

# Moisture analysers



**2022**



PROFESSIONAL MEASURING

# KERN Pictograms



## Internal adjusting:

Quick setting up of the balance's accuracy with internal adjusting weight (motordriven)



## 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 or tablet. For details see page 123



## 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 215



## 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 balance to a printer, PC or other peripherals



## WiFi data interface:

To transfer data from the balance to a printer, PC or other peripherals



## 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



## 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 log:

The balance displays serial number, user ID, weight, date and time, regardless of a printer connection



## GLP/ISO log:

With weight, date and time. Only with KERN printers, see page 163–165



## Piece counting:

Reference quantities selectable. Display can be switched from piece to weight



## Recipe level A:

The weights of the recipe ingredients can be added together and the total weight of the recipe can be printed out



## Recipe level B:

Internal memory for complete recipes with name and target value of the recipe ingredients. User guidance through display



## Totalising level A:

The weights of similar items can be added together and the total can be printed out



## Percentage determination:

Determining the deviation in % from the target value (100 %)



## Weighing units:

Can be switched to e.g. nonmetric units. See balance model. Please refer to KERN's website for more details



## Weighing with tolerance range:

(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



## Hold function:

(Animal weighing program) When the weighing conditions are unstable, a stable weight is calculated as an average value



## Protection against dust and water splashes IPxx:

The type of protection is shown in the pictogram. For details see page 53



## 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 plug-in power supply:

with universal input and optional input socket adapters for  
A) EU, CH, GB  
B) EU, CH, GB, USA  
C) EU, CH, GB, USA, AUS



## Plug-in power supply:

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



## Integrated power supply unit:

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



## Factory calibration (ISO):

The time required for Factory 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:

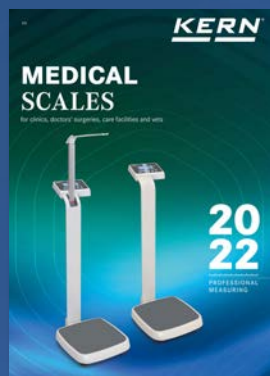
The time required for internal shipping preparations is shown in days in the pictogram

# 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.



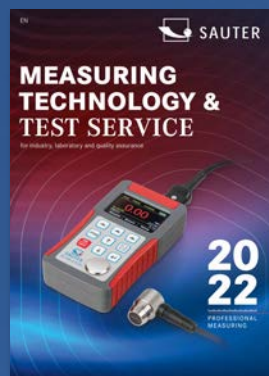
**Medical scales catalogue**

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, 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 175 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/EWG

### versatile

- One-stop shopping: from pocket balances through to 12 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)



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



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**[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

They have a number of memories, network connectivity, different heating modes and are easy to use due to the intuitive operation and easy-to-read displays. Our high-quality moisture analysers are ideal for use in the food processing industry, water resource management, plastics industry, the energy industry or agriculture.

## Halogen moisture analysers for rapid, reliable measuring results

Our models work on the thermogravimetric principle which means the sample is weighed and warmed with a halogen lamp. During this procedure, the weight loss is recorded continuously while it is drying until it reaches the defined value. The current moisture content for the sample can then be automatically calculated from the measured weight difference.

All benefits of our moisture analysers with halogen and infra-red drying:

- Even heating of the sample without risk of burning
- Rapid amortisation through low purchase costs
- Temperature ranges from 35 to 200 degrees
- High level of measurement accuracy to 0.01 %
- Spare capacity, weighing range up to 200 g
- You can select between different heating profiles
- You can select between different switch-off criteria, automatic or time-controlled

## The drying programs

Depending on the model, our moisture analysers within the laboratory balance category have different heating profiles, so the procedure can be adapted to best suit the sample in question.

