MOISTURE ANALYSERS
KERN Pictograms

**Internal adjusting:** Quick setting up of the balance’s accuracy with internal adjusting weight (motor-driven)

**Adjusting program CAL:** For quick setting up of the balance’s accuracy. External adjusting weight required

**Easy Touch:** Suitable for the connection, data transmission and control through PC, tablet or smartphone

**Memory:** Balance memory capacity, e.g. for article data, weighing data, tare weights, PLU etc.

**Alibi memory:** Secure, electronic archiving of weighing results, complying with the 2014/31/EU standard. For details see page 223

**Data interface RS-232:** To connect the balance to a printer, PC or network

**RS-485 data interface:** To connect the balance to a printer, PC or other peripherals. Suitable for data transfer over large distances. Network in bus topology is possible

**USB data interface:** To connect the balance to a printer, PC or other peripherals

**Bluetooth* data interface:** To transfer data from the scale to an Ethernet evaluation unit using an integrated Bluetooth® data interface:

**WLAN data interface:** To transfer data from the scale to a computer, industrial controller or other peripherals. Suitable for data transfer over large distances. Network in bus topology is possible

**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

**Interface for second balance:** For direct connection of a second balance

**Network interface:** For connecting the scale to an Ethernet network

**Wireless data transfer:** between the weighing unit and the evaluation unit using an integrated radio module

**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

**Protection against dust and water splashes IPxx:** The type of protection is shown in the pictogram. For details see page 62

**Suspended weighing:** Load support with hook on the underside of the balance

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

**Rechargeable battery pack:** Rechargeable set

**Universal mains adapter:** with universal input and optional input socket adapters for

- A) EU, CH, GB
- B) EU, CH, GB, USA
- C) EU, CH, GB, USA, AUS

**Mains adapter:** 230V/50Hz in standard version for EU, CH. On request GB, USA or AUS version available

**Power supply:** Integrated in balance. 230V/50Hz standard EU. More standards e.g. GB, USA or AUS on request

**Weighing principle: Strain gauges** Electrical resistor on an elastic deforming body

**Weighing principle: Tuning fork** A resonating body is electromagnetically excited, causing it to oscillate

**Weighing principle: Electromagnetic force compensation** Coil inside a permanent magnet. For the most accurate weighings

**Weighing principle: Single cell technology** Advanced version of the force compensation principle with the highest level of precision

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

**DAkkS calibration possible (DKD):** The time required for DAkkS calibration is shown in days 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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Balances & Test service catalogue

Provides a complete overview of the KERN line of balances, test weights, and services such as verification, calibration, etc.

Medical scales catalogue

Complete line of medical scales, from infant scales to patient scales, chair scales and adiposity scales, as well as hand grip dynamometers, chemist’s balances and veterinary scales.

Microscopes & refractometers catalogue

Extensive range in the area of optical instruments, such as, for example, biological microscopes, stereo microscopes, metallurgical microscopes, polarisation microscopes as well as analogue and digital refractometers.

SAUTER measuring equipment catalogue

Test instruments for industry and commerce, such as force, coating thickness, material thickness and calibration service.

DAkkS calibration service brochure

Detailed information on topics pertaining to the calibration and verification of balances, test weights, and force measuring devices.

Your advantages

fast
- 24 hours delivery service for products in stock – ordered today, on its way tomorrow
- Sales & service hotline available from 8:00 am to 6:00 pm

competent
- DAkkS accreditation DIN EN ISO/IEC 17025
- Certified QM system DIN EN ISO 9001
- Authorisation for initial verification by the manufacturer 2014/31/EU
- Medical certifications DIN EN ISO 13485 and 93/42/EWG

versatile
- One-stop shopping: from pocket balances through to 15 t crane balance – everything from one supplier
- Find the product you want at lightning speed with the "Balance Quick-Finder" at www.kern-sohn.com

reliable
- Up to 3 years warranty
- Precision in weighing technology for more than 175 years

Order hotline  +49 7433 9933-0

Service hotline  +49 7433 9933-199

Calibration hotline  +49 7433 9933-196

Online Shop  www.kern-sohn.com

E-mail order  info@kern-sohn.com

Fax order  +49 7433 9933-146

www.kern-sohn.com

Information on current product availability, product data sheets, user instructions, useful knowledge, technical glossary, images and much for you to download, practical topic areas, which will guide you to the right product in your industry as well as a clever test weight and balance search engine.

