

PROFESSIONAL MEASURING



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HARDNESS TESTING OF METALS (LEEB)

KERN Pictograms

	Adjusting program (CAL): For quick setting of the instrument's accuracy. External adjusting weight required		WLAN data interface: To transfer data from the balance/measuring instrument to a printer, PC or other peripherals		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
	Calibration block: Standard for adjusting or correcting the measuring device		Data interface Infrared: To transfer data from the measuring instrument to a printer, PC or other peripheral devices		ZERO: Resets the display to "0"
	Peak hold function: Capturing a peak value within a measuring process		Control outputs (optocoupler, digital I/O): To connect relays, signal lamps, valves, etc.		Battery operation: Ready for battery operation. The battery type is specified for each device
	Scan mode: Continuous capture and display of measurements		Analogue interface: To connect a suitable peripheral device for analogue processing of the measurements		Rechargeable battery pack: Rechargeable set
	Push and Pull: The measuring device can capture tension and compression forces		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)		Plug-in power supply: 230V/50Hz in standard version for EU. On request GB, AUS or USA version available
	Length measurement: Captures the geometric dimensions of a test object or the movement during a test process		Statistics: Using the saved values, the device calculates statistical data, such as average value, standard deviation etc.		Integrated power supply unit: Integrated, 230V/50Hz in EU. More standards e.g. GB, AUS or USA on request
	Focus function: Increases the measuring accuracy of a device within a defined measuring range		PC Software: To transfer the measurement data from the device to a PC		Motorised drive: The mechanical movement is carried out by an electric motor
	Internal memory: To save measurements in the device memory		Printer: A printer can be connected to the device to print out the measurement data		Motorised drive: The mechanical movement is carried out by a synchronous motor (stepper)
	Data interface RS-232: Bidirectional, for connection of printer and PC		Network interface: For connecting the scale/measuring instrument to an Ethernet network		Fast-Move: The total length of travel can be covered by a single lever movement
	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.		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		Verification possible: Models with type approval for construction of verifiable systems
	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. Saves potential through shorter commissioning times and device integration possible		GLP/ISO record keeping: Of measurement data with date, time and serial number. Only with SAUTER printers		Factory calibration: The time required for factory calibration is specified in the pictogram
	Data interface USB: To connect the measuring instrument to a printer, PC or other peripheral devices		Measuring units: Weighing units can be switched to e.g. non-metric. Please refer to website for more details		Package shipment: The time required for internal shipping preparations is shown in days in the pictogram
	Bluetooth* data interface: To transfer data from the balance/measuring instrument to a printer, PC or other peripherals		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		Pallet shipment: The time required for internal shipping preparations is shown in days in the pictogram

Do you have questions about our products? Our customer consultants will be pleased to assist you:

Product Specialist Measuring Technology



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

Product Specialist Measuring Technology



Helga Biselli
Tel. +49 7433 9933-188
info@sauter.eu

Product Specialist Measuring Technology



Ralf Gutbrod
Tel. +49 7433 9933-306
info@sauter.eu

Product Specialist Measuring Technology



Andreas Vossler
Tel. +49 7433 9933-243
info@sauter.eu

FR, Maghreb, GB, IE, IS, BE, LU



Maren Möwert
Tel. +49 7433 9933-132
Mobil +49 151 46143240
maren.moewert@kern-sohn.com

DK, SE, FI, NO, PL, LV, LT, EE



Mark Hauder
Tel. +49 7433 9933-310
Mobil +49 160 3378426
mark.hauder@kern-sohn.com

GR, CY, BG, HU, RO, SK, CZ, AL, Ex-Yugoslavia, CIS



Ariana Sevcenco
Tel. +49 7433 9933-203
Mobil +49 151 72434692
ariana.sevcenco@kern-sohn.com

North America, Africa, Asia, Middle East, Oceania, TR:



Corinna Matthes
Tel. +49 7433 9933-215
Mobil +49 151 44568364
corinna.matthes@kern-sohn.com

Germany (PC 4, 7), NL



Taras Mikitisin
Tel. +49 7433 9933-143
Mobil +49 171 5590115
mikitisin@kern-sohn.com

Technical Service



Stefan Rothmund
Tel. +49 7433 9933-179
rothmund@kern-sohn.com

DAKKS Calibration Service Balances & Measuring Instruments



Karl-Richard Fuchs
Tel. +49 7433 9933-401
recalibration-instruments@
kern-sohn.com

