


# MOISTURE ANALYSERS

PROFESSIONAL  
MEASURING



**2018**

# KERN Pictograms

 <b>Internal adjusting:</b> Quick setting up of the balance's accuracy with internal adjusting weight (motordriven)	 <b>GLP/ISO log:</b> The balance displays serial number, user ID, weight, date and time, regardless of a printer connection	 <b>Suspended weighing:</b> Load support with hook on the underside of the balance
 <b>Adjusting program CAL:</b> For quick setting up of the balance's accuracy. External adjusting weight required	 <b>GLP/ISO log:</b> With weight, date and time. Only with KERN printers, see page 154/155	 <b>Battery operation:</b> Ready for battery operation. The battery type is specified for each device
 <b>Memory:</b> Balance memory capacity, e.g. for article data, weighing data, tare weights, PLU etc.	 <b>Piece counting:</b> Reference quantities selectable. Display can be switched from piece to weight	 <b>Rechargeable battery pack:</b> Rechargeable set
 <b>Alibi memory:</b> Secure, electronic archiving of weighing results, complying with the 2014/31/EU standard. For details see page 191	 <b>Recipe level A:</b> The weights of the recipe ingredients can be added together and the total weight of the recipe can be printed out	 <b>Universal mains adapter:</b> with universal input and optional input socket adapters for A) EU, GB B) EU, GB, CH, USA C) EU, GB, CH, USA, AUS
 <b>Data interface RS-232:</b> To connect the balance to a printer, PC or network	 <b>Recipe level B:</b> Internal memory for complete recipes with name and target value of the recipe ingredients. User guidance through display	 <b>Mains adapter:</b> 230V/50Hz in standard version for EU. On request GB, USA or AUS version available
 <b>RS-485 data interface:</b> To connect the balance to a printer, PC or other peripherals. Suitable for data transfer over large distances. Network in bus topology is possible	 <b>Recipe level C:</b> Internal memory for complete recipes with name and target value of the recipe ingredients. User guidance through display, multiplier function, adjustment of recipe when dosages are exceeded or barcode recognition	 <b>Power supply:</b> Integrated in balance. 230V/50Hz standard EU. More standards e.g. GB, USA or AUS on request
 <b>USB data interface:</b> To connect the balance to a printer, PC or other peripherals	 <b>Totalising level A:</b> The weights of similar items can be added together and the total can be printed out	 <b>Weighing principle: Strain gauges</b> Electrical resistor on an elastic deforming body
 <b>Bluetooth* data interface:</b> To transfer data from the balance to a printer, PC or other peripherals	 <b>Percentage determination:</b> Determining the deviation in % from the target value (100 %)	 <b>Weighing principle: Tuning fork</b> A resonating body is electromagnetically excited, causing it to oscillate
 <b>WLAN data interface:</b> To transfer data from the balance to a printer, PC or other peripherals	 <b>Weighing units:</b> Can be switched to e.g. nonmetric units at the touch of a key. See balance model. Please refer to KERN's website for more details	 <b>Weighing principle: Electromagnetic force compensation</b> Coil inside a permanent magnet. For the most accurate weighings
 <b>Control outputs (optocoupler, digital I/O):</b> To connect relays, signal lamps, valves, etc.	 <b>Weighing with tolerance range:</b> (Checkweighing) Upper and lower limiting can be programmed individually, e.g. for sorting and dosing. The process is supported by an audible or visual signal, see the relevant model	 <b>Weighing principle: Single cell technology</b> Advanced version of the force compensation principle with the highest level of precision
 <b>Interface for second balance:</b> For direct connection of a second balance	 <b>Hold function:</b> (Animal weighing program) When the weighing conditions are unstable, a stable weight is calculated as an average value	 <b>Verification possible:</b> The time required for verification is specified in the pictogram
 <b>Network interface:</b> For connecting the scale to an Ethernet network	 <b>Protection against dust and water splashes IPxx:</b> The type of protection is shown in the pictogram. For details see page 58	 <b>DAkkS calibration possible (DKD):</b> The time required for DAkkS calibration is shown in days in the pictogram
 <b>Wireless data transfer:</b> between the weighing unit and the evaluation unit using an integrated radio module	 <b>Stainless steel:</b> The balance is protected against corrosion	 <b>Package shipment:</b> The time required for internal shipping preparations is shown in days in the pictogram
 <b>KERN Communication Protocol (KCP):</b> 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	 <b>Pallet shipment:</b> The time required for internal shipping preparations is shown in days in the pictogram	

