

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 964-243

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

Quick-Finder Moisture analysers

Read-out	Weighing range	Model	Price excl. of VAT ex works €	Page				
[d]	[Max]	KERN			For an explanation on the pictos, see the front flap			
0,001 g	50 g	MLS 50-3D	1450,-	42	1	●	●	●
0,001 g	60 g	DBS 60-3	1270,-	40	1	●	●	●
0,001 g	110 g	DAB 100-3	1130,-	39	1	●	●	●
0,001 g	160 g	DLB 160-3A	1170,-	41	1	●	●	●

● = standard ○ = option

Your product specialist's recommendation:



Powerful halogenquartz glass heater 400 W



High level of process reliability thanks to drying programs which can be stored



Display of the drying process in conjunction with BalanceConnection SCD 4.0 software (see page 165)



KERN DBS



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

Accessories

- Sample plates aluminium, Ø 90 mm. Unit of 80 pieces, KERN MLB-A01A
- Round fiberglass filter e.g. for samples that splash or become encrusted. Box with 100 pieces, KERN RH-A02,
- 8 Temperature calibration set consists of measuring sensor and display device, KERN DAB-A01.,
- RS-232/Ethernet adapter for connection to an IP-based Ethernet network, KERN YKI-01,
- RS-232/Bluetooth adapter to connect to Bluetooth capable devices, such as Bluetooth printers, tablets, laptops, smartphones, etc., KERN YKI-02,
- RS-232/WiFi adapter for wireless connection to networks and WLAN capable devices, such as tablets, laptops or smartphones, KERN YKI-03,
- Thermal printer, KERN YKB-01N,

STANDARD

CAL EXT

MEMORY

RS 232

GLP

PRINTER

UNIT

230 V

DMS

1 DAY

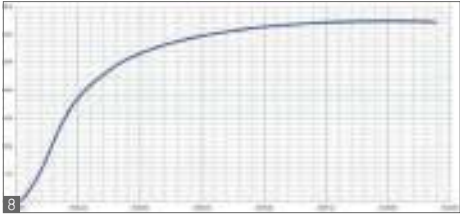
3 YEARS WARRANTY

OPTION

DAKKS

+3 DAYS

Model KERN	DAB 100-3
Readout [d]	0,001 g/0,01 %
Weighing range [Max]	110 g
Reproducibility, weight of sample 10 g	0,02 %
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	35 °C - 160 °C in steps up to 1 °C
Drying modes	<div><div>Standard drying</div><div>Gentle drying</div><div>Rapid drying</div></div>
Switch off criteria	<div><div>Automatic switch off (2 mg loss in weight in 45 s)</div><div>Time controlled switch off (3 min – 99 h 59 min, 10 s increments)</div><div>Manual switch off at the press of a button</div></div>
Log output	<div><div>At the end of the drying process, manual or automatic (Only in connection with KERN YKC-01)</div></div>
Overall dimensions W×D×H	240×365×180 mm
Net weight	4,82 kg



Moisture analyser with graphics display and 10 memories for drying programs

Features

- Backlit graphic display, digit height 15 mm
- 1 Drying program
- 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

- **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**
- **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

GLP

UNIT

230 V

FORCE

1 DAY

3 YEARS WARRANTY

OPTION

USB

DAKKS +3 DAYS

Model KERN	DBS 60-3
Readout [d]	0,001 g/0,01 %
Weighing range [Max]	60 g
Reproducibility weight of sample 2 g	0,15 %
Reproducibility, weight of sample 10 g	0,02 %
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	50 - 200 °C in steps up to 1 °C
Drying modes	<div><input type="checkbox"/> Standard drying</div> <div><input type="checkbox"/> Drying in levels</div> <div><input type="checkbox"/> Gentle drying</div> <div><input type="checkbox"/> Rapid drying</div>
Switch off criteria	<div>• Automatic unrestricted switch off (Selectable loss in weight 0,01%-0,1% in 30 s)</div> <div>• Time controlled switch off (1 min – 12 h)</div> <div>• Manual switch off at the press of a button</div>
Recall of measurement/ Log output	<div>Interval can be set from 1 sec – 10 min</div> <div>(Only when used with printer KERN YKB-01 or PC)</div>
Overall dimensions W×D×H	202×336×157 mm
Net weight	approx. 4,2 kg

