MATERIAL THICKNESS MEASUREMENT
Adjusting program (CAL): For quick setting of the instrument’s accuracy. External adjusting weight required.

Calibration block: standard for adjusting or correcting the measuring device.

Peak hold function: capturing a peak value within a measuring process.

Scan mode: continuous capture and display of measurements.

Push and Pull: the measuring device can capture tension and compression forces.

Length measurement: captures the geometric dimensions of a test object or the movement during a test process.

Focus function: increases the measuring accuracy of a device within a defined measuring range.

Internal memory: to save measurements in the device memory.

Data interface RS-232: bidirectional, for connection of printer and PC.

Data interface USB: To connect the measuring instrument to a printer, PC or other peripheral devices.

Data interface Infrared: To transfer data from the measuring instrument to a printer, PC or other peripheral devices.

Control outputs (optocoupler, digital I/O): to connect relays, signal lamps, valves, etc.

Analogue interface: to connect a suitable peripheral device for analogue processing of the measurements

Statistics: using the saved values, the device calculates statistical data, such as average value, standard deviation etc.

PC Software: to transfer the measurement data from the device to a PC.

Printer: a printer can be connected to the device to print out the measurement data.

GLP/ISO record keeping: of measurement data with date, time and serial number. Only with SAUTER printers

Measuring units: Weighing units can be switched to e.g. non-metric at the touch of a key. Please refer to website for more details.

Measuring with tolerance range (limit-setting function): Upper and lower limiting can be programmed individually. The process is supported by an audible or visual signal, see the relevant model.

Push and Pull: the measuring device can capture tension and compression forces.

Length measurement: captures the geometric dimensions of a test object or the movement during a test process.

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Push and Pull: the measuring device can capture tension and compression forces.

Length measurement: captures the geometric dimensions of a test object or the movement during a test process.

Focus function: increases the measuring accuracy of a device within a defined measuring range.
Sales conditions

All prices are valid as of January 1st 2018 until a new version of the SAUTER catalogue is released. In Europe, all prices do not include the applicable V.A.T.

At SAUTER there is no minimum order value. For orders less than € 15.00 there is no re-sale discount available.

Delivery Conditions: we supply ex works Balingen, i.e. the transport costs are invoiced. Any goods supplied, remain SAUTER's property until Measuring in a tolerance area (limit value function). Upper and lower limit value is programmable. The measurement process is supported by an acoustic and visual signal, see respective models complete payment for the goods sold has been received.

Delivery is usually via courier service.

When you see this symbol by truck, please ask for prices.

Extract from general terms and conditions:
Court of jurisdiction/Legal domicile: 72336 Balingen, Germany; Commercial register N°: HRB 400865, AG Stuttgart; Managing director: Albert Sauter, Martin Sauter. For the full Terms and Conditions, please refer to the website. www.kern-sohn.com/en/kern/agbs.html

Price changes and product changes are likely in individual cases due to product modifications as well as error.

Sale or return: within 14 days of purchase. Not valid for order-specific adaptations such as special productions, cable extensions, special weights, etc. or test services such as calibration etc. Depending on the time and effort involved, there may be processing and storage costs, please ask for details.

Warranty: 2 years. (Does not apply to consumables such as batteries, rechargeable battery packs, etc.)

After-Sales-Service

Repair services within 1 week at our plant in Balingen, transportation costs are additional. Our expert Service technicians will be pleased to assist you and will make sure that your device is quickly back in operation.

Price reduction on a new device: if repair costs are exceeding the current value of the defective device, a new device will be offered at a discount price. This offer is valid only up to 2 years after warranty expiration.

Spare parts service within 48 hours, transportation costs are additional.

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Services

KERN DirectCash: The quick, secure COD procedure for protection against non-payment. With the KERN DirectCash COD system, you can safely deliver orders to end customers with unknown credit rating, with no risk of non-payment. Please request further details on this procedure.

Hire Purchase

Financing is available using KERN hire purchase – easy and convenient.

Hire Purchase gives you the option of purchasing any product from the range against a simple monthly installment. The product value is financed over the period of the agreement. On payment of the last installment, the ownership of the contract item automatically transfers from the contractor to the contractee.

The Hire Purchase Agreement can – if you so choose – be set for a period of between one and five years. This package includes the transfer of items as well as the guarantee for the entire transfer period.

Compared with buying the product, KERN hire purchase offers the advantage that the initial financial investment is largely not applicable. This is particularly relevant when purchasing a number of products, for example when refitting a laboratory, a company department or a hospital ward. In addition the monthly installments constitute a direct cost and the item does not have to be capitalised by the purchaser. Do you have queries to our hire purchase? Our customer consultants are glad to help you.

Marketing support

Catalogues, brochures, branch prospectuses – your own personalised marketing tools

Our catalogue and branch prospectuses are available free of charge. A neutral version of the catalogue, without the SAUTER address imprint, is also available for your marketing activities free of charge, larger quantities on request. On demand we will print your company address on address labels free of charge, for the backside of the catalogue, larger quantities on request. In this way you will receive your individual marketing tool.

