SAUTER GmbH – Member of the KERN & SOHN Group, the assortment wide champion at the foot of the Swabian Alb

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EN

SAUTER

EN

MEASURING TECHNOLOGY & TEST SERVICE

for industry, laboratory and quality assurance

2022

PROFESSIONAL MEASURING

MEASURING TECHNOLOGY & TEST SERVICE – for industry, laboratory and quality assurance

2022

Keyword index

Force measurement accessories from page 35

SAUTER Models A–Z

KERN 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 decentralised 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

WLAN 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

Analog 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 USA version available

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

Verification possible:
The time required for verification is specified in the pictogram

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

Factory calibration:
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

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Our team of consultants will assist you
from Monday to Friday
from 8:00 am to 6:00 pm

Retailer information

Sales conditions

All prices are valid as of January 1st 2022 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. 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.

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 applicalble. 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, EN, FR, IT, ES

KERN – Measuring technology and testing services from a single source

SAUTER measuring equipment catalogue

Balances & Test service catalogue

Medical scales catalogue

Microscopes & refractometers catalogue

DAkkS calibration service brochure

Product group index 2022

01

Force measurement

Note: All standard force-measuring devices are available with a factory calibration certificate as an option. All electronic force-measuring devices with a measuring range of ≤ 5 kN are also available with a DAkkS calibration certificate as an option. For details on our calibration services, please see page 97 or visit on the internet website www.sauter.eu

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Quick-Finder

Readout [d] N	Measuring range [Max] N	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	Page
0,001	2	**FH 2**	**500,–**	12
0,001	5	**FH 5**	**500,–**	12
0,002	5	**FL 5**	**500,–**	14
0,004	20	**FS 4-20**	**1070,–**	18
0,004	20	**FS 2-20**	**950,–**	18
0,005	10	**FK 10**	**250,–**	9
0,005	10	**FH 10**	**500,–**	12
0,005	10	**FL 10**	**500,–**	14
0,01	1	**289-100**	**75,–**	5
0,01	1	**283-152**	**91,–**	7
0,01	10	**FC 10**	**370,–**	10
0,01	20	**FH 20**	**500,–**	12
0,01	25	**FL 20**	**500,–**	14
0,01	25	**FK 25**	**250,–**	9
0,01	50	**FC 50**	**370,–**	10
0,01	50	**FH 50**	**500,–**	12
0,01	50	**FS 2-50**	**950–**	18
0,01	50	**FS 4-50**	**1070,–**	18
0,01	50	**SD 50N100**	**2150,–**	31
0,02	3	**283-252**	**99,–**	7
0,02	50	**FK 50**	**250,–**	9
0,02	50	**FL 50**	**500,–**	14
0,02	100	**FS 2-100**	**950,–**	18
0,02	100	**FS 4-100**	**1070,–**	18
0,02	100	**SD 100N100**	**2150,–**	31
0,04	200	**FS 2-200**	**950,–**	18
0,04	200	**FS 4-200**	**1070,–**	18
0,05	5	**289-102**	**75,–**	5
0,05	6	**283-302**	**99,–**	7
0,05	10	**FA 10**	**210,–**	8
0,05	100	**FH 100**	**500,–**	12
0,05	100	**FK 100**	**250,–**	9
0,05	100	**FL 100**	**500,–**	14
0,05	200	**SD 200N100**	**2150,–**	31
0,1	10	**289-104**	**85,–**	5
0,1	10	**283-402**	**99,–**	7
0,1	20	**FA 20**	**210,–**	8

Readout [d] N	Measuring range [Max] N	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	Page
0,1	100	**FC 100**	**370,–**	10
0,1	200	**FH 200**	**500,–**	12
0,1	250	**FK 250**	**250,–**	9
0,1	250	**FL 200**	**500,–**	14
0,1	500	**FC 500**	**370,–**	10
0,1	500	**FH 500**	**500,–**	12
0,1	500	**FS 2-500**	**950,–**	18
0,1	500	**FS 4-500**	**1070,–**	18
0,1	500	**SD 500N100**	**2150,–**	31
0,2	25	**283-422**	**105,–**	7
0,2	500	**FK 500**	**250,–**	9
0,2	500	**FL 500**	**500,–**	14
0,25	50	**FA 50**	**210,–**	8
0,5	50	**283-483**	**190,–**	7
0,5	100	**FA 100**	**210,–**	8
0,5	1000	**FH 1K**	**840,–**	13
0,5	1000	**FK 1K**	**250,–**	9
0,5	1000	**FL 1K**	**570,–**	14
1	100	**283-502**	**195,–**	7
1	200	**FA 20**	**210,–**	8
1	1000	**FC 1K**	**370,–**	10
1	1000	**FC 1K-BT**	**890,–**	11
1	2000	**FH 2K**	**840,–**	13
1	2500	**FL 2K**	**600,–**	15
1	5000	**FH 5K**	**1070,–**	13
2	200	**283-602**	**200,–**	7
2	300	**FA 300**	**210,–**	8
2	5000	**FL 5K**	**990,–**	15
2,5	500	**FA 500**	**210,–**	8
5	500	**283-902**	**235,–**	7
5	10.000	**FH 10K**	**1260,–**	13
5	10.000	**FL 10K**	**1150,–**	15
10	20.000	**FL 20K**	**1190,–**	15
10	20.000	**FH 20K**	**1270,–**	13
10	50.000	**FH 50K**	**1470,–**	13
50	100.000	**FH 100K**	**1660,–**	13

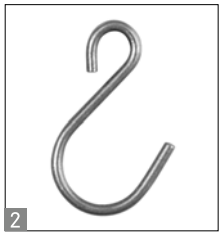
New 2022

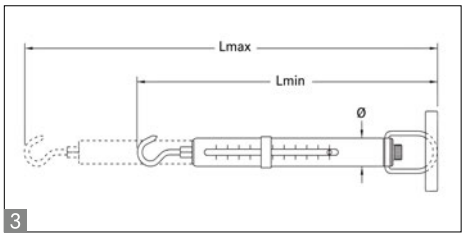
Suitable test stands for your SAUTER force measuring device can be found from page 19 onwards

Note: You will find a wide range of further spring balances with gram division at www.sauter.eu

SAUTER 289

SAUTER 287





Mechanical weight and force measurement with quality spring for long service life

Features

- The very best price/performance ratio thanks to the transparent plastic housing, ideal for schools and educational institutions
- Newton scale: The SAUTER 289 range can display the results in Newtons instead of in grammes, specifically for measuring tensile forces
- Double scale: For fast or precise recording of the measurement result
- High precision: Zero-play spring bearing with integrated tare screw for highly-precise adjustment
- Non-fatigue stainless steel spring
- Abrasion-resistant, colour precision scale with high resolution
- Thanks to the rotating inner tube, the scale is always easy to read
- The bracket which is delivered as standard can easily be swapped for another suspension device, so that the system can be individually adapted to the items being weighed

Technical data

- Measuring precision: ± 0,3 % of [Max]
- Tare range: 20 % of [Max]

Accessories

- 1 Bracket for spring balances of 10–1000 g/ 0,1–10 N, SAUTER 287-A01, **€ 26,–**
- 2 Hook for spring balances 10–1000 g/ 0,1–10 N, SAUTER 287-A02, **€ 26,–**

STANDARD 1 DAY

OPTION ISO +4 DAYS

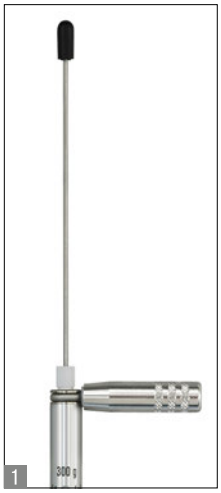
Model	Measuring range	Division	Load support	3 Dimensions			Price excl. of VAT ex works	Option Factory calibration certificate	
				Lmin	Lmax	ø			
SAUTER	N	N		mm	mm	mm	€	KERN	€
289-100	1	0,01 | 0,05	hook	230	335	12	**75,–**	961-161O	148,–
289-102	5	0,05 | 0,5	hook	230	335	12	**75,–**	961-161O	148,–
289-104	10	0,1 | 0,5	hook	230	335	12	**85,–**	961-161O	148,–

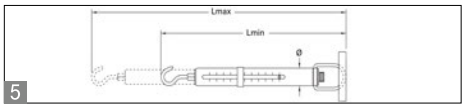
Model	Weighing range	Division	Load support	3 Dimensions			Price excl. of VAT ex works	Option Factory calibration certificate	
				Lmin	Lmax	ø			
SAUTER	g	g		mm	mm	mm	€	KERN	€
287-100	10	0,1	clip	225	330	12	**75,–**	961-100	79,–
287-102	20	0,2	clip	225	330	12	**75,–**	961-100	79,–
287-104	50	0,5	clip	225	330	12	**75,–**	961-100	79,–
287-106	100	1	clip	225	330	12	**75,–**	961-100	79,–
287-108	500	5	clip	225	330	12	**75,–**	961-100	79,–
287-110	1000	10	clip	225	330	12	**85,–**	961-100	79,–

01

SAUTER 281

SAUTER 285





Precise, mechanical spring balances in robust aluminium housing with g/kg readout

Features

- Aluminium scale tube: robust, long service life, rustproof
- Gramme/Kilogram scale: Measuring result display in grammes (SAUTER 281) or kilograms (SAUTER 285) instead of N
- Double scale: For fast or precise recording of the measurement result
- Compressive force measurement: possible using an optional pressure set, see accessories
- Drag pointer and carrying handle: as standard on all models of the SAUTER 285 range
- Suspension bow: thanks to the rotating suspension bow the scale can always be aligned to be at the very best line of sight
- High precision: Zero-play spring bearing with integrated tare screw for highly-precise adjustment
- Non-fatigue stainless steel spring
- Clip loop which can be freely rotated of the lower suspension bracket by 360° for models with [Max] ≤ 1 kg
- High-quality workmanship: Wear-resistant, colour-anodised precision scale with high resolution for accurate readout of the measuring result

Technical data

- Measuring precision: ± 0,3 % of [Max]
- Tare range: 20 % of [Max]

Accessories

- 1 Pressure-Set, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-890, **€ 72,–**
- 2 Pressure-Set, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890, **€ 80,–**
- 3 Clip, suitable for models with weighing range ≤ 2,5 kg/25 N, SAUTER 281-151-002, **€ 8,–**
- 4 Drag pointer for spring balances, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-051-001, **€ 7,–**
- Drag pointer for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897, **€ 40,–**

STANDARD 1 DAY

OPTION ISO +4 DAYS

Model SAUTER	Weighing range [Max] g	Division [d] g	Load support	5 Dimensions Lmin mm	Lmax mm	ø mm	**Price** excl. of VAT ex works **€**	Option **Factory calibration certificate** KERN	€
281-101	10	0,1	clip	220	300	12	**95,–**	961-100	79,–
281-151	30	0,25	clip	220	300	12	**85,–**	961-100	79,–
281-201	60	0,25	clip	220	300	12	**85,–**	961-100	79,–
281-301	100	1	clip	220	300	12	**85,–**	961-100	79,–
281-401	300	2	clip	220	320	12	**95,–**	961-100	79,–
281-451	600	5	clip	220	320	12	**99,–**	961-100	79,–
281-601	1000	10	clip	220	320	12	**96,–**	961-100	79,–
281-752	2500	20	hook	225	325	12	**105,–**	961-100	79,–
285-052	5000	50	hook	370	510	32	**185,–**	961-100	79,–
285-102	10000	100	hook	370	510	32	**195,–**	961-101	97,–
285-202	20000	200	hook	370	510	32	**190,–**	961-101	97,–
285-352	35000	500	hook	370	460	32	**195,–**	961-101	97,–
285-502	50000	500	hook	370	460	32	**235,–**	961-101	97,–

Precise, mechanical force gauge in robust aluminium housing with Newton readout

Features

- Aluminium scale tube: robust, long service life, rustproof
- Newton scale: Measuring result displayed in Newton
- Double scale: For fast or precise recording of the measurement result
- Compressive force measurement: possible using an optional pressure set, see accessories
- Carrying handle as standard
- Drag pointer as standard on all models of the SAUTER 283 range with [Max] ≥ 50 N
- Suspension bow: thanks to the rotating suspension bow the scale can always be aligned to be at the very best line of sight, on all models of the SAUTER 283 range with [Max] ≥ 50 N
- High precision: Zero-play spring bearing with integrated tare screw for highly-precise adjustment
- Non-fatigue stainless steel spring
- Clip loop which can be freely rotated of the lower suspension bracket by 360°
- High-quality workmanship: Wear-resistant, colour-anodised precision scale with high resolution for accurate readout of the measuring result

Technical data

- Measuring precision: ± 0,3 % of [Max]
- Tare range: 20 % of [Max]

Accessories

- 1 Pressure-Set, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-890, **€ 72,–**
- 2 Pressure-Set, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890, **€ 80,–**
- 3 Clip, suitable for models with weighing range ≤ 2,5 kg/25 N, SAUTER 281-151-002, **€ 8,–**
- 4 Drag pointer for spring balances, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-051-001, **€ 7,–**
- Drag pointer for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897, **€ 40,–**

STANDARD 1 DAY OPTION ISO +4 DAYS

Model SAUTER	Measuring range [Max] N	Division [d] N	Load support	5 Dimensions Lmin mm	Lmax mm	ø mm	**Price** excl. of VAT ex works **€**	Option **Factory calibration certificate** KERN	€
283-152	1	0,01	clip	225	305	12	**91,–**	961-161O	148,–
283-252	3	0,02	clip	225	325	12	**99,–**	961-161O	148,–
283-302	6	0,05	clip	225	325	12	**99,–**	961-161O	148,–
283-402	10	0,1	hook	225	325	12	**99,–**	961-161O	148,–
283-422	25	0,2	hook	225	325	12	**105,–**	961-161O	148,–
283-483	50	0,5	hook	370	510	32	**190,–**	961-161O	148,–
283-502	100	1	hook	370	510	32	**195,–**	961-161O	148,–
283-602	200	2	hook	370	510	32	**200,–**	961-161O	148,–
283-902	500	5	hook	370	460	32	**235,–**	961-161O	148,–

1

2

Mechanical force gauge for for tensile and compressive force measurements with peak hold function

Features

- Dual scale: shows Newton and kg
- Turnable display unit for an easy zero setting of the instrument
- Peak hold function by drag pointer
- Can be mounted on all manual test stands
- Zeroing by a short push of the switch
- 1 Delivered in a robust carrying case
- 2 Standard attachments: as shown below, extension rod: 90 mm

Technical data

- Measuring precision: 1 % of [Max]
- Overall dimensions W×D×H 230×60×50 mm
- Thread: M6
- Net weight approx. 0,65 kg

Accessories

- 2 Standard attachments, as standard, set can be reordered, SAUTER AC 43, **€ 55,–**
- Further accessory see www.sauter.eu and page 35 et seqq.

STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option **Factory calibration certificate**					
				Tensile force		**Compressive force**		**Tensile/Compressive force**	
				KERN	€	KERN	€	KERN	€
FA 10	10	0,05	**210,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FA 20	20	0,1	**210,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FA 50	50	0,25	**210,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FA 100	100	0,5	**210,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FA 200	200	1	**210,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FA 300	300	2	**210,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FA 500	500	2,5	**210,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–

! Further calibration options on request


1


2

Robust, digital force gauge for for tensile and compressive force measurements

Features

- Turnable display: automatic direction identification
- Secure operability due to the ergonomic design
- Peak-Hold function to capture peaks (value is “frozen” for approx. 10 seconds) or Track function mode for a continuous measurement indication
- Selectable measuring units: N, lbf, kgf, ozf
- Auto-Power-Off
- 1 Standard attachments: as shown below, extension rod: 90 mm
- Can be mounted on all SAUTER test stands up to 5 kN

Technical data

- Measuring precision: 0,5 % of [Max]
- Overload protection: 200 % of [Max]
- Overall dimensions W×D×H 195×82×35 mm
- Thread: M8
- Ready for use: Batteries included, 6×1,5 V AA
- Net weight approx. 0,72 kg

Accessories

- 2 With one of the two optional attachments for tensile strength testing, the SAUTER FK can become a tensiometer for testing the material tension characteristics of cables, threads, wires, twine etc. (up to ⌀ 5 mm): Illustration shows accessories SAUTER FK-A02
- Tensiometer attachment with Safe-insert function: Pull and release to insert the running cable in between the rolls, for tensile strength testing up to 250 N, aluminium attachment, rolls can be adjusted inwards, SAUTER FK-A01, **€ 210,–**
- Tensiometer kit for high-capacity tensile strength testing up to 1000 N, steel attachment and steel rolls, rolls cannot be adjusted, SAUTER FK-A02, **€ 295,–**
- 1 Standard attachments, as standard, set can be reordered, SAUTER AC 430, **€ 50,–**
- Further accessory see www.sauter.eu and page 35 et seqq.

STANDARD: PEAK · PUSH/PULL · ZERO · BATT · 230 V · 1 DAY

OPTION: ISO +4 DAYS

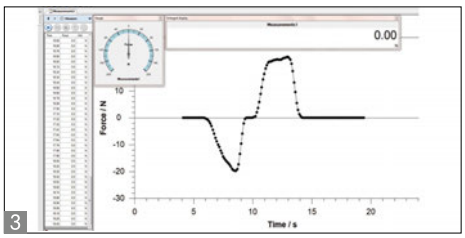
Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option **Factory calibration certificate**					
				Tensile force		**Compressive force**		**Tensile/Compressive force**	
				KERN	€	KERN	€	KERN	€
FK 10	10	0,005	**250,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FK 25	25	0,01	**250,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FK 50	50	0,02	**250,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FK 100	100	0,05	**250,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FK 250	250	0,1	**250,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FK 500	500	0,2	**250,–**	961-161O	148,–	961-261O	148,–	961-361O	270,–
FK 1K	1000	0,5	**250,–**	961-162O	182,–	961-262O	182,–	961-362O	330,–

! Further calibration options on request

01


1


2



3

Compact force gauge for tensile and compressive force measurements

Features

- Turnable display with backlight
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Metal housing for durable use in harsh environmental conditions
- Capacity display: A bar lights up to show how much of the measuring range is still available
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, between 10 and 100% of [MAX], in pull and push direction. The process is supported by an acoustic and visual signal.
- Safety: If loads exceed 110 % of the measuring range, the device will give clear acoustic and visual signals
- Internal memory for up to 500 measurement values
- USB data interface and USB interface cable as standard
- Selectable: AUTO-OFF function or permanent operation
- 1 Delivered in a robust carrying case
- Selectable measuring units: N, kgf, ozf, lbf
- 2 Standard attachments: as shown below
- Can be mounted on all SAUTER test stands up to 5 kN

Technical data

- Measuring precision: 0,3 % of [Max]
- Transmission rate to PC: up to 200 measured values/second
- Overload protection: 150 % of [Max]
- Overall dimensions W×D×H 145×73×34 mm
- Thread: M6
- Rechargeable battery pack integrated, standard, operating time up to 20 h without backlight, charging time approx. 4 h
- Net weight approx. 0,94 kg

Accessories

- Data transfer software with graphic display of the measurement process, 3 Force-time, SAUTER AFH FAST, **€ 115,–** Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**
- 2 Standard attachments, as standard, set can be reordered, SAUTER AC 43, **€ 55,–**
- Further accessory see www.sauter.eu and page 35 et seqq.

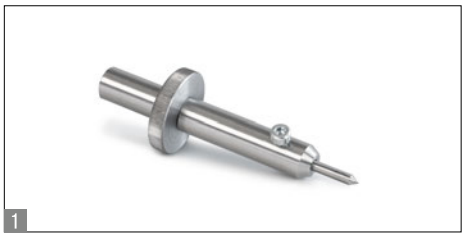
STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option **DAkkS calibration certificate**					
				Tensile force		Compressive force		Tensile/Compressive force	
				DAkkS KERN	€	DAkkS KERN	€	DAkkS KERN	€
FC 10	10	0,01	**370,–**	963-161	148,–	963-261	148,–	963-361	270,–
FC 50	50	0,01	**370,–**	963-161	148,–	963-261	148,–	963-361	270,–
FC 100	100	0,1	**370,–**	963-161	148,–	963-261	148,–	963-361	270,–
FC 500	500	0,1	**370,–**	963-161	148,–	963-261	148,–	963-361	270,–
FC 1K	1000	1	**370,–**	963-162	182,–	963-262	182,–	963-362	330,–

! Further calibration options on request


1


1


2

Compact force measuring instrument

Features

- Checking the consistency of sprayed concrete is essential to ensure the maximum strength of the concrete during the curing process
- The FC 1K-BT determines exactly the forces required for the needle to penetrate the concrete. This allows reliable conclusions to be made regarding the compressive strength of the concrete during the dry phase
- Peak hold function to capture the peak value or track function for continuous display of measurement
- Metal housing for continuous use in tough environmental conditions
- Capacity display: A bar lights up to show how much of the measuring range is still available
- Limit value function, programming of Max./ Min., with output of acoustic and optical signal
- Safety: If loads exceed 110 % of the measuring range, the device will give clear acoustic and visual signals
- Internal memory for up to 500 values
- 2 Delivered in a robust carrying case
- Turnable display with backlight
- Selectable: AUTO-OFF function or continuous operation, charge indicator

Technical data

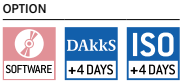
- Transmission rate to PC: up to 200 measured values/second
- Accuracy: 0,3 % of Max
- Overload protection up to 150 % of Max
- Overall dimensions W×D×H 145×73×34 mm
- Net weight approx. 1670 g
- Selectable measuring units: N, kgf, ozf, lbf
- Robust, cleanable and portable construction
  - Built-in 1000 N force measuring cell
  - Rapid and simple changing of the penetration needle
  - Inverted display for better readability
  - Live peak force value for immediate monitoring
  - Measurement precision ± 0,1 %
  - Memory for up to 500 measurements
  - USB interface
- 1 Penetration needle and adapter
  - Removable if necessary
  - Needle diameter: 3 mm
  - Upper angle: 60 degrees
  - Length: 15 mm
  - Included: 15 needles

Accessories

- Needle for concrete tester, SAUTER BT-A01, **€ 25,–**
- Further accessory see www.sauter.eu and page 35 et seqq.

STANDARD

OPTION



Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option **DAkkS calibration certificate**			
				Tensile force		**Compressive force**	
				DAkkS KERN	€	DAkkS KERN	€
FC 1K-BT	1000	1	**890,–** ↓	963-162	182,–	963-262	182,–

↓ Price reduction


1


2


3

Save with **our practical bundles of test stand, force gauge and matching clamps,**
e.g. SAUTER FH 500S71, consisting of:
- 1× FH 500
- 1× AE 500 **(Details, see P. 39)**

Universal digital force gauge for tensile and compressive force measurements with integrated measuring cell

Features

- Turnable display with backlight
- 1 Can be mounted on all SAUTER test stands up to 5 kN
- Data interface RS-232 standard
- 2 Standard attachments: as shown below, extension rod: 90 mm
- 3 Delivered in a robust carrying case
- Selectable measuring units: N, kgf, lbf
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an audible and visual signal.
- Auto-Power-Off
- Internal memory for up to 10 measurement values
- Mini Statistics Kit: calculates the average result from up to 10 stored measured values, as well as min., max., n

Technical data

- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Overall dimensions W×D×H 66×36×230 mm
- Thread: M6
- Rechargeable battery pack integrated, standard, operating time up to 12 h without backlight, charging time approx. 4 h
- Net weight approx. 0,64 kg

Accessories

- Data transfer software with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,–**
  Force-displacement only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**
  Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**
- RS-232/PC connection cable to connect models from the SAUTER FH range to a PC, SAUTER FH-A01, **€ 46,–**
- 2 Standard attachments, as standard, set can be reordered, SAUTER AC 43, **€ 55,–**
- Further accessory see www.sauter.eu and page 35 et seqq.

STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option **DAkkS calibration certificate**					
				Tensile force		Compressive force		Tensile/Compressive force	
				DAkkS KERN	€	DAkkS KERN	€	DAkkS KERN	€
FH 2	2	0,001	**500,–**	–	–	–	–	–	–
FH 5	5	0,001	**500,–**	–	–	–	–	–	–
FH 10	10	0,005	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FH 20	20	0,01	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FH 50	50	0,01	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FH 100	100	0,05	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FH 200	200	0,1	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FH 500	500	0,1	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–

! Further calibration options on request

1

Universal digital force gauge for tensile and compressive force measurements with external measuring cell

Features

- Turnable display with backlight
- Data interface RS-232 standard
- Delivered in a robust carrying case
- Selectable measuring units: N, kN, kgf, tf
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an audible and visual signal.
- Auto-Power-Off
- Internal memory for up to 10 measurement values
- Mini Statistics Kit: calculates the average result from up to 10 stored measured values, as well as, min., max., n

Technical data

- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Dimensions housing W×D×H 66×36×230 mm
- Rechargeable battery pack integrated, standard, operating time up to 12 h without backlight, charging time approx. 4 h
- 1 Tension loops and compression plates are included in delivery
- Cable length approx 3 m

Accessories

- Data transfer software with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,–**
  Force-displacement only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**
  Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**
- RS-232/PC connection cable to connect models from the SAUTER FH range to a PC, SAUTER FH-A01, **€ 46,–**
- Further accessory see www.sauter.eu and page 35 et seqq.

