power-Off
- Selectable measuring units: mm, inch
- TB 200-0.1US-RED. can only analyse these materials: cast iron, aluminium, copper, brass, zinc, quartz glass, polyehylene, PVC, grey cast iron, nodular cast iron, steel
- 1 Delivered in a robust carrying case

Technical data

- Measuring precision: 0,5 % of [Max]
- Dimensions W×D×H 161×69×32 mm
- Battery operation, batteries standard 4× 1.5 V AA
- Net weight approx. 0,3 kg

Accessories

- External sensor, 5 MHz, ∅ 6 mm, for thin test materials: measuring range (steel) 1–50 mm, SAUTER ATB-US01, **€ 190,–**
- External sensor, 5 MHz, ∅ 12 mm, for hot test materials: Measuring range (steel) 1–225 mm at temperatures up to approx. 300°C, 4-100 mm at temperatures up to approx. 300 °C, SAUTER ATB-US02, **€ 295,–**
- External sensor, 5 MHz, ∅ 10 mm, SAUTER ATU-US09, **€ 110,–**
- External sensor, 5 MHz, ∅ 8 mm, SAUTER ATB-US06, **€ 100,–**
- Ultrasound contact gel, can be reordered, approx. 60 ml, SAUTER ATB-US03, **€ 30,–**

STANDARD · OPTION

Model	Measuring range	Readout	Sensor	Sound velocity	Price excl. of VAT ex works	Option Factory calibration certificates	
SAUTER	[Max] mm	[d] mm		m/sec	€	KERN	€
TB 200-0.1US	1,5–200	0,1	5 MHz | ∅ 8 mm	500–9000	**210,–** ⬇	961-113	120,–
TB 200-0.1US-RED	1,5–200	0,1	5 MHz | ∅ 8 mm	–	**270,–**	961-113	120,–

⬇ Price reduction

Ultrasonic thickness gauge SAUTER TD-US

1

Compact pocket-sized material thickness gauge

Features

· External sensor for difficult-to-access
  measuring points
· Data interface RS-232 included
· Base plate for adjustment incorporated
· Selectable measuring units: mm, inch
· 1 Delivered in a robust carrying case

Technical data

· Measuring precision: 0,5 % of [Max] + 0,1 mm
· Dimensions W×D×H 120×65×30 mm
· Battery operation, batteries standard
  4× 1.5 V AAA, AUTO-OFF function to
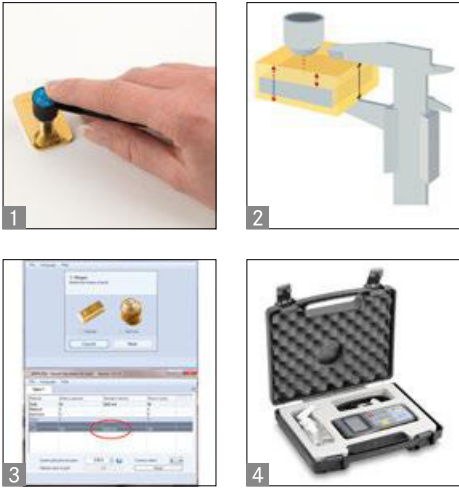 preserve batteries
· Net weight approx. 0,164 kg

Accessories

· Data transfer software, interface cable
  included, SAUTER ATC-01, **€ 90,–**
· External sensor, 5 MHz, ⌀ 6 mm, for thin test
  materials: Measuring range (steel) 1–50 mm,
  SAUTER ATB-US01, **€ 190,–**
· External sensor, 5 MHz, ⌀ 12 mm, for hot
  test materials: Measuring range (steel)
  1–225 mm at normal temperatures,
  4–100 mm at temperatures of up to 300 °C,
  SAUTER ATB-US02, **€ 295,–**
· External sensor, 5 MHz, ⌀ 8 mm,
  SAUTER ATB-US06, **€ 100,–**
· External sensor, 5 MHz, ⌀ 10 mm,
  SAUTER ATU-US09, **€ 110,–**
· External sensor, 5 MHz, ⌀ 10 mm,
  transducer at an angle of 90°,
  SAUTER ATU-US10, **€ 110,–**
· Ultrasound contact gel, can be reordered,
  approx. 60 ml, SAUTER ATB-US03, **€ 30,–**

STANDARD

CAL BLOCK · RS 232 · BATT · 1 DAY

OPTION

SOFTWARE · ISO +4 DAYS

Model	Measuring range	Readout	Sensor	Sound velocity	Price excl. of VAT ex works	Option Factory calibration certificates	
SAUTER	[Max] mm	[d] mm		m/sec	€	KERN	€
TD 225-0.1US	1,2–225	0,1	5 MHz | ⌀ 8 mm	500–9000	**370,–**	961-113	120,–

www.sauter.eu · Order hotline +49 7433 9933-0   Material thickness measurement   **57**