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Our team of consultants will assist you

from Monday to Friday
from 8:00 am to 5:00 pm



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
- 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
- **2** Delivered in a robust carrying case

Technical data

- Precision: ± 1 % at 800 HLD
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Thinnest measurable 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
- Overall dimensions W×D×H 132×82×31 mm
- Permissible ambient temperature -10 °C/40 °C
- Optional battery operation, 2×1.5 V AA not included in scope of delivery, 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-2.0, € 95,-

- Software BalanceConnection, for flexible recording or transmission of measured values, in particular also to Microsoft® Excel or Access as well as transfer of this data to other Apps and programs, For more details see the internet, Scope of supplies: 1 CD, 1 license, KERN SCD-4.0, € 189,-
- Support rings for bended test objects, SAUTER AHMR 01, € 370,-
- Impact body Type D, net weight approx. 0,05 kg, hardness ≥ 1600 HV, tungsten carbide, Impact ball Ø 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, € 590,-
- External impact sensor Type D, SAUTER AHMR D, € 590,-
- External impact sensor Type D+15. Slim front section for holes, grooves or re-entrant surfaces, SAUTER AHMR D+15, € 590,-
- External impact sensor Type DL, for very narrow surfaces (Ø 4,5 mm), SAUTER AHMR DL, € 1480,-
- External impact sensor Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMR G, € 1480,-
- Connection cable impact sensor, SAUTER HMO-A04, € 115,-
- **3** Test block Type D/DC, Ø 90 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, € 205,- 630 ± 40 HL, SAUTER AHMO D03, € 205,- 530 ± 40 HL, SAUTER AHMO D04, € 205,-
- Factory calibration certificates for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, € 150,-

STANDARD



OPTION



Model	Sensor	Measuring range	Readout	Test block	Price excl. of VAT ex works €	Option Factory calibration certificate	
						KERN	€
SAUTER		[Max] HL	[d] HL	Typ D/DC approx. 800 HL			
HK-D	D	170-960	1	not standard	1420,-	961-131	150,-
HK-DB	D	170-960	1	standard	1520,-	961-131	150,-



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** Hardness test block for calibration included (790 ± 40 HL)
- Internal memory for up to 9 measurement 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: (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
- **3** Delivered in a robust carrying case

Technical data

- 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)
- Overall dimensions W×D×H 150×80×30 mm
- SAUTER HMM: External mains adapter for printer, as standard
- Batteries included, 3×1.5 V AAA, operating time up to 30 h, AUTO-OFF function to preserve the battery
- Net weight approx. 0,25 kg

Accessories

- External impact sensor Type D, as standard, can be reordered, SAUTER AHMO D, **€ 315,-**
- Connection cable, without impact sensor, SAUTER HMM-A02, **€ 45,-**
- **3** Support rings for bended test objects, SAUTER AHMR 01, **€ 370,-**
- **4** Impact body Type D, net weight approx. 0,05 kg, hardness ≥ 1600 HV, tungsten carbide, Impact ball Ø 3 mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,-**
- Test block Type D/DC, Ø 90 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, **€ 205,-** 630 ± 40 HL, SAUTER AHMO D03, **€ 205,-** 530 ± 40 HL, SAUTER AHMO D04, **€ 205,-**
- Paper roll, 1 piece, SAUTER ATU-US11, **€ 17,-**
- Factory calibration certificates for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 150,-**



Model	Sensor	Measuring range	Readout	Price	
				excl. of VAT ex works €	Option Factory calibration certificate €
SAUTER HMM	D	[Max] HL 170-960	[d] HL 1	1180,-	KERN 961-131 150,-
HMM-NP	D	170-960	1	1060,-	961-131 150,-



“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: (B & C), Vickers (HV), Brinell (HB), Leeb (HL)
- Standard block for calibration not included in scope of delivery
- 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 with fixed coupling
- Thinnest measurable material thickness: 3 mm, with coupling on fixed base
- Overall dimensions WxDxH 22x35x147 mm
- Rechargeable battery pack integrated, as standard, operating time up to 16 h without backlight, charging time approx. 3 h
- Mains adapter external, standard
- Net weight approx. 0,20 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-2.0, **€ 95,-**
- Impact body Type D, net weight approx. 0,05 kg, hardness ≥ 1600 HV, tungsten carbide, Impact ball $\varnothing 3$ mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,-**
- **2** Test block Type D/DC, $\varnothing 90$ mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, **€ 205,-** 630 ± 40 HL, SAUTER AHMO D03, **€ 205,-** 530 ± 40 HL, SAUTER AHMO D04, **€ 205,-**
- Factory calibration certificates for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 150,-**