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

Moisture analysing is an integral part of production and processing of many raw and finished products and has a crucial impact on the quality of the product.

Moisture analysers are used particularly in the food industry, water resource management (sewage plants, etc.), plastics industry, agriculture and the energy industry (bio-energy plants, etc.).

Determining moisture requires a great deal of experience. Depending on the type of sample and the task involved, various drying processes are used.

KERN has concentrated on the most widely-used drying method: halogen drying, which brings many advantages:

- Sample is evenly warmed from above, without risk of burning the sample surface
- Affordable purchase costs ensure rapid amortisation of the device
- Most common temperature ranges from 35 – 200 °C
- High measuring precision, up to 0.01 %
- Sufficient buffer capacity, weighing capacity up to 200 g
- Various drying programs (soft drying, standard drying, drying in levels, rapid drying (Boost))

The numerous memories of the KERN moisture analyser are particularly useful, as they hold information on the complete drying processes with drying parameters such as drying time, drying period, drying temperature, display settings, switch off criteria, etc. This saves an enormous amount of time and helps to achieve repeatable results.

On the internet, you will find a practical application handbook containing many examples, field reports, settings and tips for each KERN moisture analyser.

Determination of drying parameters

We would be pleased to carry out individual analyses on the sample you submit, which will help you when setting the parameters of your moisture analyser and will lead to results which can be reproduced. KERN 965-243, € 95,–/hour

Temperature calibration by KERN moisture analysers (factory calibration certificate)

In order to guarantee the comparability of the results of moisture analyses it is crucial that the heating chamber and therefore the sample are maintained at the correct temperature. Over time, for example, deposits or dirt can contaminate the heating chamber of the moisture analyser and this can distort the measuring results. It is therefore necessary to carry out regular temperature calibration. KERN 964-305, € 140,–

Quick-Finder Moisture analysers

<table>
<thead>
<tr>
<th>Readability [d] g</th>
<th>Weighing capacity [Max] g</th>
<th>Model</th>
<th>Price excl. of VAT ex works €</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,001</td>
<td>60</td>
<td>DBS 60-3</td>
<td>1270,–</td>
<td>47</td>
</tr>
<tr>
<td>0,001</td>
<td>110</td>
<td>DAB 100-3</td>
<td>1050,–</td>
<td>46</td>
</tr>
<tr>
<td>0,001</td>
<td>160</td>
<td>DLB 160-3A</td>
<td>1150,–</td>
<td>48</td>
</tr>
<tr>
<td>0,01</td>
<td>200</td>
<td>DAB 200-2</td>
<td>940,–</td>
<td>46</td>
</tr>
</tbody>
</table>

For an explanation on the pictos, see front flap

- = standard
○ = option

Jesús Martínez
Product specialist Moisture analysers
Tel.   +49 7433 9933-209
Fax    +49 7433 9933-29209
jesus.martinez@kern-sohn.com

▹ Powerful 400 W halogen quartz glass heater

▹ High process reliability thanks to 10 storable drying programs and 100 executed drying processes

▹ Up to 99 samples can be individually labelled and printed out in the measuring protocol

1270,–
Moisture analyser KERN DAB

Particularly user-friendly moisture analyzer with high-quality halogen quartz glass heater- also available as version with \([\text{d}]\) = 10 mg, ideal for recurring rapid tests

**Features**

- **KERN DAB 200-2:** Version with lower resolution, whereby the switch-off criterion is reached faster, which saves time. Ideal for quick tests and spot checks
- Backlit graphic display, digit height 14 mm
  - Drying process active
  - Active heating profile
  - Active switch-off criteria
  - Previous drying time
  - Current temperature
  - Current moisture content in %