STANDARD

OPTION

Model SAUTER	Measuring range [Max] kN	Readout [d] N	Dimensions load cell W×D×H mm	Thread	**Price** excl. of VAT ex works **€**	Option **DAkkS calibration certificate** (≤ 5 kN)/**Factory calibration certificates** (> 5 kN)					
						Tensile force		**Compressive force**		**Tensile/Compressive force**	
						KERN	€	KERN	€	KERN	€
FH 1K	1	0,5	76,2×51×19	M12	**840,–**	963-162	182,–	963-262	182,–	963-362	330,–
FH 2K	2	1	76,2×51×19	M12	**840,–**	963-162	182,–	963-262	182,–	963-362	330,–
FH 5K	5	1	76,2×51×28,2	M12	**1070,–**	963-163	250,–	963-263	250,–	963-363	445,–
FH 10K	10	5	76,2×51×28,2	M12	**1260,–**	961-164	325,–	961-264	325,–	961-364	485,–
FH 20K	20	10	76,2×51×28,2	M12	**1270,–**	961-164	325,–	961-264	325,–	961-364	485,–
FH 50K	50	10	108×76,3×25,5	M18×1,5	**1470,–**	961-165	325,–	961-265	325,–	961-365	485,–
FH 100K	100	50	178×152,2×51,3	M30×2	**1660,–**	961-166	360,–	961-266	360,–	961-366	530,–

1 Further calibration options on request

01

PREMIUM ★★★


1


2

Universal digital force gauge with graphic-assisted display and integrated measuring cell

Features

- Turnable display with backlight
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Metal housing for durable usage in harsh environmental conditions
- Can be mounted on all SAUTER test stands up to 5 kN
- Capacity display: A bar lights up to show how much of the measuring range is still available
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an visual signal.
- Internal memory for up to 500 measurement values
- Continuous analogue output: Linear voltage signal in dependence to the load (-2 to +2 V)
- Data interface USB standard
- 1 Standard attachments: as shown above
- Selectable measuring units: N, kN, kgf, lbf
- 2 Delivered in a robust carrying case

Technical data

- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Overall dimensions W×D×H 175×75×30 mm
- Thread: M6
- Rechargeable battery pack integrated, standard, operating time up to 10 h without backlight, charging time approx. 8 h
- Net weight approx. 0,5 kg

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,–**
- Data transfer software with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,–** Force-displacement only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–** Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**
- USB cable, as standard, can be reordered, SAUTER FL-A01, **€ 46,–**
- RS-232 adapter cable, SAUTER FL-A04, **€ 46,–**
- Supports for fastening of objects as well as additional accessories, please see page 35 onwards or www.sauter.eu

STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option **DAkkS calibration certificate**					
				Tensile force		**Compressive force**		**Tensile/Compressive force**	
				DAkkS KERN	€	DAkkS KERN	€	DAkkS KERN	€
FL 5	5	0,002	**500,–**	–	–	–	–	–	–
FL 10	10	0,005	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FL 20	25	0,01	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FL 50	50	0,02	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FL 100	100	0,05	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FL 200	250	0,1	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FL 500	500	0,2	**500,–**	963-161	148,–	963-261	148,–	963-361	270,–
FL 1K	1000	0,5	**570,–**	963-162	182,–	963-262	182,–	963-362	330,–

! Further calibration options on request

PREMIUM ★★★

1

Powerful digital force gauge with graphic assisted display for tensile and compressive force measurements with external measuring cell

Features

- Premium force gauge with external measuring cell, tension loops included in delivery
- Turnable display with backlight
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Metal housing for durable usage in harsh environmental conditions
- Can be mounted on all SAUTER test stands from 1 kN
- Capacity display: A bar lights up to show how much of the measuring range is still available
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an visual signal.
- Internal memory for up to 500 measurement values
- Continuous analogue output: Linear voltage signal in dependence to the load (-2 to +2 V)
- Data interface USB standard
- Selectable measuring units: N, kN, kgf, ozf, lbf
- 1 Delivered in a robust carrying case

Technical data

- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Overall dimensions: W×D×H 175×75×30 mm
- Dimensions load cell W×D×H
  FL 2K : 76,2×51×19 mm
  FL 5K, 10K, 20K : 76,2×51×28 mm
- Thread: M12
- Rechargeable battery pack integrated, standard, operating time up to 10 h without backlight, charging time approx. 8 h
- Net weight approx. 1,5 kg

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,–**
- Data transfer software with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,–**
  Force-displacement only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**
  Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**
- USB cable, as standard, can be reordered, SAUTER FL-A01, **€ 46,–**
- RS-232 adapter cable, SAUTER FL-A04, **€ 46,–**

STANDARD: PEAK, PUSH/PULL, MEMORY, USB, ANALOG, UNIT, TOL, ACCU, 230 V, 1 DAY

OPTION: SOFTWARE, DAkkS +4 DAYS, ISO +4 DAYS

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option **DAkkS calibration certificate** (≤ 5 kN)/**Factory calibration certificates** (> 5 kN)					
				Tensile force		**Compressive force**		**Tensile/Compressive force**	
				KERN	€	KERN	€	KERN	€
FL 2K	2500	1	**600,–**	963-162	182,–	963-262	182,–	963-362	330,–
FL 5K	5000	2	**990,–**	963-163	250,–	963-263	250,–	963-363	445,–
FL 10K	10000	5	**1150,–**	961-164	325,–	961-264	325,–	961-364	485,–
FL 20K	20000	10	**1190,–**	961-164	325,–	961-264	325,–	961-364	485,–

! Further calibration options on request

01

PREMIUM ★★★

◂ **Note:** The shown measuring cell is not included in the scope of delivery! Combine the FL TM with a measuring cell suitable for your application from the SAUTER program, such as CR P1, CR Q1, CS P1 or CS Q1

Digital Premium force gauge with graphics display for tensile and compressive force measurements, prepared for external measuring cells

Features

- 1 Premium force-measuring for connection of external measuring cells (measuring cell, tension loops and pressure plates not included with delivery)
- Adjustable nominal loads: 5 N, 10 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 50 kN
- Suitable for strain gauge sensors: up to 500 N, characteristic value 1 mV/V from 1 kN, characteristic value 2 mV/V
- Maximum resolution 2500 d
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Metal housing for durable usage in harsh environmental conditions
- Capacity display: A bar lights up to show how much of the measuring range is still available
- Measuring with tolerance range (liwith-setting function): Upper and lower liwithing can be programmed individually, in pull and push direction. The process is supported by an visual signal.
- Internal memory for up to 500 measurement values
- Continuous analogue output: Linear voltage signal in dependence to the load (-2 to +2 V)
- Data interface USB standard
- Selectable measuring units: N, kN, kgf, lbf, ozf

Technical data

- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Overall dimensions: W×D×H 175×75×30 mm
- Rechargeable battery pack integrated, standard, operating time up to 10 h without backlight, charging time approx. 8 h
- Net weight approx. 0,5 kg

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,–**
- Data transfer software with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,–**
  Force-displacement only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**
  Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**
- USB cable, as standard, can be reordered, SAUTER FL-A01, **€ 46,–**
- RS-232 adapter cable, SAUTER FL-A04, **€ 46,–**
- Option FL-C01: Solder connector for FL TM to measuring cell and adjusting the device, SAUTER, **€ 95,–**

STANDARD

OPTION

Model SAUTER	Price excl. of VAT ex works €
FL TM	**470,–**

Option **DAkkS calibration certificate** (≤ 5 kN)/**Factory calibration certificates** (> 5 kN)

Option Load cell	Measuring range optional load cell	Tensile force		Compressive force		Tensile/Compressive force	
		KERN	€	KERN	€	KERN	€
Load cells see page S. 88–95	≤ 500 N	963-161	148,–	963-261	148,–	963-361	270,–
	≤ 2 kN	963-162	182,–	963-262	182,–	963-362	330,–
	≤ 5 kN	963-163	250,–	963-263	250,–	963-363	445,–
	≤ 20 kN	961-164	325,–	961-264	325,–	961-364	485,–
	≤ 50 kN	961-165	325,–	961-265	325,–	961-365	485,–

1 Further calibration options on request

NEW

PREMIUM ★★★

Measurement of forces in different tensile or compressive directions possible with only one measuring device

Supplied in a high-quality and robust system case (systainer® T-LOC) including plug-in power supply and USB cable type C

Premium force gauge with integrated measuring cell (optional) and connection possibility for up to 4 external measuring cells

Use with integrated measuring cell

The SAUTER FS premium force gauge has an integrated measuring cell for tensile and compressive force applications. Whether mobile for rapid testing or stationary integrated into a test stand or production line, the multifunction display allows all the values recorded to be read off at a glance in real time. Via the integrated interface, the data can be sent to a PC or laptop for further processing.

Use with external measuring cells

The SAUTER FS premium force gauge is compatible with all SAUTER strain gauge measuring cells, see page 88 et seq. Up to 4 external measuring cells can be connected simultaneously. If all available external measuring channels are used, the internal measuring cell is deactivated as long as an external measuring cell is connected.

Tip: Order the practical system case (systainer® T-LOC) for storing and transporting accessories, clamps, sensors, etc. at the same time, SAUTER FS TKZ, **€ 105,–**

Can be mounted on all SAUTER test benches, illustration shows optional accessories, see page 35 et seq., and the manual test bench SAUTER TVL-XS, see page 19 et seq.

Simultaneous measurement on up to four channels. External sensors with sensor data memory optionally available

Compact force gauge with internal measuring cell (up to max. 500 N) for fast and mobile force measurements. Illustration shows optional accessories SAUTER AE 500 screw tension clamp

01

Features

- 3,5" Touchscreen
- Standard version with 2 or 4 measuring channels for external force sensors (subsequently expandable from 2 to 4)
- An internal measuring cell is possible (is deactivated if an external measuring cell is connected)
- Suitable for 4-wire and 6-wire sensors with strain gauges
- Two-point adjustment with weights or numerical adjustment possible
- The specific data of an external sensor are stored directly in the connector
- USB interface for programming, data transfer and power supply as standard
- Integrated SD card memory
- Adjustable SI units kg, N, kN, mN, MN, Nm, kNm, mNm
- Tolerance function
- Track function for continuous measurement display
- Peak value measurement
- Mountable on SAUTER test benches

Technical data

- High resolution: up to 10000 points per measurement channel
- Storage of measured values as well as their transmission to the interface with up to 1000 Hz per measuring channel
- Measurement accuracy:
  - with internal measuring cell: 0.1 % of [Max]
  - with external measuring cell: among other things from the measuring cells used
- Overall dimensions W×D×H 71×31×180 mm
- Overload protection: 150 % of [Max] with internal measuring cell
- Thread on load receptor: M6 (outside)
- Battery operation internal, standard, operating time up to 8 h, Charging time approx. 8 h
- External mains adapter, for connection to the USB-C socket, standard
- Net weight approx. 0,4 kg

Accessories

- A/D converter module, only for models FS 2 and FS 2-xxx, SAUTER FS 34, **€ 190,–**
- Stainless steel handle bar with rubber grip for safe handling, SAUTER AFK 02, **€ 95,–**
- Transport case, e.g. for accessories, SAUTER FS TKZ, **€ 105,–**
- Standard attachments, SAUTER AC 43, **€ 55,–**
- Suitable measuring cells see page 86 et seqq.
- For holders for object fixation and other accessories see www.sauter.eu and page 35 et seq.

! Optional calibration see page 97 et seqq. Calibration is recommended for each measuring cell!

Assembly and adjustment of measuring cell, connector and sensors must be ordered separately, see table below, SAUTER FS 401–FS 408

Order example SAUTER FS force gauge with 2 measuring cells:

1x	**FS 2-5O**	2-channel force gauge with integrated measuring cell for tension/compression force measurements
1x	**963-361**	DAkkS calibration certificate tension/compression force up to 500 N
1x	**CO 100-Y1**	Miniature compression load cell up to 1 kN
1x	**FS 403**	Two-point adjustment up to 2 kN, incl. plug and memory for SAUTER FS
1x	**963-262**	DAkkS calibration certificate compression force up to 2 kN
1x	**CS 500-3P2**	Stainless steel “S” measuring cell for tension/compression force up to 5 kN
1x	**963-363**	DAkkS calibration certificate tension/compression force up to 5 kN
1x	**FS 404**	Two-point adjustment up to 5 kN, incl. connector and memory for SAUTER FS

STANDARD

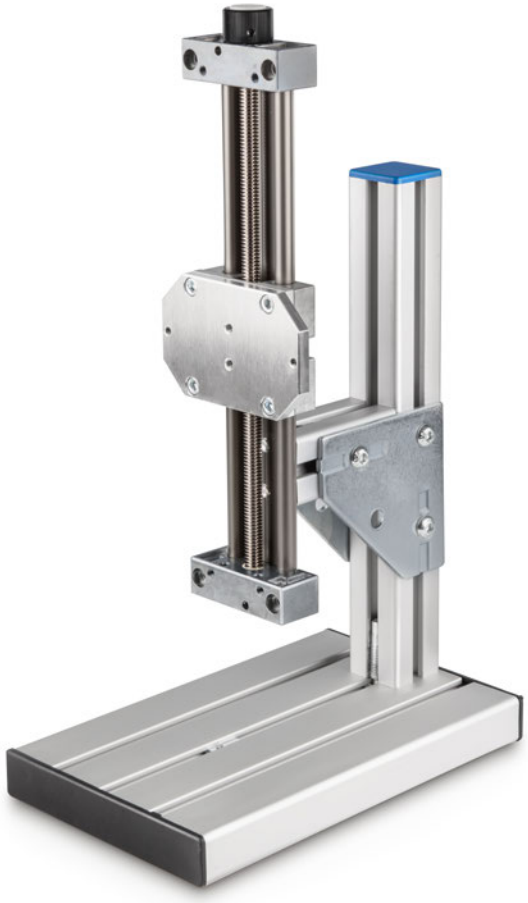
OPTION

Model SAUTER	Measuring range internal measuring cell [Max] N	Readability internal measuring cell [d] N	Internal measuring cell	Number of measuring channels	Price excl. of VAT ex works €
FS 2	–	–	–	2	**850,-**
FS 2-20	20	0,004	•	2	**950,-**
FS 2-50	50	0,01	•	2	**950,-**
FS 2-100	100	0,02	•	2	**950,-**
FS 2-200	200	0,04	•	2	**950,-**
FS 2-500	500	0,1	•	2	**950,-**
FS 4	–	–	–	4	**970,-**
FS 4-20	20	0,004	•	4	**1070,-**
FS 4-50	50	0,01	•	4	**1070,-**
FS 4-100	100	0,02	•	4	**1070,-**
FS 4-200	200	0,04	•	4	**1070,-**
FS 4-500	500	0,1	•	4	**1070,-**

Service required for use with external sensors:

Model SAUTER	Adjustment of optional, external sensors	Measuring range [Max] kN	Price excl. of VAT ex works €
FS 401	Numeric*	–	**120,–**
FS 402	Two-point	0,5	**140,–**
FS 403		2	**150,–**
FS 404		5	**170,–**
FS 405		20	**180,–**
FS 406		50	**180,–**
FS 407		120	**200,–**
FS 408		250	**220,-**

*only for sensors > 250 kN



1

2

Manual test bench for precise compressive force measurement in the range up to 100 N

Features

- 1 The redesigned, superfine spindle enables exact testing in a force-measurement range up to 100 N in particularly fine steps and, in conjunction with the fine-dosing crank, ensures safe, reliable operation
- 2 Main areas of application: Testing of low levels of force with short distances, such as, for example, testing keyboard overlays, biological samples (e.g. strength of leaves, etc.), blister packs (e.g. force required to push tablets out, etc.)
- For vertical and horizontal use
- High level of security with repeated measurements
- Large base plate with various holes for fixture mountings
- Suitable for all SAUTER force measuring device up to 100 N (not included with the delivery)

Technical data

- Travel distance per knob rotation (one turn): 2 mm
- Overall dimensions W×D×H 160×280×380 mm
- Net weight approx. 6 kg

Save with our practical bundles of test stand, force gauge and matching clamps, e.g. SAUTER TVL 100FHS71, consisting of:
- 1× TVL-XS
- 1× FH 100 **(Details, see P. 13)**
- 2× AE 500 **(Details, see P. 39)**

STANDARD

1 DAY

Model **SAUTER**	Measuring range [Max] N	**Price** excl. of VAT ex works **€**
TVL-XS	100	**650,–**

1

2

Save with our practical bundles of test stand, force gauge and matching clamps,
e.g. SAUTER TVL 500FHS71, consisting of:
- 1× TVL
- 1× FH 500 **(Details, see P. 13)**
- 2× AE 500 **(Details, see P. 39)**

Manual test stand for highly accurate tensile and compressive force measurements, with length measurement

Features

- For vertical and horizontal use
- Precise measurement result
- High level of security with repeated measurements
- Large base plate with high versatility of fastening objects
- Can be used for force gauges up to 500 N (not included)
- Hook with M6 thread as standard
- Digital length meter SAUTER LA (without interface) standard:
  - Measuring range: max. 200 mm
  - Readout: 0,01 mm
  - Zero setting possible
  - Pre-length can be set manually
- 1 Model TVL and TVL with extension kit TVL-XL in size comparison

Technical data

- Maximum travel distance: 230 mm
- Travel distance per knob rotation (stroke per one turn): 3 mm
- Extended work zone with TVL-XL: +250 mm
- Overall dimensions TVL: W×D×H 151×234×465 mm
- Net weight approx. 8,3 kg

Accessories

- 2 Extension kit for SAUTER TVL, extends the working area by 250 mm, enabling larger test pieces to be measured. The travel distance (spindle height from base plate) remains the same: 230 mm. Overall dimensions W×D×H 200×300x250 mm, Net weight approx. 7 kg, can be retrofitted, SAUTER TVL-XL, **€ 650,–**
- Digital length measuring device, measuring range 200 mm, readout 0,01 mm, details see page 45, SAUTER LB 200-2, **€ 1050,–**
- Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,–**
- Data transfer software with graphical representation of the measuring process, Force-time SAUTER AFH FAST, **€ 115,–** Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**

STANDARD

SCALE 1 DAY

Model **SAUTER**	Measuring range [Max] N	**Price** excl. of VAT ex works **€**
TVL	500	**420,–**

SAUTER TVP

SAUTER TVP-L

Manual test stands for compressive force measurements, also with digital length measurement

Features

- Provides quick and consistent testing
- High level of security with repeated measurements
- Provides maximum versatility and precise measuring results
- Slide construction for distance measurement
- Large base plate with high versatility of fastening objects
- Can be used for force gauges up to 500 N (not included)

TVP-L:

- Digital length meter
  - Measuring range: 100 mm
  - Readout: 0,01 mm
  - Zero setting possible
  - Pre-length can be set manually

Technical data

- Maximum work zone: 315 mm
- Maximum stroke length: 78 mm
- Overall dimensions W×D×H 150×233×420 mm
- Net weight approx. 10,5 kg

Accessories

- Digital length measuring device, measuring range 200 mm, readout 0,01 mm, details see page 45, SAUTER LB 200-2, **€ 1050,–**
- Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,–**
- Data transfer software with graphical representation of the measuring process, Force-time SAUTER AFH FAST, **€ 115,–** Force-displacement only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**

Save with our practical bundles of test stand, force gauge and matching clamps, e.g. SAUTER TVP 500FHS71, consisting of:
- 1× TVP
- 1× FH 500 **(Details, see P. 13)**
- 2× AE 500 **(Details, see P. 39)**

STANDARD

SCALE FAST-MOVE 1 DAY

TVP-L

Model SAUTER	Measuring range [Max] N	Price excl. of VAT ex works €
TVP	500	310,–
TVP-L	500	410,–

01

1

Universal attachment for test benches for 90 degree peel tests

Features

- 1 The attachment for peel tests, SAUTER TPE-N has been specially developed for peel testing up to 500 N. Typically this involves pulling a bonded material layer from a base material. As a general rule the significant value in this process is the force required to pull away the top layer from bonded material
- The attachment can be fitted onto all SAUTER force measuring test benches quickly and easily and thereby offers the highest level of flexibility in terms of travel path, measuring range, sample fixing ecc.
- The attachment has been designed so that a bonded material, e.g. adhesive tape, plasters, etc, or an appropriate basic medium can be applied to the moving carriage. The test item is fixed to the force measuring device with a suitable clamp (both not included in the scope of delivery). Then the carriage is aligned such that the start of the test item is vertically immediately below the force measuring device. By moving the test bench upwards, the carriage is moved and the test item is peeled off at a 90-degree angle to the surface
- Suitable for all SAUTER force measuring devices up to 500 N (not included)
- Suitable for SAUTER test stands TVO 1000N500S, TVO 2000N500S, TVM 5000N230N, TVM 5000N230NL, TVS 5000N240, TVM 10KN120N, TVS 10KN100, (not included)

Technical data

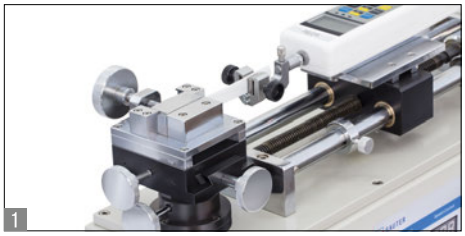
- Maximum stripping length: 200 mm
- Overall dimensions W×D×H 425×100×60 mm
- Net weight approx. 4 kg

STANDARD

1 DAY

Model SAUTER	Measuring range [Max] N	Price excl. of VAT ex works €
TPE-N	500	720,–

THM 500N500S



1

2

3

Motorised test stand with digital display for horizontal force measurement where highest standards are required

Features

- Step motor for greatest ease of use only at THM 500N500S
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy. Precise starting and stopping, without follow-up movement, even at high speeds
  - precise adjustment of the process speed using the information shown on the display
- Easy to use
- Efficient working
- Robust design and heavy duty metal construction
- 1 Linear adjustable jaw vice
  The clamping vice can be locked and finely adjusted sidewards and up/down using the setting wheel (THM 500N500N)
- Repeat function for fatigue tests
- Digital speed display to read the process speed straightaway
- Premium operating panel:
  - Digital speed display
  - Digital repeat function display
  - Control of the test stand using PC software SAUTER AFH
- 2 Figure shows the premium operating panel of SAUTER THM 500N500N
- Solid and versatile fixing options of SAUTER force measuring devices, see accessory page 35 et seqq.
- Suitable for all SAUTER force measuring devices up to 500 N (not supplied with the product)

Technical data

3 **THM-N:**

- Minimum distance between left and right object fastening: 30 mm
- Maximum travel distance: 220 mm (protected by electronic end switches)
- Overall dimensions W×D×H 550×170×345 mm
  Net weight approx. 35 kg

THM-S:

- Maximum travel distance: 240 mm (protected by electronic end switches)
- Overall dimensions W×D×H 695×235×300 mm
- Net weight approx. 48 kg

Accessories

- Only THM-S: Linear potentiometer for length measurement, measuring range: 300 mm, readout: 0.01 mm, for details see page 46, SAUTER LD, **€ 630,–**
- Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LD-A06, **€ 290,–**
- Only THM-S:
  Data transfer software with graphical representation of the measuring process, Force-time SAUTER AFH FAST, **€ 115,–**
  Force-displacement only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**

STANDARD | OPTION

ELECTRO (THM-N) | STEPPER (THM-S) | 2 DAYS | SCALE | SOFTWARE

Model SAUTER	Measuring range [Max] N	Speed range mm/min	Motor	Price excl. of VAT ex works €
THM 500N500N	500	50–500	Electric motor	**2580,–**
THM 500N500S	500	1–500	Step motor	**3670,–**

01

Robust test stand for laboratory applications

Features

- Motorised test stand for tension an compression tests
- Table-top design for comfortable operation
- Robust design for durable use
- Easy-to-access safety switch-off
- Upper and lower end point, can be set individually
- Automatic or manual operation mode
- Can be used for force gauges up to 500 N (e.g. SAUTER FH-S, not included, for details see page 11)

Technical data

- Maximum tensile and compressive force: 500 N
- Maximum travel distance: 270 mm
- Speed accuracy: 2 % of [Max]
- Net weight approx. 25 kg

Accessories

- Digital length measuring device, measuring range 300 mm, readout 0,01 mm, details see page 45, SAUTER LB 300-2., **€ 1150,–**
- Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,–**
- Data transfer software with graphic display of the measurement process,
  Force-time SAUTER AFH FAST, **€ 115,–**
  Force-displacement, only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**

STANDARD OPTION

ELECTRO 2 DAYS SCALE SOFTWARE

Model **SAUTER**	Measuring range [Max] N	Speed range mm/min	Maximum travel distance mm	Overall dimensions W×D×H mm	**Price** excl. of VAT ex works **€**
TVO 500N300	500	15–300	270	236×428×570	**2030,–**

PREMIUM
★★★

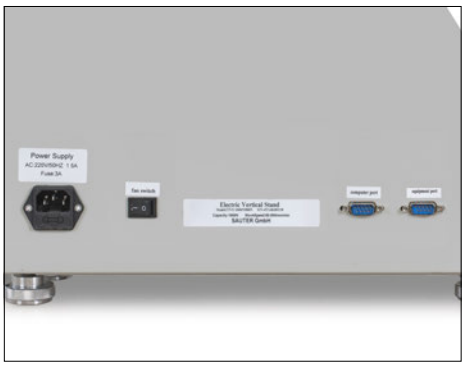
SAUTER TVO 1000N500S

Premium test stand in table-top version – with precise step motor

SAUTER TVO 2000N500S

Solid and flexible fixing options for many terminals and accessories from the SAUTER product range, see accessories on page 35 et seq.

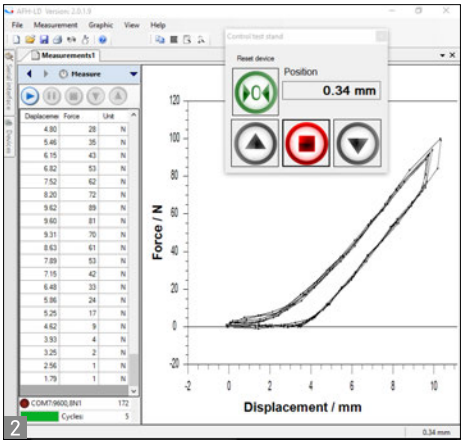
A wide range of application possibilities because of its large travelling distance



Interface for data transmission from SAUTER FH measuring device and for controlling the test stand with SAUTER AFH software

Motorised vertical test stand SAUTER TVO-S

1



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Features

- Motorised test stand for tension/compression force testing
- Step motor for greatest ease of use
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy. Precise starting and stopping, without overrun, even at high speeds
  - precise adjustment of the process speed using the information shown on the display
- Automatic or manual process mode
- 1 Premium operating panel
  - Digital speed display
  - Digital repeat function
  - 2 Control of the test stand using PC software SAUTER AFH
- Table-top version for easy operation
- Robust construction
- Fixation of SAUTER force measuring devices up to 2 kN possible
- The large diagram shows the TVO 1000N500S test stand with: SAUTER FH force measuring device, length measuring device SAUTER LD as well as mounts for the force measuring device and test objects (not supplied with the product)

Technical data

- Speed accuracy: 0,5 % of [Max]
- Positioning accuracy when shutting down: ± 0,05 mm

Accessories

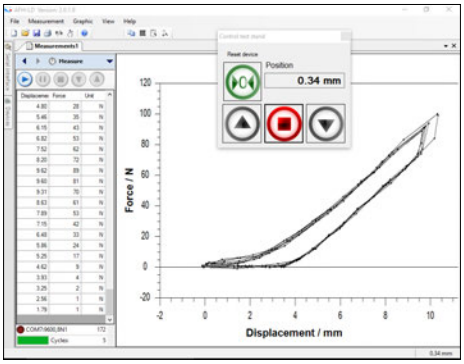
- Linear potentiometer for length measurement, measuring range: 300 mm or 700 mm (for TVO 1000/2000), readout: 0.01 mm, for details see page 46, SAUTER LD, **€ 630,–**
- Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LD-A06, **€ 290,–**
- Data transfer software with graphic display of the measurement process, Force-time SAUTER AFH FAST, **€ 115,–** Force-displacement, only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**
- 3 Holder for force gauges with external measuring cell on test stands, for comfortable reading of the measured value, SAUTER TVO-A01, **€ 110,–**

STANDARD: STEPPER, 2 DAYS
OPTION: SCALE, SOFTWARE

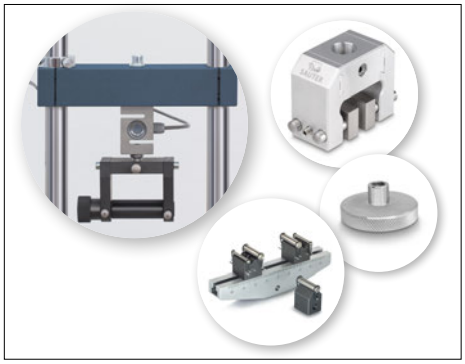
Model **SAUTER**	Measuring range [Max] N	Speed range mm/min	Maximum travel distance 2 mm	Overall dimensions W×D×H mm	**Price** excl. of VAT ex works **€**
TVO 500N500S	500	1–500	300	236×428×570	**3420,–**
TVO 1000N500S	1000	1–500	500	265×405×980	**3490,–**
TVO 2000N500S	2000	1–500	700	300×465×1185	**4950,–**

Test stand with electric motor for standard measurements

Premium operating panel
- Digital speed display
- Digital repeat function

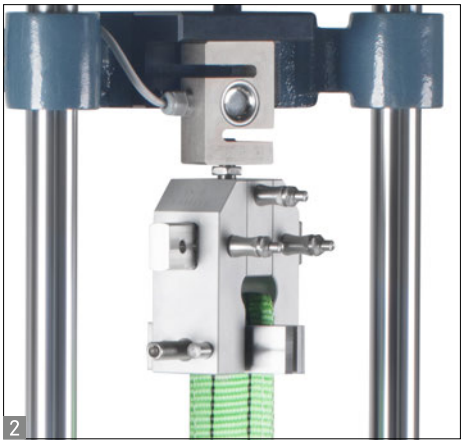


Control of the test stand using SAUTER PC software AFH



Solid and flexible fixing options for many terminals and accessories from the SAUTER product range, see accessories on page 35 et seq.