Accessories

- **Protective working cover**, standard, can be re-ordered, scope of delivery: 5 items, KERN DBS-A03S05,
- **Sample plates aluminium**, ø 90 mm. Unit of 80 pieces, KERN MLB-A01A,
- **Round fiberglass filter** e.g. for samples that splash or become encrusted. Box with 100 pieces, KERN RH-A02,
- **Temperature calibration set** consists of measuring sensor and display device, KERN DBS-A01.,
- **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,
- **Display of the drying process** in conjunction with BalanceConnection, KERN SCD-4.0
- **Thermal printer**, KERN YKB-01N



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
- 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,
- Round fibreglass filter e.g. for samples that splash or become encrusted. Box with 100 pieces, KERN RH-A02,
- 4 Temperature calibration set consists of measuring sensor and display device, KERN DLB-A01,
- Protective working cover, standard, can be re-ordered, scope of delivery: 5 items, KERN ALJ-A01S05,
- Thermal printer, KERN YKB-01N

STANDARD

CAL EXT

MEMORY

RS 232

GLP
PRINTER

UNIT

230 V

DMS

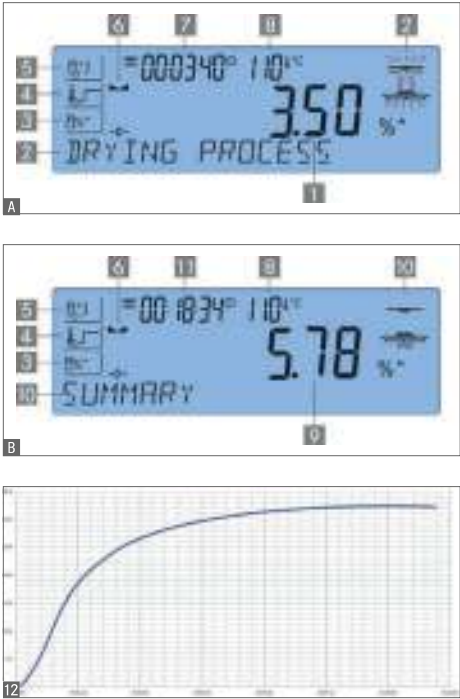
1 DAY

3 YEARS
WARRANTY

OPTION

DAKKS
+3 DAYS

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	<div><div>Standard drying</div><div>Rapid drying, Pre-heat level, can be switched on</div></div>
Switch off criteria	<div>• Automatic unrestricted switch off (Selectable loss in weight 0,1%-9,9% in 60 s)</div> <div>• Time controlled switch off (1 min – 99 min)</div> <div>• Manual switch off at the press of a button</div>
Log output	<div>• Continuous output (residual weight)</div> <div>• At the end of the drying process, manual or automatic (Only in connection with KERN YKB-01N printer or PC)</div>
Overall dimensions W×D×H	210×340×225 mm
Net weight	approx. 4,2 kg



Infrared moisture analyser with graphics display and a vast database

Features

- Backlit graphic display, digit height 14 mm
- **A Display during the drying process:**
 - 1 Current moisture content in %
 - 2 Drying process active
 - 3 Active result display
 - 4 Active heating profile
 - 5 Active switch-off criteria
 - 6 Stability display

- 7 Previous drying time
- 8 Current temperature
- **B Display after the drying process:**
 - 9 End result moisture content in %
 - 10 Drying process has finished
 - 11 Drying period
- **Infrared heater 400 W**
- **Observation window above the sample,** useful during initial setting

STANDARD

CAL EXT

MEMORY

RS 232

GLP

INTERN

UNIT

230 V

FORCE

1 DAY

3 YEARS WARRANTY

OPTION

DAKKS

+3 DAYS

- **Balance contains memory** for automatic sequence of 100 complete drying programs (92 drying programs with optimised drying characteristics for rapid sample warming and therefore shorter drying times, pre-installed at factory), 100 users with related authorisations, 1.000 drying processes performed and 1.000 weighing results (ring memory)
- The last value measured remains on the display until it is replaced by a new measurement
- **10 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

Model KERN	MLS 50-3D
Readout [d]	0,001 g/0,01 %
Weighing range [Max]	50 g
Reproducibility weight of sample 2 g	0,1 %
Reproducibility, weight of sample 10 g	0,02 %
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	40 °C - 160 °C in Schritten zu 1 °C
Drying modes	<div><input type="checkbox"/> Standard drying</div> <div><input type="checkbox"/> Drying in levels</div> <div><input type="checkbox"/> Gentle drying</div> <div><input type="checkbox"/> Rapid drying</div>
Switch off criteria	<div>• Automatisches Abschalten (AUTO 1 - 5)</div> <div>• Automatisches freies Abschalten (wählbar 1 - 10 mg / 10 - 120 s)</div> <div>• Zeitgesteuertes Abschalten (1min - 99h 59 min)</div> <div>• Manuelles Abschalten per Tastendruck</div>
Recall of measurement / Log output	Manuell oder automatisch, Intervall einstellbar von 1 sec - 5 min (Nur in Verbindung mit Drucker KERN YKB-01N oder PC)
Overall dimensions W×D×H	206×333×192 mm
Net weight	ca. 4,9 kg