Gold tester SAUTER TN-GOLD

Ultrasonic measuring instrument for checking the authenticity of gold bars and coins

Features

- 1 You can use the TN-GOLD to determine whether gold or silver bars and coins are genuine or whether they contain a core of a different material
- The instrument measures the thickness of gold bars and gold coins using ultrasound
- 2 Process: Ultrasound waves are directed onto the test object using a sensor. The waves penetrate the test object, are then reflected from a surface opposite the object and then picked up again by the sensor. The measurement determined by this process will be compared with the material thickness as measured by a traditional calliper gauge. On the basis of the measurement given, false cores (Figure: grey) for example, those made of tungsten, lead, etc. can be easily identified, as the ultrasound reacts differently, compared with pure gold
- Selectable measuring units: mm, inch

- 3 SAUTER SSG software (included) can be used to calculate the sound velocity for various precious metal alloys. This makes it possible to determine whether coins or ingots contain false cores or whether they consist of one and the same material. Compatible with the following operating systems: Windows® 7/8/10
- Known additions in tested gold items – e.g. copper or silver – are compensated by the software
- In addition, the software determines the value of the gold item. The price of gold is polled on line continuously
- It is the only test process which measures right through the whole bar or the whole coin without interference and thereby guarantees the highest level of certainty
- Internal memory for up to 20 files (with up to 100 values per file)
- Base plate for adjustment incorporated
- 4 Delivered in a robust carrying case

Technical data

- Measuring precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions W×D×H 74×32×150 mm
- Battery operation, batteries standard 2× 1.5 V AA, AUTO-OFF function to preserve the batteries
- Net weight approx. 0,25 kg

Accessories

- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, **€ 30,–**
- External sensor, 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 110,–**
- USB/PC connection cable, standard, SAUTER FL-A01, **€ 46,–**
- Data transfer software, USB interface cable included, SAUTER ATU-04, **€ 110,–**

STANDARD

| CAL BLOCK | MEMORY | USB | ZERO | BATT | 1 DAY |

OPTION

| SOFTWARE | ISO +4 DAYS |

Model	Measuring range	Readout	Sensor	Sound velocity	Price	Option
						Factory calibration certificates
	[Max]	[d]			excl. of VAT ex works		
SAUTER	mm	mm		m/sec	€	KERN	€
TN GOLD 80	0,75–80	0,01	7 MHz | 6 mm	1000–9999	**690,–**	961-113	120,–

Ultrasonic thickness gauge SAUTER TN-US

Portable measuring device for ultrasonic material thickness testing

Features

- External sensor
- Data interface USB, standard (only for models with readout [d] = 0,01 mm)
- Scan mode (10 measurements per sec.) or single point measuring mode possible
- Internal memory for up to 20 files (with up to 100 values per file)
- Selectable measuring units: mm, inch
- **1** Delivered in a robust carrying case

Technical data

- Measuring precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions W×D×H 74×32×150 mm
- Battery operation, batteries standard 2× 1.5 V AA, AUTO-OFF function to preserve batteries
- Net weight approx. 245 g

Accessories

- Data transfer software, USB interface cable included, SAUTER ATU-04, **€ 110,–**
- External sensor, 2,5 MHz, ⌀ 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01, **€ 215,–**
- External sensor, 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 110,–**
- External sensor, 5 MHz, ⌀ 6 mm, SAUTER ATB-US01, **€ 190,–**
- External sensor, 5 MHz, ⌀ 10 mm, SAUTER ATU-US09, **€ 110,–**
- External sensor, 5 MHz, ⌀ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 110,–**
- External sensor, 5 MHz, ⌀ 12 mm, for hot test materials: Measuring range (steel) 3–200 mm at temperatures of up to 300 °C, SAUTER ATB-US02, **€ 295,–**
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, **€ 30,–**