1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3

Features

- Force controlled automatic switchoff, Teststop after achieving an adjusted limit load, only in combination with a SAUTER FH force gauge
- Maximum travel distance protected by electronic end switches
- SAUTER LA length measuring device as standard, to read the travel distance with a readout of 0.01 mm
- Particularly flexible mounting options for the most variable force measuring devices, such as, SAUTER FC, FH, FK, FL:
  - 1 Direct mounting of measuring devices with internal load cell up to [Max] of 500 N (only with TVM 5000N230N.)
  - 2 Direct mounting of the external measuring cell on the traverse, from 1000 N measurement range and higher
  - 3 Mount for force-measuring devices from the SAUTER FH range with external measuring cell
- The large figure shows the TVM-N test stand with: SAUTER FH force measuring device, SAUTER LB length measuring device, longer guide columns as well as mount for force measuring device and test objects (not supplied with the product)

Technical data

- Speed accuracy: 3 % of [Max]

Accessories

- Length measuring device SAUTER LB, SAUTER LB 300-2., **€ 1150,–**
- Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,–**
- Data transfer software with graphic display of the measurement process, Force-time SAUTER AFH FAST, **€ 115,–** Force-displacement, only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,–**
- 3 Mount for force measuring devices from the SAUTER FH range with external load cell, SAUTER TVM-A01, **€ 80,–**

STANDARD OPTION

ELECTRO 2 DAYS SCALE SOFTWARE

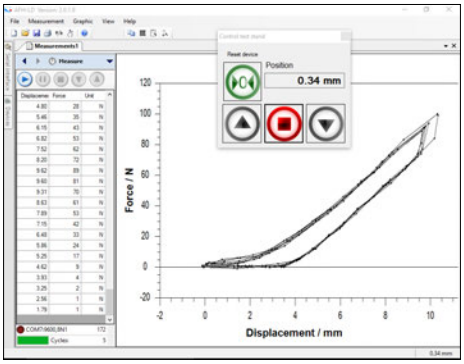
Model SAUTER	Measuring range [Max] N	Speed range mm/min	Maximum travel distance mm	Length of columns mm	**Price** excl. of VAT ex works €
TVM 5000N230N	5000	10–230	210	635	**2380,–**
TVM 5000N230NL	5000	10–230	210	1135	**2750,–**
TVM 10KN120N	10000	30–120	210	1135	**3240,–**
TVM 20KN120N	20000	30–120	210	1135	**4230,–**
TVM 30KN70N*	30000	5–70	210	1135	**4400,–** ↓

! *ONLY WHILE STOCKS LAST! ↓ Price reduction

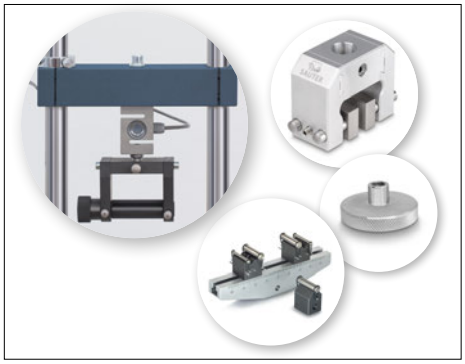
PREMIUM ★★★

Premium test stand with step motor for precise testing up to 50 kN

Premium operating panel
- Digital speed display: shows the displacement speed
- Digital repeat function for long-term stress test



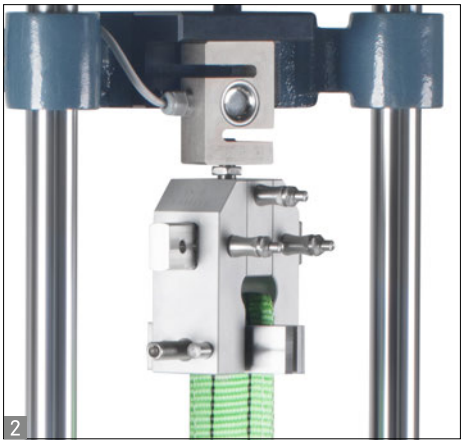
Control of the test stand using SAUTER PC software AFH



Solid and flexible fixing options for many terminals and accessories from the SAUTER product range, see accessories on page 35 et seq.

Motorised vertical test stand SAUTER TVS


1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3

Features

- Motorised test stand for tension/compression force testing
- Step motor for greatest ease of use
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy: Precise starting and stopping, without follow-up movement, even at high speeds
  - precise adjustment of the process speed with indication on the display
- Maximum travel distance protected by electronic end switches
- Large working area by means of long guide columns as standard, which allows a wide range of fixing options
- SAUTER LA length measuring device as standard, to read the measurement range with a readout of 0.01 mm
- Particularly flexible mounting options for the most variable force measuring devices, such as, SAUTER FC, FH, FA, FK, FL:
  - 1 Direct mounting of measuring devices with internal load cell up to [Max] of 500 N (only at TVS 5000N240N)
  - 2 Direct mounting of the external measuring cell on the traverse, from 1000N measurement range and higher
  - 3 Mount for force-measuring devices from the SAUTER FH range with external measuring cell
- The large figure shows the TVS test stand with: SAUTER FH force measuring device, SAUTER LD length measuring device, longer guide columns as well as mount for force measuring device and test objects, not supplied with the product
- For force-displacement testing: Please order SAUTER LD length measuring device and software AFH LD as well as the factory fitting of the length measuring device with the product

Technical data

- Speed accuracy: 1 % of [Max]
- Positioning accuracy when shutting down: ± 0,05 mm

Accessories

- Linear potentiometer for length measurement, measuring range: 300 mm, readout: 0.01 mm, for details see page 46, SAUTER LD, **€ 630,–**
- Mounting the length measuring device LD onto a SAUTER test stand at the factory, SAUTER LD-A06, **€ 290,–**
- Data transfer software with graphic display of the measurement process, Force-time SAUTER AFH FAST, **€ 115,–** Force-displacement, only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**
- 3 Mount for force measuring devices from the SAUTER FH range with external load cell, SAUTER TVM-A01, **€ 80,–**

STANDARD: STEPPER, 2 DAYS
OPTION: SCALE, SOFTWARE

Model SAUTER	Measuring range [Max] N	Speed range mm/min	Maximum travel distance mm	Length of columns mm	Price excl. of VAT ex works €
TVS 5000N240	5000	1–240	210	1135	**4900,–**
TVS 10KN100	10000	1–200	210	1135	**6070,–**
TVS 20KN100	20000	1–70	210	1135	**6090,–**
TVS 30KN80*	30000	1–70	210	1135	**6150,–** ↓
TVS 50KN80	50000	1–70	210	1135	**8650,–**

! *ONLY WHILE STOCKS LAST! ↓ Price reduction

Manual test stand for tensile and compressive testing of springs, medium version from 50 N up to 500 N

Features

- Spring tester for tension and compression tests
- Measuring device integrated in housing
- 1 Integrated thermal printer
- Digital length measuring unit SAUTER LA standard:
  - Manual zero adjustment possible
  - Pre-length can be set manually
  - Readout: 0,01 mm
- 10 memories to print out the results or to calculate average values
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an audible and visual signal
- Peak load display (peak hold)
- Selectable measuring units: N, lbf, kgf

Technical data

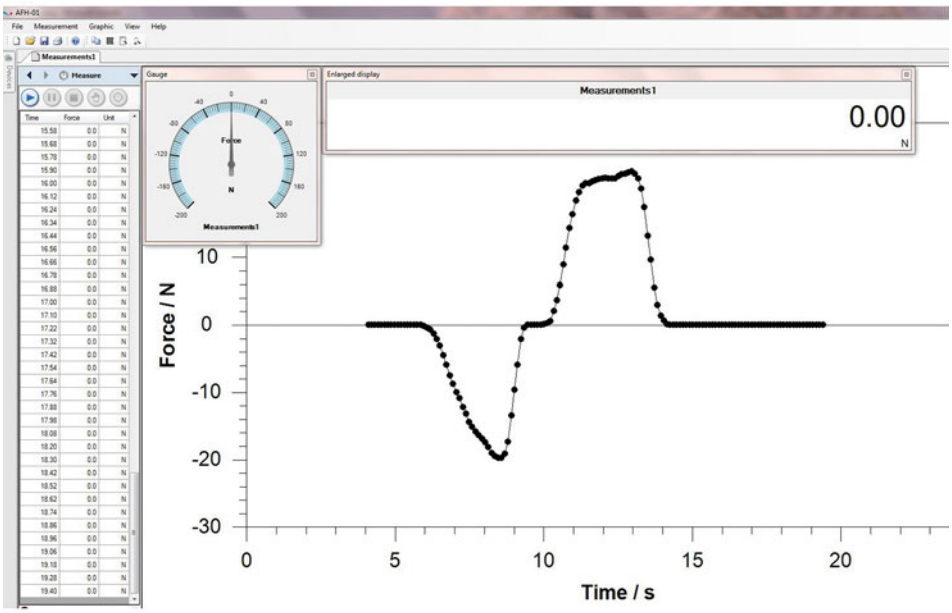
- Measuring precision: 0,5 % of [Max]
- Maximum stroke length: 100 mm
- Maximum work zone: 100 mm
- Overall dimensions W×D×H 300×235×620 mm

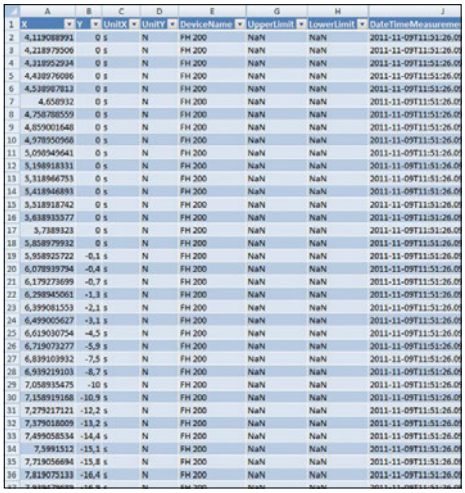
STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Readout [d] N	Net weight kg	**Price** excl. of VAT ex works **€**	Option **Factory calibration certificates compression**	
					KERN	€
SD 50N100	50	0,01	21	**2150,–**	961-261O	148,–
SD 100N100	100	0,02	21	**2150,–**	961-261O	148,–
SD 200N100	200	0,05	21	**2150,–**	961-261O	148,–
SD 500N100	500	0,1	21	**2150,–**	961-261O	148,–

01





Data transfer software for force-time-measurements

Features

- Force measurements can be conducted over a very short period, i.e. seconds
- A high speed data transfer to a PC is possible (with a transfer of up to 20 data sets per second) when combining the AFH FAST with SAUTER FH, FC or FL
- AFH FAST shows the results in a Force-Time-Graph and can export the data to Microsoft Excel®
- Compatible with the following operating systems: Microsoft Windows 10®

Technical data

- Data recording rate approx. 20 measurements per second with SAUTER FH, FC and FL
- The following interface cables are supplied with the product
  - RS-232 for SAUTER FH (FH-A01)
  - USB for SAUTER FL (FL-A01)

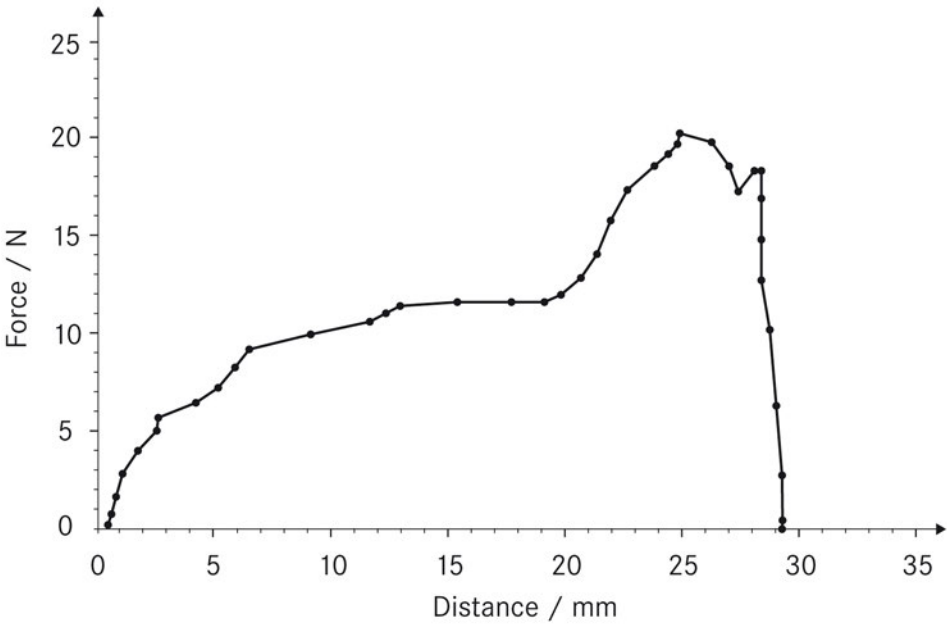
Accessories

- 1 RS-232/USB adapter, to connect peripheral devices with USB connection, SAUTER AFH 12, **€ 85,–**
- RS-232/Ethernet adapter, for connection to an IP-based Ethernet network, SAUTER YKI-01, **€ 310,–**

STANDARD

1 DAY

Model SAUTER	Price excl. of VAT ex works €
AFH FAST	115,–

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3

Data transfer software for force-displacement-measurements

Features

- AFH FD or LD software is designed for all applications that require the measurement of forces, depending on the displacement. Typically these are force progression graphs in penetration tests or pullout tests
- The program simultaneously requests the measurements from a force measuring device, e.g. SAUTER FH, as well as a length measuring device, e.g. 1 SAUTER LB resp. 2 SAUTER LD
- The measurements from both instruments are transferred continuously to the PC, synchronised by the AFH FD resp. AFH LD software and exported in the form of a graphic, as well as free data format for simple processing in Microsoft Excel®
- The software AFH FD resp. AFH LD is compatible with all instruments of series SAUTER FC, FH, FL
- These measuring instruments are usually used with SAUTER test stands, in particular those from the SAUTER TVM-N and TVS, range. However, it is also possible to use them with mechanical testing machines
- Further analysis functions:
  - extension of the test object
  - Tensile and compressive force
  - Endurance testing
  - Archiving the recorded data

STANDARD

1 DAY

- Scope of supply SAUTER AFH FD resp. AFH LD:
  - AFH FD resp. AFH LD software on DVD
  - User manual
  - Interface cable RS-232 for FH (FH-A01)
  - Interface cable USB for FL (FL-A01)
  - AFH FD: Interface cable RS-232 for LB (LB-A01)
- Compatible with the following operating systems: Microsoft Windows 10®
- 3 Order example for a complete test system:
  - FH 5K. (Digital force gauge)
  - LB 300-2. (Digital length measuring device)
  - AFH FD (Force-distance evaluation software)
  - TVM 5000N230N.* (Test stand)
  - LB-A02* (Mounting LB on test stand)
  - 2×AFH 12 (RS-232/USB adapter)
  - AC 04* (Test object holder)
  - 963-163* (Force calibration)
  - 961-150* (Length calibration)

  * not necessarily required for operating the AFH FD software

SAUTER AFH LD

- Force-displacement software (like AFH FD), but only in combination with a lenght measuring device of SAUTER LD series

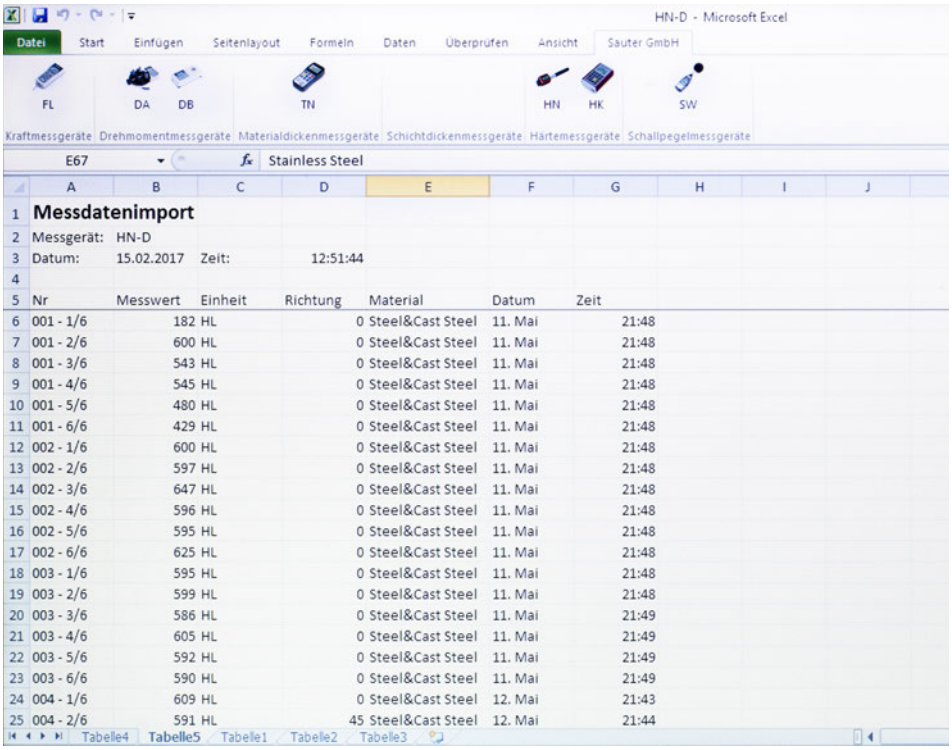
Technical data

- Data recording rate max. 3 Hz (specially in combination with SAUTER FH and SAUTER LB)
- Data recording rate max. 25 Hz (in combination with SAUTER LD, depending on the force gauge)

Accessories

- Interface cable RS-232
  for SAUTER FH: SAUTER FH-A01, **€ 46,–**
  for SAUTER LB: SAUTER LB-A01, **€ 360,–**
- RS-232/USB adapter, to connect peripheral devices with USB connection, SAUTER AFH 12, **€ 85,–**

Model SAUTER	Price excl. of VAT ex works €
AFH FD	650,–
AFH LD	250,–



Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®

Features

- Ideal for transferring measuring data from the internal data memory of the measuring instrument to Microsoft Excel®
- Solution: SAUTER AFI-1.0 plug-in for Microsoft Excel®. By doing this, an installation and learning yet another software can be avoided
- Compatible with Microsoft Excel® 2010 et seq.
- Easy handling: The measuring instrument is connected to the PC. At the push of a button, the SAUTER AFI-1.0 plug-in scans all the existing serial interfaces on the PC, finds the relevant measuring instrument and then reads the measuring data memory

Technical data

- Scope of supply: SAUTER AFI plug-in, USB/PC connection cable SAUTER FL-A01
- Suitable for SAUTER FL, DA, DB, HN-D, HK-D, HK-DB, SW series

Accessories

- RS-232/Ethernet adapter to connect force measuring instruments to an IP-based Ethernet network, SAUTER YKI-01, **€ 310,–**
- USB/PC connection cable, USB-A plug/ USB-Mini plug, SAUTER FL-A01, **€ 46,–**

STANDARD

1 DAY

Model SAUTER	Price excl. of VAT ex works €
AFI-1.0	**90,–**

For tension tests ≤ 500 N

Long clamp
for tension and rupture tests up to 50 N, clamping width: 3 mm, thread: M6

AC 17R
€ 70,–
1 piece
AC 17
€ 120,–
2 pieces

Angle bracket
for tension and rupture tests up to 500 N (e.g. for cable tests), clamping width: 22 mm, thread: M6

AC 01R
€ 65,–
1 piece
AC 01
€ 120,–
2 pieces

Rope and thread clamp
for tension and rupture tests up to 500 N thread: M6

AC 10S*
€ 70,–
1 piece

Fine point clamp
for tension and rupture tests up to 500 N, width 15 mm, clamping width: 4 mm, thread: M6

AC 14R
€ 35,–
1 piece
AC 14
€ 60,–
2 pieces

Fine point clamp
for tension and rupture tests up to 500 N, width 22 mm, clamping width: 4 mm, thread: M6

AC 22R
€ 70,–
1 piece
AC 22
€ 120,–
2 pieces

Screw tension clamp
for 100 N for laboratory tensile force measurements, incl. jaws with pyramid grip, thread: M6

AD 9001
Price on request
1 piece

PREMIUM ★★★

Screw tension clamp
for 100 N for laboratory tensile force measurements, incl. jaws with pyramid grip 1 with adapter structure for AD-system, 2 with clamping width: 8 mm, M6 thread

AD 9005
Price on request
1 piece

PREMIUM ★★★

Screw tension clamp
for 100 N for laboratory tensile force measurements with collar joint and jaws with pyramid grip

AD 9016
Price on request
1 piece

PREMIUM ★★★

For tension tests ≤ 5000 N

Flat jaw attachment
for tension tests up to 5 kN (e.g. textile, paper etc.), clamping width: 4 mm, thread: M6

AC 03R
€ 70,–
1 piece
AC 03
€ 130,–
2 pieces

Parallel jaw grip
for tension and rupture tests up to 5 kN, clamping width: 5 mm, thread: M10

AC 12R
€ 45,–
1 piece
AC 12
€ 80,–
2 pieces

High capacity small clamp
for tension and rupture tests up to 5 kN, clamping width: 5 mm, thread: M10

AC 16R*
€ 70,–
1 piece
AC 16*
€ 130,–
2 pieces

2 wide jaw grip attachment
for tension and extraction tests up to 5 kN, jaw width 60 mm, clamping width: 33 mm, thread: M10

AC 18R
€ 75,–
1 piece
AC 18
€ 140,–
2 pieces

Rolling-clamp attachment
for tension and rupture tests up to 5 kN, thread: M10

AC 11R
€ 70,–
1 piece

1-jaw-clamp attachment
for tension and rupture tests up to 5 kN, clamping width: 3 mm, thread: M6

AC 13R*
€ 50,–
1 piece
AC 13*
€ 90,–
2 pieces

Eccentric roll clamp
in particular for cable tests up to 5 kN, 10×30 mm slotted hole, clamping width: 9 mm

AC 41*
€ 210,–
1 piece

Drum clamp
typically for cable connector extraction tests up to 5 kN, for test objects with ø from 1,5 mm up to 8 mm, thread: M10

AC 42*
€ 210,–
1 piece

Screw-in tension clamp
for 1 kN, for tensile force tests, jaws with pyramid grip

AD 9021
Price on request
1 piece

PREMIUM ★★★

Wedge tension clamp
up to 5 kN, for tensile force tests, due to the wedge shape of the clamp the specimen is clamped automatically with increasing load, clamping width up to 10 mm, jaws with pyramid grip

AD 9080
Price on request
1 piece

PREMIUM ★★★

Rope and thread tension clamp
up to 1 kN, Suitable for wires up to a diameter of 2 mm, belts up to 7 mm width, incl. jaws with rubberised surface

AD 9120
Price on request
1 piece

PREMIUM ★★★

! *ONLY WHILE STOCKS LAST

All prices listed here are without german legal VAT (19%)

For tension tests ≤ 5000 N

Rope and thread tension clamp
up to 5 kN, for clamping belts, ropes, wires, etc. Suitable for wires up to a diameter of 5 mm, belts up to 8 mm. jaws with pyramid grip

AD 9121
Price on request
1 piece

Roller tension clamp
up to 1 kN, can clamp on one side and eccentrically. suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip, the opposite clamping surface is smooth.
Suitable for test objects up to 50 mm width

AD 9205
Price on request
1 piece

Roller tension clamp
up to 5 kN, symmetrisch und exzentrisch spannend. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip

AD 9200
Price on request
1 piece

Roller tension clamp
up to 5 kN, can clamp on one side and eccentrically. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip, the opposite clamping surface is smooth.
Suitable for test objects up to 50 mm width

AD 9207
Price on request
1 piece

Tip
Have you not found the right fastener? We are happy to manufacture individual fastening options according to your specifications, for all details see page 43

For tension tests > 5000 N

Belt tension clamp
up to 20 kN, open at one end, suitable for tensile force tests with belts or any other soft, flexible, flat materials with a maximum sample thickness of 2,5 mm a test object width up to 22 mm

AD 9250
Price on request
1 piece

Belt tension clamp
up to 20 kN, suitable for tensile force tests with belts or any other soft, flexible, flat materials with a maximum sample thickness of 2,5 mm a test object width up to 80 mm

AD 9255
Price on request
1 piece

All prices listed here are without german legal VAT (19%)

For compression tests > 500 N

Concave force sensor
with optimised radius for the measurement particularly of arms and legs up to 1 kN,
thread: M6

AC 45
€ 135,–
1 piece

Flat square-shaped sensor
for lateral power sensing of back, chest or arm up to 1 kN,
thread: M6

AC 46
€ 90,–
1 piece

Round sensor
to measure particular muscle groups, such as, for example, the shoulder up to 1 kN,
inner thread: M6

AC 47
€ 95,–
1 piece

Pressure disc
out of aluminium, thickness 10 mm, for compression tests up to 5 kN,
diam. 110 mm, outer thread: M12

AFH 06
€ 55,– ↓
1 piece

Pressure disc
for compression tests up to 5 kN (e. g. plastics), ø 49 mm,
inner thread: M10

AC 08R
€ 45,–
1 piece
AC 08
€ 85,–
2 pieces

Stainless steel ball-shaped head
for compression and fracture tests up to 5 kN, (e.g. foam, glass),
thread: M6/M10
Ball radius: 5mm/8mm

AC 02
€ 60,–
1 piece each

Small 3-point bending device (steel)
up to 10 kN,
central scale 80-0-80 mm.
Consisting of one support beam, two support brackets and a curved fin each with permanently fixed radii, radius of the fin 3,2 mm, radii of the support brackets 3,2 + 5 mm, other radii on request.
Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm

AD 9300
Price on request
1 piece

PREMIUM ★★★

For tension and compression tests

Threaded adapters
made of steel for SAUTER force measuring devices, clamps and test stands,
external thread 1: M6,
external thread 2: M12.

AFM 14
€ 15,–
1 piece

PREMIUM ★★★

Reducing sleeve
made of steel, for SAUTER force gauges, clamps and test stands,
external thread: M10,
internal thread: M6

AFM 05
€ 15,–
1 piece

PREMIUM ★★★

Threaded adapters
made of steel, for SAUTER force gauges, clamps and test stands,
external thread: M12,
internal thread: M10

AFM 16
€ 15,–
1 piece

PREMIUM ★★★ NEW

Threaded pin
made of steel for SAUTER force gauges and clamps,
external thread: M6,
internal thread: M8

AFM 22
€ 15,–
1 piece

PREMIUM ★★★

Numerous more adapters can be found on request.