# KERN – measuring technology and testing services from a single source



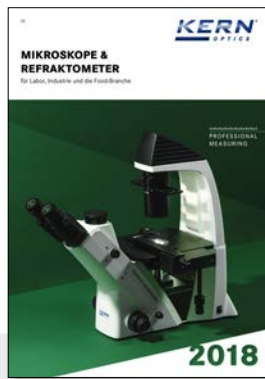
## Balances & Test service catalogue

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

### reliable

- Up to 3 years warranty
- Precision in weighing technology for more than 170 years

### 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/EEC

### 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](http://www.kern-sohn.com)



### Order hotline

+49 [0] 7433 9933-0



### Service hotline

+49 [0] 7433 9933-199



### Calibration hotline

+49 [0] 7433 9933-196



### Our team of consultants will assist you

from Monday to Friday  
from 8:00 am to 6:00 pm



### Online Shop

[www.kern-sohn.com](http://www.kern-sohn.com)



### E-mail order

[info@kern-sohn.com](mailto:info@kern-sohn.com)



### Fax order

+49 [0] 7433 9933-146



### [www.kern-sohn.com](http://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.

## 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 range up to 160 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 analyzers (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

Read-out [d] g	Weighing range [Max] g	Model  KERN	Price excl. of VAT ex works €	Page	 DAYS	 CAL EXT	 MEMORY	 RS 232
0,001	60	<b>DBS 60-3</b>	<b>1270,-</b>	42	1	●	●	●
0,001	110	<b>DAB 100-3</b>	<b>1050,-</b>	41	1	●	●	●
0,001	160	<b>DLB 160-3A</b>	<b>1170,-</b>	43	1	●	●	●

● = standard ○ = option

- ▶ **Powerful halogenquartz glass heater 400 W**
- ▶ **High level of process reliability thanks to drying programs which can be stored**
- ▶ **Memory for drying processes which have been carried out**



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HIGH-LIGHT

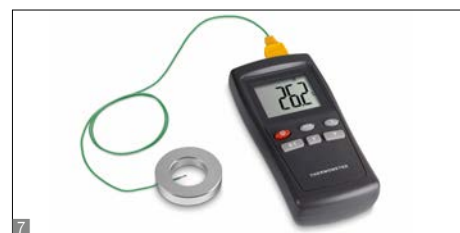
from €

# 1050,-

page 41



KERN DAB



## Moisture analyser with user-friendly graphics display and 15 memories for drying programs

### Features

- Backlit graphic display, digit height 14 mm

- 1 Drying process active
- 2 Active heating profile
- 3 Active switch-off criteria
- 4 Previous drying time
- 5 Current temperature
- 6 Current moisture content in %

- 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**

- 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. Current moisture content in %

### STANDARD



### OPTION



<b>Model KERN</b>	<b>DAB 100-3</b>
<b>Readout [d]</b>	0,001 g/0,01 %
<b>Weighing range [Max]</b>	110 g
<b>Reproducibility, weight of sample 10 g</b>	0,02 %
<b>Display after drying (Display can be switched over at any time)</b>	
<b>Moisture [%] = Moisture content (M) from wet weight (W)</b>	0- 100 %
<b>Dry content [%] = Dry weight (D) from W</b>	100-0 %
<b>Moisture content (M)</b>	Absolute value in [g]
<b>Temperature range</b>	40°C-199°C in steps up to 1 °C
<b>Drying modes</b>	<input type="checkbox"/> Standard drying <input type="checkbox"/> Gentle drying <input type="checkbox"/> Rapid drying
<b>Switch off criteria</b>	<ul style="list-style-type: none"> <li>Automatic switch off (2 mg loss in weight in 45 s)</li> <li>Time controlled switch off (3 min - 99 min 59 sec, 10 s increments)</li> <li>Manual switch off at the press of a button</li> </ul>
<b>Log output</b>	Manual at the end of the drying process, e. g. with KERN YKB-01N printer
<b>Overall dimensions WxDxH</b>	240x365x180 mm
<b>Net weight</b>	4,82 kg
<b>Price €, excl. of VAT, ex works</b>	<b>1050,-</b>
<b>Option DAKKS Calibr. Certificate</b>	Mass: KERN 963-127, € 72,-
<b>Option Factory Calibr. Certificate</b>	Temperature: KERN 964-305, € 140,-