Our catalogues and branch prospectuses are available in following languages: DE, GB, FR, IT, ES

Online-Shop

At your disposal round the clock. Delivery and service via your specialist dealer.

Measuring instruments Quick-Finder

Find the product you want with the “Measuring instruments Quick-Finder” in no time.

Calibration

In our accredited DAkkS calibration laboratories, we produce internationally recognised DAkkS and Factory calibration certificates for balances and test weights as well as measuring instruments.

Special offers

Special offers, special models and opportunities – something for everybody and always up to date – just drop in!

One-Stop-Shopping

From force gauge to test stand – everything from one supplier.

Downloads

For each model there is an individual brochure, user manual or pictures.
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.

Quick-Finder

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<td>TN 300-0.1US.</td>
<td>660,–</td>
<td>46</td>
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</tbody>
</table>

Taras Mikitisin
Product specialist
Material thickness measurement
Tel. +49 (0) 7433 9933 - 143
Fax +49 (0) 7433 9933 - 29143
mikitisin@kern-sohn.com
Ultrasonic thickness gauge SAUTER TB-US

Compact worktool for daily use

Features
- **External sensor** for difficult-to-access measurements
- **Base plate for adjustment** incorporated
- **Delivered in a robust carrying case**
- **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, polyethylene, PVC, grey cast iron, nodular cast iron, steel

Technical data
- Precision: 0.5 % of [Max]
- Dimensions W×D×H 161x69x32 mm
- Battery operation, batteries standard 4× 1.5V AA
- Net weight approx. 0.3 kg

Technical data
- Precision: 0.5 % of [Max]
- Dimensions W×D×H 161x69x32 mm
- Battery operation, batteries standard 4× 1.5V AA
- Net weight approx. 0.3 kg

Accessories
- **External sensor**, 5 MHz, Ø 6 mm, for thin test materials: measuring range (steel) 1–50 mm, SAUTER ATB-US01, € 190,-
- **External sensor**, 5 MHz, Ø 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, Ø 10 mm, SAUTER ATU-US09, € 110,-
- **External sensor**, 5 MHz, Ø 8 mm, SAUTER ATB-US06, € 100,-
- **Ultrasound contact gel**, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,-

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] mm</th>
<th>Readout [d] mm</th>
<th>Sensor 5 MHz</th>
<th>Sound velocity m/sec</th>
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<th>Option</th>
<th>Factory calibration certificates €</th>
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<td>TB 200-0.1US-RED</td>
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<td>0.1</td>
<td>Ø 8 mm</td>
<td>–</td>
<td>270,-</td>
<td>KERN 113</td>
<td>961-113 120,-</td>
</tr>
</tbody>
</table>

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Material thickness measurement 43
Ultrasonic thickness gauge SAUTER TD-US

Compact material thickness gauge with external sensor

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

**Technical data**
- Precision: 0.5 % of [Max] + 0.1 mm
- Dimensions W×D×H 120×65×30 mm
- Battery operation, batteries standard 4× 1.5V AAA, AUTO-OFF function to preserve batteries
- Net weight approx. 0.164 kg

**Accessories**
- **Software**, interface cable included, SAUTER ATD-01, € 90,–
- **External sensor**, 5 MHz, ø 6 mm, for thin test materials: Measuring range (steel) 1–50 mm, SAUTER ATB-US01, € 190,–
- **External sensor**, 5 MHz, ø 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, ø 8 mm, SAUTER ATB-US06, € 100,–
- **External sensor**, 5 MHz, ø 10 mm, SAUTER ATU-US09, € 110,–
- **External sensor**, 5 MHz, ø 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,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] mm</th>
<th>Readout [d] mm</th>
<th>Sensor</th>
<th>Sound velocity m/sec</th>
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<td>1,2–225</td>
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<td>5 MHz</td>
<td>ø 8 mm</td>
<td>500–9000</td>
<td>370,–</td>
<td>KERN 961-113</td>
</tr>
</tbody>
</table>
Ultrasound measuring instrument for testing the authenticity of gold and other precious metals

**Features**

- 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
- 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

- Using the SAUTER SSG software (included), you can determine whether the test item is genuine or contains a false core – and you can be very confident of the result
- 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
- Data interface USB, standard
- Delivered in a robust carrying case

**Technical data**

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

**Accessories**

- External sensor, 5 MHz, ∅ 6 mm, SAUTER ATB-US01, € 190,–
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,–
- Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0, € 90,–
- External sensor, 7 MHz, ∅ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, € 110,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] mm</th>
<th>Readout [d] mm</th>
<th>Sensor</th>
<th>Sound velocity m/sec</th>
<th>Price excl. of VAT ex works €</th>
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<td>TN GOLD 80</td>
<td>0,75–80</td>
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<td>7 MHz</td>
<td>6 mm</td>
<td>1000-9999</td>
<td>690,–</td>
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<td>120,–</td>
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</tbody>
</table>

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Material thickness measurement
Portable measuring device for ultrasonic material thickness testing

**Features**
- External sensor
- Data interface USB, standard (only for models with readout \[d\] = 0,01 mm)
- 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)
- Selectable measuring units: mm, inch