↓ Price reduction

All prices listed here are without german legal VAT (19%)

For tension tests ≤ 500 N

Standard small clamp
Opening width (inside the jaws): 0-7 mm, for tensile tests up to 500 N, thread M6. Overload protection: 150 % of [Max]. Easy handling without tools, the opening and closing of the jaws can be made with the rotary knob on the upper side. Presetting of the jaw opening via attached screws. Pretension due to built-in springs

AE 01
€ 125,–
1 piece
PREMIUM ★★★

Wide jaw clamp
Opening width (inside the jaws): 0–6 mm, for tensile tests up to 500 N, thread M6. Overload protection: 150 % of [Max]. Easy handling without tools, the opening and closing of the jaws can be made with the rotary knobs on the upper side

AE 02
€ 140,–
1 piece
PREMIUM ★★★

Belt tension clamps
Opening width (inside the jaws): 0–4 mm, for tensile tests up to 500 N, thread M6. Overload protection: 150 % of [Max]. Easy handling without tools, the opening and closing of the jaws can be made with the lever on the upper side

AE 03
€ 270,–
1 piece
PREMIUM ★★★

Belt tension clamps
Opening width (inside the jaws): 0–6 mm, for tensile tests up to 500 N, thread M6. Overload protection: 150 % of [Max]. Easy handling without tools, the opening and closing of the jaws can be made with the lever on the upper side

AE 04
€ 210,–
1 piece
PREMIUM ★★★

Rope and thread tension clamps
Opening width (inside the jaws): 0–5 mm, for tensile tests up to 500 N, thread M6. Overload protection: 150 % of [Max]. Easy handling without tools, test item can simply be wrapped around the screw and fastened via the clamping screw

AE 05
€ 60,–
1 piece
PREMIUM ★★★

For tension tests ≤ 500 N

Cable removal clamp
Opening width (inside the jaws): 1,5–6 mm, for tensile tests up to 500 N, thread M6. Overload protection: 150 % of [Max]. Easy handling without tools, test item can simply be inserted into the appropriate recess and be tested

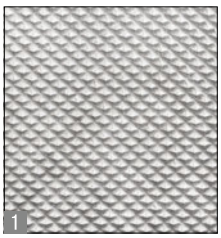
AE 06
€ 210,–
1 piece
PREMIUM ★★★

Wedge tension clamp
Opening width (inside the jaws): 0–6 mm, for tensile tests up to 500 N, thread M6. Overload protection: 150 % of [Max]. Easy handling without tools, test item can simply be inserted into the open clamp. It closes automatically during a tensile test

AE 07
€ 225,–
1 piece
PREMIUM ★★★

All prices listed here are without german legal VAT (19%)


2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Quickly fittable universal screw tension clamp for tension and compression testing for a force range up to 500 N

Features

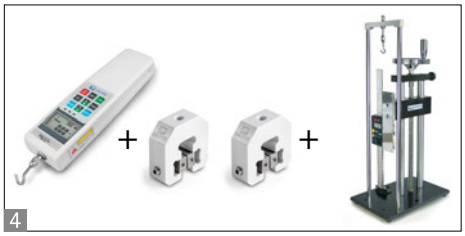
- High-quality screw tension clamp in the lower force range with an enormous flexibility for a fast adaptation to a wide variety of test objects
- Solid version for high clamp forces
- Flexible clamping width (width between the jaws) from 0-10 mm
- 1 Jaws with pyramid grip as standard, W×H 15×10 mm
- The modular construction enables a quick adaptation and cleaning of the clamp
- The threaded rods with hexagon socket allow the test objects to be securely clamped with standard tools and thus adapted to the user's own requirements and operating conditions, e.g. use with a test stand or measuring device, etc.
- Can be used with all SAUTER force measuring devices or test stand systems
- To fix the clamp on a force gauge, there is a M6 thread on the upper side of the clamp
- For tension and compression testing up to 500 N
- Overload protection: 150 % of [Max]
- 2 Scope of supply: 1 clamp with 2 jaws with pyramid-shaped grip

Option

Bundles:

- 3 **FH 500S71**, consisting of:
  - 1× FH 500 (further information, see page 12)
  - 1× AE 500
- 4 **TVL 500FHS71**, consisting of:
  - 1× FH 500 (further information, see page 12)
  - 2× AE 500
  - 1× TVL (further information, see page 20)
- 5 **TVP 500FHS71**, consisting of:
  - 1× FH 500 (further information, see page 12)
  - 2× AE 500
  - 1× TVP (further information, see page 21)
- 6 **TVL 100FHS71**, consisting of:
  - 1× FH 100 (further information, see page 12)
  - 2× AE 500
  - 1× TVL-XS (further information, see page 19)


3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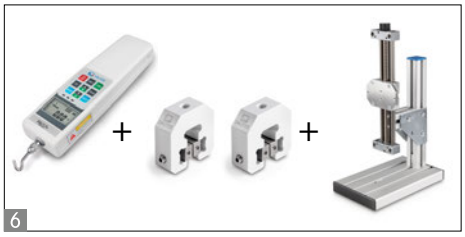
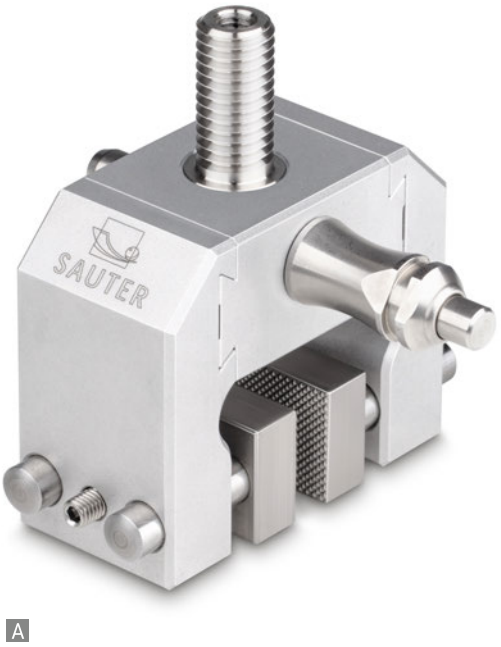

6

STANDARD

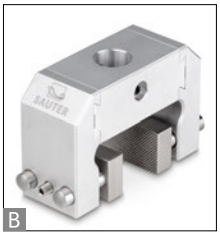
1 DAY

Model SAUTER	Measuring range [Max] N	Readability measuring device [d] N	Scope of supplies	Price excl. of VAT ex works €
AE 500	500	–	2	**190,–**
Bundles				
FH 500S71 NEW	500	0,1	3	**660,–**
TVL 500FHS71 NEW	500	0,1	4	**1260,–**
TVP 500FHS71 NEW	500	0,1	5	**1120,–**
TVL 100FHS71 NEW	100	0,05	6	**1480,–**

NEW New model



A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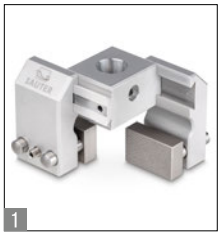
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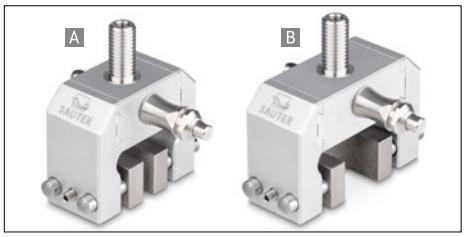
A B


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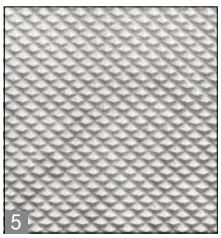

5

Quickly fittable universal screw tension clamp for tension and compression testing for a force range up to 2 kN

Features

- High-quality screw tension clamp in the middle force range with an enormous flexibility for a fast adaptation to a wide variety of test objects
- Solid version for high clamp forces
- Flexible clamping width (width between the jaws) from A 15-30mm (standard) and from B 15-30mm (in combination with the optional, wide central section: SAUTER AE 2K-A01)
- 5 Jaws with pyramid grip as standard, W×H 32×20 mm
- 1 The modular construction enables a quick adaptation and cleaning of the clamp
- 2 By means of the practical ball locking pin system, the clamp can be quickly adapted to ones' own demands, test objects, operational environment, e.g. test stand or force measuring device
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 2 kN
- Overload protection: 150 % of [Max]
- Scope of supply: 1 clamp with middle section for widths from 0-15 mm, 1 adapter, 1 locking pin
- For dimensional drawing, see www.sauter.eu

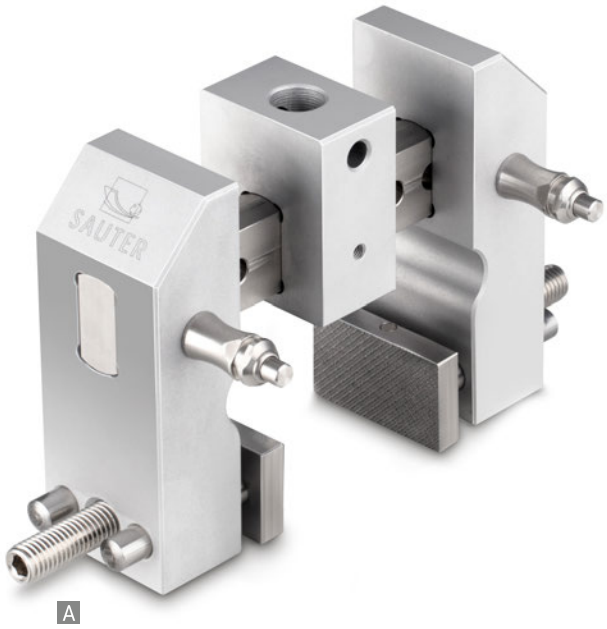
Accessories

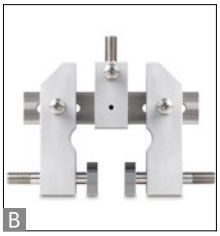
- 3 Adapter, connection pin between clamp and load cell/measuring device as standard, M12 and M6 thread, max. load up to 10 kN, can be reordered at any time, SAUTER AE-A01, **€ 30,–**
- Safety pin, stainless steel, with spring system to fix adjustable components, as standard, can be reordered at any time, SAUTER AE-A05, **€ 45,–**
- 4 Wide central section for widths from 15–30 mm, SAUTER AE 2K-A01, **€ 75,–**

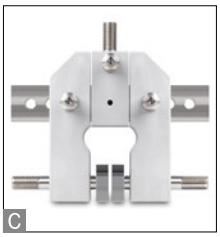
STANDARD

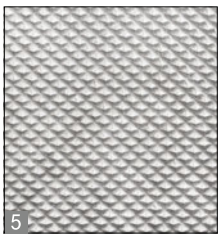
1 DAY

Model SAUTER	Maximum tensile/ compressive force N	Range mm A	 B (Option)	Scope of supplies	Price excl. of VAT ex works €
AE 2KS	2000	0–15	15–30	1 piece	**550,–**









Quickly fittable universal screw tension clamp for tension and compression testing for a force range up to 10 kN

Features

- High-quality screw tension clamp with enormous flexibility which can be adapted quickly to a wide variety of test objects
- Solid version for high clamp forces
- Maximum clamping width (width between the jaws): 75 mm, triple lockable A, B, C, can be finely adjusted using threaded rods
- 5 Jaws with pyramid grip as standard, W×H 49×30 mm
- The modular design enables a quick fitting, expansion and cleaning of the clamp
- 1 By means of the practical ball locking pin system, the clamp can be quickly adapted to ones' own demands, test objects, operational environment, e.g. test stand or force measuring device.
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 10 kN
- Overload protection: 150 % of [Max]
- Scope of supply: 1 clamp, 1 adapter, 2 safety pins
- For dimensional drawing, see www.sauter.eu

Accessories

- 2 Adapter, connection pin between clamp and load cell/measuring device as standard, M12 thread, max. load up to 10 kN, can be reordered, SAUTER AE-A01, **€ 30,–**
- 3 Safety pin, stainless steel, with spring system to fix adjustable components, as standard, can be reordered, SAUTER AE-A05, **€ 45,–**
- 4 Long jaws, stainless steel, pyramid grip 2 pcs. W×H 100×30 mm, SAUTER AE-A02, **€ 70,–**

STANDARD

1 DAY

Model SAUTER	Maximum tensile/ compressive force N	Range mm A	 B	 C	Scope of supplies	Price excl. of VAT ex works €
AE 10KS	10000	43–75	10–43	0–10	1 piece	**690,–**

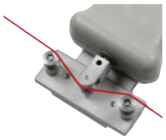
Attachments

Standard attachments kit
for all force gauges FA, FH, FL and FC, thread: M6
10–500 N

AC 43
€ 55,–
6 items

Standard attachments kit
for force gauge FK, thread: M8
10–1000 N

AC 430
€ 50,–
6 items



Tensiometer attachment
optional for all FK models from FK 10 up to FK 250

FK-A01
€ 210,–
1 piece

Tensiometer attachment
for high-capacity tensile strength tests up for FK 500 and FK 1K

FK-A02
€ 295,–
1 piece

Special solutions

Stainless steel handle bar
with rubber grip for safe handling,
AFH 04 suitable for FA, FH, FL
AFK 02 suitable for FK, FC and FS

AFH 04
€ 95,–
1 piece
AFK 02
€ 95,–
1 piece

Stainless steel handle bar
with rubber grip for FH, FL with external sensor, thread: M12

AFH 05
€ 55,–
1 piece

Door tester
Handle (length: 300 mm) and two round force receptor plates (ø 85 mm) as an option to FH 1K up to FH 5K for the safe testing of clamping forces (not approved to DIN 18650 or similar), up to 5 kN

AFH 03
€ 295,–
1 piece

Tombstone tester
for testing the stability of tombstones according to VSG 4.7 up to 500 N on the basis of FA (included),
Option: Factory calibration 961-261, **€ 135,–**

FA 500G
€ 350,–
1 piece

Tombstone tester
for testing the stability of tombstones according to VSG 4.7 on the basis of FL (included), up to 500 N: FL 500G, up to 1000 N: FL 1KG
Option: DAkkS calibration for
FL 500G: 963-261, **€ 135,–**
FL 1KG: 963-262, **€ 165,–**

FL 500G
€ 670,–
1 piece
FL 1KG
€ 750,–
1 piece

Interface cables

RS-232/PC connection cable
to connect models from the SAUTER FH range to a PC

FH-A01
€ 46,–
1 piece

RS-232/PC connection cable
to connect models from the SAUTER FL, DA and DB range to a PC

FL-A04
€ 46,–
1 piece

USB/PC connection cable
to connect models from the SAUTER FL, DA and DB range to a PC

FL-A01
€ 46,–
1 piece

RS-232/PC connection cable
to connect models from the SAUTER LB range to a PC

LB-A01
€ 360,–
1 piece

RS-232/USB adapter
to connect peripherical devices with USB interface, suitable for all balances and measuring instruments with RS 232 output, scope of supply: adapter, CD with driver

AFH 12
€ 85,–
1 piece

RS-232 connection cable
to connect models from the SAUTER FC

FC-A01
€ 46,–
1 piece

All prices listed here are without german legal VAT (19%)

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Patrick Walz
Product Manager SAUTER Force Measurement

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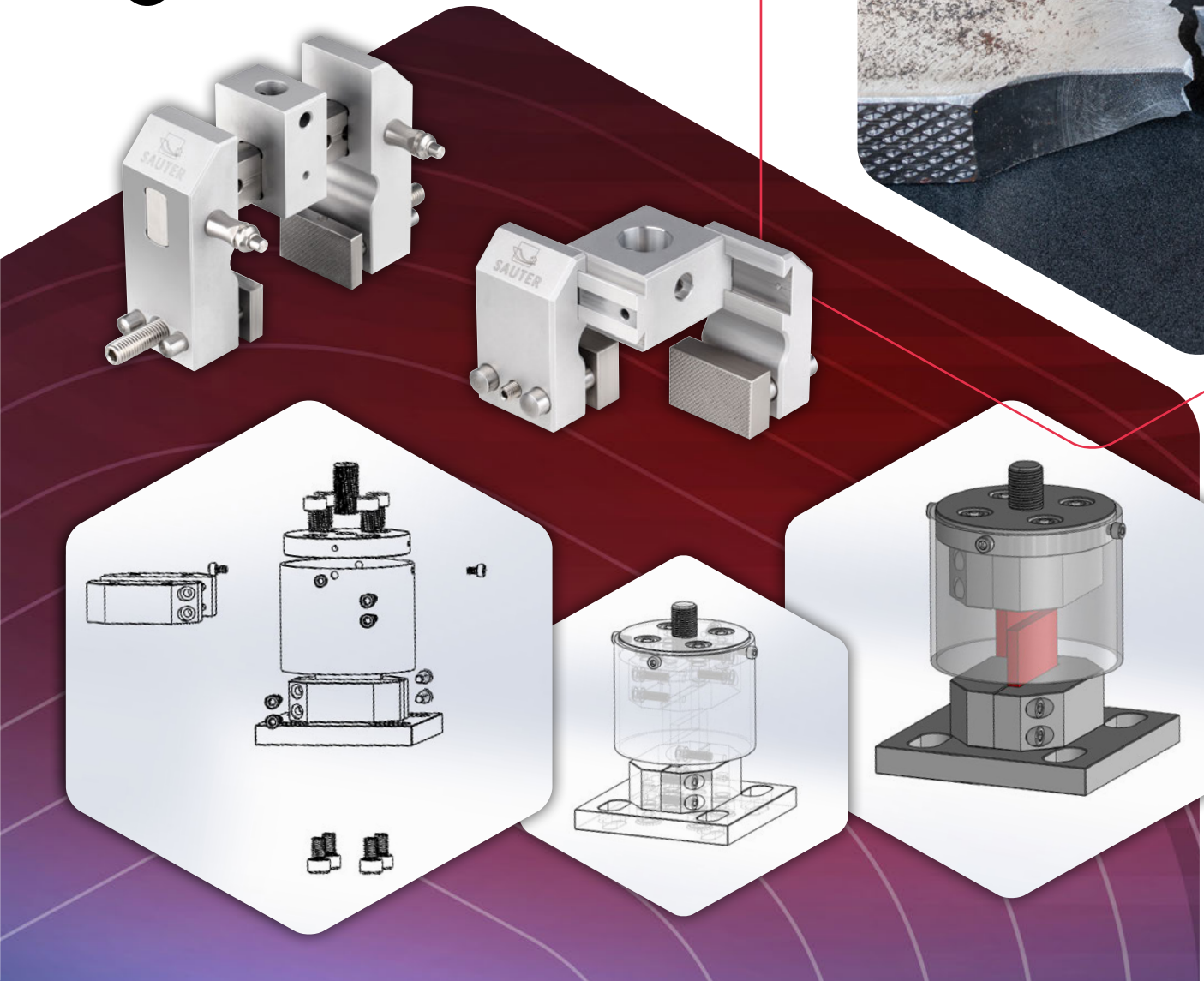

02

Length measurement

Measuring geometric characteristics is one of the most common tests when carrying out material testing. The most well-known tool is the calliper gauge or the micrometer gauge (micrometer).

In this area of measurement, SAUTER confines itself to integrated calliper gauges which can be used in combination with deforming material testing.

Very often, the issue of material testing relates to a force which is exerted in connection with a specific deformation, i.e. expansion or compression of the test item.

In these cases, the force must be measured or recorded in relation to the distance travelled by the test item during the test.

Integrated calliper gauges serve to capture this distance. They are typically fitted in test stands, machines or plant.

As a guide, the following has been assembled as a sample system for a typical material test stand:

- Length measuring device, e.g. LB 300-2
- Clibration length measuring device, e.g. 961-150
- Test stand, e.g. TVM-N
- Fitting to test stand, e.g. LB-A02
- Data transfer software, e.g. AFH FD
- Force gauges, e.g. FH
- Calibration Force gauges, e.g. 961-162
- 2× RS-232/USB adapter, e.g. AFH 12

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Quick-Finder

Readout [d] mm	Measuring range [Max] mm	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	Page
0,01	200	**LB 200-2**	**1050,–**	45
0,01	300	**LB 300-2**	**1150,–**	45
0,01		**LD**	**630,–**	46
0,01	500	**LB 500-2**	**1250,–**	45

Distance measurement directly in machines or sites with RS-232 interface

Features

- Digital sliding calliper with a superior precision even at high operation speed
- Easy mounting to machine tools, conveyer, test stands e.g. SAUTER TVO-N, TVM-N etc.
- Zeroing, pre-added and pre-reduced length as well as switching the unit can be done manually
- Data interface RS-232 standard
- Selectable measuring units: mm, inch

Technical data

- Dimensions housing W×D×H 77×43×34 mm
- Battery operation, batteries standard (3 V CR2032)

Accessories

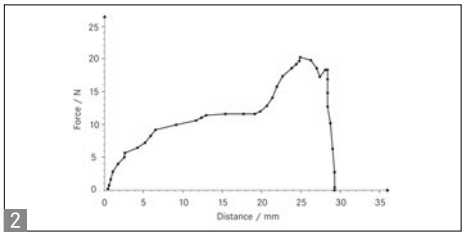
- RS-232/PC connection cable, SAUTER LB-A01, **€ 360,–**
- Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,–**

STANDARD: RS 232 · ZERO · BATT · 1 DAY

OPTION: SOFTWARE · ISO +4 DAYS

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Direction of measurement	**Price** excl. of VAT ex works €	Option **Factory calibration certificate**	
					KERN	€
LB 200-2	200	0,01	vertical	**1050,–**	961-150	132,–
LB 300-2	300	0,01	vertical	**1150,–**	961-150	132,–
LB 500-2	500	0,01	vertical	**1250,–**	961-150	132,–

PREMIUM ★★★



Linear potentiometer for length measurement for test benches TVO-S and TVS

Features

- This linear displacement sensor, with its lengthways coupling without rods, is specially constructed for accurate recording of distances
- By means of its compact design it is also suitable for high processing speeds
- 1 Can be used in all electrical SAUTER force testing systems with stepper motor, e.g. SAUTER TVO-S, THM-S, TVS, to determine distances e.g. within the scope of tensile or pressure testing
- Long service life: on average up to 100×10^6 cycles
- High data collection speed
- High-resolution linear position sensor with 65,000 points over the whole measuring range
- Data transfer box with 16-bit AD converter for high resolution and speed
- 2 You will need the SAUTER AFH LD software to read and evaluate data. This allows clear force-displacement analyses
- Scope of supply: Linear potentiometer, Data transfer box, mains adapter, USB cable

Technical data

- Measuring precision: ± 0,5 % of [Max]
- Reproducibility < 0,03 mm
- Overall dimensions W×D×H 449×68×38 mm
- Cable length USB approx. 1,5 m
- Cable length mains adapter approx. 1,2 m
- Net weight approx. 0,7 kg

Accessories

- Mounting the length measuring device LD onto a SAUTER test stand at the factory, SAUTER LD-A06, **€ 290,–**
- 2 Force-displacement data transfer software with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,–**

STANDARD

SOFTWARE 1 DAY

Model **SAUTER**	Measuring range [Max] mm	Readout [d] mm	Direction of measurement	**Price** excl. of VAT ex works **€**
LD	Length suitable for the travel of the selected test stand	0,01	vertical/horizontal	**630,–**

Torque measurement

There is a fundamental differentiation here between the measurement of static and dynamic torques.

Dynamic torques measurement is typically carried out using torque sensors on test objects which are rotated – during the movement.

Static torques measurement, on the other hand, is always carried out when the item is at rest.

The SAUTER range includes static torques gauges for determining the torque expended when opening rotary or screw caps of any kind.

Further typical applications of static torque measuring devices are testing of assembly tools for screws and nuts, in particular torque keys and mechanical assembly tools such as cordless electric screw drivers.

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Quick-Finder

Measuring range [Max] Nm	Readout [d] Nm	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	Page
0.5	0,0001	**DB 0.5-4**	**1490,–**	49
1	0,0002	**DB 1-4**	**1490,–**	49
1	0,0002	**DA 1-4**	**1690,–**	48
5	0,001	**DB 5-3**	**1490,–**	49
5	0,001	**DA 5-3**	**1690,–**	48
10	0,002	**DB 10-3**	**1490,–**	49
10	0,002	**DA 10-3**	**1690,–**	48
20	0,005	**DB 20-3**	**1690,–**	49
50	0,01	**DB 50-2**	**1690,–**	49
100	0,02	**DB 100-2**	**1690,–**	49
200	0,05	**DB 200-2**	**1690,–**	49
500	0,05	**DA 500-2**	**1690,–**	48


1


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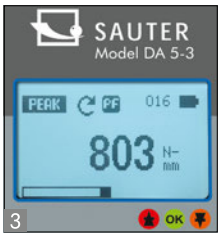


3


4

Comfortable testing of screw tops, e.g. bottles, jars

Features

- 1 Optimised for torque testing of bottles, jars and other packaging with screw tops with a minimum diameter of 15 mm and a maximum diameter of 160 mm, in the food industry and pharmaceutical industry, as well as in the manufacturing of cosmetics such as, for example, lipsticks, etc.
- 2 Quick pin system: The four bottle mounts (holders) are pushed in, instead of being screwed in, to save time. This allows you to reconfigure quickly for other bottle sizes
- Metal housing for continuous use in tough environmental conditions
- 3 Capacity display: A bar lights up to show how much of the measuring range is still available.
- 3 LCD graphics display with backlight
- Rubber feet with anti-slip feature
- Scope of delivery: four bottle mounts with rubber coat, sturdy carrying case
- Internal data memory saves up to 500 measurements. The memory contents can be transferred to the PC using optional software
- 4 USB and RS-232 data interfaces standard
- Peak hold function to capture the peak value or Track function for continuous display of measurement
- Can be used in both directions of rotation
- 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
- AUTO-OFF function

Technical data

- Selectable units: Nm, lbf-in, kgf-cm, kgf-m, ft-lbf
- Measuring precision: ± 0,5 % of [Max]
- Usable measuring range: 5–100 % of [Max]
- Overload protection: 150 % of [Max]
- Rechargeable battery pack integrated, standard, operating time up to 18 h without backlight, charging time approx. 14 h
- Overall dimensions W×D×H 250×160×100 mm
- Net weight approx. 3 kg

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,–**
- Force-time data transfer software with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,–**
- USB/PC connection cable, standard, SAUTER FL-A01, **€ 46,–**

STANDARD

OPTION

Model SAUTER	Measuring range [Max] Nm	Readout [d] Nm	Diameter test object mm	**Price** excl. of VAT ex works €	Option **Factory calibration certificate** KERN	 €
DA 1-4	1	0,0002	15–160	**1690,–**	961-120	187,–
DA 5-3	5	0,001	15–160	**1690,–**	961-120	187,–
DA 10-3	10	0,002	15–160	**1690,–**	961-120	187,–

PREMIUM ★★★


1


2


3

03

Convenient way to test the torque of tools

Features

- 1 Particularly suitable for testing torque wrenches, electric hand screwdrivers and cordless screwdrivers
- 2 Torque pick-up system for dynamic testing of electric screwdrivers (from SAUTER DB 0.5-4 to DB 50-2)
- Metal housing for continuous use in tough environmental conditions
- Capacity display: A bar lights up to show how much of the measuring range is still available.
- LCD graphics display with backlight
- Rubber feet with anti-slip feature at SAUTER DB 0.5-4 up to DB 10-3
- 3 Stable mounting plate for solid fixation at SAUTER DB 20-3 up to DB 500-2
- USB and RS-232 data interfaces standard
- Scope of delivery: Torque pick-up, sturdy carry case, mounting plate (models with [Max] ≥ 20 Nm)
- Internal data memory saves up to 500 measurements. The memory contents can be transferred to the PC using optional software
- Peak hold function to capture the peak value or Track-Funktion for continuous display of measurement
- Can be used in both directions of rotation
- 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
- AUTO-OFF function

Technical data

- Backlit LCD graphics display
- Units can be selected: Nm, lbf-in, kgf-cm, kgf-m, ft-lbf
- Measuring precision: ± 0,5 % of [Max]
- Usable measuring range: 5–100 % of [Max]
- Overload protection: 150 % of [Max]
- Rechargeable battery pack integrated, standard, operating time up to 18 h without backlight, charging time approx. 14 h
- Overall dimensions W×D×H 200×100×50 mm
- Net weight approx. 3 kg

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,–**
- Force-time data transfer software with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,–**
- USB/PC connection cable, standard, SAUTER FL-A01, **€ 46,–**

STANDARD: PEAK, MEMORY, RS 232, USB, STATISTIC, UNIT, TOL, ACCU, 230 V, 1 DAY

OPTION: SOFTWARE, ISO +4 DAYS

Model **SAUTER**	Measuring range [Max] Nm	Readout [d] Nm	Tool fitting mm/Inch	**Price** excl. of VAT ex works **€**	Option **Factory calibration certificate** KERN	 €
DB 0.5-4	0,5	0,0001	20 mm & 3/8"	**1490,–**	961-120	187,–
DB 1-4	1	0,0002	20 mm & 3/8"	**1490,–**	961-120	187,–
DB 5-3	5	0,001	20 mm & 3/8"	**1490,–**	961-120	187,–
DB 10-3	10	0,002	20 mm & 3/8"	**1490,–**	961-120	187,–
DB 20-3	20	0,005	20 mm & 3/8"	**1690,–**	961-120	187,–
DB 50-2	50	0,01	20 mm & 3/8"	**1690,–**	961-120	187,–
DB 100-2	100	0,02	3/8"	**1690,–**	961-120	187,–
DB 200-2	200	0,05	1/2"	**1690,–**	961-120	187,–
DB 500-2	500	0,05	3/4"	**1690,–**	961-120	187,–

04

Coating thickness measurement

Measurement of coating thicknesses is known from, for example, the paint measurement for coating thickness at cars. In fact, these measurements are used much more widely in industrial applications. This is where the thickness of the surface finish is measured, such as galvanisation, zinc coating etc, or also lacquers.