- **KERN DAB 100-3:**

**Features**

- Halogen quartz glass heater 400 W
- Observation window above the sample, useful during initial setting
- **Internal memory** for automatic sequence of 15 complete drying processes and 5 drying processes carried out
- The last value measured remains on the display until it is replaced by a new measurement
- 50 sample plates included

**Model KERN DAB 200-2**

<table>
<thead>
<tr>
<th>Features</th>
<th>DAB 200-2</th>
<th>DAB 100-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readability ([\text{d}])</td>
<td>0.01 g/0.05 %</td>
<td>0.001 g/0.01 %</td>
</tr>
<tr>
<td>Weighing capacity [Max]</td>
<td>200 g</td>
<td>110 g</td>
</tr>
<tr>
<td>Reproducibility weight of sample 2 g</td>
<td>1,5 %</td>
<td>0,15 %</td>
</tr>
<tr>
<td>Reproducibility, weight of sample 10 g</td>
<td>0,3 %</td>
<td>0,02 %</td>
</tr>
<tr>
<td>Display after drying (Display can be switched over at any time)</td>
<td>0-100 %</td>
<td>100-0 %</td>
</tr>
<tr>
<td>Moisture [%] = Moisture content (M) from wet weight (W)</td>
<td>40 °C–199 °C in steps up to 1 °C</td>
<td>40 °C–160 °C in steps up to 1 °C</td>
</tr>
<tr>
<td>Dry content [%] = Dry weight (D) from W</td>
<td>100-0 %</td>
<td>100-0 %</td>
</tr>
<tr>
<td>Temperature range</td>
<td>40 °C–199 °C in steps up to 1 °C</td>
<td>40 °C–160 °C in steps up to 1 °C</td>
</tr>
<tr>
<td>Drying modes</td>
<td>Standard drying</td>
<td>Gentle drying</td>
</tr>
<tr>
<td>Switch-off criteria</td>
<td>Automatic switch-off (2 mg loss in weight in 45 s)</td>
<td>Time controlled switch-off (3 min – 99 min 59 s, 10 s increments)</td>
</tr>
<tr>
<td>Recall of measurement/Log output</td>
<td>Interval can be set from 1 s – 10 min (Only when used with printer or PC)</td>
<td></td>
</tr>
<tr>
<td>Net weight</td>
<td>4,82 kg</td>
<td></td>
</tr>
<tr>
<td>Price €, excl. of VAT, ex works</td>
<td>940,-</td>
<td>1050,-</td>
</tr>
<tr>
<td>Option DAkkS Calibr. Certificate</td>
<td>Mass: KERN 963-127, € 72,-</td>
<td></td>
</tr>
<tr>
<td>Option Factory Calibr. Certificate</td>
<td>Temperature: KERN 964-305, € 140,-</td>
<td></td>
</tr>
</tbody>
</table>

**Application handbook:** On the internet, you will find a practical application handbook containing many examples, field reports, settings and tips for each KERN moisture analyser

**Accessories**

- **Sample plates aluminium, \(\Phi 90\) mm, unit of 80 pieces, KERN MLB-A01A, € 45,-
- **Round fiberglass filter** high mechanical stability, with organic binder, box of 100 pieces, KERN RH-A02, € 80,-
- **Round fiberglass filter**, medium mechanical stability, without organic binder, box of 100 pieces, KERN YMF-A01, € 40,-
- **Temperature calibration set** consists of measuring sensor and display device, KERN DAB-A01., € 110,-
- **Infrared quartz glass heater**, temperature range 40 °C–160 °C, Factory Option, KERN DAB-A02, € 165,-
- **RS-232/ Ethernet adapter** for connection to an IP-based Ethernet network, KERN YKI-01, € 290,-
- **RS-232/ Bluetooth adapter** to connect to Bluetooth capable devices, such as Bluetooth printers, tablets, laptops, smartphones, etc., KERN YKI-02, € 290,-
- **RS-232/ WiFi adapter** for wireless connection to networks and WLAN capable devices, such as tablets, laptops or smartphones, KERN YKI-03, € 690,-
- **Display of the drying process in conjunction with BalanceConnection**, KERN SCD-4.0, € 150,-
- **Normal printer**, KERN YKB-01N, € 310,-
- **Matrix needle printer**, to print the weights on normal paper, ideal for long-term archiving, KERN 911-013, € 390,-
Moisture analyser KERN DBS