**Technical data**
- Precision: 0,5 % of \([\text{Max}]\) ± 0,04 mm
- Dimensions W×D×H 74×32×150 mm
- Battery operation, batteries standard 2× 1.5V AA, AUTO-OFF function to preserve batteries
- Net weight approx. 245 g

**Accessories**
- Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0, € 90,–
- Software, interface cable included, SAUTER ATU-04, € 100,–
- External sensor, 2,5 MHz, \(\varnothing\) 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, \(\varnothing\) 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, € 110,–
- External sensor, 5 MHz, \(\varnothing\) 6 mm, SAUTER ATB-US01, € 190,–
- External sensor, 5 MHz, \(\varnothing\) 10 mm, SAUTER ATU-US09, € 110,–
- External sensor, 5 MHz, \(\varnothing\) 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, € 110,–
- External sensor, 5 MHz, \(\varnothing\) 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,–

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**Model**
- SAUTER
- Measuring range \([\text{Max}]\) mm
- Readout \([d]\) mm
- Sensor
- Sound velocity m/sec
- Price excl. of VAT ex works €
- Option Factory calibration certificates KERN €

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Sensor</th>
<th>Sound velocity</th>
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<td>1000–9999</td>
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**Material thickness measurement**

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Ultrasonic thickness gauges SAUTER TN-EE

Portable measuring device for ultrasonic material thickness testing in Echo-Echo principle

**Features**

- External sensor
- Data interface RS-232, standard
- 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)
- 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)

**Technical data**

- Precision: 0.5 % of [Max] ± 0.04 mm
- Dimensions W×D×H 74×32×150 mm
- Battery operation, batteries standard 2× 1.5V 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**

- Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0, € 90,–
- External sensor, 5 MHz, Ø 12 mm, for echo-echo measuring, SAUTER ATU-US12, € 310,–
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,–
- RS-232/USB adapter, SAUTER AHF 12, € 85,–
- 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, Ø 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, Ø 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, € 110,–
- External sensor (Pulse-Echo), 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, € 110,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Sensor</th>
<th>Sound velocity</th>
<th>Price excl. of VAT</th>
<th>Option</th>
<th>Factory calibration certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>Echo-echo</td>
<td>Plus-Echo</td>
<td>[d] mm</td>
<td>mm</td>
<td>m/sec</td>
<td>€</td>
<td>KERN</td>
<td>€</td>
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<tr>
<td>TN 30-0.01EE</td>
<td>3–30</td>
<td>0.65–600</td>
<td>0,01</td>
<td>5 MHz</td>
<td>1000–9999</td>
<td>890,–</td>
<td>961-113</td>
<td>120,–</td>
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<tr>
<td>TN 60-0.01EE</td>
<td>3–60</td>
<td>0.65–600</td>
<td>0,01</td>
<td>5 MHz</td>
<td>1000–9999</td>
<td>1200,–</td>
<td>961-113</td>
<td>120,–</td>
</tr>
</tbody>
</table>

Price reduction
Ultrasonic thickness gauge SAUTER TU-US

### Premium ultrasonic thickness gauge

#### Features
- **External sensor** for difficult-to-access measurements
- **Base plate for adjustment** included
- **Data interface RS-232**
- **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
- **Precision**: 0.5 % of [Max] ± 0.04 mm
- **Dimensions W×D×H**: 76×32×132 mm
- **Battery operation**, batteries standard 2× 1.5V AA
- **Net weight approx.**: 345 g

#### Accessories
- **Software**, interface cable included, SAUTER ATU-04, € 100,–
- **External sensor**, 2.5 MHz, ø 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, ø 6 mm, for thin test materials: Measuring range 0.75–80 mm (steel), SAUTER ATU-US02, € 110,–
- **External sensor**, 5 MHz, ø 6 mm, SAUTER ATB-US01, € 190,–
- **External sensor**, 7 MHz, ø 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, ø 10 mm, SAUTER ATU-US09, € 110,–
- **External sensor**, 5 MHz, ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, € 110,–
- **External sensor**, 6 MHz, ø 6 mm, for thin test materials: Measuring range (steel) 1–50 mm, SAUTER ATB-US01, € 190,–
- **Ultrasound contact gel**, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] mm</th>
<th>Readout [d] mm</th>
<th>Sensor 7 MHz</th>
<th>Sound velocity m/sec</th>
<th>Price excl. of VAT ex works €</th>
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</thead>
<tbody>
<tr>
<td>TU 80-0.01US.</td>
<td>0.75–80</td>
<td>0.01</td>
<td>6 mm</td>
<td>1000–9999</td>
<td>1170,–</td>
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<tr>
<td>TU 230-0.01US.</td>
<td>1.2–200</td>
<td>230</td>
<td>0.01</td>
<td>0.1</td>
<td>1000–9999</td>
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<tr>
<td>TU 300-0.01US.</td>
<td>3–300</td>
<td>0.01</td>
<td>0.1</td>
<td>14 mm</td>
<td>1000–9999</td>
</tr>
</tbody>
</table>

Price €: 961–913 | Option KERN €: 120.–
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