Fundamentally there are two measuring principles for determining coating thickness:

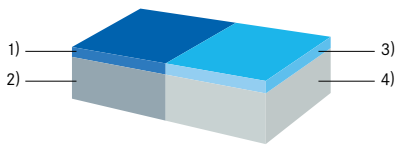
Typ F: Non-magnetic coatings on magnetic metals, such as iron or steel (magnetic induction principle). Here are some sample material combinations:

1) [chrome, copper, rubber, lacquer] on
2) [steel, iron, alloys, magnetic s tainless steel]

Typ N: Coatings on non-magnetic metals, such as aluminium (eddy current principle). Here are some sample material combinations:

3) [lacquer, paints, enamel, chrome, plastics] on
4) [aluminium, brass, sheet metal, copper, zinc, bronze]

Typ FN: All coatings as for type F and N on all metals as for type F and N (combination of magnetic induction and eddy current principle)



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Coating thickness measurement

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Quick-Finder

Readout [d] µm	Measuring range [Max] µm	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	Page
0,1 | 1	100 | 1000	**TB 1000-0.1F**	**320,–**	51
0,1 | 1	100 | 1000	**TB 1000-0.1FN**	**400,–**	51
0,1 | 1	100 | 1250	**TC 1250-0.1F**	**360,–**	52
0,1 | 1	100 | 1250	**TC 1250-0.1N**	**400,–**	52
0,1 | 1	100 | 1250	**TC 1250-0.1FN**	**460,–**	52
0,1 | 1	100 | 1250	**TC 1250-0.1FN-CAR**	**470,–**	52
0,1 | 1	100 | 1250	**TE 1250-0.1F**	**360,–**	53
0,1 | 1	100 | 1250	**TE 1250-0.1N**	**400,–**	53
0,1 | 1	100 | 1250	**TE 1250-0.1FN**	**460,–**	53
0,1 | 1	100 | 1250	**TF 1250-0.1FN**	**530,–**	54
0,1 | 1	100 | 1250	**TG 1250-0.1FN**	**530,–**	54
0,1 | 1	100 | 2000	**TB 2000-0.1F**	**290,–**	51


1


2


3


4

Practical measuring device for measuring the thickness of layers for daily use

Features

- External sensor for difficult-to-access measuring points
- Base plate and calibration foils included with delivery
- 1 Delivered in a robust carrying case
- Offset-Accur: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- Selectable measuring units: µm, mil
- Auto-Power-Off
- SAUTER TB 2000-0.1F: Specifically designed for the automobile industry, Precision: Standard 5 % of measured value

Technical data

- Measuring precision:
  - Standard: 3 % of measured value
  - Offset-Accur: 1 % of measured value
- Smallest sample surface (radius)
- Type F:
  - Convex: 1,5 mm
  - Flat: 6 mm
  - Concave: 25 mm
- Type N:
  - Convex: 3 mm
  - Flat: 6 mm
  - Concave: 50 mm
- Minimum thickness of base material: 300 µm
- Dimensions W×D×H 69×32×161 mm
- Battery operation, batteries standard 4× 1.5 V AA
- Net weight approx. 0,26 kg

Accessories

- 2 Calibration foils for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), sim. to illustration, SAUTER ATB-US07, **€ 105,–**
- 3 External sensor, Type F, SAUTER ATE 01, **€ 105,–**
- 4 External sensor, Type N, SAUTER ATE 02, **€ 110,–**

STANDARD: CAL BLOCK | FOCUS | ZERO | BATT | 1 DAY

OPTION: ISO +4 DAYS

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
TB 1000-0.1F	100 | 1000	0,1 | 1	Non-magnetic coatings on iron, steel (F)	**320,–**	961-110	132,–
TB 2000-0.1F	100 | 2000	0,1 | 1	Non-magnetic coatings on iron, steel (F)	**290,–**	961-110	132,–
TB 1000-0.1FN	100 | 1000	0,1 | 1	Combination instrument: F/N	**400,–**	961-112	187,–

1

2

Robust measuring device for layer thickness – compact and easy to use

Features

- Ergonomic design for easy handling
- Data interface RS-232 standard
- Base plate and calibration foils included with delivery
- 1 Delivered in a robust carrying case
- Offset-Accur: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- Selectable measuring units: µm, mil

2 SAUTER TC 1250-0.1FN-CAR:

- Specifically designed for the automobile industry
- Automatic recognition of measuring mode (F or N): “point and shoot”
- Simple and convenient 1-key operation

Technical data

- Measuring precision:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- Smallest sample surface (radius)
- Type F:
  - Convex: 1,5 mm
  - Flat: 6 mm
  - Concave: 25 mm
- Type N:
  - Convex: 3 mm
  - Flat: 6 mm
  - Concave: 50 mm
- Minimum thickness of base material: 300 µm
- Dimensions W×D×H 65×28×131 mm
- Battery operation, batteries standard 4× 1.5 V AAA
- Net weight approx. 81 g

Accessories

- Data transfer software, interface cable included, SAUTER ATC-01, **€ 90,–**
- Calibration foils for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07, **€ 105,–**

STANDARD: CAL BLOCK, FOCUS, RS 232, ZERO, BATT, 1 DAY

OPTION: SOFTWARE, ISO +4 DAYS

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
TC 1250-0.1F	100 | 1250	0,1 | 1	Non-magnetic coatings on iron, steel (F)	**360,–**	961-110	132,–
TC 1250-0.1N*	100 | 1250	0,1 | 1	Insulating coatings on non-magnetic metals (N)	**400,–**	961-110	132,–
TC 1250-0.1FN	100 | 1250	0,1 | 1	Combination instrument: F/N	**460,–**	961-112	187,–
TC 1250-0.1FN-CAR	100 | 1250	0,1 | 1	Combination instrument: F/N	**470,–**	961-112	187,–

! *ONLY WHILE STOCKS LAST


1


2


3

Ergonomic design and external sensor for highest ease of use

Features

- External sensor for difficult-to-access measurements
- Data interface RS-232 standard
- Base plate and calibration foils included with delivery
- 1 Delivered in a robust carrying case
- Offset-Accur: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- Selectable measuring units: µm, mil
- Auto-Power-Off

Technical data

- Measuring precision:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- Smallest sample surface (radius)
- Type F:
  - Convex: 1,5 mm
  - Flat: 1,5 mm
  - Concave: 25 mm
- Type N:
  - Convex: 3 mm
  - Flat: 5 mm
  - Concave: 50 mm
- Minimum thickness of base material: 300 µm
- Dimensions W×D×H 65×28×131 mm
- Battery operation, batteries standard 4× 1.5 V AAA
- Net weight approx. 81 g

Accessories

- Data transfer software, interface cable included, SAUTER ATC-01, **€ 90,–**
- Calibration foils for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07, **€ 105,–**
- 2 External sensor, TypeF, SAUTER ATE 01, **€ 105,–**
- 3 External sensor, TypeN, SAUTER ATE 02, **€ 110,–**

STANDARD: CAL BLOCK · FOCUS · RS 232 · ZERO · BATT · 1 DAY

OPTION: SOFTWARE · ISO +4 DAYS

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
TE 1250-0.1F	100 | 1250	0,1 | 1	Non-magnetic coatings on iron, steel (F)	**360,–**	961-110	132,–
TE 1250-0.1N	100 | 1250	0,1 | 1	Insulating coatings on non-magnetic metals (N)	**400,–**	961-110	132,–
TE 1250-0.1FN	100 | 1250	0,1 | 1	Combination instrument: F/N	**460,–**	961-112	187,–

PREMIUM ★★★

SAUTER TF

1

2

PREMIUM ★★★

SAUTER TG

04

Premium coating thickness gauge for paint coating, lacquer coating etc.

Features

- 1 LCD display, backlit, display of all information at a glance
- Offset-Accur: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- Scan mode for continuous measurement or single point measuring mode
- Mini Statistics Kit: displays the measured result, the average value and the max and the min value
- Internal memory up to 99 values
- Selectable measuring units: µm, mil
- Base plate and calibration foils included with delivery
- Data interface RS-232 standard
- 2 Delivered in a robust carrying case, figure shows SAUTER TF

SAUTER TG:
- External sensor for difficult-to-access measuring points

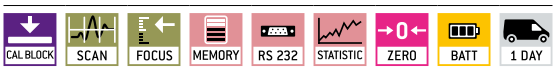
Technical data

- Measuring precision:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- Minimum thickness of base material: 300 µm
- Dimensions W×D×H 65×35×126 mm
- Battery operation, batteries standard 2× 1.5 V AAA
- Net weight approx. 81 g

Accessories

- Data transfer software, interface cable included, SAUTER ATC-01, **€ 90,–**
- Calibration foils for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07, **€ 105,–**
- SAUTER TG: External sensor, TypeFN, SAUTER ATG 01, **€ 130,–**

STANDARD



OPTION

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm	**Price** excl. of VAT ex works **€**	Option **Factory calibration certificates** KERN	 €
TF 1250-0.1FN	100 | 1250	0,1 | 1	Combination instrument: F/N	F: Convex: 1,5 Concave: 25	**530,–**	961-112	187,–
TG 1250-0.1FN	100 | 1250	0,1 | 1	Combination instrument: F/N	N: Convex: 3 Concave: 50	**530,–**	961-112	187,–

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.

Irmgard Russo
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,–**	61
0,01	80	**TN 80-0.01US**	**620,–**	59
0,01 | 0,1	100	**TO 100-0.01EE**	**1390,–**	62
0,01 | 0,1	230	**TU 230-0.01US**	**1170,–**	61
0,01 | 0,1	300	**TU 300-0.01US**	**1260,–**	61
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**	**320,–**	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


1

Reliable material thickness gauge for daily use

05

Features

- External sensor for difficult-to-access measurements
- Base plate for adjustment included with delivery
- 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

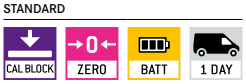
Technical data

- 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) 3–200 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 SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	**Price** excl. of VAT ex works **€**	Option **Factory calibration certificates** KERN	 €
TB 200-0.1US	1,5–200	0,1	5 MHz | ⌀ 8 mm	500–9000	**320,–**	961-113	132,–
TB 200-0.1US-RED	1,5–200	0,1	5 MHz | ⌀ 8 mm	–	**270,–**	961-113	132,–

Compact pocket-sized material thickness gauge

Features

- External sensor for difficult-to-access measuring points
- Data interface RS-232 included
- Selectable measuring units: mm, inch
- Base plate for adjustment included with delivery
- 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

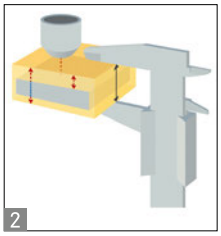
Accessories

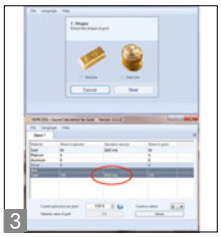
- Data transfer software, interface cable included, SAUTER ATC-01, **€ 90,–**
- External sensor, 5 MHz, ⌀ 6 mm, for thin test materials: Measuring range (steel) up to approx. 80 mm, SAUTER ATB-US01, **€ 190,–**
- External sensor, 5 MHz, ⌀ 12 mm, for hot test materials: Measuring range (steel) 3–200 mm 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, ⌀ 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	132,–





05 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 with delivery
- 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, ø 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 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 GOLD 80	0,75–80	0,01	7 MHz | 6 mm	1000–9999	**690,–**	961-113	132,–


1

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

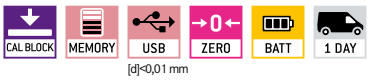
Technical data

- 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, 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 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, 5 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,–**
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, **€ 30,–**

STANDARD



OPTION

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 | ø 6 mm	1000–9999	**560,–**	961-113	132,–
TN 230-0.1US	1,2–230	0,1	5 MHz | ø 10 mm	1000–9999	**560,–**	961-113	132,–
TN 300-0.1US	3–300	0,1	2,5 MHz | ø 14 mm	1000–9999	**660,–**	961-113	132,–
TN 80-0.01US	0,75–80	0,01	7 MHz | ø 6 mm	1000–9999	**620,–**	961-113	132,–
TN 230-0.01US	1,2–200 | 230	0,01 | 0,1	5 MHz | ø 10 mm	1000–9999	**620,–**	961-113	132,–
TN 300-0.01US	3–200 | 300	0,01 | 0,1	2,5 MHz | ø 14 mm	1000–9999	**710,–**	961-113	132,–

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, ø 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, 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, SAUTER ATU-US09, **€ 110,–**
- External sensor (Pulse-Echo), 5 MHz, ø 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 SAUTER	Measuring range Echo-Echo mm	Measuring range Pulse-Echo mm	Readout [d] mm	Sensor	Sound velocity m/sec	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
TN 30-0.01EE	3–30	0,65–600	0,01	5 MHz | ø 10 mm	1000–9999	**890,–**	961-113	132,–
TN 60-0.01EE	3–60	0,65–600	0,01	5 MHz | ø 10 mm	1000–9999	**1200,–**	961-113	132,–

PREMIUM ★★★


1


2

Premium ultrasonic thickness gauge

Features

- External sensor for difficult-to-access measurements
- Base plate for adjustment included with delivery
- 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: CAL BLOCK · MEMORY · USB · TOL · ZERO · BATT · 1 DAY

OPTION: SOFTWARE · ISO +4 DAYS

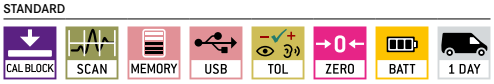
Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	**Price** excl. of VAT ex works €	Option **Factory calibration certificates** KERN	 €
TU 80-0.01US	0,75–80	0,01	7 MHz | ⌀ 6 mm	1000–9999	**1170,–**	961-113	132,–
TU 230-0.01US	1,2–200 | 230	0,01 | 0,1	5 MHz | ⌀ 10 mm	1000–9999	**1170,–**	961-113	132,–
TU 300-0.01US	3–200 | 300	0,01 | 0,1	2,5 MHz | ⌀ 14 mm	1000–9999	**1260,–**	961-113	132,–

05 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: 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 probe SAUTER: ATU-US12 included with delivery
- 3 Delivered in a robust carrying case

STANDARD



OPTION

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
- Interface cable FL-A01 (for use of the software) included

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, **€ 170,–**
- Further sensors on request
- **Note:** Further details and plenty of further accessories see www.sauter.eu

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	132,–

Hardness testing of plastics (Shore)

To determine the hardness of plastics, in 1915 Albert Shore developed an extremely simple process: A pin made of hardened metal and of a defined shape is held by a spring and is then pushed into the test item. Depending on the depth of the penetration, the material tested is either harder or softer. This procedure is described in DIN ISO 48-4.

Currently, there are two types of devices used for this test: Mechanical measuring devices with drag indicator and electronic measuring devices.

Both types of measuring devices can be operated with test stands (such as the SAUTER TI series). With a test stand, measurements can be carried out more consistently and accurately.

At this time, KERN does not calibrate Shore hardness testing instruments. As an alternative, we recommend that the measuring device is operated with a calibrated kit of hardness comparison plates (such as SAUTER AHBA 01).

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Hardness testing of plastics

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Quick-Finder

Readout [d] HS	Measuring range [Max] HS	Hardness type	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	Page
1,0 HA	100 HA	A	**HBA 100-0**	**105,–**	64
1,0 HA0	100 HA0	A0	**HB0 100-0**	**135,–**	64
1,0 HD	100 HD	D	**HBD 100-0**	**145,–**	64
0,1 HA	100 HA	A	**HDA 100-1**	**375,–**	65
0,1 H0	100 H0	0	**HD0 100-1**	**375,–**	65
0,1 HD	100 HD	D	**HDD 100-1**	**375,–**	65
–	–	A/A0	**TI-AC**	**240,–**	66
–	–	D	**TI-D**	**300,–**	66
–	–	A/0	**TI-ACL**	**300,–**	66
–	–	D	**TI-DL**	**370,–**	66


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Compact handheld durometer with drag indicator

06

Features

- Typical application: measurement of penetration (Shore)
- Particularly recommended for internal comparison measurement. Standard calibrations e. g. to DIN 48-4 are not possible because of very narrow standard tolerances
- Shore A rubber, elastomers, neoprene, silicone, vinyl, soft plastics, felt, leather and similar material
- Shore D plastics, formica, epoxides, plexiglass etc.
- Shore A0 foam, sponge etc.
- Max mode: Records the peak value indication by drag pointer
- Can be attached to the test stands SAUTER TI-AC (for Shore A and A0), TI-D. (for Shore D)
- 1 Delivery in a plastic box
- The measuring tips are not interchangeable

Technical data

- Measuring precision: 3 % of [Max]
- Dimensions W×D×H 60×25×115 mm
- Net weight approx. 160 g
- Screws to screw on to the TI: M7 fine thread
- Material thickness of the sample, min. 4 mm

Accessories

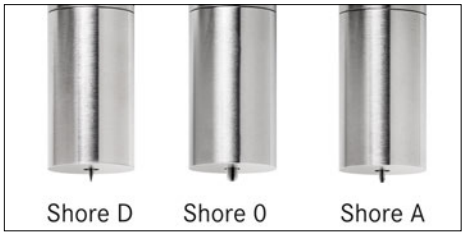
Shore comparison plates for testing and calibration of Shore hardness testing devices. By regular comparison, the measuring accuracy increases significantly.

- 2 7 hardness comparison plates for Shore A, tolerance up to ± 2 HA, SAUTER AHBA-01, **€ 95,–**
- 3 3 hardness comparison plates for Shore D, tolerance up to ± 2 HD, SAUTER AHBD-01, **€ 75,–**
- Factory calibration of the comparison plates, SAUTER 961-170, **€ 105,–**
- Test stand for HBA and HB0, SAUTER TI-AC., **€ 240,–**
- Test stand for HBD, SAUTER TI-D., **€ 300,–**

STANDARD

PEAK 1 DAY

Model **SAUTER**	Hardness type	Measuring range [Max]	Readout [d]	**Price** excl. of VAT ex works **€**
HBA 100-0	Shore A	100 HA	1,0 HA	**105,–**
HB0 100-0	Shore A0	100 HA0	1,0 HA0	**135,–**
HBD 100-0	Shore D	100 HD	1,0 HD	**145,–**



Professional Shore hardness tester

Features

- Shore A, 0 and D to measure the hardness of plastics through penetration measurement
- Shore A rubber, elastomers, neoprene, silicone, vinyl, soft plastics, felt, leather and similar material
- Shore 0 foam, sponge
- Shore D plastics, formica, epoxides, plexiglass etc.
- Delivered in a robust carrying case
- Particularly recommended for internal comparison measurement. Standard calibrations e. g. to DIN 48-4 are not possible because of very narrow standard tolerances
- Can be attached to the test stands TI-ACL (for Shore A and 0), TI-DL (for Shore D) to improve measuring uncertainty
- Large display with backlight
- Selectable: AUTO-OFF function or continuous operation, battery level indicator

Technical data

- Tolerance: 1 % of [Max]
- Overall dimensions W×D×H 65×38×162 mm
- Net weight approx. 173 g
- Transfer via RS-232 to the PC, e.g. to Microsoft Excel®
- Battery operation, batteries standard 2× 1.5 V AAA
- Material thickness of the sample, min. 4 mm

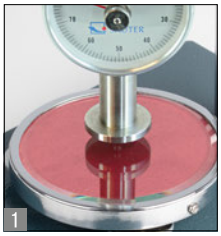
Accessories

- 1 7 hardness comparison plates for Shore A, tolerance up to ± 2 HA, SAUTER AHBA-01, **€ 95,–**
- 2 3 hardness comparison plates for Shore D, tolerance up to ± 2 HD, SAUTER AHBD-01, **€ 75,–**
- Factory calibration of the comparison plates, SAUTER 961-170, **€ 105,–**
- Test stand for HDA and HD0, SAUTER TI-ACL, **€ 270,–**
- Test stand for HDD, see page 66, SAUTER TI-DL, **€ 370,–**
- Data transfer software, interface cable included, SAUTER ATC-01, **€ 90,–**

STANDARD: CAL EXT, PEAK, ZERO, RS 232, BATT, 1 DAY

OPTION: SOFTWARE

Model **SAUTER**	Hardness type	Measuring range [Max]	Readout [d]	**Price** excl. of VAT ex works **€**
HDA 100-1	Shore A	100 HA	0,1 HA	**375,–**
HD0 100-1	Shore 0	100 H0	0,1 H0	**375,–**
HDD 100-1	Shore D	100 HD	0,1 HD	**375,–**



Lever operated test stand for hardness testing with base plate made of glass

Features

- For Shore hardness testing of plastics, leather etc.
- 1 Glass plate: high measurement accuracy by means of superior hardness of the glass plate
- 2 Mechanical construction: Robust design for precise measuring
- 3 Level adjustment: For the precise levelling of the base plate blate, e.g. for the correction of inhomogeneous test objects
- 4 Test stand TI-DL, with exchangeable longer column for use with digital hardness tester HD
- Hardness tester not included in delivery
- Operation:
  1. The SAUTER hardness testing device HB or HD is fitted in a suspended position
  2. The test object is placed on the round testing table right under the durometer measuring tip
  3. By pressing the lever down, the test weight will be released, and this then presses the measuring tip into the test object with its own weight (see table)
- The accuracy of the displayed result is approx. 25 % higher than in a manual operated test

Technical data

- Stroke length: 15 mm
- Maximum test object height: 63 mm
- Base plate ⌀ 75 mm
- Overall dimensions W×D×H
  TI-AC: 150×110×330 mm
  TI-D: 150×110×400 mm
  TI-ACL: 150×110×380 mm
  TI-DL: 150×110×450 mm

06

STANDARD

FAST-MOVE 1 DAY

Model SAUTER	Suitable for	Length of column mm	Poids de contrôle kg	Net weight approx. kg	Price excl. of VAT ex works €
TI-AC	HBA, HB0	245	1	4,5	**240,–**
TI-D	HBD	245	5	8,5	**300,–**
TI-ACL	HDA, HD0	300	1	4,5	**300,–**
TI-DL	HDD	300	5	8,5	**370,–**

Hardness testing of metals (Leeb)

Determining the hardness of metals is of particular significance during the preparation and use of metallic materials. Usually, hardness is determined using test machines in accordance with Vickers, Rockwell or Brinell.

For mobile measurements, the rebound method according to Dietmar Leeb, which was first used in 1978, has prevailed. To do this, a standardised impact body (such as SAUTER AHMO D01) is shot against the item to be tested. The rebound of the impact body leads to a deformation of the upper surface, which results in a loss of kinetic energy. This loss of energy is determined by measuring the speed and herefrom the Leeb hardness value (HL) is calculated.

These measuring devices can be used in any location. Usually they are equipped with a large internal data memory, which allows to record the measurements at goods receipt or in production.

Our range is equipped with compact measuring devices of the so-called “Pen Type” shape (HN-D) or measuring devices with external sensors connected by cables.

