Industry — Laboratory — Quality Assurance

MATERIAL THICKNESS MEASUREMENT

180 YEARS
since 1844
KERN & SOHN

24

SAUTER Pictograms

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

Profibus
For transmitting data, e.g. between scales, measuring cells, controllers and peripheral devices over long distances. Suitable for safe, fast, fault-tolerant data transmission. Less susceptible to magnetic interference

Profinet
Enables efficient data exchange between de-centralised peripheral devices (balances, measuring cells, measuring instruments etc.) and a control unit (controller). Especially advantageous when exchanging complex measured values, device, diagnostic and process information. Savings potential through shorter commissioning times and device integration possible

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

Bluetooth* data interface
To transfer data from the balance/measuring instrument to a printer, PC or other peripherals

WIFI data interface
To transfer data from the balance/measuring instrument to a printer, PC or other peripherals

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

Analogue output
For output of an electrical signal depending on the load (e.g. voltage 0 V – 10 V or current 4 mA – 20 mA)

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

Network interface
For connecting the scale/measuring instrument to an Ethernet network

KERN Communication Protocol (KCP)
It is a standardized interface command set for KERN balances and other instruments, which allows retrieving and controlling all relevant parameters and functions of the device. KERN devices featuring KCP are thus easily integrated with computers, industrial controllers and other digital systems

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. 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

Protection against dust and water splashes IPxx
The type of protection is shown in the pictogram cf. DIN EN 60529:2000-09, IEC 60529:1989 +A1:1999+A2:2013

ZERO
Resets the display to "0"

Battery operation
Ready for battery operation. The battery type is specified for each device

Rechargeable battery pack
Rechargeable set

Plug-in power supply
230V/50Hz in standard version for EU. On request GB, AUS or US version available

Integrated power supply unit
Integrated, 230V/50Hz in EU. More standards e.g. GB, AUS or US on request

Motorised drive
The mechanical movement is carried out by a electric motor

Motorised drive
The mechanical movement is carried out by a synchronous motor (stepper)

Fast-Move
The total length of travel can be covered by a single lever movement

Conformity assessment
Models with type approval for construction of verifiable systems

DAkkS calibration possible
The time required for DAkkS calibration is shown in days in the pictogram

Factory calibration (ISO)
The time required for factory calibration is specified in the pictogram

Package shipment
The time required for internal shipping preparations is shown in days in the pictogram

Pallet shipment
The time required for internal shipping preparations is shown in days in the pictogram

SAUTER Models A-Z

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SAUTER Hotlines

Technical questions about our products?
You will find assistance here quickly: **+49 7433 9933-…**

Service Hotline   → **199**

for general technical questions about your SAUTER product

SAUTER Measuring Instruments   → **555**

for all technical questions concerning our SAUTER measuring instruments,
test benches, force measuring accessories (clamps etc.), SAUTER software

Industrial Scales   → **333**

for all technical questions concerning our basic scales (laboratory & industry),
pocket balances, school balances, bench scales, price-computing scales,
platform scales, counting scales, counting systems, floor scales, pallet truck
scales, crane scales, veterinary scales

System Solutions Industry 4.0   → **200**

for all technical questions concerning the interlocking of the latest information
and communication technology with our scales, load cells and measuring devices
as well as questions about KERN software

5

Reliable material thickness gauge for daily use

Features

- External measuring head for difficult-to-access measuring points
- Base plate for adjustment included
- 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
- Scope of delivery: Operating instructions, batteries, external measuring head (∅ 8 mm) and ultrasound contact gel
- **1** Delivered in a robust carrying case

Technical data

- Measuring precision: 0,5 % of [Max]
- Overall dimensions W×D×H 161×69×32 mm
- Battery operation, batteries standard (4×1.5 V AA)
- Net weight approx. 0,30 kg