Moisture analyzer with high-quality single-cell weighing system for outstanding stability, reliability and response speed

**Features**

- **Halogen quartz glass heater** 400 W
- Excellent temperature control thanks to halogen technology, suitable for temperature-sensitive samples
- **Internal memory** for automatic sequence of 10 complete drying processes and 100 drying processes carried out
- The last value measured remains on the display until it is replaced by a new measurement

**Modell KERN**

<table>
<thead>
<tr>
<th>DBS 60-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readability [d]</td>
</tr>
<tr>
<td>Weighing capacity [Max]</td>
</tr>
<tr>
<td>Reproducibility weight of sample 2 g</td>
</tr>
<tr>
<td>Display after drying</td>
</tr>
<tr>
<td>Dry content [%] = Dry weight (D) from W</td>
</tr>
<tr>
<td>ATRO [%] [(W-D) / D] : 100%</td>
</tr>
<tr>
<td>Moisture content (M) = Moisture content (M) from wet weight (W)</td>
</tr>
<tr>
<td>Temperature range</td>
</tr>
<tr>
<td>Drying modes</td>
</tr>
<tr>
<td>Switch-off criteria</td>
</tr>
<tr>
<td>Recall of measurement/Log output</td>
</tr>
<tr>
<td>Overall dimensions W×D×H</td>
</tr>
<tr>
<td>Net weight</td>
</tr>
<tr>
<td>Price €, excl. of VAT, ex works</td>
</tr>
<tr>
<td>Option DAkkS Calibr. Certificate</td>
</tr>
<tr>
<td>Option Factory Calibr. Certificate</td>
</tr>
</tbody>
</table>

**Accessories**

- **Protective working cover**, scope of delivery: 5 items, KERN DBS-A03S05, € 65,-
- **Sample plates aluminium**, Ø 90 mm, unit of 80 pieces, KERN MLB-A01A, € 45,-
- **Round fiberglass filter** high mechanical stability, with organic binder, box of 100 pieces, KERN RH-A02, € 80,-
- **Temperature calibration set** consists of measuring sensor and display device, KERN DBS-A01., € 450,-
- **USB interface kit** for bi-directional data exchange between balance/moisture analyser and computer. Scope of delivery: USB cable, driver, Software Balance Connection, KERN DBS-A02, € 290,-
- **Display of the drying process** in conjunction with BalanceConnection, KERN SCD-4.0, € 150,-
- **Thermal printer**, KERN YKB-01N, € 310,-
- **Matrix needle printer**, to print the weights on normal paper, ideal for long-term archiving, KERN 911-013, € 390,-
- **Label printer**, KERN YKE-01, € 590,-
### Moisture analyser KERN DLB

#### The moisture analyser for heavy samples

**Features**

- Backlit LCD display, digit height 17 mm
- Current moisture content in %
- Unit for displaying the results
- Drying process active
- Halogen quartz glass heater 400 W
- Internal memory for automatic sequence of 5 complete drying processes
- The last value measured remains on the display until it is replaced by a new measurement
- 10 sample plates included
- Protective working cover included with delivery
- Application handbook: On the internet, you will find a practical application handbook containing many examples, field reports, settings and tips for each KERN moisture analyser

**Accessories**

- Protective working cover, scope of delivery: 5 items, KERN ALJ-A01S05, € 40,-
- Sample plates aluminium, Ø 90 mm. unit of 80 pieces, KERN MLB-A01A, € 45,-
- Round fiberglass filter high mechanical stability, with organic binder, box of 100 pieces, KERN RH-A02, € 80,-
- Round fiberglass filter, medium mechanical stability, without organic binder, box of 100 pieces, KERN YMF-A01, € 40,-
- Temperature calibration set consists of measuring sensor and display device, KERN DLB-A01N., € 460,-
- Thermal printer, KERN YKB-01N, € 310,-
- Matrix needle printer, to print the weights on normal paper, ideal for long-term archiving, KERN 911-013, € 390,-