Irmgard Russo
Product specialist
Hardness testing of metal

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Quick-Finder

Readout [d] HL	Sensor	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	Page
1	D	**HK-D**	**1250,–**	68
1	D	**HK-DB**	**1290,–**	68
1	D	**HMM**	**1090,–**	69
1	D	**HMO**	**1770,–**	71
1	D	**HN-D**	**860,–**	70
1	D	**HMM-NP**	**870,–**	69


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Premium Leeb hardness tester – now also with hardness comparison block included

Features

- External impact sensor standard (Type D)
- Mobility: In comparison with stationary table-top devices and testing devices with an internal sensor, using the SAUTER HK-D offers the highest level of mobility and flexibility
- All measurement directions possible (360°) thanks to an automatic compensation function
- 1 SAUTER HK-DB: Hardness comparison block, hardness approx. 800 HLD, included in delivery
- 2 Delivered in a sturdy carrying case
- Measurement value display: Rockwell (Type A, B, C), Vickers (HV), Shore (HS), Leeb (HL), Brinell (HB)
- Internal memory for up to 600 data groups, with up to 32 values per group forming the average value of the group
- Mini statistics function: displays the measured result, the average value, the impact direction, date and time
- Automatic unit conversion: The measuring result is automatically converted into all specified hardness units
- 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.
- Matrix display: Backlit multi-function display for all relevant functions at a glance
- Robust metal housing

Technical data

- Measuring precision: ± 1 % at 800 HLD
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Minimum sample material thickness: 3 mm with coupling on fixed base
- The lowest weight of the test item on solid support unit: 2 kg with fixed coupling
- Dimensions W×D×H 132×82×31 mm
- Permissible ambient temperature -10 °C/40 °C
- Battery operation, batteries not standard 2× 1.5 V AA, operating time up to 200 h
- Net weight approx. 0,45 kg

Accessories

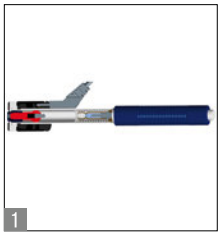
- Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0, **€ 90,–**
- Data transfer software, KERN SCD-4.0, **€ 170,–**
- Support rings for secure positioning, SAUTER AHMR 01, **€ 320,–**
- Impact body Type D, net weight approx. 5,5 g, hardness ≥ 1600 HV, tungsten carbide, Impact ball ⌀ 3 mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,–**
- External impact sensor Type C. Low energy sensor: requires only 25 % impact energy compared to type D, for testing tiny or light objects or the surface of hardened layer, SAUTER AHMR C, **€ 640,–**
- External impact sensor Type D, SAUTER AHMR D, **€ 290,–**
- External impact sensor Type D+15. Slim front section for holes, grooves or re-entrant surfaces, SAUTER AHMR D+15, **€ 640,–**
- External impact sensor Type DL, for very narrow surfaces (⌀ 4,5 mm), SAUTER AHMR DL, **€ 1590,–**
- External impact sensor Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMR G, **€ 1590,–**
- Connection cable impact sensor SAUTER HMO-A04, **€ 95,–**
- 3 Test block Type D/DC, ⌀ 90 mm (± 1 mm), net weight < 3 kg, hardness range
  790 ± 40 HL, SAUTER AHMO D02, **€ 190,–**
  630 ± 40 HL, SAUTER AHMO D03, **€ 190,–**
  530 ± 40 HL, SAUTER AHMO D04, **€ 190,–**
- Factory calibration certificates for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 132,–**

STANDARD: MEMORY, USB, STATISTIC, UNIT, TOL, BATT, 1 DAY

OPTION: CAL BLOCK, SOFTWARE, ISO +4 DAYS

HK-D

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL	Test block Typ D/DC approx. 800 HL	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
HK-D	Typ D	170–960	1	not standard	**1250,–**	961-131	132,–
HK-DB	Typ D	170–960	1	standard	**1290,–**	961-131	132,–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5

Advanced features for demanding applications

Features

- 1 Impact (rebound) sensor: The bounce module is accelerated by a spring against the item being tested. Depending on how hard the object is, the kinetic energy of the module will be absorbed. The speed reduction will be measured and converted to Leeb hardness values.
- External impact sensor (Type D) included
- Mobility: In comparison with stationary table-top devices and testing devices with an internal sensor, using the SAUTER HMM offers the highest level of mobility and flexibility
- All measurement directions possible (360°) thanks to an automatic compensation function
- 2 Standard block for calibration included (790 ± 40 HL)
- 3 Delivered in a robust carrying case
- Internal memory for up to 9 measured values
- Mini statistics function: displays the measured result, the average value, the impact direction, date and time
- SAUTER HMM-NP: identical product features as the SAUTER HMM model, but comes without the printer
- Measurement value display: Rockwell (B & C), Vickers (HV), Brinell (HB), Shore (HSD), Leeb (HL), tensile strength (MPa)
- Automatic unit conversion: The measuring result is automatically converted into all specified hardness units

Technical data

- Measuring precision: 1 % at 800 HLD (± 6 HLD)
- Measuring range tensile strength: 375–2639 MPa (steel)
- Minimum sample weight on a solid and stable support: 2 kg with fixed coupling
- Minimum sample material thickness: 3 mm with coupling on fixed base
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Dimensions W×D×H 80×30×150 mm
- SAUTER HMM: External mains adaptor for printer, as standard
- Ready for use: Batteries included, 3× 1.5 V AAA, block, operating time up to 30 h, AUTO-OFF function to preserve battery life
- Net weight approx. 0,2 kg

Accessories

- External impact sensor Type D, SAUTER AHMO D, **€ 340,–**
- Connection cable, without impact sensor, SAUTER HMM-A02, **€ 105,–**
- 5 Attachment rings for secure positioning, SAUTER AHMR 01, **€ 320,–**
- 4 Impact body, SAUTER AHMO D01, **€ 115,–**
- Test block Type D/DC, ⌀ 90 mm (± 1 mm), net weight < 3 kg, hardness range
  790 ± 40 HL, SAUTER AHMO D02, **€ 190,–**
  630 ± 40 HL, SAUTER AHMO D03, **€ 190,–**
  530 ± 40 HL, SAUTER AHMO D04, **€ 190,–**
- Paper roll, 1 piece, SAUTER ATU-US11, **€ 15,–**
- Factory calibration certificates for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 132,–**

STANDARD

HMM

OPTION

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL	**Price** excl. of VAT ex works €	Option **Factory calibration certificates**	
					KERN	€
HMM	Typ D	170–960	1	**1090,–**	961-131	132,–
HMM-NP	Typ D	170–960	1	**870,–**	961-131	132,–


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“Pen type” Leeb hardness tester for mobile hardness testing of metals

Features

- User-friendly operation: The compact version enables the product to be used in a significantly wider range of applications compared with traditional devices
- The measuring device has been designed for one-hand operation and this allows the user to work more quickly and flexibly
- Modern LCD display: Optimised for industrial applications: increased luminosity and backlight can be switched on, that way the display can be read from any angle
- All measurement directions possible (360°) thanks to an automatic compensation function
- Internal impact sensor included (Type D)
- Measurement value display: Rockwell (B & C), Vickers (HV), Brinell (HB), Leeb (HL) Hardness comparison block not included
- Internal data memory for up to 500 measurements with date and time
- Data interface USB, including USB interface cable
- 1 Delivered in a robust carrying case

Technical data

- Measurement uncertainty ± 4 HLD
- Minimum sample weight on a solid and stable support: 2 kg
- Minimum sample material thickness: 3 mm with coupling on fixed base
- Dimensions W×D×H 35×25×145 mm
- Operation by rechargeable battery, standard, operating time without backlight 16 h, charging time 3 h
- Mains adapter, external, standard
- Net weight approx. 0,07 kg

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,–**
- Impact body, SAUTER AHMO D01, **€ 115,–**
- 2 Test block Type D/DC, ø 90 mm (± 1 mm), Net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, **€ 190,–** 630 ± 40 HL, SAUTER AHMO D03, **€ 190,–** 530 ± 40 HL, SAUTER AHMO D04, **€ 190,–**
- Factory calibration certificates for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 132,–**

STANDARD

OPTION

Model SAUTER	Sensor	Measuring range [Max] HLD	Readout [d] HL	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
HN-D	Typ D	170–960	1	860,–	961-131	132,–

PREMIUM ★★★


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5

Advanced features for professional applications

Features

- Innovative touchscreen
- Automatic recognition of the impact (rebound) sensor connected to the HMO
- Mobility: In comparison with stationary table-top devices and hardness testing devices with internal sensor, the SAUTER HMO offers the highest level of mobility and flexibility
- All measurement directions possible (360°) by defining the direction of impact on the device
- USB bearing for connection to the printer and charging the batteries
- 1 Standard block for calibration included
- Internal memory up to 500 values
- Mini statistics function: Displays the measure value, the average value, the difference between the maximum and minimum values, date and time
- Measurement value display: Rockwell (B & C), Vickers (HV), Brinell (HB), Leeb (HL), tensile strength (MPa)
- Automatic unit conversion: The measuring result is automatically converted into all specified hardness units
- 2 Delivered in a robust carrying case

Technical data

- Measuring precision: 1 % at 800 HLD (± 6 HLD)
- Measuring range tensile strength: 375–2639 MPa (steel)
- Minimum sample weight on a solid and stable support:
  Sensor D + DC: 2 kg with fixed coupling
  Minimum sample material thickness:
  Sensor D + DC: 3 mm with coupling on fixed base
  Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Dimensions W×D×H 83×24×135 mm
- Rechargeable battery pack internal, operating time up to 50 h
- Mains adapter included
- Net weight approx. 0,23 kg

Accessories

- Operation by rechargeable battery pack, operating time up to 50 h, SAUTER HMO-A03, **€ 75,–**
- External impact sensor Type D, as standard, can be reordered, SAUTER AHMO D, **€ 340,–**
- 3 External impact sensor Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, **€ 490,–**
- 4 External impact sensor Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMO G, **€ 990,–**
- Support rings for bended testing samples available on request, SAUTER AHMR 01, **€ 320,–**
- 5 Impact body, SAUTER AHMO D01, **€ 115,–**
- Connection cable impact sensor, SAUTER HMO-A04, **€ 95,–**
- Test block Type D/DC, 90×50 mm (± 1 mm), net weight < 3 kg, hardness range
  790 ± 40 HL, SAUTER AHMO D02, **€ 190,–**
  630 ± 40 HL, SAUTER AHMO D03, **€ 190,–**
  530 ± 40 HL, SAUTER AHMO D04, **€ 190,–**
- Paper roll, 1 piece, SAUTER ATU-US11, **€ 15,–**

STANDARD: CAL BLOCK, MEMORY, IR, STATISTIC, PRINT, TOL, ACCU, 230 V, 1 DAY

OPTION: ISO +4 DAYS

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
HMO	Typ D	170–960	1	**1770,–**	961-131	132,–

08

Hardness testing of metals (UCI)

Ultrasonic contact impedance (UCI) hardness testing devices are filling wisely a void in the area of hardness testing.

This area of testing is, on one hand, dominated by mobile hardness testing devices which are using the Leeb procedure and, on the other hand, by stationary hardness testing devices which are predominantly carrying out destructive tests.

Because of the high demands required by this system on the minimum weight and thickness of the test object, the Leeb procedure is not suitable for the majority of tests for small test objects. A good example of this is hardness testing of the flanks of gear wheels. Often in this test, the question is whether the flanks have been hardened or whether the hardened layer has already been removed.

UCI hardness testing devices therefore are offering significantly better measurement performance at small test objects in comparison with Leeb hardness testing devices.

One advantage of the UCI hardness testing devices compared with stationary hardness testing machines is, that the test object does not have to be cut out of the whole object.

By using the optional support rings, the minimum weight of the test object can even be reduced from 300 g to 100 g.

By means of optional ISO calibration, SAUTER UCI hardness testing devices can be used not only for internal testing purposes but also for measurements where the results have to be changed externally.

Irmgard Russo
Product specialist
Hardness testing of metals (UCI)

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Quick-Finder

Model	Hardness scale	**Price** excl. VAT, ex works	Page
SAUTER		**€**	
HO 1K	HV 1	**4900,–**	73
HO 2K	HV 2	**4900,–**	73
HO 5K	HV 5	**4900,–**	73
HO 10K	HV10	**4900,–**	73


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Premium UCI hardness testing device for Rockwell, Brinell and Vickers

Features

- Application: This ultrasound hardness testing device is ideally suited for mobile hardness testing, where the main emphasis is on obtaining rapid and precise results.
- Principle: The SAUTER HO measures by using a vibrating rod which vibrates at ultrasonic frequency and is pressed onto the sample at a defined test force. At the lower end there is a Vickers indenter. Its resonant frequency increases as soon as an indentation is created when it comes into contact with the sample. Through appropriate adjustment of the device, the resulting change in resonant frequency is matched with the corresponding Vickers hardness.
- Examples: The HO ultrasound hardness testing system is primarily used for measuring small forgings, castings, welding points, punched parts, casting tools, ball bearings and the flanks of gear wheels as well as for measuring the influence of warmth or heat
- Advantages compared with Rockwell and Brinell: Means that the testing is almost nondestructive, small penetrations means that the testing is less destructive
- Advantages compared with Vickers: Demanding optical measuring is not required. You can therefore carry out measurements directly on-site, for example, on a permanently installed workpiece
- Advantages compared with Leeb: The high requirements on the weight of the test object can be widely omitted
- Standards: The device meets following technical standards: DIN 50159-1; ASTM-A1038-2005; JB/T9377-2013
- Measurement data memory saves up to 1000 measurement groups each with 20 individual values
- 2 Mini statistics function: Display of the measuring result, the number of measurements, the maximum and minimum value as well as the average value and the standard deviation
- Calibration: The device can be set to both standard hardness test blocks and also to up to 20 reference calibration values. When doing this it is possible to measure different materials quickly, without having to re-adjust the device to the individual materials
- 1 Scope of delivery: Standard block for calibration (approx. 61 HRC), USB cable, Display unit, UCI sensor unit, transport case, software to transfer the saved data to the PC, accessories

Technical data

- Measuring ranges: HRC: 20,3–68; HRB: 41–100; HRA: 61-85,6; HV: 80–1599; HB: 76–618; Tensile strength: 255–2180 N/mm²
- Measuring precision: ± 3 % HV; ± 1,5 HR; ± 3 % HB
- Display units: HRC, HV, HBS, HBW, HK, HRA, HRD, HR15N, HR30N, HR45N, HS, HRF, HR15T, HR30T, HR45T, HRB.
- Rechargeable battery integrated, standard, operating time up to 12 h without backlight, charging time approx. 8 h
- Minimum weight of the test object: 300 g for direct measurement with the sensor (included); 100 g with support ring (optional)
- Minimum thickness of the test object: 2 mm
- Minimum dimensions the test surface size around: approx. 5×5 mm (recommended)
- Overall dimensions W×D×H 160×83×28 mm
- Permissible ambient temperature -10 °C/40 °C
- Net weight approx. 0,93 kg

Accessories

- External impact sensor Type D, Leeb standard sensor, can be reordered at any time, SAUTER AHMO D, **€ 340,–**
- 7 Calibration and adjustment plate (hardness test blocks) with defined and tested steel hardness for regular testing and adjustment of hardness testing devices. The hardness values are indicated. A key feature of the plates is the low-granular, homogenous finish of the steel, ⌀ 90 mm, including calibration certificate, each, **€ 395,–**
  28 to 35 HRC: SAUTER HO-A09
  38 to 43 HRC: SAUTER HO-A10
  48 to 53 HRC: SAUTER HO-A11
  58 to 63 HRC: SAUTER HO-A12
- 8 Test stand for repeatable movements during testing. In this way you can avoid errors which could occur with manual handling of the sensor. This ensures even more stable measurements and more precise measuring results. Smooth-running mechanical system, stroke length 34 mm, maximum height of the test object within the test bench 240 mm, swivel probe device for measurements outside the base plate, very robust construction, net weight approx. 9 kg, SAUTER HO-A08, **€ 1490,–**
- Motorised probe. Enables testing at the touch of a button while maintaining the same procedure (while stocks last)
  HV 0,3, SAUTER HO-A15, **€ 3900,–**
  HV 0,5, SAUTER HO-A16, **€ 3900,–**
  HV 0,8, SAUTER HO-A17, **€ 3900,–**
  HV 1, SAUTER HO-A18, **€ 3900,–**

SAUTER HO 5K, HO 10K:
- 3 Support ring, flat, SAUTER HO-A04, **€ 460,–**
- 4 Support ring, small cylinder, ⌀ 8-20 mm, SAUTER HO-A05, **€ 450,–**
- 5 Support ring, large cylinder, ⌀ 20–80 mm, SAUTER HO-A06, **€ 450,–**
- 6 Deep-hole protective cover, SAUTER HO-A07, **€ 235,–**

SAUTER HO 1K, HO 2K:
- 3 Support ring, flat, SAUTER HO-A04N, **€ 460,–**
- 4 Support ring, small cylinder, ⌀ 8-20 mm, SAUTER HO-A05N, **€ 460,–**
- 5 Support ring, large cylinder, ⌀ 20–80 mm, SAUTER HO-A06N, **€ 460,–**

08

STANDARD: CAL BLOCK, MEMORY, USB, STATISTIC, SOFTWARE, UNIT, TOL, ACCU, 230 V, 1 DAY

OPTION: ISO +4 DAYS

Model SAUTER	Hardness scale	Min. weight of test item g	Min. thickness of test item mm	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
HO 1K	HV 1	300	2	**4900,–**	961-270	285,–
HO 2K	HV 2	300	2	**4900,–**	961-270	285,–
HO 5K	HV 5	300	2	**4900,–**	961-270	285,–
HO 10K	HV10	300	2	**4900,–**	961-270	285,–

For discoverers: The wide product universe of weighing and measuring technology.

Reliable, uncomplicated and durable weighing and measuring technology products, innovative software and the competent testing service from KERN and SAUTER are convincing.

The best thing to do is to request our special catalogues – free of charge, of course!

There is also a lot for you to discover online: current offers, new models, sale articles and interesting news ...
Of course, ordering is also very easy at www.kern-sohn.com

www.kern-sohn.com

09

Occupational safety/Environment

Prevention of accidents as well as modern health care have got the same operational starting point in many countries. With industrialisation and the formation of conurbations, transport infrastructures and large companies, regular preventive medical examinations were introduced for wide sections of the population.

In addition to preventive medical examinations, monitoring of working conditions with defined limits was also introduced. To date, the regular checking of these limits as part of safety and accident prevention measures is domiciled as a business responsibility up till now.

For this purpose, SAUTER provides a targeted selection of the most commonly-used instruments in general measuring technology. They can be used to measure environmental influences such as noise (acoustic pressure) or light.

For regular calibration, our pick-up and return service can be used, which will save you a lot of efforts and expenses.

Irmgard Russo
Product specialist
Occupational safety/Environment

Tel. +49 7433 9933-208
info@sauter.eu

Quick-Finder

Readout [d] lx/dB	Measuring range [Max] lx/dB	**Model** **SAUTER**	**Price** excl. VAT, ex works **€**	P.
0,1|1|10|100 lx	200|2000|20000|200000 lx	**SO 200K**	**85,–**	77
0,1|1|10|100 lx	200|2000|20000|200000 lx	**SP 200K**	**95,–**	78
0,1 dB	130 dB	**SU 130**	**110,–**	79
0,1 dB	134 dB	**SW 1000**	**1990,–**	80
0,1 dB	136 dB	**SW 2000**	**1220,–**	80


1

Photometer for precise light measurement up to 200,000 Lux

Features

- Helps to determine if workplace lighting meets standard requirements, e.g. DIN EN 12464-1 “Lighting of workplaces indoors”
- Photo sensor: silicon diode
- Cosine correction for angular incident light
- Sturdy protective cover for the photo sensor
- Increased service life: Impact protection by means of a protective casing
- 1 Delivery in a robust box
- Track function for continuous recording of changing environmental conditions
- Peak Hold Mode to capture peaks
- Selectable measuring units: fc (foot-candle), lx

Technical data

- Measuring frequency: 2 Hz
- Cable length (Photo sensor) approx. 1 m
- Dimensions W×D×H 100×60×28 mm
- Battery operation, battery not standard (9 V Block), AUTO-OFF function for battery conservation
- Net weight approx. 250 g

09

STANDARD

OPTION

Model SAUTER	Measuring range [Max] lx	Readout [d] lx	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
SO 200K	200	0,1	85,–	961-190	182,–
	2000	1			
	20000	10			
	200000	100			

1

2

Compact photometer, optimised for accurate light measurement, including LED light measurement

Features

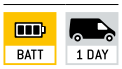
- For measuring illumination of office workstations, production workstations, etc.
- Photo sensor: Silicon diode, filtered
- Cosine correction for incidence of light at an angle
- Data-hold function, to freeze the current measurement
- 1 Rotatable sensor unit (+90 and -180°) for optimum alignment to the light source
- Sturdy protective cover for the photo sensor
- 2 Increased service life: Impact protection by means of delivery in a soft box with light protection
- TRACK function for continuous recording of variable environmental conditions
- By pressing the key, the current measured value can be frozen until the key is pressed again
- Selectable units: fc (foot-candle), lux
- Easy to toggle between units by a keypress
- Option of fitting a stand on the rear of the housing, ¼" thread

Technical data

- Measuring precision up to 20.000 Lux: ± (4 % of the result + 10 scale intervals)
- Measuring precision from 20,000 Lux: ± (5 % of the result + 10 scale intervals)
- Repeatability: ± 2 % of [Max]
- Temperature error: ± 0,1 % of [Max]/°C
- Measuring frequency: 2 Hz
- Dimensions W×D×H 185×68×38 mm
- Ready to use: Battey included, 9 V block, operating time up to 200 hours
- Net weight approx. 130 g

09

STANDARD



OPTION

Model SAUTER	Measuring range [Max] lx	Readout [d] lx	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
SP 200K	0–200	0,1	95,–	961-190	182,–
	200–2000	1			
	2000–20000	10			
	2000–200000	100			

1


2

Professional sound level meter

Features

- Professional sound level meter for measuring noise in areas such as, environment, mechanical applications, car industry and much more
- Measures the sound intensity in the workplace
- Helps in differentiation between normal noise influences, and excessive noise, nuisances e.g. in a production hall
- 1 Data interface RS-232, included
- 2 Delivered in a robust carrying case
- Multi measuring functions:
  Lp: Standard sound level measuring function
  Leq: Energy equivalent sound level measuring mode (type A)
  Ln: Shows the deviation from a pre-defined limit in %
- Selectable methods of evaluation:
  A: As sensitive as the human ear
  C: Sensitive for noisier environmental conditions, where there are machines, plant, motors etc.
  F: For areas with constant sound intensity
- Limit value function: programmable value for the maximum level value
- Track function for continuous recording of changing environmental conditions
- Peak Hold Mode to capture peaks
- Internal memory for 30 measured values, transferable to PC with SAUTER ATC-01

Technical data

- Measuring precision: 3 % of [Max]
- Dimensions W×D×H 236×63×26 mm
- Battery operation, batteries standard 4× 1.5 V AAA
- Net weight approx. 170 g

Accessories

- Data transfer software, interface cable included, SAUTER ATC-01, **€ 90,–**
- Adjustment device for regular adjustment of the sound level meter, SAUTER ASU-01, **€ 260,–**
- Foam windshield, SAUTER ASU-02, **€ 5,–**

STANDARD: PEAK, MEMORY, RS 232, TOL, BATT, 1 DAY
OPTION: SOFTWARE, ISO +10DAYS

Model SAUTER	Type	Measuring range [Max] dB	Readout [d] dB	Price excl. of VAT ex works €	Option Factory calibration certificates KERN	 €
SU 130	Lp A	30–130	0,1	110,–	961-281	210,–
	Lp C	35–130				
	Lp F	35–130				

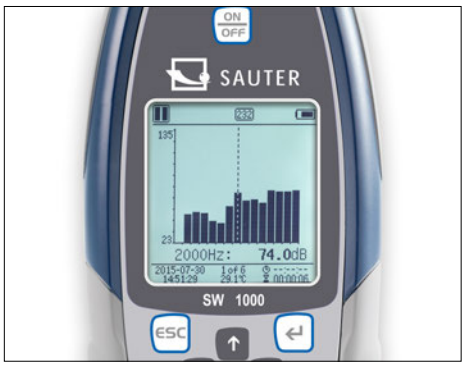
PREMIUM
★★★

First-class professional Class I, Class II sound level meter

09

Data logging function with date and time in the device...

... and data transfer using MicroSD (4G) memory card (included in delivery), RS-232 or USB



Different sound pressure levels can be selected, such as, Laeq, LcPeak, LaF, LaFMax, LaFMin, SD, SEL, E


1


2


3

Features

- Ideal for measurements for workplaces outdoor, e.g. at airports, on building sites, in road traffic etc. with broad access to spectrum thanks to the highly-accurate 24-Bit A/D converter
- Floating point evaluation for higher level of accuracy and better stability
- The optimised analogue frontend switch reduces the ambient noise and increases the linear measuring range
- A specially-developed algorithm permits a compliant dynamic range of more than 120 dB! (SW 1000: > 123 dB; SW 2000: > 122 dB)
- Three profiles and 14 user-defined measurements can be calculated in parallel with different frequency and time weighting
- LN statistics and display of the graph showing the progression of time
- User-defined integral interval measurement up to a maximum of 24 hours is possible
- Frequency weighting (filter) A, B, C, Z
- Time interval during measurement: F (fast), S (slow), I (pulse)
- Freely-definable limits for the output of an optical alarm signal
- Peak hold function to capture the peak value
- Octavo function for targeted sound analysis
- TRACK function with graphic display of a measurement
- Calibration mode (with optional calibrator)
- Trigger mode: external start/stop of measurement via 3.5 mm connector
- Automatic measurement for timer function is possible
- Selectable frequency for recording measurements: 10, 5, 2 Hz
- Operating languages: EN, DE, FR, ES, PT
- 1 Delivery in robust transport case
- 2 Option of fitting a stand on the rear of the housing, ¼" thread

Technical data

- Applicable standards:
  IEC61672-1:2014-07
  GB/T3785.1-2010
  1/1 Octave in accordance with IEC 61260:2014
- ½" microphone
- Permissible ambient temperature range -10 °C/50 °C
- Output (direct or alternating current) AC (max 5 VRMS), DC (10 mV/DB)
- Mains operation as standard
- Battery operation, 4× 1.5 V AA, not included, operating time up to 10 h
- Dimensions W×D×H 80×36×300 mm
- Net weight approx. 400 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,–**
- 2 Stand, W×D×H 430×90×90 mm, 1250×750×750 mm (moved out), SAUTER SW-A05, **€ 65,–**
- SD-memory card, storage capacity 4 GB, SAUTER SW-A04, **€ 50,–**
- Foam windshield, SAUTER SW-A03, **€ 40,–**
- 3 Calibrator for regular adjustment of the sound level meter, class 1, as well as testing the linearity of sound level meters
  - Applicable standards: IEC60942:2003 Class 1, ANSI S1.40-1984, GB/T 15173-1994.
  - Output frequency 1 kHz (+/- 0,5 %)
  - Output of acoustic pressure, can be selected at 94 dB or 114 dB (± 0.3 dB)
  - Distortion factor < 2 %
  - Stabilisation time < 10 s
  - Permissible ambient temperature range -10 °C/50 °C
  - The calibrator is designed for ½" as well as ¼" microphones (adapter included in the delivery) in accordance with the IEC 61094-4 standard
  - Battery operation, 2× 1.5 V AA, not standard, operating time up to 40 hours
  - Dimensions W×D×H 70×70×48 mm
  - Net weight approx. 137 g
  - SAUTER BSWA-01, **€ 710,–**
  - Factory calibration certificate for calibrator, SAUTER 961-291, **€ 160,–**
  - DAkkS-Calibration certificate for calibrator, SAUTER 963-291, **€ 225,–**

STANDARD: PEAK, MEMORY, RS 232, USB, ANALOG, STATISTIC, TOL, BATT, 230 V, 1 DAY

OPTION: SOFTWARE, ISO +10 DAYS, DAkkS +10 DAYS

Model SAUTER	Accuracy class	Measuring range Linear dB	Frequency range kHz	Sensitivity mV/Pa	**Price** excl. of VAT ex works €	Option **DAkkS calibration certificate** DAkkS KERN	 €	Option **Factory calibration certificates** KERN	 €
SW 1000	1	20–134	0,01–20	50	**1990,–**	963-281	295,–	961-281	210,–
SW 2000	2	25–136	0,02–12,5	40	**1220,–**	963-281	295,–	961-281	210,–

10

System solutions Industry 4.0 (IoT)/Display devices

BALANCE MANUFACTURE

Load cell + Junction Box + KERN YKV

FORCE MEASUREMENT

Load cell + SAUTER FL + Software

BALANCE MANUFACTURE

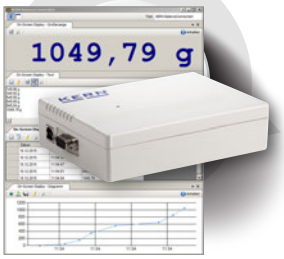
Load cell + display device

BALANCE MANUFACTURE

Load cell + KERN YKV +
KERN Software BalanceConnection

BALANCE MANUFACTURE

Load cell + Junction Box +
display device



We help to dovetail industrial production with state-of-the-art information and communication technology with the aim of increasing quality, using costs, time and resources more efficiently and being able to react more flexibly to the demands of the future. You can benefit from our standardized data protocols in conjunction with our BalanceConnection 4.0 data software, for details see Internet.