### Accessories

- Sample plates aluminium**, ø 90 mm, unit of 80 pieces, KERN MLB-A01A, € 45,-
- Round fiberglass filter** e.g. for samples that splash or become encrusted or for determining dry mass in liquids, high mechanical stability, with organic binder, box of 100 pieces, KERN RH-A02, € 80,-
- Round fiberglass filter** e.g. for samples that splash or become encrusted or for determining dry mass in liquids, medium mechanical stability, without organic binder, box of 100 pieces, KERN YMF-A01, € 25,-
- Temperature calibration set** consists of measuring sensor and display device, KERN DAB-A01, € 110,-
- 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, € 220,-
- RS-232/WiFi adapter** for wireless connection to networks and WLAN capable devices, such as tablets, laptops or smartphones, KERN YKI-03, € 750,-
- Thermal printer**, KERN YKB-01N, € 290,-



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## Moisture analyser with graphics display and 10 memories for drying programs

### Features

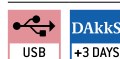
- Backlit graphic display, digit height 15 mm
- 1 Drying process active
- 2 Previous drying time
- 3 Current temperature
- 4 Unit for displaying the results
- 5 Current moisture content in %
- 6 Active heating profile

- Halogen quartz glass heater 400 W
- Observation window above the sample, useful during initial setting
- 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

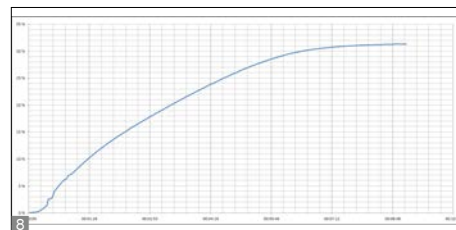
### STANDARD



### OPTION



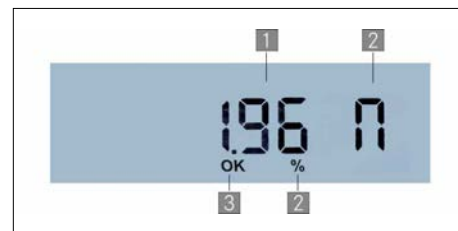
<b>Model KERN</b>	<b>DBS 60-3</b>
<b>Readout [d]</b>	0,001 g/0,01 %
<b>Weighing range [Max]</b>	60 g
<b>Reproducibility weight of sample 2 g</b>	0,15 %
<b>Reproducibility, weight of sample 10 g</b>	0,02 %
<b>Display after drying</b>	
<b>Moisture [%] = Moisture content (M) from wet weight (W)</b>	0-100 %
<b>Dry content [%] = Dry weight (D) from (W)</b>	100-0 %
<b>ATRO [%] [(W-D) : D] · 100%</b>	0-999 %
<b>Moisture content (M)</b>	Absolute value in [g]
<b>Temperature range</b>	50 °C-200 °C in steps up to 1 °C
<b>Drying modes</b>	<input type="checkbox"/> Standard drying <input type="checkbox"/> Drying in levels <input type="checkbox"/> Gentle drying <input type="checkbox"/> Rapid drying
<b>Switch off criteria</b>	<ul style="list-style-type: none"> <li>• Automatic unrestricted switch off (Selectable loss in weight 0,01%-0,1% in 30 s)</li> <li>• Time controlled switch off (1 min - 12 h)</li> <li>• Manual switch off at the press of a button</li> </ul>
<b>Recall of measurement/ Log output</b>	Interval can be set from 1 sec - 10 min (Only when used with printer KERN YKB-01N or PC)
<b>Overall dimensions WxDxH</b>	204x336x167 mm
<b>Net weight</b>	approx. 4,6 kg
<b>Price €, excl. of VAT, ex works</b>	<b>1270,-</b>
<b>Option DAkkS Calibr. Certificate</b>	Mass: KERN 963-127, € 72,-
<b>Option Factory Calibr. Certificate</b>	Temperature: KERN 964-305, € 140,-