- The standard drying setting is suitable for most types of sample. As an option you can choose between these two types of switch-off criteria: Automatic drying (AUTO) or time-controlled (TIME).
- Rapid drying is suitable for samples with a high moisture content.
- Smooth heating through gentle drying prevents disintegration and formation of a skin
- As an alternative to rapid drying, you can also use stage drying as well. The temperature and the time period for the increase in temperature can be freely selected. Equally, the moisture can be determined selectively for different temperatures.

Our recommendation: The high-performance DBS moisture analyser with excellent stability, reliability and reaction speed, 10 drying programs can be stored and memory for 100 drying processes carried out as well as a USB and RS 232 data interface.

## Simple data transfer

For easy, convenient communication between the moisture analyser and printer, or PC there are interfaces available, for example to connect a USB or Ethernet. The devices themselves have several internal memories, where you can store drying programs with drying parameters, such as, for example, drying period, drying temperature, display settings, switch-off criteria etc. This saves time and guarantees repeatable results. Compatible printers to print out weights, calibration and interface kits are available in our extensive range of accessories, suitable for each moisture analyser.

For communication between the balance and the printer, the moisture analyser must be disconnected from the power supply and connected to the printer. We guarantee fault-free operation with the KERN interface cable. To transfer the values to the PC we recommend our "Balance Connection KERN SCD 4.0" transfer software. Programs such as Excel or other spreadsheet applications are ideal for displaying graphics.





Our recommendation: DLB moisture analyser with intuitive graphics display, multi-lingual user guidance, convenient Auto-Tare when closing the lid and RS 232 data interface

## Our service options

In order for the comparability of the results of moisture analyses to be guaranteed, the correct temperatures must be maintained in the heating chamber or sample. We offer our customers regular calibration of the temperature for genuine and reliable measuring results KERN 964-305, € 154,-. If requested, we can carry out sample analysis for you and support you in adjusting the parameters of your moisture analyser KERN 965-243, € 95,-/hour

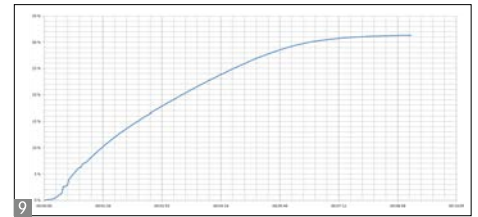
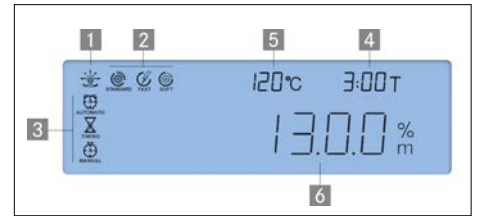
Please contact your personal customer advisor if you would like us to help!

## Quick-Finder Moisture analysers

Readability [d] g	Weighing capacity [Max] g	Model  KERN	Price excl. of VAT ex works €	Page				
0,001	60	<b>DBS 60-3</b>	<b>1350,-</b>	44	1	●	●	●
0,001	110	<b>DAB 100-3</b>	<b>1090,-</b>	43	1	●	●	●
0,001	160	<b>DLB 160-3A</b>	<b>1270,-</b>	45	1	●	●	●
0,01	200	<b>DAB 200-2</b>	<b>990,-</b>	43	1	●	●	●

For an explanation on the pictos, see front flap

● = standard ○ = option



Particularly user-friendly moisture analyser with high-quality halogen quartz glass heater- also available as version with [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
- 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

**Accessories**

- 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,-
- 7 Temperature calibration set consists of measuring sensor and display device, KERN DAB-A01., € 250,-
- 8 Infrared quartz glass heater, temperature range 40 °C-160 °C, Factory Option, KERN DAB-A02, € 180,-
- RS-232/Ethernet adapter for connection to an IP-based Ethernet network, KERN YKI-01, € 310,-
- RS-232/Bluetooth adapter to connect to Bluetooth capable devices, such as Bluetooth printers, tablets, laptops, smartphones, etc., KERN YKI-02, € 310,-
- RS-232/WiFi adapter for wireless connection to networks and WiFi capable devices, such as tablets, laptops or smartphones, KERN YKI-03, € 740,-
- 9 Display of the drying process in conjunction with BalanceConnection, KERN SCD-4.0, € 170,-
- Thermal printer, KERN YKB-01N, € 310,-
- Matrix needle printer, to print the weights on normal paper, ideal for long-term archiving, KERN 911-013, € 440,-