Accessories

- External measuring head, 5 MHz, ∅ 6 mm, for thin test materials: measuring range (steel) up to approx. 80 mm, SAUTER ATB-US01, **€ 215,–**
- External measuring head, 5 MHz, ∅ 12 mm, for hot test materials: Measuring range (steel) 3-200 mm at temperatures of up to 300°C, SAUTER ATB-US02, **€ 270,–**
- External measuring head, 5 MHz, ∅ 8 mm, SAUTER ATB-US06, **€ 110,–**
- External measuring head, 5 MHz, ∅ 10 mm, SAUTER ATU-US09, **€ 150,–**
- Ultrasound contact gel, refill pack, approx. 70 ml, SAUTER ATB-US03, **€ 35,–**

STANDARD | OPTION

CAL BLOCK | →0← ZERO | BATT | 1 DAY | ISO +4 DAYS

Model	Measuring range	Readout	Measuring head	Sound velocity	Price excl. of VAT ex works	Option Factory Calibration Certificate	
SAUTER	mm	[d] mm		m/sec	€	KERN	€
TB 200-0.1US	1,5 – 200	0,1	5 MHz | ∅ 8 mm	500 – 9999	**405,–**	961-113	159,–
TB 200-0.1US-RED	1,5 – 200	0,1	5 MHz | ∅ 8 mm	500 – 9999	**345,–**	961-113	159,–

1

Compact pocket-sized material thickness gauge

Features

- External measuring head for difficult-to-access measuring points
- Data interface RS-232, included
- AUTO-OFF function to preserve the battery
- Selectable measuring units: mm, inch
- Base plate for adjustment included
- Scope of delivery: Operating instructions, batteries, external measuring head (∅ 8 mm) and ultrasound contact gel
- **1** Delivered in a robust carrying case
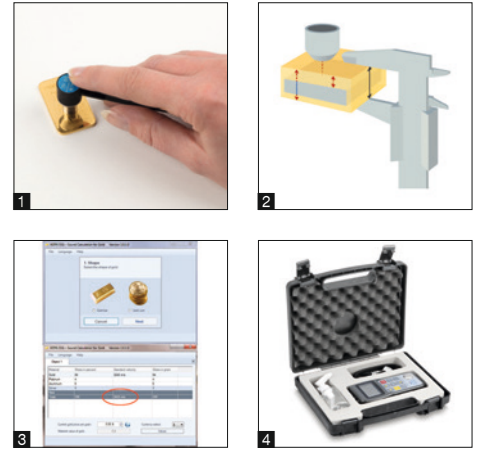
Technical data

- Measuring precision: 0,5 % of [Max] + 0,1 mm
- Overall dimensions W×D×H 30×65×120 mm
- Battery operation, batteries standard (4×1.5 V AAA)
- Net weight approx. 0,20 kg

Accessories

- Data transfer software, interface cable included, SAUTER ATC-01, **€ 100,–**
- External measuring head, 5 MHz, ∅ 6 mm, for thin test materials: measuring range (steel) up to approx. 80 mm, SAUTER ATB-US01, **€ 215,–**
- External measuring head, 5 MHz, ∅ 12 mm, for hot test materials: Measuring range (steel) 3-200 mm at temperatures of up to 300°C, SAUTER ATB-US02, **€ 270,–**
- External measuring head, 5 MHz, ∅ 8 mm, SAUTER ATB-US06, **€ 110,–**
- External measuring head, 5 MHz, ∅ 10 mm, SAUTER ATU-US09, **€ 150,–**
- External measuring head, 5 MHz, ∅ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 150,–**
- Ultrasound contact gel, refill pack, approx. 70 ml, SAUTER ATB-US03, **€ 35,–**

5

STANDARD

CAL BLOCK · RS 232 · BATT · 1 DAY

OPTION

SOFTWARE · ISO +4 DAYS

Model	Measuring range	Readout [d]	Measuring head	Sound velocity	Price excl. of VAT ex works	Option Factory Calibration Certificate	
SAUTER	mm	mm		m/sec	€	KERN	€
TD 225-0.1US	1,2 – 225	0,1	5 MHz | ∅ 8 mm	1000 – 9999	**485,–**	961-113	159,–

5

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
- It is a 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 included
- Scope of delivery: Operating instructions, batteries, external measuring head (∅ 6 mm) and ultrasound contact gel
- **4** Delivered in a robust carrying case