Accessories

- **Protective working cover**, standard, can be re-ordered, scope of delivery: 5 items, KERN ALS-A02S05
- **Sample plates aluminium**, ø 90 mm. Unit of 80 pieces, KERN MLB-A01A
- **Round fiberglass filter** e.g. for samples that splash or become encrusted. Box with 100 pieces, KERN RH-A02
- **Temperature calibration set** consists of measuring sensor and display device, KERN MLB-A12.
- ☒ **Display of the drying process** in conjunction with BalanceConnection, KERN SCD-4.0
- **Thermal printer**, KERN YKB-01N

BOECO MOISTURE ANALYZER BMA H50, BMA I50

Specification	BMA H50	BMA I50
Heating Module	Halogen emitter	IR emitter
Range of Drying temp	250°C	160°C
Max. capacity	50 g	
Readability	0,001 g	
Tare range	- 50 g	
Max mass sampling	50 g	
Accuracy of moisture reading	0,001 %	
Repeatability	±0,24 % (sample < 2 g) ±0,06 % (sample 2-10 g) ±0,04 % (sample >10 g)	
Max. height of tested sample	h = 20 mm	
Pan size	ø 90 mm, h = 8 mm	
Drying modes	4 drying modes (standard, quick, step, mild)	
Auto switch off options	3 modes (manual, automatic, time defined)	
Additional functions	sample identification	
Power of heating device	400 W	
Interface	RS 232	
Display	LCD with backlight	
Working temperature	+10°C - +40°C	
Power Supply	110-240 V AC, 50/60 Hz	
Netweight / Grossweight	4,9 kgs / 6,4 Kg	
Size / Packing size	333x206x190 / 470x380x336 mm	



ACCESSORIES FOR BMA MOISTURE ANALYZERS

Code	Description
BOE PAN90	Aluminium sample pans, round, ø = 90 mm (box of 50)
BOE 440017	Glass fiber filters MG 161, 90 mm ø, with binder, anorganic, 75 g/m ² (box of 50)
BOE F1-50	Calibration weight, 50 g, F1



PRINTER FOR BOECO BALANCES

Code	Description
BOE TMU220D	Epson TM-U 220D dot-matrix printer
BOE P0151	Cable to connect the printer with the BOECO balances with RS232 interface



DUST COVER FOR BOECO BALANCES

Code	Description
BOE DC-1	Dust cover for BAS 31 / BAS 32 PLUS balances
BOE DC-2	Dust cover for BAS 31 / BAS 52 PLUS balances BWL 51 / BWL 69 / BWL 61 balances

3. Analytical measurement and testing

Balances/Moisture balances

2 Moisture balances MB23 and MB25

The Ohaus MB Series Moisture Analyzers MB-23 and MB-25 provide stable results with 0.1% or 0.05% moisture resolution because of precision weighing technology. They are supplied with either an infra-red, or halogen, heating system. Applicable for most applications. Graphical interface control. No programming necessary.

OHAUS

- Halogen (MB-25) or infra-red (MB23) technology
- 110g capacity
- Operating temperature 50°C to 160°C, set in 5°C
- Displayed data: 0.005g/0.05% (MB25) and 0.001g/0.1% (MB23)
- Sample holder included in MB25 but as option in MB23
- Delivered with 50 x 90mm aluminium sample dishes and protective cover

Specifications

Capacity (g):	110
Electricity supply:	100 to 240V 50/60 Hz a.c.
Dimensions (WxHxD):	17 x 13 x 28cm
Net weight (kg):	2.3

Type	Heating	Reproducibility ± g	Readability mg	PK	Cat. No.
MB23	Infra-red heating (no glass)	0.2% (10g sample)	10	1	9.947 604
MB25	Halogen heating	0.05% (10g sample)	5	1	9.947 605