STANDARD | OPTION

CAL BLOCK | MEMORY | USB [d]<0,01 mm | →0← ZERO | BATT | 1 DAY | SOFTWARE | ISO +4 DAYS

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	Price excl. of VAT ex works €	Option Factory calibration certificates	
						KERN	€
TN 80-0.1US	0,75–80	0,1	7 MHz | ⌀ 6 mm	1000–9999	**560,–**	961-113	120,–
TN 230-0.1US	1,2–230	0,1	5 MHz | ⌀ 10 mm	1000–9999	**560,–**	961-113	120,–
TN 300-0.1US	3–300	0,1	2,5 MHz | ⌀ 14 mm	1000–9999	**660,–**	961-113	120,–
TN 80-0.01US	0,75–80	0,01	7 MHz | ⌀ 6 mm	1000–9999	**620,–**	961-113	120,–
TN 230-0.01US	1,2–200 | 230	0,01 | 0,1	5 MHz | ⌀ 10 mm	1000–9999	**620,–**	961-113	120,–
TN 300-0.01US	3–200 | 300	0,01 | 0,1	2,5 MHz | ⌀ 14 mm	1000–9999	**710,–**	961-113	120,–

PREMIUM
★★★

05

Hand-held measuring device for ultrasonic material thickness testing in Echo-Echo principle

Features

- External sensor
- Data interface USB, standard
- Scan mode (10 measurements per sec.) or single point measuring mode possible
- Internal memory for up to 20 files (with up to 100 values per file)
- Selectable measuring units: mm, inch
- Two measuring modes to determine material thickness:
  - Pulse-Echo mode
  - Echo-Echo mode
- Echo-Echo measuring: Determining the actual thickness of materials irrespective of any coating which might be present. In this way, the wall thickness of pipes, for example, can be determined in a non-destructive manner, without having to remove the coating and the measurement can be shown on the display, with the adjustment for the coating thickness already taken into account
- Echo-Echo measurements are only possible with the measuring head included as part of the delivery (ATU-US12, see accessory)
- **1** Delivered in a robust carrying case

Technical data

- Measuring precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions W×D×H 74×32×150 mm
- Battery operation, batteries standard 2× 1.5 V AA, AUTO-OFF function to preserve batteries
- Net weight approx. 245 g
- Maximum thickness of coating (paints, lacquers or similar coatings which shall be eliminated): 3 mm

Accessories

- Data transfer software, USB interface cable included, SAUTER ATU-04, **€ 110,–**
- External sensor, 5 MHz, ∅ 10 mm, for echo-echo measuring, SAUTER ATU-US12, **€ 310,–**
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, **€ 30,–** Note: All following Pulse-Echo sensors can only be used in Pulse-Echo mode, not in Echo-Echo mode
- External sensor (Pulse-Echo), 2,5 MHz, ∅ 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01, **€ 215,–**
- External sensor (Pulse-Echo), 7 MHz, ∅ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 110,–**
- External sensor (Pulse-Echo), 5 MHz, ∅ 10 mm, SAUTER ATU-US09, **€ 110,–**
- External sensor (Pulse-Echo), 5 MHz, ∅ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 110,–**

STANDARD | CAL BLOCK | MEMORY | USB | ZERO | BATT | 1 DAY **OPTION** | SOFTWARE | ISO +4 DAYS

Model	Measuring range Echo-Echo	Measuring range Pulse-Echo	Readout [d]	Sensor	Sound velocity	Price excl. of VAT ex works	Option Factory calibration certificates	
SAUTER	mm	mm	mm		m/sec	€	KERN	€
TN 30-0.01EE	3–30	0,65–600	0,01	5 MHz | ∅ 10 mm	1000–9999	**890,–**	961-113	120,–
TN 60-0.01EE	3–60	0,65–600	0,01	5 MHz | ∅ 10 mm	1000–9999	**1200,–**	961-113	120,–

Ultrasonic thickness gauge SAUTER TO-EE

1

2

3

Material thickness gauge for ultrasonic material thickness testing in Echo-Echo principle

Features

- Premium thickness gauge device using ultrasonic technology: New NT measuring technology generation with automatic sensor adjustment (V-path correction for improved accuracy and more rapid display speed)
- Dual measuring modes to determine material thickness:
  - Pulse-Echo mode (up to 600 mm)
  - Echo-Echo mode (up to 100 mm)
- Echo-Echo measurements: Determining the actual thickness of materials regardless of any existing coating, such as, for example, paint or an anti-corrosion coating on the base metal. In this way, the wall thickness of pipes, for example, can be determined in a non-destructive manner, without having to remove the coating and the measurement can be shown on the display, with the adjustment for the coating thickness already taken into account
- Can be used on these materials, as well as others: Metals, plastics, ceramics, composite materials, epoxy, glass and other materials
- High-precision mode: Readout accuracy can be switched from 0.1 mm to 0.01 mm
- 1 Premium display with colour TFT display (320×240) with adjustable brightness so that it can be read easily in any environmental conditions