Technical data

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

Accessories

- Data transfer software, interface cable included, SAUTER ATU-04, **€ 120,–**
- USB/PC connection cable (USB-A/USB mini), SAUTER FL-A01, **€ 50,–**
- External measuring head, 7 MHz, ∅ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 150,–**
- Ultrasound contact gel, refill pack, approx. 70 ml, SAUTER ATB-US03, **€ 35,–**

STANDARD | OPTION

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

Model	Measuring range	Readout [d]	Measuring head	Sound velocity	Price excl. of VAT ex works	Option Factory Calibration Certificate	
SAUTER	mm	mm		m/sec	€	KERN	€
TN GOLD 80	0,75 – 80	0,01	7 MHz | ∅ 6 mm	1000 – 9999	**770,–**	961-113	159,–

1

5

Portable measuring device for ultrasonic material thickness testing

Features

- External measuring head
- 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
- Scope of delivery: Operating instructions, batteries, device-specific measuring head and ultrasound contact gel
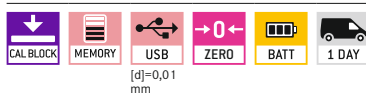- **1** Delivered in a robust carrying case

Technical data

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

Accessories

- Data transfer software, interface cable included, SAUTER ATU-04, **€ 120,–**
- External measuring head, 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, **€ 230,–**
- External measuring head, 7 MHz, ∅ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 150,–**
- External measuring head, 5 MHz, ∅ 10 mm, SAUTER ATU-US09, **€ 150,–**
- External measuring head, 5 MHz, ∅ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 150,–**
- External measuring head, 5 MHz, ∅ 12 mm, for hot test materials: Measuring range (steel) 3-200 mm at temperatures of up to 300°C, SAUTER ATB-US02, **€ 270,–**
- Ultrasound contact gel, refill pack, approx. 70 ml, SAUTER ATB-US03, **€ 35,–**

STANDARD

| CAL BLOCK | MEMORY | USB [d]=0,01 mm | ZERO | BATT | 1 DAY |

OPTION

| SOFTWARE | ISO +4 DAYS |

Model	Measuring range	Readout [d]	Measuring head	Sound velocity	Price excl. of VAT ex works	Option Factory Calibration Certificate	
SAUTER	mm	mm		m/sec	€	KERN	€
TN 80-0.1US	0,75 – 80	0,1	7 MHz | ∅ 6 mm	1000 – 9999	**630,–**	961-113	159,–
TN 230-0.1US	1,2 – 230	0,1	5 MHz | ∅ 10 mm	1000 – 9999	**630,–**	961-113	159,–
TN 300-0.1US	3 – 300	0,1	2,5 MHz | ∅ 14 mm	1000 – 9999	**740,–**	961-113	159,–
TN 80-0.01US	0,75 – 80	0,01	7 MHz | ∅ 6 mm	1000 – 9999	**700,–**	961-113	159,–
TN 230-0.01US	1,2 – 230	0,01	5 MHz | ∅ 10 mm	1000 – 9999	**700,–**	961-113	159,–
TN 300-0.01US	3 – 300	0,01	2,5 MHz | ∅ 14 mm	1000 – 9999	**800,–**	961-113	159,–

PREMIUM ★★★

1

5

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

Features

- External measuring head
- USB data interface, as 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 (SAUTER ATU-US12, see *Accessories*)

- Scope of delivery: Operating instructions, batteries, external measuring head (∅ 10 mm) and ultrasound contact gel
- **1** Delivered in a robust carrying case

Technical data

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

Accessories

- Data transfer software, interface cable included, SAUTER ATU-04, **€ 120,–**
- External measuring head, 5 MHz, ∅ 10 mm, for echo-echo measuring, SAUTER ATU-US12, **€ 345,–**
- Ultrasound contact gel, refill pack, approx. 70 ml, SAUTER ATB-US03, **€ 35,–**

Note: All following Pulse-Echo sensors can only be used in Pulse-Echo mode, not in Echo-Echo mode
- External measuring head, 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, **€ 230,–**
- External measuring head, 7 MHz, ∅ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 150,–**
- External measuring head, 5 MHz, ∅ 10 mm, SAUTER ATU-US09, **€ 150,–**
- External measuring head, 5 MHz, ∅ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 150,–**