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### Modell KERN

<table>
<thead>
<tr>
<th>Modell KERN</th>
<th>DLB 160-3A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readability [d]</td>
<td>0,001 g/0,01 %</td>
</tr>
<tr>
<td>Weighing capacity [Max]</td>
<td>160 g</td>
</tr>
<tr>
<td>Reproducibility, weight of sample 10 g</td>
<td>0,05 %</td>
</tr>
<tr>
<td>Display after drying (Display can be switched over at any time)</td>
<td></td>
</tr>
<tr>
<td>Moisture [%] = Moisture content (M) from wet weight (W)</td>
<td>0–100 %</td>
</tr>
<tr>
<td>Dry content [%] = Dry weight (D) from W</td>
<td>100–0 %</td>
</tr>
<tr>
<td>ATRO [%] (W-D) : D - 100%</td>
<td>0–999 %</td>
</tr>
<tr>
<td>Moisture content (M)</td>
<td>Absolute value in [g]</td>
</tr>
<tr>
<td>Temperature range</td>
<td>35 °C–160 °C in steps up to 1 °C</td>
</tr>
<tr>
<td>Drying modes</td>
<td>Standard drying, Rapid drying, preheating can be switched on</td>
</tr>
<tr>
<td>Switch-off criteria</td>
<td></td>
</tr>
<tr>
<td>• Automatic unrestricted switch-off (Selectable loss in weight 0,1%-9,9% in 60 s)</td>
<td></td>
</tr>
<tr>
<td>• Time controlled switch-off (1 min – 99 min)</td>
<td></td>
</tr>
<tr>
<td>• Manual switch-off at the press of a button</td>
<td></td>
</tr>
<tr>
<td>Log output</td>
<td></td>
</tr>
<tr>
<td>• Continuous output (residual weight)</td>
<td></td>
</tr>
<tr>
<td>• At the end of the drying process, manual or automatic (Only in connection with printer or PC)</td>
<td></td>
</tr>
<tr>
<td>Overall dimensions W×D×H</td>
<td>210×340×225 mm</td>
</tr>
<tr>
<td>Net weight</td>
<td>approx. 4,2 kg</td>
</tr>
<tr>
<td>Price €, excl. of VAT, ex works</td>
<td>1150,-</td>
</tr>
<tr>
<td>Option DAkkS Calibr. Certificate Mass:</td>
<td>KERN 963-127, € 72,-</td>
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<tr>
<td>Option Factory Calibr. Certificate</td>
<td>Temperature: KERN 964-305, € 140,-</td>
</tr>
</tbody>
</table>

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Price reduction
1769
Ancestor Johann Jakob Sauter built the Hahn inclination scale out of iron, a foundation stone for weighing for the balance industry in Southern Germany.

1844
KERN is founded – precision balances are produced.

1863
A proud Gottlieb Kern with his staff.

1880
Pharmaceutical balance with Aesculap.

1923
Inflation – KERN wages are paid with self printed currency.

1980
The electronic balance ousts mechanical devices.

1994
Accredited DKD laboratory (ISO 17025).

2000
New premises in Balingen.

2002
Existing QM system certification in accordance with DIN EN ISO 9001:2000 standards.

2007
Approval for the manufacture of medical products (DIN EN 13485 and 93/42/EEC).

2009
Approval for the manufacture and sale of height rods (DIN EN 13485 and 93/42/EEC).

2012

2014
Expansion of the product range to include optical instruments (microscopes and refractometers).

2015
Inauguration of Ziegelei 2.0 with computer-controlled high-bay warehouse.

2017
Come with KERN into the digital future: Expansion of the model ranges compatible with Industry 4.0, as well as the related services.

2019
Significant anniversary year! 25 years of accredited DKD laboratory. 175 years of KERN & SOHN, 250 years of balance manufacture in the Sauter family-owned company.

2020
Construction of Ziegelei 3.0, extension of administration building.

KERN & SOHN GmbH
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Germany

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