- **Sample description** for up to 99 samples, 2 digits, freely programmable, and is printed in the measuring protocol
- **Date and time display** as standard
- **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 DBS-A03S05, € 40,-
- **Sample plates aluminium**, ø 90 mm, unit of 80 pieces, KERN MLB-A01A, € 45,-
- **Round fiberglass filter** e.g. for samples that splash or become encrusted or for determining dry mass in liquids, high mechanical stability, with organic binder, box of 100 pieces, KERN RH-A02, € 80,-
- **Round fiberglass filter** e.g. for samples that splash or become encrusted or for determining dry mass in liquids, medium mechanical stability, without organic binder, box of 100 pieces, KERN YMF-A01, € 25,-
- **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, € 290,-
- **Matrix needle printer**, to print the weights on normal paper, ideal for long-term archiving, KERN 911-013, € 360,-
- **Label printer**, KERN YKE-01, € 590,-



## The moisture analyser for heavy, high-volume samples

### Features

- Backlit LCD display, digit height 17 mm
  - 1 Current moisture content in %
  - 2 Unit for displaying the results
  - 3 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

### STANDARD



### OPTION



### 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** e.g. for samples that splash or become encrusted or for determining dry mass in liquids, high mechanical stability, with organic binder, box of 100 pieces, KERN RH-A02, € 80,-
- Round fiberglass filter** e.g. for samples that splash or become encrusted or for determining dry mass in liquids, medium mechanical stability, without organic binder, box of 100 pieces, KERN YMF-A01, € 25,-
- 4 Temperature calibration set** consists of measuring sensor and display device, KERN DLB-A01, € 290,-
- Thermal printer**, KERN YKB-01N, € 290,-
- Matrix needle printer**, to print the weights on normal paper, ideal for long-term archiving, KERN 911-013, € 360,-

Model KERN	DLB 160-3A
Readout [d]	0,001 g/0,01 %
Weighing range [Max]	160 g
Reproducibility, weight of sample 10 g	0,05 %
Display after drying (Display can be switched over at any time)	
Moisture [%] = Moisture content (M) from wet weight (W)	0-100 %
Dry content [%] = Dry weight (D) from W	100-0 %
ATRO [%] [(W-D) : D] · 100%	0-999 %
Moisture content (M)	Absolute value in [g]
Temperature range	35 °C-160 °C in steps up to 1 °C
Drying modes	Standard drying Rapid drying, Pre-heat level, can be switched on
Switch off criteria	<ul style="list-style-type: none"> <li>Automatic unrestricted switch off (Selectable loss in weight 0,1%-9,9% in 60 s)</li> <li>Time controlled switch off (1 min - 99 min)</li> <li>Manual switch off at the press of a button</li> </ul>
Log output	<ul style="list-style-type: none"> <li>Continuous output (residual weight)</li> <li>At the end of the drying process, manual or automatic (Only in connection with KERN YKB-01N printer or PC)</li> </ul>
Overall dimensions W×D×H	210×340×225 mm
Net weight	approx. 4,2 kg
Price €, excl. of VAT, ex works	1170,-
Option DAkKS Calibr. Certificate	Mass: 963-127, € 72,-
Option Factory Calibr. Certificate	Temperature: KERN 964-305, € 140,-



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**G**etting goods flowing rapidly and correctly, that is our passion. My colleagues and I are here each and every day to make sure that your order is processed without delay, and that, as a rule, your products are sent to you within 24 hours by courier service or freight forwarder.

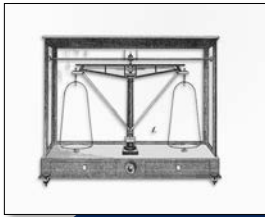
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*Bernd Schätzle, Shipping Department*



# Tradition and innovation for more than 170 years

An independent family business, KERN since already 7 generations is synonymous with quality and reliability in customer service.



**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)



**2008**

Authorisation for initial verification by the manufacturer (2009/23/EU)



**2009**

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



**2012**

Verification point for non-automatic balances and test weights.

New customer portal [www.kern-sohn.com](http://www.kern-sohn.com) goes live



**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

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**Balances, Test weights,**  
**DAkKS Calibration laboratory**  
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