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

Model	Measuring range Echo-Echo	Measuring range Puls-Echo	Readout [d]	Measuring head	Sound velocity	Price excl. of VAT ex works	Option Factory Calibration Certificate	
SAUTER	mm	mm	mm		m/sec	€	KERN	€
TN 30-0.01EE	3 – 30	0,65 – 600	0,01	5 MHz | ∅ 10 mm	1000 – 9999	**980,–**	961-113	159,–
TN 60-0.01EE	3 – 60	0,7 – 600	0,01	5 MHz | ∅ 10 mm	1000 – 9999	**1340,–**	961-113	159,–

PREMIUM
★★★

5

Premium ultrasonic thickness gauge

Features

- External measuring head for difficult-to-access measuring points
- Base plate for adjustment included
- **1** USB data interface, as 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)
- 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
- Scope of delivery: Operating instructions, batteries, device-specific measuring head and ultrasound contact gel
- **2** Delivered in a robust carrying case

Technical data

- Measuring precision: 0,5 % of [Max] ± 0,04 mm
- Overall dimensions W×D×H 130×76×32 mm
- Battery operation, batteries standard (2×1.5 V AA)
- Net weight approx. 0,50 kg

Accessories

- Software, interface cable included, SAUTER ATU-04TU, **€ 120,–**
- External measuring head, 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, **€ 230,–**
- External measuring head, 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, **€ 150,–**
- External measuring head, 5 MHz, ⌀ 12 mm, for hot test materials: Measuring range (steel) 3-200 mm at temperatures of up to 300°C, SAUTER ATB-US02, **€ 270,–**
- External measuring head, 5 MHz, ⌀ 10 mm, SAUTER ATU-US09, **€ 150,–**
- External measuring head, 5 MHz, ⌀ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 150,–**
- Ultrasound contact gel, refill pack, approx. 70 ml, SAUTER ATB-US03, **€ 35,–**

STANDARD | OPTION

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

Model	Measuring range	Readout [d]	Measuring head	Sound velocity	Price excl. of VAT ex works	Option Factory Calibration Certificate	
SAUTER	mm	mm		m/sec	€	KERN	€
TU 80-0.01US	0,75 – 80	0,01	7 MHz | ⌀ 6 mm	1000 – 9999	1310,–	961-113	159,–
TU 230-0.01US	1,2 – 230	0,01	5 MHz | ⌀ 10 mm	1000 – 9999	1310,–	961-113	159,–
TU 300-0.01US	3 – 300	0,01	2,5 MHz | ⌀ 14 mm	1000 – 9999	1410,–	961-113	159,–

5

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 measurement: 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, for example of pipes, 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 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
- **❶** Premium display with colour TFT display (320×240 mm) 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)
- **❷** USB data output for easy data download from the device memory to the PC, as standard
- Triple-calibration mode: Automatic 0-point adjustment, 1-point adjustment at a specified material thickness, 2-point precision adjustment with two specified material 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: DE, EN, FR, ES, IT
- Date and time can be adjusted. It is possible to store the measurement values with a time stamp

- Standard measuring head SAUTER ATU-US12 included with delivery
- Scope of delivery: Operating instructions, batteries, external measuring head (∅ 10 mm) and ultrasound contact gel
- **❸** Delivered in a robust carrying case
- Interface cable SAUTER FL-A01 (for use of the software) included

Technical data

- Measuring precision: 0,4 % of [Max] ± 0,04 mm
- Overall dimensions W×D×H 31×69×130 mm
- Battery operation, batteries standard (2×1.5 V AA), AUTO-OFF function to preserve the battery
- Net weight approx. 0,25 kg

Accessories

- External measuring head, 5 MHz, ∅ 10 mm, for echo-echo measuring, SAUTER ATU-US12, **€ 345,–**
- Ultrasound contact gel, refill pack, approx. 70 ml, SAUTER ATB-US03, **€ 35,–**
- Software BalanceConnection, for flexible recording or transmission of measured values, in particular also to Microsoft® Excel or Access as well as transfer of this data to other Apps and programs, for more details see internet, scope of supplies: 1 CD, 1 license, KERN SCD-4.0, **€ 210,–**
- Other sensors on request
- Further details and plenty of further accessories see internet www.kern-sohn.com