- Large internal data memory for up to 100 data sets each with 100 individual values
- Energy-saving operation with 2× AA batteries and an operating time of at least 30 hours, adjustable power-off time (sleep mode) and adjustable display switch-off (standby mode)
- 2 USB data output for easy data download from the device memory to the PC, as standard
- Adjustment options: 0-point adjustment, 1-point adjustment, 2-point adjustment by measuring material of different thicknesses
- 3 different measurement modes with standard measuring (single measurement), scan mode (for continuous measurement and display of the ACTUAL value, the MIN and MAX value of the measuring sequence) and DIFF mode with calculation of the difference between the ACTUAL measured value and a manually defined nominal thickness
- Limit alarm function: Upper and lower limit adjustable. The measurement process is supported by an audible and visual signal
- Menu languages: GB, DE, FR, ES, IT
- Date and time can be adjusted. It is possible to store the measurement values with a time stamp
- Standard measuring probe ATU-US12 included with delivery
- 3 Delivered in a robust carrying case

Technical data

- Measuring precision: 0,4 % of [Max] ± 0,04 mm
- Dimensions W×D×H 70×31×130 mm
- Battery operation, batteries standard 2× 1.5 V AA, AUTO-OFF function to preserve batteries
- Net weight approx. 245 g
- Maximum thickness of coating (paints, lacquers or similar coatings which shall be eliminated): 3 mm

Accessories

- External sensor, 5 MHz, ⌀ 10 mm, for echo-echo measuring, SAUTER ATU-US12, **€ 310,–**
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, **€ 30,–**
- Software BalanceConnection, flexible recording or transfer of measurements, particularly to Microsoft® Excel or Access as well as transfer of this data to other Apps and programs. The displayed result can therefore be converted to any format for communication with the different user programs, such as, for example, e.g. SAP, for details see internet, KERN SCD-4.0, **€ 150,–**
- Further sensors on request
- **Note:** Further details and plenty of further accessories see www.sauter.eu

STANDARD / OPTION

| CAL BLOCK | SCAN | MEMORY | USB | TOL | ZERO | BATT | 1 DAY | SOFTWARE | ISO +4 DAYS |

Model	Measuring range Echo-Echo	Measuring range Pulse-Echo	Readout [d]	Speed of sound	Sensor	Price excl. of VAT ex works €	Option Factory calibration certificates	
SAUTER	mm	mm	mm	m/s			KERN	€
TO 100-0.01EE	3–100	0,7–600	0,1/0,01	100–19999	5 MHz | ⌀ 10 mm	**1390,–**	961-113	120,–

PREMIUM
★★★

05

Premium ultrasonic thickness gauge

Features

- External sensor for difficult-to-access measurements
- Base plate for adjustment included
- **1** Data interface USB
- **2** Delivered in a robust carrying case
- Scan mode (10 measurements per sec.) or single point measuring mode possible
- Internal memory for up to 20 files (with up to 100 values per file)
- Measuring with tolerance range (limit-setting function): Upper and lower limiting can be programmed individually. The process is supported by an audible and visual signal.
- Selectable measuring units: mm, inch
- Robust metal housing

Technical data

- Measuring precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions W×D×H 76×32×132 mm
- Battery operation, batteries standard 2× 1.5 V AA
- Net weight approx. 345 g

Accessories

- Data transfer software, interface cable included, SAUTER ATU-04TU, **€ 110,–**
- External sensor, 2,5 MHz, ⌀ 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01, **€ 215,–**
- External sensor, 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 110,–**
- External sensor, 5 MHz, ⌀ 12 mm, for hot test materials: Measuring range (steel) 3–200 mm at temperatures of up to 300 °C, SAUTER ATB-US02, **€ 295,–**
- External sensor, 5 MHz, ⌀ 10 mm, SAUTER ATU-US09, **€ 110,–**
- External sensor, 5 MHz, ⌀ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 110,–**
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, **€ 30,–**

STANDARD | OPTION

CAL BLOCK · MEMORY · USB · TOL · ZERO · BATT · 1 DAY | SOFTWARE · ISO +4 DAYS

Model	Measuring range	Readout	Sensor	Sound velocity	Price excl. of VAT ex works	Option Factory calibration certificates	
	[Max]	[d]					
SAUTER	mm	mm		m/sec	€	KERN	€
TU 80-0.01US	0,75–80	0,01	7 MHz | ⌀ 6 mm	1000–9999	**1170,–**	961-113	120,–
TU 230-0.01US	1,2–200 | 230	0,01 | 0,1	5 MHz | ⌀ 10 mm	1000–9999	**1170,–**	961-113	120,–
TU 300-0.01US	3–200 | 300	0,01 | 0,1	2,5 MHz | ⌀ 14 mm	1000–9999	**1260,–**	961-113	120,–