STANDARD

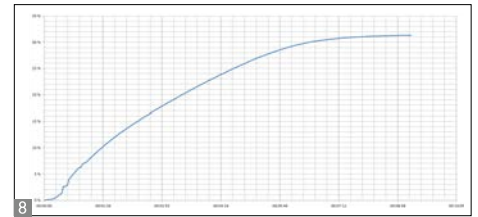
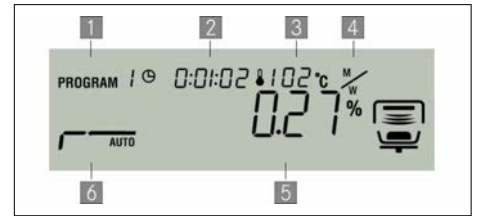
CAL EXT | MEMORY | RS 232 | GLP | UNIT | 230 V | DMS | 1 DAY

OPTION

DAKKS +3 DAYS

Model KERN	DAB 200-2	DAB 100-3
Readability [d]	0,01 g/0,05 %	0,001 g/0,01 %
Weighing capacity [Max]	200 g	110 g
Reproducibility weight of sample 2 g*	1,5 %	0,15 %
Reproducibility, weight of sample 10 g*	0,3 %	0,03 %
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 %	
Moisture content (M)	Absolute value in [g]	
Temperature range	40 °C-199 °C in steps up to 1 °C	
Drying modes	<input type="checkbox"/> Standard drying <input type="checkbox"/> Gentle drying <input type="checkbox"/> Rapid drying	
Switch-off criteria	• Automatic switch-off (2 mg loss in weight in 45 s) • Time controlled switch-off (3 min - 99 min 59 s, 10 s increments) • Manual switch-off at the press of a button	
Recall of measurement/ Log output	Interval can be set from 1 s - 10 min (Only when used with printer or PC)	
Overall dimensions WxDxH	240x365x180 mm	
Net weight	4,82 kg	
Price €, excl. of VAT, ex works	990,-	1090,-
Option DAKKS Calibr. Certificate	Mass: KERN 963-127, € 82,-	
Option Factory Calibr. Certificate	Temperature: KERN 964-305, € 154,-	

\* application-dependent



05

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

Features

- Tip: Suitable for samples with low moisture content, e.g. plastics
- 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
- 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

- Password protection to prevent manipulation of stored settings, data, etc.
- Sample description for up to 99 samples, 2 digits, freely programmable, and is printed in the measuring protocol
- Date and time display as standard
- USB data interface for transferring weighing data to the PC, printer etc. \*Can only be used in combination with KERN DBS-A02
- 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

CAL EXT MEMORY RS 232 USB GLP INTERN UNIT 230 V FORCE SC TECH 1 DAY

OPTION

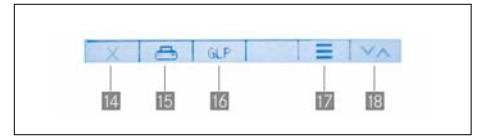
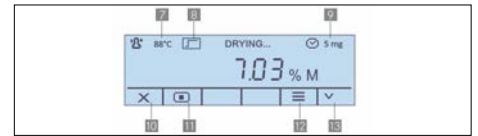
DAkKS +3 DAYS