STANDARD / OPTION

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

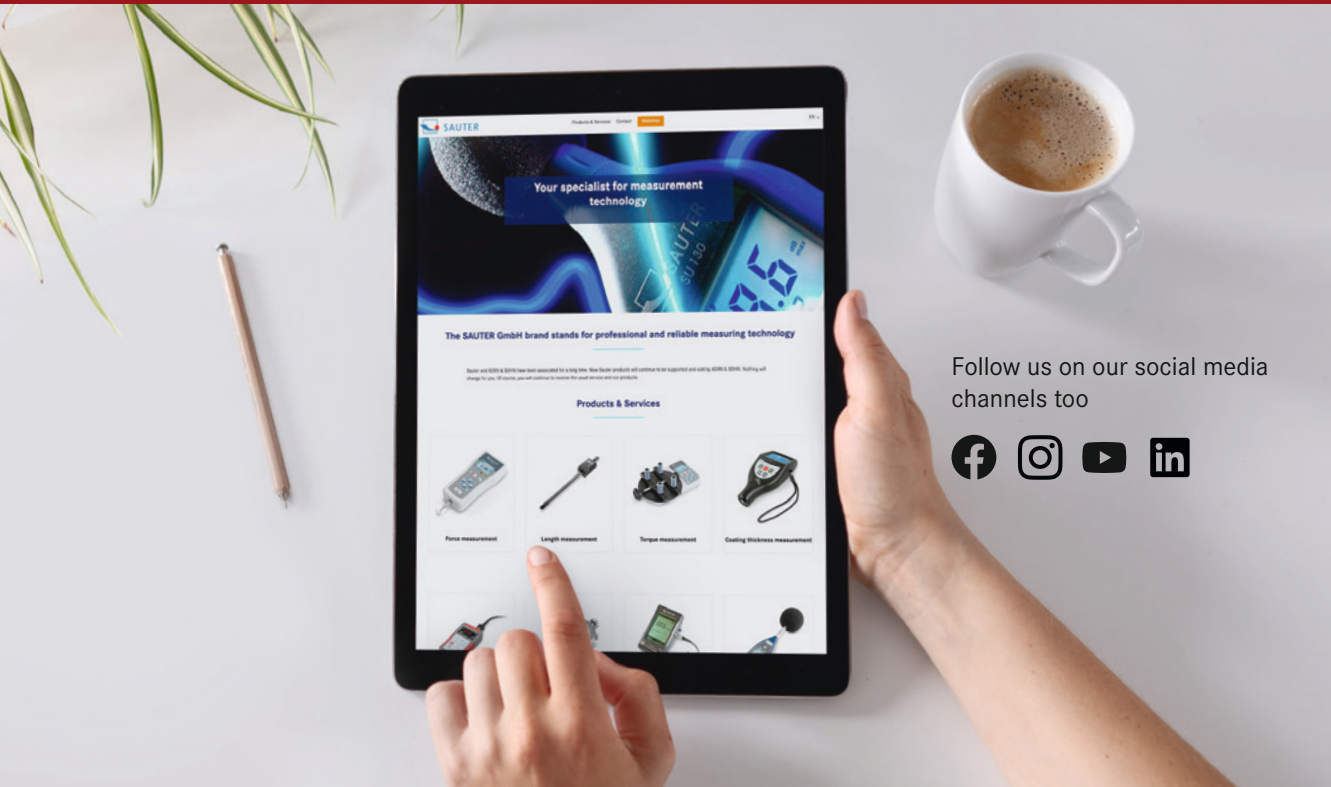| Modell SAUTER	Measuring range Echo-Echo	Measuring range Puls-Echo	Readout [d]	Measuring head	Sound velocity	Price excl. of VAT ex works €	Option Factory Calibration Certificate KERN	€
	mm	mm	mm		m/sec			
TO 100-0.01EE	3 – 100	0,7 – 600	0,01	5 MHz	∅ 10 mm	200 – 19999	**1490,–**	961-113	159,–

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