STANDARD



OPTION



Model	Sensor	Measuring range	Readout	Price		Option	
				excl. of VAT ex works €	€	Factory calibration certificate	€
SAUTER		[Max] HL	[d] HL			KERN	
HN-D	D	170-960	1	930,-		961-131	150,-



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 testing devices with an internal sensor, using 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 data memory for 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: (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

- Precision: $\pm 1\%$ 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)
- Overall dimensions WxDxH 24x83x135 mm
- Internal rechargeable battery pack, operating time up to 50 h without backlight, charging time approx. 8 h, standard
- Mains adapter included
- Net weight approx. 0,25 kg

Accessories

- External impact sensor Type D, as standard, can be reordered, SAUTER AHMO D, **€ 315,-**
- **3** External impact sensor Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, **€ 455,-**
- **4** External impact sensor Type G. High energy sensor: 9-fold impact energy compared to type D, SAUTER AHMO G, **€ 1595,-**
- On request: Support rings for bended test objects, SAUTER AHMR 01, **€ 370,-**
- **5** Impact body Type D, net weight approx. 0,05 kg, hardness ≥ 1600 HV, tungsten carbide, Impact ball \varnothing 3 mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,-**
- Connection cable impact sensor, SAUTER HMO-A04, **€ 115,-**
- Test block Type D/DC, \varnothing 90 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, **€ 205,-** 630 ± 40 HL, SAUTER AHMO D03, **€ 205,-** 530 ± 40 HL, SAUTER AHMO D04, **€ 205,-**
- Paper roll, 1 piece, SAUTER ATU-US11, **€ 17,-**

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STANDARD



OPTION



Model	Sensor	Measuring range	Readout	Price		Option	
				excl. of VAT ex works €	Factory calibration certificate	KERN	€
SAUTER HMO	D	[Max] HL 170-960	[d] HL 1	2020,-	961-131	150,-	

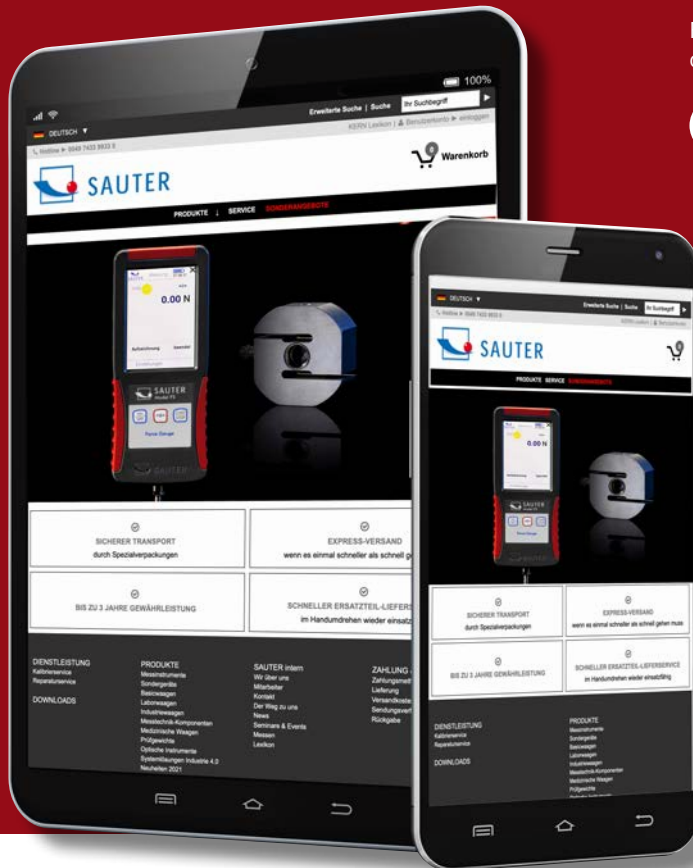
SAUTER GmbH – member of the KERN & SOHN Group, the assortment wide champion at the foot of the Swabian Alb

Sauter GmbH
 c/o KERN & SOHN GmbH
 Ziegelei 1
 72336 Balingen
 Germany
 Tel. +49 7433 9933-0
 info@sauter.eu



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