Modell KERN	DBS 60-3
Readability [d]	0,001 g/0,01 %
Weighing capacity [Max]	60 g
Reproducibility weight of sample 2 g*	0,15 %
Reproducibility, weight of sample 10 g*	0,02 %
Display after drying	
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	50 °C-200 °C in steps up to 1 °C
Drying modes	<input type="checkbox"/> Standard drying <input type="checkbox"/> Drying in levels <input type="checkbox"/> Gentle drying <input type="checkbox"/> Rapid drying
Switch-off criteria	• Automatic unrestricted switch-off (Selectable loss in weight 0,01%-0,1% in 30 s) • Time controlled switch-off (1 min - 12 h) • Manual switch-off at the press of a button
Recall of measurement/ Log output	Interval can be set from 1 s - 10 min (Only when used with printer or PC)
Overall dimensions WxDxH	204x336x167 mm
Net weight	approx. 4,6 kg
Price €, excl. of VAT, ex works	1350,-
Option DAkKS Calibr. Certificate	Mass: KERN 963-127, € 82,-
Option Factory Calibr. Certificate	Temperature: KERN 964-305, € 154,-

\* application-dependent

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,-
- 7 Temperature calibration set consists of measuring sensor and display device, KERN DBS-A01., € 490,-
- 8 Display of the drying process in conjunction with BalanceConnection, KERN SCD-4.0, € 170,-
- USB cable, KERN DBS-A04, € 25,-
- 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. For details see page 175, scope of supplies: Download link for 1 license, KERN SCD-4.0-DL, € 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, € 440,-
- Label printer, KERN YKE-01, € 620,-



## Moisture analyser with intuitive graphic display and step-by-step user guidance in 6 languages

### Features

- Rapid and efficient operation thanks to the graphics display
- Backlit graphics display, digit height 11 mm
- Home screen:
  - 1 Main menu
  - 2 Start drying process
  - 3 Select drying temperature
  - 4 Select shut-off criteria
  - 5 Setting to zero/taring
  - 6 Stand-by

- During measurement:
  - 7 Current temperature
  - 8 Current heating profile
  - 9 Active shut-off criteria
  - 10 Abort drying process
  - 11 Stop drying process
  - 12 Display current drying parameters
  - 13 Toggle the unit for displaying the results
- At the end of the measurement:
  - 14 Exit drying program:
  - 15 Print measurement report
  - 16 (De)activate, edit GLP parameters
  - 17 Display detailed result
  - 18 Toggle the unit for displaying the results

- 400 W halogen-quartz glass heater
- User guidance in 6 languages (DE, EN, FR, IT, ES, PT)
- Automatic taring when starting a measurement by closing the lid
- The last value measured remains on the display until it is replaced by a new measurement
- 19 Internal GLP; printout of balance ID, project ID, user ID, values determined by the drying process etc.
- 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	

Modell KERN	DLB 160-3A
Readability [d]	0,001 g/0,01 %
Weighing capacity [Max]	160 g
Reproducibility weight of sample 2 g*	0,15 %
Reproducibility, weight of sample 10 g*	0,05 %
<b>Display after drying (Display can be switched over at any time)</b>	
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	<input checked="" type="checkbox"/> Standard drying <input type="checkbox"/> Rapid drying, preheating can be switched on
Switch-off criteria	<ul style="list-style-type: none"> <li>• Automatic unrestricted switch-off (Selectable loss in weight 1 mg/30 s-10 mg/30 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	• Interval adjustable (5 s - 250 s)
Overall dimensions WxDxH	215x345x235 mm
Net weight	approx. 4,7 kg
Price €, excl. of VAT, ex works	<b>1270,-</b>
Option DAkKS Calibr. Certificate	Mass: KERN 963-127, € 82,-
Option Factory Calibr. Certificate	Temperature: KERN 964-305, € 154,-

\* application-dependent

### 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., € 490,-
- Thermal printer, KERN YKB-01N, € 310,-
- Matrix needle printer, to print the weights on normal paper, ideal for long-term archiving, KERN 911-013, € 440,-

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