The SAUTER team in our centre of expertise – Industry 4.0 (IoT)

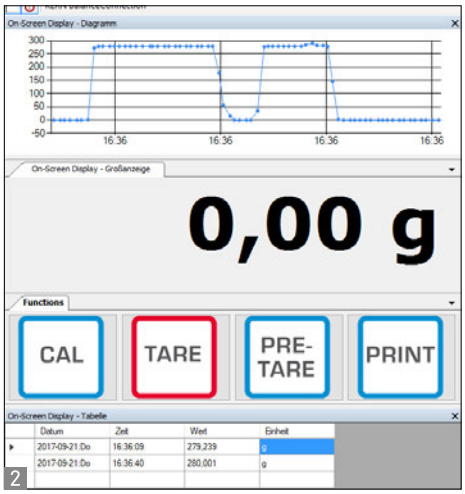
Daniel Egeler

Edgar Litti

Ralf Schmieg

Fabian Brenner

▷ **We would like to inform you and advise you**
Tel. +49 7433 9933-200
ITsupport@kern-sohn.com



Modern A/D converter for the rapid recording of weighing data and forwarding it to the most varied output channels such as tablets, networks, SPS controllers, etc. – ideal for operating balances in systems or conveyors

Features

- With this A/D converter box your weighing processes are ready for the requirements of Industry 4.0. Simply connect a weighing platform or measuring cell, integrate the A/D converter box into the network and start weighing
- For rapid transfer of weighing data to connected networks, computers, etc.
- USB and RS-232 data interface standard, Power supply via USB interface
- Transfer formats are freely configurable
- Functions: Weighing, taring
- Measuring frequency 10 Hz
- Easy configuration using the software supplied
- Robust plastic die-cast housing
- 1 Suitable for wall mounting and DIN track mount
- Compatible with all KERN weighing platforms
- Included with delivery:
  - Industrial platform KERN KFP
  - USB cable incl. mains plug
  - DIN rail mounting bracket
  - 2 Configuration software for adjusting and managing the KERN YKV-01, for large-format display of the values collected on the PC 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, Oracle etc.

Technical Data

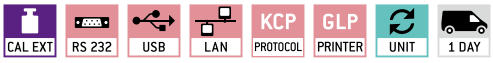
- Overall dimensions W×D×H 100×127×28 mm
- Net weight approx. 1,2 kg
- Permissible ambient temperature -10 °C/40 °C

Accessories

- Bluetooth data interface, KERN YKV-A02, **€ 90,–**
- WiFi data interface, KERN YKV-A01, **€ 90,–**
- DIN rail mounting bracket for KERN YKV, KERN YKV-A03, **€ 60,–**
- 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, **€ 170,–**

10

STANDARD



FACTORY

Model SAUTER	Standard interfaces	Price excl. of VAT ex works €
YKV-01	RS-232, USB	200,–
YKV-02	RS-232, USB, Ethernet	250,–

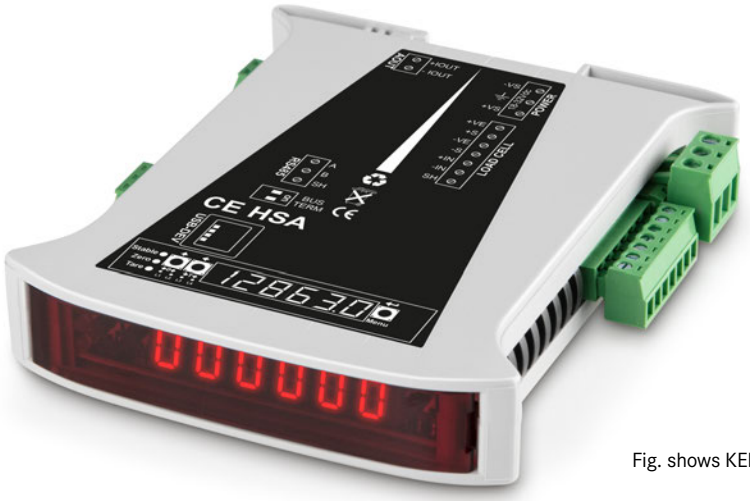
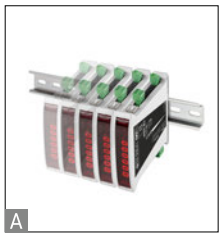


Fig. shows KERN CE HSA



A

Super compact display device (rail-mounted module) for installation in switch cabinets for DMS sensors

Technical Data

- LCD display, digit height 7,6 mm
- Overall dimensions W×D×H 101×120×22,5 mm
- Permissible ambient temperature -10 °C/40°C

Features

- Compact display unit for recording weighing data using strain gauge load cells, e.g. in industrial applications
- A Due to its small size, it is particularly space-saving to install in switch cabinets
- Thanks to the many interface variants, the modules can be ideally integrated into existing infrastructures and systems
- The modules can be used either individually or as a Buslink system with a total of up to 332 DIN rail modules
- The configuration of the module can be carried out conveniently via a connected PC with the suitable software (Download see Internet)
- Bright LED display for optical control and settings
- Time-saving G-Cal™ (Geographic Calibration) technology for fast and accurate calibration without weights conveniently over a network or the Internet worldwide
- Convenient communication via remote devices
- Backup and restore function via USB port
- Can handle various industrial protocols such as Ethernet IP, Modbus TCP, Modbus RTU, FINS, PROFIBUS DP and PROFINET (according to model)
- Extremely high measurement frequency possible, up to 1600 data records/s
- Internal resolution 24 Bit

Accessories

- Mains adapter for power supply of the KERN CE HSx, mountable on DIN rail, KERN CE HSS, **€ 80,–**
- Large display, display size 7,6 cm (only for CE HSR), KERN YKD-A02, **€ 260,–**
- For further accessories, such as load and load cells, torque sensors and weighing platforms (strain gauge based only) from the SAUTER and KERN range, see www.sauter.eu
- Further accessories such as DIN rail, housing as well as individual assembly, configuration, adjustment, etc. on request

STANDARD: CAL EXT, USB, UNIT, 1 DAY

OPTION: RS 232, SWITCH, ANALOG, LAN, PROFINET, PROFIBUS

Features	Model KERN				
	CE HSA	**CE HSE**	**CE HSP**	**CE HSR**	**CE HSN**
Power supply	18-32 Vdc; 4 W max.	18-32 Vdc; 4 W max.	18-32 Vdc; 4 W max.	18-32 Vdc; 4 W max.	18-32 Vdc; 4 W max.
Load cell power supply	5 Vdc	5 Vdc	5 Vdc	5 Vdc	5 Vdc
Sensitivity	0,1 µV/d	0,1 µV/d	0,1 µV/d	0,1 µV/d	0,1 µV/d
Adjustable nominal sensitivity	1; 1.5; 2; 2.5; 3 mV/V	1; 1.5; 2; 2.5; 3 mV/V	1; 1.5; 2; 2.5; 3 mV/V	1; 1.5; 2; 2.5; 3 mV/V	1; 1.5; 2; 2.5; 3 mV/V
Input voltage Unipolar @3mV/V	-1 mV to +16 mV	-1 mV to +16 mV	-1 mV to +16 mV	-1 mV to +16 mV	-1 mV to +16 mV
Input voltage Bipolar @3mV/V	-16 mV to +16 mV	-16 mV to +16 mV	-16 mV to +16 mV	-16 mV to +16 mV	-16 mV to +16 mV
A/D Conversion speed	1600/s	1600/s	1600/s	1600/s	1600/s
Max. load cell impedance	1200Ω	1200Ω	1200Ω	1200Ω	1200Ω
Min. load cell impedance	43,75 Ω	43,75 Ω	43,75 Ω	43,75 Ω	43,75 Ω
Max. no. of load cells 350 Ω	8	8	8	8	8
Max. no. of load cells 1000 Ω	22	22	22	22	22
Max. number of d	10.000	10.000	10.000	10.000	10.000
Display steps	1,2,5,10,20,50,100,200	1,2,5,10,20,50,100,200	1,2,5,10,20,50,100,200	1,2,5,10,20,50,100,200	1,2,5,10,20,50,100,200
Communication/Interfaces	USB	USB, Ethernet	USB, PROFIBUS	USB, RS232/422	USB, PROFINET
Analog output	0/4-20/24mA	-	-	-	-
Dimensions W×D×H	120×110×22 mm	120×110×22 mm	120×110×22 mm	120×110×22 mm	120×110×22 mm
Net weight g	150	150	150	150	150
Price excl. of VAT ex works **€**	**480,–**	**540,–**	**540,–**	**510,–**	**540,–**


1


2

Analogue weighing transmitter to amplify the DMS signal with current or voltage output

Features

- Voltage supply 12V or 24V
- Output signal voltage or current
- Suitable for transfer to SPS, analogue measuring card etc.
- Integrated overvoltage protection
- Polarity reversal protection at the input and protection of the output
- CE WT1-Y4 and CE WT2-Y4: up to 4 sensors connectable without junction box
- Scope of delivery: weighing transmitter, connection plug for sensor, cable incl. plug for output signal and power supply
- 12V DC or 24V DC voltage source (depending on model) required (e.g. for 24V voltage source CE is HSS compatible)
- Compatible with all analogue SAUTER load cells and analogue KERN weighing platforms

Technical Data

- Measuring range: 0 to 20 mV
- Accuracy: ≤ ± 0.1 % F.S.
- Ambient temperature: -20 to +85°C
- Overall dimensions W×D×H
  CE WTY1: 112×45×33 mm, see larger picture
  1 CE WTY2: 110×64×37 mm
  2 CE WTY4: 158×100×65 mm

Accessories

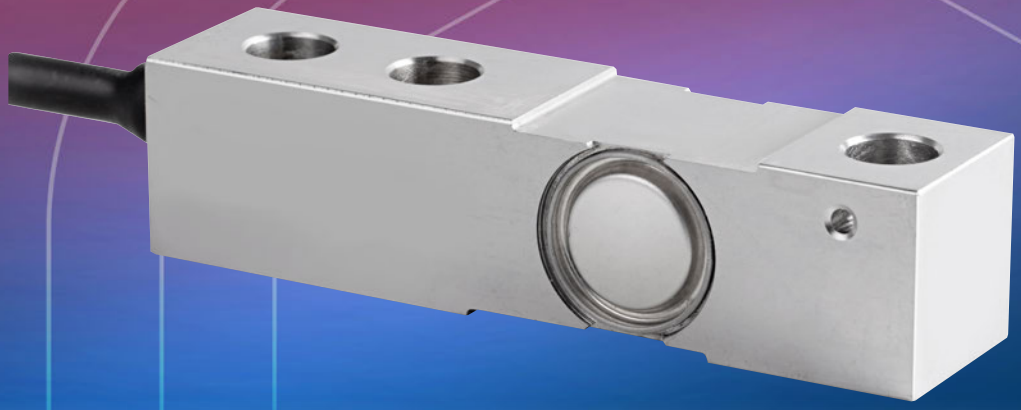
- Mains adapter for power supply of the KERN CE (only for models with 24 V), KERN CE HSS, **€ 80,–**

STANDARD

CAL EXT · ANALOG · IP 54 · IP 65 · 1 DAY

Model **SAUTER**	Sensor connections	Supply voltage	Output signal	Housing	Class of protection	**Price** excl. of VAT ex works **€**
CE WT1-Y1	1	12 V	Analog (4 - 20 mA)	Steel plate	IP54	**130,–**
CE WT2-Y1	1	24 V	Analog (4 - 20 mA)	Steel plate	IP54	**130,–**
CE WT3-Y1	1	12 V	Analog 0 +/-5V	Steel plate	IP54	**130,–**
CE WT4-Y1	1	24 V	Analog 0 +/-5V	Steel plate	IP54	**130,–**
CE WT1-Y2	1	12 V	Analog (4 - 20 mA)	Aluminium	IP65	**205,–**
CE WT2-Y2	1	24 V	Analog (4 - 20 mA)	Aluminium	IP65	**205,–**
CE WT1-Y4	4	12 V	Analog (4 - 20 mA)	Aluminium	IP65	**270,–**
CE WT2-Y4	4	24 V	Analog (4 - 20 mA)	Aluminium	IP65	**270,–**

11



Load cells

Various Accuracy classes with nominal loads from 300 g to 100 t and protection classes up to IP69K are available to you in the SAUTER product range. Whatever the project – whether it's the development of customised weighing systems, installation in silos and storage tanks or in shelving for continuous inventory, for special application in mechanical engineering or in any type of test bench – SAUTER can offer you just the right measuring cell.

Of course, we can also supply you with the appropriate accessories such as load corners, pivot heads, display devices, junction boxes or the relevant calibration certificate at the same time.

Any special requests? Do you need special load cells, other capacities or cable lengths, individual force test benches or a special mount for your test item? No problem, our product specialist for force-measuring cells Mr Stefan Herrmann is available at any time to help you further and will work with you to develop a customised concept for your application.

Accuracy class	Combined error
C5	≤ 0,01 %
C4	≤ 0,015 %
C3	≤ 0,02 %
C2	≤ 0,03 %
C1	≤ 0,05 %
G1	≤ 0,1 %
G2	≤ 0,2 %
G3	≤ 0,3 %
G5	≤ 0,5 %
G10	≤ 1,0 %

Note

Individual scale construction according to your individual requirements, also possible with third-party components.

Stefan Herrmann
Product specialist Load cells

Tel. +49 7433 9933-214
stefan.herrmann@kern-sohn.com

Note

Analogue torque sensors are compatible with the SAUTER CE HSx display device (rail-mounted module) (see page 84)

DC Y1

Alloy steel static torque sensor

STANDARD

1 DAY

- High precision (comprehensive Error 0,5 % F.S.)
- RoHS compliant
- For monitoring or measurement of static torques, tests of manual torque wrenches or transfer of static load torques
- Nominal sensitivity 1.0~1.5 mV/V, depending on nominal load
- Supply voltage max. 10 V DC
- 4-wire connection
- Simple and quick installation
- High torsional stiffness
- Other designs and nominal loads on request

Model SAUTER	Nominal load Nm	Price excl. of VAT ex works €
DC 5-Y1	5	240,–
DC 10-Y1	10	240,–
DC 20-Y1	20	240,–
DC 50-Y1	50	240,–
DC 100-Y1	100	240,–
DC 200-Y1	200	240,–
DC 500-Y1	500	305,–

DC Y2

Alloy steel static torque sensor

STANDARD

IP 65

1 DAY

OPTION

ISO +4 DAYS

- High precision (comprehensive Error 0,3 % F.S.)
- RoHS compliant
- Dust and spray protection to IP65 (in accordance with EN 60529)
- For monitoring or measurement of static torques, tests of manual torque wrenches or transfer of static load torques
- Nominal sensitivity 1,5 mV/V
- Supply voltage max. 15 V DC
- 4-wire connection
- High torsional stiffness
- Other designs and nominal loads on request

Model SAUTER	Nominal load Nm	Price excl. of VAT ex works €
DC 200M-Y2	0,2	410,–
DC 1-Y2	1	410,–
DC 10-Y2	10	410,–
DC 20-Y2	20	410,–
DC 50-Y2	50	410,–

Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu

CP P4 · CP Y4

Single-point load cells made of anodised aluminium

STANDARD: IP 65, 1 DAY

OPTION: DAkkS +3 DAYS, ISO +4 DAYS

- CP P4: Accuracy in accordance with OIML R60 C3
- CP Y4: Accuracy in accordance with OIML R60 C2
- CE and RoHS compliant
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium, anodised
- Suitable for price-computing scales, bench scales, platform scales, etc.
- Maximum platform size 200×200 mm
- 4-wire connection
- Nominal sensitivity: 0,9 mV/V

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CP 300-0P4	0,3	60,–
CP 600-0P4	0,6	60,–

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
ECO design		
CP 300-0Y4	0,3	45,–
CP 1500-0Y4	1,5	45,–
CP 3000-0Y4	3	45,–

CP P1 · CP Y1

Single-point load cells made of anodised aluminium

STANDARD: IP 65, M (CP P1), 1 DAY

OPTION: DAkkS +3 DAYS, ISO +4 DAYS

- CP P1: Accuracy in accordance with OIML R60 C3
- CP Y1: Accuracy in accordance with OIML R60 C2
- CE and RoHS compliant
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium, anodised
- Suitable for price-computing scales, bench scales, platform scales, etc.
- Maximum platform size 250×350 mm
- 4-wire connection
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 or C5 on request

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CP 3-3P1	3	55,–
CP 5-3P1	5	55,–
CP 6-3P1	6	55,–
CP 8-3P1	8	55,–
CP 10-3P1	10	55,–
CP 15-3P1	15	55,–
CP 20-3P1	20	55,–
CP 30-3P1	30	55,–
CP 35-3P1	35	55,–
CP 40-3P1	40	55,–
CP 50-3P1	50	55,–

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
ECO design (without EC type approval)		
CP 3-2Y1	3	30,–
CP 5-2Y1	5	30,–
CP 10-2Y1	10	30,–
CP 15-2Y1	15	30,–
CP 20-2Y1	20	30,–
CP 30-2Y1	30	30,–

CP P3

Single-point load cells made of anodised aluminium

STANDARD: IP 65, 1 DAY

OPTION: DAkkS +3 DAYS, ISO +4 DAYS

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Suitable for price-computing scales, bench scales, platform scales, etc.
- Maximum platform size 350×400 mm
- 4-wire connection
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 on request

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CP 30-3P3 NEW	30	70,-
CP 40-3P3 NEW	40	70,-
CP 50-3P3	50	70,–
CP 75-3P3	75	70,–
CP 100-3P3 NEW	100	70,-

Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu

NEW

CP P2

Single-point load cell of aluminium

STANDARD: IP 65 · 1 DAY

OPTION: DAkkS +3 DAYS · ISO +4 DAYS

- Accuracy in accordance with OIML R60 C3
- RoHS compliant
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium, anodised
- Suitable for price-computing scales, bench scales, etc.
- Maximum platform size 100–300 kg: 400×400 mm
- Maximum platform size 400–500 kg: 450×450 mm
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 or C5 on request

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CP 100-3P2	100	75,–
CP 150-3P2	150	75,–
CP 200-3P2	200	75,–
CP 300-3P2	300	75,–
CP 400-3P2	400	75,–
CP 500-3P2	500	75,–

CP P7

Single-point load cells of Stainless steel

STANDARD: IP 67 · 1 DAY

OPTION: DAkkS +3 DAYS · ISO +4 DAYS

- Accuracy in accordance with OIML R60 C3
- RoHS compliant
- Dust and spray protection to IP67 (in accordance with EN 60529)
- Stainless steel
- Application example: Weight as well as compressive force measurements under harsh environmental conditions
- Suitable for bench scales, price-computing scales
- Maximum platform size 400×400 mm
- 6-wire connection
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 on request

Model KERN	Nominal load kg	Price excl. of VAT ex works €
CP 30-3P7	30	250,-
CP 50-3P7	50	250,-
CP 75-3P7	75	250,-
CP 100-3P7	100	250,-
CP 150-3P7	150	250,-

CP P9

Single-point load cells of stainless steel

STANDARD: IP 68 · IP 69K · M · 1 DAY

OPTION: DAkkS +3 DAYS · ISO +4 DAYS

- Accuracy in accordance with OIML R60 C3
- RoHS compliant
- Dust and spray protection to IP68/IP69K (in accordance with EN 60529), welded to create a hermetic seal
- Stainless steel
- Area of application: Weight measurement as well as compressive force in harsh environments
- Suitable for platform scales, checkweighers
- Maximum platform size 10–50 kg: 400×400 mm
- Maximum platform size 100–500 kg: 800×800 mm
- 4-wire connection (10–50 kg)
- 6-wire connection (100–500 kg)
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 or C5 on request

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CP 10-3P9	10	350,–
CP 20-3P9	20	350,–
CP 50-3P9	50	350,–
CP 100-3P9	100	530,–
CP 200-3P9	200	530,–
CP 300-3P9	300	530,–
CP 400-3P9	400	530,–
CP 500-3P9	500	530,–

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Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu


CK P1


CK P2


CK P3


CK P4


CK Y1

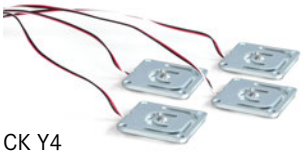
CK Y4

Fig. shows optional accessory, mounting kit
1 SAUTER CE P4136

CK P1-4

Miniature load cells made of aluminium

STANDARD: IP 65 · 1 DAY
OPTION: DAkkS +3 DAYS · ISO +4 DAYS

- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium
- High level of accuracy
- Suitable for small scales and kitchen scales and force-measuring devices
- 4-wire connection

Model SAUTER	Nominal load kg	Compre-hensive Error	Price excl. of VAT ex works €
CK 600-0P1	0,6	0,03 %	30,–
CK 1-0P1	1	0,03 %	30,–
CK 2-0P1	2	0,03 %	30,–
CK 3-0P1	3	0,03 %	30,–
CK 5-0P1	5	0,03 %	30,–
CK 6-0P1	6	0,03 %	30,–
CK 300-0P2	0,3	0,03 %	45,–
CK 600-0P2	0,6	0,03 %	45,–
CK 1000-0P3	1	0,1 %	25,–
CK 100-0P4	0,1	0,05 %	40,–
CK 120-0P4	0,12	0,05 %	40,–
CK 300-0P4	0,3	0,05 %	40,–
CK 500-0P4	0,5	0,05 %	40,–

CK Y1 · Y4

Flat miniature alloy steel load cells

STANDARD: IP 65 (CK Y4) · IP 66 (CK Y1) · 1 DAY

- Accuracy class in accordance with OIML C1
- RoHS compliant
- High precision (comprehensive Error 0,05 % F.S.)
- Very low design
- Suitable for e.g. personal scales, kitchen scales, post scales or other scales with lowest instasllation height

CK Y1:
- Protection against dust and water splashes IP66
- Scope of delivery: 1 piece
- Full-bridge circuit (Junction box required for connecting several measuring cells)

CK Y4:
- Protection against dust and water splashes IP65
- Scope of delivery: 1 set (4 pieces)
- Quarter-bridge circuit: 4 load cells are connected to a full-bridge
- No junction box required
- Corner adjustment not possible

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CK 10-Y1	10	15,–
CK 30-Y1	30	15,–
CK 10-Y4	10	20,–
CK 30-Y4	30	20,–
CK 50-Y4	50	22,–

CD P1

Load cells made of stainless steel

STANDARD: IP 68 · M · 1 DAY
OPTION: ISO +4 DAYS *

- Accuracy in accordance with OIML R60 C3
- RoHS compliant
- Dust and spray protection to IP68 (in accordance with EN 60529), hermetically encapsulated
- Stainless steel
- Area of application: Weight measurement as well as compressive force
- Suitable for vehicle scales, weigh hoppers, vehicle testing equipment, test benches
- Note: EX version or accuracy class C4 on request
- Nominal sensitivity: 2 mV/V

Accessories CD P1:

- Pressure piece, steel, rustproof, suitable for CD 10-3P1, CD 20-3P1, SAUTER CE P10330, **€ 90,–**
- Pressure piece, steel, rustproof, suitable for CD 40-3P1, CD 50-3P1, SAUTER CE P10350, **€ 85,–**
- 1 Mounting kit, steel, rustproof, suitable for CD 10-3P1, CD 20-3P1, SAUTER CE P41430, **€ 660,–**
- Mounting kit, steel, rustproof, suitable for CD 40-3P1, CD 50-3P1, SAUTER CE P14150, **€ 670,–**

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CD 10-3P1	10 t/100 kN	420,–
CD 20-3P1	20 t/200 kN	420,–
CD 40-3P1	40 t/400 kN	420,–
CD 50-3P1	50 t/500 kN	420,–

* up to max. 25 t / 250 kN

Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu

Fig. shows accessories, load corner 1 SAUTER CE Q42901, for further accessories please visit our online shop

CR Q1

Load cells made of stainless steel

STANDARD: IP 68, 1 DAY
OPTION: ISO +4 DAYS **

- Accuracy in accordance with OIML R60 C1
- RoHS compliant
- Dust and spray protection to IP68 (in accordance with EN 60529), hermetically encapsulated
- Stainless steel
- Area of application: Weight measurement as well as compressive force
- Suitable for vehicle scales, weigh hoppers, vehicle testing equipment, test benches
- Nominal sensitivity: 2 mV/V

Accessories CR Q1:

- 1 Load corner, steel, galvanised, suitable for CR Q1 with nominal load ≤ 10 t, SAUTER CE Q42901, **€ 245,–**
- Load corner, steel, galvanised, suitable for CR Q1 with nominal load ≥ 20 t, SAUTER CE Q42902, **€ 390,–**
- Load corner, steel, rustproof, suitable for CR Q1 with nominal load ≤ 10 t, SAUTER CE RQ42901, **€ 440,–**
- Load corner, steel, rustproof, suitable for CR Q1 with nominal load ≥ 20 t, SAUTER CE RQ42902, **€ 750,–**

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CR 2500-1Q1	2,5 t/25 kN	**265,–**
CR 5000-1Q1	5 t/50 kN	**265,–**
CR 10000-1Q1	10 t/100 kN	**265,–**
CR 20000-1Q1	20 t/200 kN	**520,–**
CR 30000-1Q1	30 t/300 kN	**520,–**

** up to max. 25 t / 250 kN

CR P1

Load cells made of stainless steel

STANDARD: IP 68, 1 DAY
OPTION: DAkkS +3 DAYS, ISO +4 DAYS *

- Accuracy in accordance with OIML R60 C3
- RoHS compliant
- Dust and spray protection to IP68 (in accordance with EN 60529), hermetically encapsulated
- Stainless steel
- Area of application: Weight measurement as well as compressive force
- Suitable for truck scales, suspended scales, silo scales and other diverse scales, test benches, etc.
- Nominal sensitivity: 1–2 mV/V, depending on nominal load

Accessories CR P1:

- Load corner for CR 1000-3P1, CR 250-3P1, CR 500-3P1 Steel, incl. pressure piece, SAUTER CE P244011, **€ 550,–**
- Pressure piece for CR 1000-3P1, CR 250-3P1, CR 500-3P1 steel, SAUTER CE P244012, **€ 105,–**
- Load corner for CR 2000-3P1 steel, rustproof, incl. pressure piece, SAUTER CE P244021, **€ 660,–**
- Pressure piece for CR 2000-3P1 steel, rustproof SAUTER CE P244022, **€ 115,–**

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CR 60-3P1	60 kg/0,6 kN	**860,–**
CR 130-3P1	130 kg/1,3 kN	**900,–**
CR 250-3P1	250 kg/2,5 kN	**830,–**
CR 500-3P1	500 kg/5 kN	**790,–**
CR 1000-3P1	1000 kg/10 kN	**790,–**
CR 2000-3P1	2000 kg/20 kN	**790,–**

* up to max. 500 kg / 5 kN

CR Y1

Load cells made of alloyed steel

STANDARD: IP 68, 1 DAY
OPTION: DAkkS +3 DAYS, ISO +4 DAYS *

- High precision (comprehensive Error 0,05 % F.S.)
- Accuracy in accordance with OIML R60 C1
- RoHS compliant
- Dust and spray protection to IP68 (in accordance with EN 60529), hermetically encapsulated
- Stainless steel
- Area of application: for weight, tensile and compressive force measurement
- Suitable for Weight measurement as well as force and force test benches
- Force transmission via pressure piece or threaded hole
- Nominal sensitivity: 2 mV/V
- Pressure piece included with delivery
- Thread for pressure piece or other force application: up to 5000 kg M16×1,5, from 10000 kg M32×1,5

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CR 500-1Y1	0,5 t/5 kN	**240,–**
CR 1000-1Y1	1 t/10 kN	**240,–**
CR 5000-1Y1	5 t/50 kN	**240,–**
CR 10000-1Y1	10 t/100 kN	**360,–**
CR 20000-1Y1	20 t/200 kN	**360,–**

* up to max. 500 kg / 5 kN

Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu

Fig. shows accessories, base plate 1 SAUTER CE Q30903 and bearings 2 SAUTER CE Q30904, for further accessories please visit our online shop

Fig. shows optional accessory load corner 3 SAUTER CE P4022

CB Q1 · CB Q2

Bending beam and shear beam measuring cells made from stainless steel

STANDARD: IP 68 · IP 69K · 1 DAY

OPTION: DAkkS +3 DAYS · ISO +4 DAYS *

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP68/IP69K (in accordance with EN 60529), welded to create a hermetic seal
- Stainless steel
- Area of application: Weight measurement as well as compressive force in harsh environments
- Suitable for platform scales, weigh hoppers, floor scales and other weighing devices
- 4-wire connection
- Nominal sensitivity: 2 mV/V
- Note: Accuracy class OIML R60 C6 or EX version on request