Halogen moisture balances MB35 and MB45

- Halogen heating technology
- 35g capacity (MB35)/45g capacity (MB45) with 0.01%/0.001g readability
- Temperature range: 50°C to 160°C (5°C increments) MB35/50 to 200°C (1°C stages) MB45
- Large, back-lit graphical LCD display
- One automatic shutoff mode (MB35)/three selectable automatic shutoff modes (MB45)
- 50 User defined drying programs (MB45 Only)
- RS232 Interface

OHAUS

Type	Readability	Weighing range g	Plate diam. mm	PK	Cat. No.
MB35	0.01% / 0.001 g	35	90	1	9.947 500 3
MB45	0.01% / 0.001 g	45	90	1	9.950 065



9.947 500

3. Analytical measurement and testing

Balances/Moisture balances

1



1 Moisture Analyser MA35

- Fully automatic heating of a sample by two powerful metal tubular-shaped heating elements (also called dark radiators)
- Ideally suited for robust production applications
- Particularly simple operator guidance using self-explanatory pictograms
- Sample quantity 5-15g
- % moisture content, % dry weight, ATRO value, g residue, mg weight loss
- Temperature range and settings: 40 to 160°C, in increments of 1 degree
- Standard drying
- Shutoff criteria (optional): fully automatic, timer setting (0.1-99min.), manual
- Access to sample chamber through hinged cover with large opening angle
- 1 program saved in a non-volatile memory (freely selectable parameters)
- Data storage results are saved until the start of the next measurement
- Printout using an optional, external printer (Cat. No. 6.238 838)
- Fixed standard configuration GLP report for measuring results, calibration, adjustment (5 languages selectable)
- External calibration using optional weight sets
- Data interface RS232 C-S/V24-V28, 7 data bits (ASCII) 1 parity bit

Specifications

Readability:	1mg, 0.01%
Weighing range, max:	35g
Reproducibility, weight of sample 1g:	±0.2%
Reproducibility, weight of sample 5g:	±0.05%
Power consumption:	400VA
Dimensions (WxDxH):	224 x 366 x 191mm

Type	Description	PK	Cat. No.
MA35	Moisture Analyser with metal tubular-shaped heating element	1	6.235 500
YDP20-OCE	Data printer (external)	1	6.238 838
6965542	Disposable sample dishes, aluminium, round	80	9.902 612
6906940	Glass fibre filter, hard quality	80	9.601 426
6906941	Glass fibre filter, soft quality	200	6.232 716

2



2 Moisture Analyser MA150C/MA150Q

- Sample heating Infrared heating using a round ceramic heating element (MA150C) or a coiled quartz (CQR) heating element (MA150Q)
- 20 program memory modules for quick method changing
- Very even heat distribution, ideally suited for thermally sensitive samples
- Optional version without glass, for use in food production applications
- Sample quantity 5-15g
- Reading display: % moisture content, % dry weight, RATIO value, mg weight loss, g residue, g/kg residue, g/l residue
- Temperature range and settings: 40 to 220°C, stand-by temperature selectable from 40 to 100°C in increments of 1 degree
- Heating programs: standard drying and gentle drying
- Shutoff criteria (optional): fully automatic, semi-automatic (1-50mg/5-300sec.), semi-automatic (0.1-5.0%/5-300sec.), timer setting (0.1-99.9 min.), manual
- Access to sample chamber through hinged cover
- 20 programs saved in a non-volatile memory (freely selectable parameters)
- Results are saved until the start of the next measurement
- Printout using an optional, external printer (Cat. No. 6.238 838), configurable GLP-report for measuring results, calibration, adjustment (5 languages selectable)
- External calibration using optional weight sets, automatic temperature calibration with optional temperature adjustment set (Cat. No. 6.264 042)
- Safety Parameter settings password-protected against unauthorized access

Specifications

Readability:	1 mg, 0.01%
Weighing range, max:	150g
Reproducibility, weight of sample 1g:	±0.2%
Reproducibility, weight of sample 5g:	±0.05%
Power consumption:	700VA
Dimensions (WxDxH):	213 x 320 x 181mm

Type	Description	PK	Cat. No.
MA150C	Moisture Analyser with ceramic heater	1	6.231 903
MA150Q	Moisture Analyser with quartz heater	1	6.227 492
YDP20-OCE	Data printer (external)	1	6.238 838
YTM03MA	Temperature adjustment set	1	6.264 042
YDB05MA	Carrying case	1	9.902 607
6965542	Disposable sample dishes, aluminium, round	80	9.902 612
6906940	Glass fibre filter, hard quality	80	9.601 426
6906941	Glass fibre filter, soft quality	200	6.232 716