CB P1

Measuring cells made from stainless steel

STANDARD: IP 67 · M · 1 DAY

OPTION: DAkkS +3 DAYS · ISO +4 DAYS

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP67 (in accordance with EN 60529), hermetically encapsulated
- Nickel-plated steel
- Area of application: Weight measurement as well as compressive force in harsh environments
- Suitable for platform scales, silo scales, bed scales and other diverse scales
- 4-wire connection
- Nominal sensitivity: 3 mV/V

Accessories CB Q1 · CB Q2:

- Traction device, steel, galvanised, suitable for CB Q1, SAUTER CE Q30901, **€ 75,–**
- Traction device, steel, rustproof, suitable for CB Q2, SAUTER CE Q34905, **€ 80,–**
- 1 Base plate, steel, galvanised, suitable for CB Q1, SAUTER CE Q30903, **€ 90,–**
- Base plate, steel, rustproof, suitable for CB Q1, SAUTER CE RQ30903, **€ 175,–**
- Base plate, steel, rustproof, suitable for CB Q2, SAUTER CE Q34903, **€ 85,–**
- 2 Bearing, steel, rustproof, suitable for CB Q1 (nominal load 5 kg–50 kg), SAUTER CE Q30904, **€ 110,–**
- Bearing, steel, rustproof, suitable for CB Q1 (nominal load 75 kg–300 kg), SAUTER CE Q30905, **€ 110,–**
- Bearing, steel, rustproof, suitable for CB 500-3Q1, SAUTER CE Q30906, **€ 190,–**
- Bearing, steel, rustproof, suitable for CB 750-3Q2, CB 1000-3Q2, CB 1500-3Q2, SAUTER CE Q34906, **€ 175,–**
- Load corner, steel, galvanised, suitable for CB Q1, SAUTER CE Q30907, **€ 205,–**
- Load corner, steel, rustproof, suitable for CB Q1, SAUTER CE RQ30907, **€ 290,–**
- Adjustable foot, steel, rustproof, suitable for SAUTER CE Q34901, **€ 65,–**

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CB 5-3Q1	5	**210,–**
CB 10-3Q1	10	**210,–**
CB 20-3Q1	20	**210,–**
CB 30-3Q1	30	**210,–**
CB 50-3Q1	50	**210,–**
CB 75-3Q1	75	**210,–**
CB 100-3Q1	100	**210,–**
CB 150-3Q1	150	**210,–**
CB 200-3Q1	200	**210,–**
CB 250-3Q1	250	**210,–**
CB 300-3Q1	300	**210,–**
CB 500-3Q1	500	**210,–**
CB 750-3Q2	750	**220,–**
CB 1000-3Q2	1000	**220,–**
CB 1500-3Q2	1500	**220,–**

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CB 100-3P1	100	**105,–**
CB 250-3P1	250	**105,–**

Accessories CB P1:

- Adjustable foot, steel, nickel-plated, load base M12 for CT 500-3P1, CT 1000-3P1 and CT 1500-3P1, SAUTER CE P2012, **€ 25,–**
- 3 Load corner, steel, nickel-plated for CT 500-3P1, CT 1000-3P1 and CT 1500-3P1, SAUTER CE P4022, **€ 180,–**
- Spacer plates for bending beam CB P1 made from steel, SAUTER CE P3012, **€ 8,–**

* up to max. 500 kg

Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu

Fig. shows optional accessory load corner 1 SAUTER CE RQ35903

Fig. shows optional accessory load corner 2 SAUTER CE P4022

CT Q1

Shear beam made from stainless steel

STANDARD: IP 68 · IP 69K · 1 DAY

OPTION: DAkkS +3 DAYS · ISO +4 DAYS *

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP68/IP69K (in accordance with EN 60529), welded to create a hermetic seal
- Stainless steel
- Area of application: Weight measurement as well as compressive force in harsh environments
- Suitable for platform scales, weigh hoppers, flush-mounted floor scales and other weighing devices
- 6-wire connection
- Nominal sensitivity: 2 mV/V
- Note: EX version on request

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CT 300-3Q1	300	**205,–**
CT 500-3Q1	500	**205,–**
CT 750-3Q1	750	**205,–**
CT 1000-3Q1	1000	**205,–**
CT 1500-3Q1	1500	**205,–**
CT 2000-3Q1	2000	**205,–**
CT 3000-3Q1	3000	**400,–**
CT 5000-3Q1	5000	**400,–**
CT 7500-3Q1	7500	**530,–**
CT 10000-3Q1	10000	**530,–**

* up to max. 500 kg

CT P1 · CT P2

Measuring cells made from stainless steel

STANDARD: IP 67 · M · 1 DAY

OPTION: DAkkS +3 DAYS · ISO +4 DAYS *

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP67 (in accordance with EN 60529), welded to create a hermetic seal
- Nickel-plated steel
- Area of application: Weight measurement as well as compressive force in harsh environments
- Suitable for platform scales, weigh hoppers, flush-mounted floor scales and other weighing devices
- 4-wire connection
- Nominal sensitivity: 3 mV/V
- Note: EX version, 6-wire connection and accuracy class C4 or C5 on request
- **CT P2:** Delivery with calibrated characteristic value, if several cells are ordered, this means significantly less effort when aligning the corners of a platform

Model SAUTER	Nominal load kg	Price excl. of VAT ex works €
CT 500-3P1	500	**90,–**
CT 1000-3P1	1000	**90,–**
CT 1500-3P1	1500	**90,–**
CT 2500-3P1	2500	**110,–**
CT 3000-3P1	3000	**110,–**
CT 5000-3P1	5000	**110,–**
CT 10000-3P1	10000	**160,–**
CT 500-3P2	500	**95,–**
CT 1000-3P2	1000	**95,–**
CT 3000-3P2	3000	**115,–**
CT 5000-3P2	5000	**115,–**
CT 10000-3P2	10000	**165,–**

* up to max. 500 kg

Accessories CT Q1:

- Base plate, steel, rustproof, suitable for CT Q1, SAUTER CE RQ35911, **€ 185,–**
- Base plate, steel, rustproof, suitable for CT 3000-3Q1, CT 5000-3Q1, SAUTER CE RQ35912, **€ 185,–**
- Base plate, steel, rustproof, suitable for CT 7500-3Q1, CT 10000-3Q1, SAUTER CE RQ35919, **€ 790,–**
- Bearing, steel, rustproof, suitable for CT Q1, SAUTER CE RQ35909, **€ 150,–**
- Bearing, steel, rustproof, suitable for CT 3000-3Q1, CT 5000-3Q1, SAUTER CE RQ35910, **€ 295,–**
- Bearing, steel, rustproof, suitable for CT 7500-3Q1, CT 10000-3Q1, SAUTER CE RQ35918, **€ 360,–**
- Load corner, steel, rustproof, suitable for CT Q1, SAUTER CE RQ35902, **€ 390,–**
- 1 Load corner, steel, rustproof, suitable for CT 3000-3Q1, CT 5000-3Q1, SAUTER CE RQ35903, **€ 570,–**

Accessories CT P1 · CT P2:

- Load corner, steel, rustproof, suitable for CT 10000-3P1, CT 10000-3P2, SAUTER CE P40210, **€ 470,–**
- 2 Load corner, steel, nickel-plated, suitable for CT 500-3P1, CT 1000-3P1, CT 1500-3P1, SAUTER CE P4022, **€ 180,–**
- Load corner, steel, nickel-plated, suitable for CT 2500-3P1, CT 3000-3P1, CT 5000-3P1, SAUTER CE P4025, **€ 240,–**
- Adjustable foot, steel, rustproof, suitable for CT 500-3P1, CT 1000-3P1, CT 1500-3P1, SAUTER CE P2012, **€ 25,–**
- Adjustable foot, steel, rustproof, suitable for CT 2500-3P1, CT 3000-3P1, CT 5000-3P1, SAUTER CE P2018, **€ 35,–**
- Adjustable foot, steel, rustproof, suitable for CT 10000-3P1, SAUTER CE P2024, **€ 105,–**
- Spacer plate for CT 500-3P1, CT 500-3P2, CT 1000-3P1, CT 1000-3P2 and CT 1500-3P1, SAUTER CE P3012, **€ 8,–**
- Spacer plate for CT 2500-3P1, CT 3000-3P1, CT 3000-3P2, CT 5000-3P1 and CT 5000-3P2 SAUTER CE P3015, **€ 8,–**
- Spacer plate for CT 10000-3P1 and CT 10000-3P2 SAUTER CE P30110, **€ 25,–**

Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu

CS P2 0,5–7,5 t

Fig. shows optional accessory SAUTER CE R20, for further accessories please visit our online shop

Fig. shows optional accessory traction device SAUTER CE Q12, for further accessories please visit our online shop

CS P2 50–250 kg

CS P1

4-wire “S” measuring cells made of nickel-plated steel for force and mass measurement

STANDARD: IP 67, 1 DAY — OPTION: DAkkS +3 DAYS *, ISO +4 DAYS **

- Accuracy in accordance with OIML R60 C3
- RoHS compliant
- Dust and spray protection to IP67 (in accordance with EN 60529), welded to create a hermetic seal
- Nickel-plated steel
- Scope of application: for tensile and compressive force measurement
- Suitable for handing scales, weigh hoppers and other weighing devices as well as force measurement devices and test benches
- 4-wire connection***
- Note: EX version and accuracy class C4 on request
- Nominal sensitivity: 2 mV/V

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CS 25-3P1	25 kg/250 N	185,–
CS 50-3P1	50 kg/500 N	185,–
CS 100-3P1	100 kg/1 kN	185,–
CS 150-3P1	150 kg/1,5 kN	185,–
CS 250-3P1	250 kg/2,5 kN	185,–
CS 500-3P1	500 kg/5 kN	185,–
CS 600-3P1	600 kg/6 kN	185,–
CS 750-3P1	750 kg/7,5 kN	185,–
CS 1000-3P1	1 t/10 kN	210,–
CS 1500-3P1	1.5 t/15 kN	210,–
CS 2000-3P1	2 t/20 kN	240,–
CS 2500-3P1	2.5 t/25 kN	240,–
CS 5000-3P1	5 t/50 kN	240,–
CS 7500-3P1	7.5 t/75 kN	485,–
CS 10000-3P1	10 t/100 kN	490,–
CS 15000-3P1	15 t/150 kN	640,–
CS 20000-3P1	20 t/200 kN	700,–
CS 30000-3P1	30 t/300 kN	1800,–

* up to max. 500 kg/5 kN,
** up to max. 25 t/250 kN

CS Q1

6-wire “S” measuring cells made of nickel-plated steel for force and mass measurement

STANDARD: IP 67, 1 DAY — OPTION: DAkkS +3 DAYS *, ISO +4 DAYS **

- Accuracy in accordance with OIML R60 C3
- RoHS compliant
- Dust and spray protection to IP67 (in accordance with EN 60529), hermetically encapsulated
- Nickel-plated steel
- Scope of application: for tensile and compressive force measurement
- Suitable for handing scales, weigh hoppers and other weighing devices as well as force measurement devices and test benches
- 6-wire connection***
- Nominal sensitivity: 2 mV/V

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CS 50-3Q1	50 kg/500 N	200,–
CS 100-3Q1	100 kg/1 kN	200,–
CS 150-3Q1	150 kg/1,5 kN	200,–
CS 200-3Q1	200 kg/2 kN	200,–
CS 300-3Q1	300 kg/3 kN	200,–
CS 500-3Q1	500 kg/5 kN	200,–
CS 750-3Q1	750 kg/7,5 kN	200,–
CS 1000-3Q1	1 t/10 kN	200,–
CS 1500-3Q1	1.5 t/15 kN	230,–
CS 2000-3Q1	2 t/20 kN	230,–
CS 3000-3Q1	3 t/30 kN	340,–
CS 5000-3Q1	5 t/50 kN	340,–
CS 6000-3Q1	6 t/60 kN	340,–

* up to max. 500 kg/5 kN,
** up to max. 12 t/120 kN

CS P2

“S” measuring cells/load cells made of stainless steel

STANDARD: IP 68, 1 DAY — OPTION: DAkkS +3 DAYS *, ISO +4 DAYS *

- Accuracy in accordance with OIML C3
- RoHS compliant
- Dust and spray protection to IP68
- Stainless steel
- Scope of application: Weight measurement as well as force
- Suitable for handing scales, silo scales, force test benches and other diverse scales
- 4-wire connection***
- Nominal sensitivity: 2 mV/V

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CS 50-3P2	50 kg/500 N	400,–
CS 100-3P2	100 kg/1 kN	420,–
CS 250-3P2	250 kg/2,5 kN	400,–
CS 500-3P2	500 kg/5 kN	310,–
CS 1000-3P2	1 t /10 kN	310,–
CS 2000-3P2	2 t/20 kN	310,–
CS 5000-3P2	5 t/50 kN	375,–
CS 7500-3P2	7.5 t/75 kN	375,–

* up to max. 500 kg/5 kN

*** With 6-wire measuring circuits, the cable can be shortened without affecting the temperature compensation and the actual characteristic value. For 4-wire measuring circuits the cable length should not be changed

Tip: Further details and technical data sheet as well as extensive accessories can be found at www.sauter.eu

NEW

CS Y1

CO Y1

CO Y2/CO Y3

CO Y4

CS Y1

Miniature “S” measuring cells/load cells made of stainless steel

STANDARD: IP 65 · 1 DAY
OPTION: ISO +4 DAYS

- High precision (comprehensive Error 0,05 % F.S.)
- RoHS compliant
- Dust and spray protection to IP65
- Stainless steel
- Scope of application: for tensile and compressive force measurement, Weight measurement as well as force
- Suitable for force test benches, handing scales, silo scales and other diverse scales
- Nominal sensitivity: 1,3 – 2 mV/V, depending on nominal load

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CS 1-Y1	1 kg/10 N	290,–
CS 2-Y1	2 kg/20 N	290,–
CS 5-Y1	5 kg/50 N	290,–
CS 10-Y1	10 kg/100 N	290,–
CS 20-Y1	20 kg/200 N	290,–

CO Y1 – Y4

Miniature button-type measuring cells made of stainless steel

STANDARD: IP 65 (CO Y1, CO Y2) · IP 66 (CO Y3) · IP 67 (CO Y4) · 1 DAY
OPTION: DAkkS +3 DAYS · ISO +4 DAYS **

CO Y1/CO Y4:

- RoHS compliant
- Dust and spray protection to IP65/IP67
- Scope of application: compressive force applications
- Suitable for Weight measurement as well as force and force test benches
- Nominal sensitivity: 1.0 – 1.5 mV/V, depending on nominal load

CO Y2/Y3:

- RoHS compliant
- Dust and spray protection to IP65/IP66
- Scope of application: for tensile and compressive force measurement
- Suitable for Weight measurement as well as force and force test benches
- Nominal sensitivity: 1,5 – 2 mV/V, depending on nominal load

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CO 10-Y1	10 kg/100 N	155,–
CO 20-Y1	20 kg/200 N	155,–
CO 50-Y1	50 kg/500 N	155,–
CO 100-Y1	100 kg/1 kN	155,–
CO 200-Y1	200 kg/2 kN	155,–
CO 500-Y1	500 kg/5 kN	180,–
CO 1000-Y1	1000 kg/10 kN	180,–
CO 2000-Y1	2000 kg/20 kN	205,–
CO 10-Y2	10 kg/100 N	220,–
CO 20-Y2	20 kg/200 N	220,–
CO 50-Y2	50 kg/500 N	220,–
CO 100-Y2	100 kg/1 kN	275,–
CO 200-Y2	200 kg/2 kN	275,–
CO 500-Y2	500 kg/5 kN	275,–
CO 1000-Y2	1000 kg/10 kN	275,–
CO 2000-Y2	2000 kg/20 kN	300,–
CO 5-Y3	5 kg/50 N	330,–
CO 10-Y3	10 kg/100 N	330,–
CO 5-Y4	5 kg/50 N	205,–
CO 10-Y4	10 kg/100 N	205,–

** up to 500 kg/5 kN

CO Y5

Tension and compression load cells made of stainless steel

STANDARD: IP 66 · 1 DAY
OPTION: DAkkS +3 DAYS · ISO +4 DAYS (not CO 0.5-Y5)

- Accuracy in accordance with OIML R60 G1
- CE and RoHS compliant
- Dust and spray protection to IP66 (in accodance with EN60529)
- Stainless steel
- Very low profile
- Suitable for test benches, force gauges, automation systems, etc.
- 4-wire connection
- Nominal sensitivity:
  CO 0.5-Y5, CO 1-Y5: 1 mV/V
  CO 5-Y5, CO 10-Y5: 2 mV/V

Model SAUTER	Nominal load	Price excl. of VAT ex works €
CO 0.5-Y5	0,5kg/5N	320,-
CO 1-Y5	1kg/10N	320,-
CO 5-Y5	5kg/50N	320,-
CO 10-Y5	10kg/100N	320,-

CJ P4

CJ X467

CJ X468

CJ P6

CJ P4PG

CJ P

Junctionbox for connecting several measuring cells to one evaluation unit

STANDARD

IP 65 · 1 DAY

- Prepared for 4-wire and 6-wire measuring cells
- Models available for 2, 4, 6 or 8 load cells
- Robust aluminium die-cast housing
- Protection against dust and spray

CJ X

Junctionbox for connecting several measuring cells to one evaluation unit

STANDARD

IP 67 (CJ X467) · IP 68 (CJ X468) · 1 DAY

- Prepared for 4-wire and 6-wire measuring cells
- Models available for 4 load cells

CJ X467:
- Robust stainless steel housing with protection against dust and water splashes IP67

CJ X468:
- Robust aluminium die-cast housing with protection against dust and water splashes IP68

Model **SAUTER**	Number of connection options	**Price** excl. of VAT ex works **€**
CJ P2	2	**80,–**
CJ P4	4	**80,–**
CJ P4PG	4	**90,–**
CJ P6	6	**100,–**
CJ P8	8	**100,–**

Model **SAUTER**	Number of connection options	**Price** excl. of VAT ex works **€**
CJ X467	4	**190,–**
CJ X468	4	**110,–**

Accredited calibration with DAkkS calibration certificate for force gauges

The KERN calibration laboratory is at your side when you need to calibrate DAkkS reliably.

From the transducer to the full measuring chain, we are happy to take care of traceable calibration of your test equipment for you. Our accreditation includes the calibration of tensile and pressure force up to 5 kN according to the standards DIN EN ISO 376 and DKD-R 3-3, each with the Newton (N) display unit for a complete measuring chain (situation A) or voltage ratio/transmission coefficient (mV/V, situation B). Below you will find a comparison of which standard meets which criteria:

Comparison of DIN EN ISO 376 and DKD-R 3-3		
	ISO 376	**DKD-R 3-3**
Standardization	ISO standard (internationally standardized)	Standard of the DKD (Germany)
Measuring equipment	Force transducers and complete measuring chains	Force transducers and complete measuring chains
Area of application	Specifically force gauges for the testing of testing equipment	General force gauges
Number of power stages	8	5
Classification/Assessment	Classification in classes 00; 0,5; 1 and 2	None in standard
Test sequences	Fixed procedure	Processes A, B, C and D possible. Standard is A; B, C and D are reduced processes, corresponding previous knowledge is necessary
Summary	Higher-quality calibration, as 8 force levels are calibrated	High-quality calibration, reduced sequences with less effort possible

Prices for DAkkS calibration of force gauges and force transducers

Situation A: Force transducer (voltage ratio, in mV/V)*1,2					
ISO 376 (8 stages)			**DKD-R 3-3 (5 stages, sequence A)**		
KERN	**Measuring range**	**Price €** ex works excl. of VAT	**KERN**	**Measuring range**	**Price €** ex works excl. of VAT
Tensile force:					
963-161IV (R)	≤ 500 N	**199,–**	963-161V (R)	≤ 500 N	**185,–**
963-162IV (R)	≤ 2 kN	**235,–**	963-162V (R)	≤ 2 kN	**220,–**
963-163IV (R)	≤ 5 kN	**310,–**	963-163V (R)	≤ 5 kN	**285,–**
Compression force:					
963-261IV (R)	≤ 500 N	**199,–**	963-261V (R)	≤ 500 N	**185,–**
963-262IV (R)	≤ 2 kN	**235,–**	963-262V (R)	≤ 2 kN	**220,–**
963-263IV (R)	≤ 5 kN	**310,–**	963-263V (R)	≤ 5 kN	**285,–**
Tensile and Compression force:					
963-361IV (R)	≤ 500 N	**330,–**	963-361V (R)	≤ 500 N	**310,–**
963-362IV (R)	≤ 2 kN	**400,–**	963-362V (R)	≤ 2 kN	**370,–**
963-363IV (R)	≤ 5 kN	**530,–**	963-363V (R)	≤ 5 kN	**485,–**

Situation B: Complete force gauge (in N)*2					
ISO 376 (8 stages)			**DKD-R 3-3 (5 stages, sequence A)**		
KERN	**Measuring range**	**Price €** ex works excl. of VAT	**KERN**	**Measuring range**	**Price €** ex works excl. of VAT
Tensile force:					
963-161I (R)	≤ 500 N	**164,–**	963-161 (R)	≤ 500 N	**148,–**
963-162I (R)	≤ 2 kN	**200,–**	963-162 (R)	≤ 2 kN	**182,–**
963-163I (R)	≤ 5 kN	**275,–**	963-163 (R)	≤ 5 kN	**250,–**
Compression force:					
963-261I (R)	≤ 500 N	**164,–**	963-261 (R)	≤ 500 N	**148,–**
963-262I (R)	≤ 2 kN	**200,–**	963-262 (R)	≤ 2 kN	**182,–**
963-263I (R)	≤ 5 kN	**275,–**	963-263 (R)	≤ 5 kN	**250,–**
Tensile and Compression force:					
963-361I (R)	≤ 500 N	**295,–**	963-361 (R)	≤ 500 N	**270,–**
963-362I (R)	≤ 2 kN	**365,–**	963-362 (R)	≤ 2 kN	**330,–**
963-363I (R)	≤ 5 kN	**490,–**	963-363 (R)	≤ 5 kN	**445,–**

(R): Recalibration
For each force gauge without interface or from other manufacturers we charge a surcharge of € 10,– for the additional effort.
*1 Compatibility with our amplifiers required
*2 Installation in our measuring equipment required

Factory calibration for force

Situation A: Force transducer (voltage ratio, in mV/V)*1,2			Situation B: Complete force gauge (in N)*2		
KERN	**Measuring range**	**Price €** ex works excl. of VAT	**KERN**	**Measuring range**	**Price €** ex works excl. of VAT
Tensile force:					
961-161V (R)	≤ 500 N	**185,-**	961-161 (R)	≤ 500 N	**148,-**
961-162V (R)	≤ 2 kN	**220,-**	961-162 (R)	≤ 2 kN	**182,-**
961-163V (R)	≤ 5 kN	**285,-**	961-163 (R)	≤ 5 kN	**250,-**
961-164V (R)	≤ 20 kN	**365,-**	961-164 (R)	≤ 20 kN	**325,-**
961-165V (R)	≤ 50 kN	**365,-**	961-165 (R)	≤ 50 kN	**325,-**
961-166V (R)	≤ 120 kN	**395,-**	961-166 (R)	≤ 120 kN	**360,-**
961-167V (R)	≤ 250 kN	**395,-**	961-167 (R)	≤ 250 kN	**395,-**
Compression force:					
961-261V (R)	≤ 500 N	**185,-**	961-261 (R)	≤ 500 N	**148,-**
961-262V (R)	≤ 2 kN	**220,-**	961-262 (R)	≤ 2 kN	**182,-**
961-263V (R)	≤ 5 kN	**285,-**	961-263 (R)	≤ 5 kN	**250,-**
961-264V (R)	≤ 20 kN	**365,-**	961-264 (R)	≤ 20 kN	**325,-**
961-265V (R)	≤ 50 kN	**365,-**	961-265 (R)	≤ 50 kN	**325,-**
961-266V (R)	≤ 120 kN	**395,-**	961-266 (R)	≤ 120 kN	**360,-**
961-267V (R)	≤ 250 kN	**395,-**	961-267 (R)	≤ 250 kN	**395,-**
Tensile and Compression force:					
961-361V (R)	≤ 500 N	**310,-**	961-361 (R)	≤ 500 N	**270,-**
961-362V (R)	≤ 2 kN	**370,-**	961-362 (R)	≤ 2 kN	**330,-**
961-363V (R)	≤ 5 kN	**485,-**	961-363 (R)	≤ 5 kN	**445,-**
961-364V (R)	≤ 20 kN	**520,-**	961-364 (R)	≤ 20 kN	**485,-**
961-365V (R)	≤ 50 kN	**520,-**	961-365 (R)	≤ 50 kN	**485,-**
961-366V (R)	≤ 120 kN	**570,-**	961-366 (R)	≤ 120 kN	**530,-**
961-367V (R)	≤ 250 kN	**570,-**	961-367 (R)	≤ 250 kN	**570,-**

(R): Recalibration
For each force gauge without interface or from other manufacturers we charge a surcharge of € 10,- for the additional effort.
*1 Compatibility with our amplifiers required
*2 Installation in our measuring equipment required

Factory calibration certificates

As DAkkS calibration certificates cannot be offered for all measuring devices or measurement sizes, or where it is not customary, we then offer factory calibration certificates. These calibration certificates meet international standards and are particularly suitable as proof of exacting calibration in the monitoring of your checking equipment, for example:

- Mechanical balances (spring balances, etc.)
- Force-measuring devices up to 250 kN
- Measuring devices for layer thickness 0 µm – 2000 µm
- Hardness testing devices in accordance with Leeb tests
- Ultrasonic material thickness testing device 25 mm – 300 mm

We carry out calibrations independent of brand. In order to avoid any unnecessary delays when processing your order, please send us the technical documents and necessary accessories with the checking device. Calibration time 4 working days.

For up-to-date information on test services for further measuring sizes please visit our website www.kern-lab.com

Factory calibration certificates

KERN	Physical unit	Measuring range	Price excl. of VAT ex works €
Factory calibration			
961-102K	Force (for digital dynamometer KERN MAP)	≤ 130 kg	**132,–**
961-110	Coating thickness	≤ 2000 µm F or N	**132,–**
961-112	Coating thickness	≤ 2000 µm FN	**187,–**
961-113	Wall thickness (ultra sound)	≤ 300 mm (in stainless steel)	**132,–**
961-114	Wall thickness (Test blocks)	≤ 300 mm	**165,–**
961-170	Hardness comparison plate (Shore)	For sets up to 7 plates	**105,–**
961-131	Hardness tester (Leeb)	400 – 800 HLD	**132,–**
961-132	Hardness comparison plate (Leeb)	Hardness comparison plate (for Leeb durometer)	**132,–**
961-270	Hardness (UCI)	200 – 800 HV	**285,–**
961-150	Length	≤ 300 mm	**132,–**
961-190	Light	≤ 200000 lx	**182,–**
961-100	Mass (Mechanical balances/ spring balances)	≤ 5 kg	**79,–**
961-101	Mass (Mechanical balances/ spring balances)	> 5 – 50 kg	**97,–**
961-102	Mass (Mechanical balances/ spring balances)	> 50 – 350 kg	**116,–**
961-103	Mass (Mechanical balances/ spring balances)	> 350 – 1500 kg	**182,–**
961-120	Torque wrench test devices	1 Nm – 200 Nm	**187,-**
Additional services			
962-116	Express service with 48 hour delivery		**50,–**/ instrument