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# Operating instructions Electronic Moisture Analyzer

## KERN DLB\_A

Version 1.4  
03/2017  
GB



DLB\_A-BA-e-1714



# KERN DLB\_A

Version 1.4 03/2017

## Operating instructions Electronic Moisture Analyser

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## 1 Technical data

Data	DLB 160-3A	
Radiator	Halogen (1 x 400 W)	
Temperature range	35°C - 160°C Choice of steps at 1°C	
Maximum load (Max)	160 g	
Warm-up time	120 min	
Minimum for drying	0.5 g	
Readability (d)	Weighing mode	0.001g
	Moisture analysis mode	0.01 %
Reproducibility	Weighing mode	0.001g
	Moisture analysis mode	Weighed in quantity 10 g: 0.03 %
Linearity	± 0.003 g	
Stabilization time (typical)	4 sec.	
Recommended adjustment weight, not added (class)	100g (E2)	
Environmental conditions	<ul style="list-style-type: none"> <li>• 5°C....+40°C ambient temperature</li> <li>• 45% - 75% air humidity non-condensing</li> </ul>	
Shutoff criterion	<p><b>1. Time mode</b></p> <p>Drying is finished after the set time, adjustable 1 – 99 minutes.</p> <p><b>2. Auto mode</b></p> <p>Drying is completed, when the set weight value per time unit is lower than the nominal value, 0.1 – 9.9 % loss of weight adjustable.</p>	
Sample dishes included	Ø 90 mm	

Result display	[g] residual weight [%] moisture [%] dry mass: ATRO [%] = Start weight : Residual weight x 100%
Internal memory	5 memory locations for drying programs
Interface	RS232
Dimensions	Housing 210 x 340 x 225 mm
Available drying room	Ø 100 mm, 20 mm high
Net weight	4.2 kg
Electric Supply	230V AC 50Hz
Mains adapter	9V AC, 1000mA

## 2 Declaration of Conformity

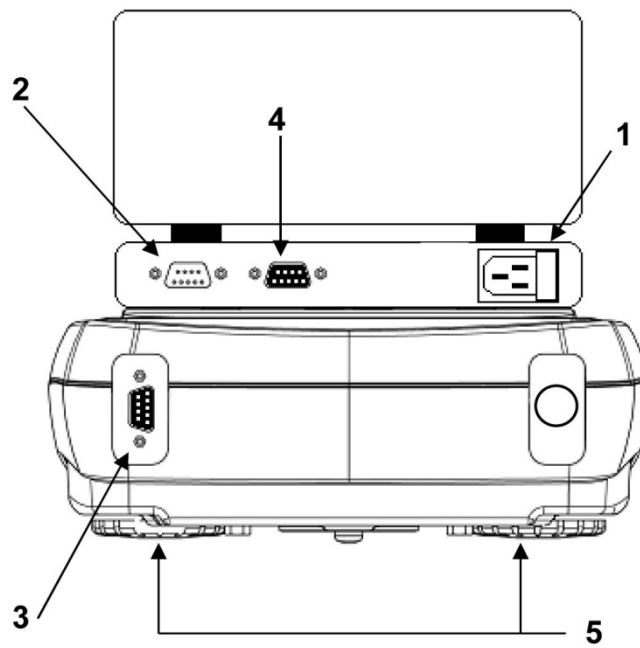
To view the current EC/EU Declaration of Conformity go to:

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

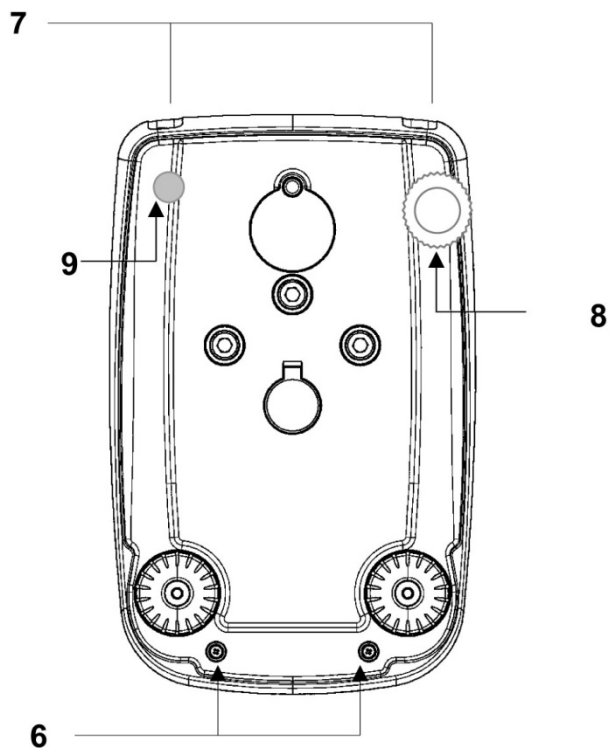
### 3 Appliance overview



Pos.	Description
1	Foldable hood
2	Temperature sensor
3	Sample dish
4	Heating top
5	Balance
6	Display
7	Keyboard
8	Levelling screw



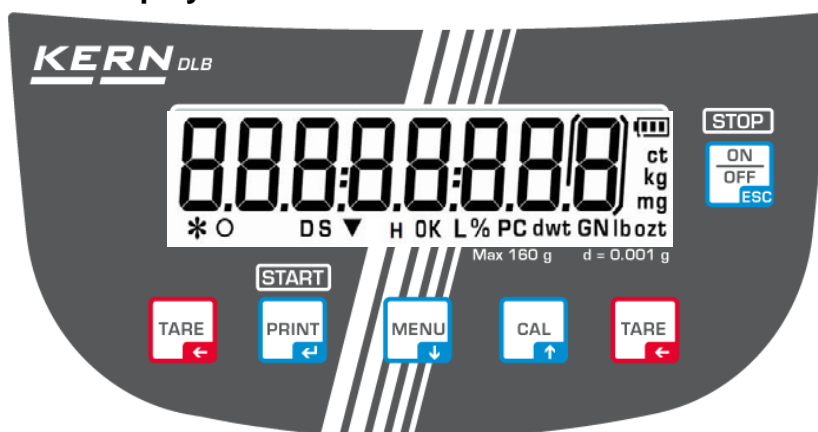
1. Mains connection socket
2. Plug-in connection cable „ / Heating top / Balance “
3. Plug-in connection cable „Balance / Heating top“
4. RS 232 interface
5. Adjustable foot screws









- 6. Housing screws
- 7. Housing screws (for access remove the foot screws)
- 8. Adjustable foot screws
- 9. Rigid foot screw



### 3.1 Keyboard and display overview



Display	Description
*	Stability display
○	Zero indicator
▼	Status „Weighted in quantity sample“
H	Drying process active
%	Display of percentage moisture
g	Gram display

Key	Description	Description
	<b>MENU</b> button	Short key pressing
		Long time pressed button until the acoustic signal gets mute
	Navigation button ▼	<ul style="list-style-type: none"> <li>Invoke user menu</li> <li>Switch over display of result</li> </ul>
		<ul style="list-style-type: none"> <li>Invoke / exit configuration menu</li> </ul>
	<b>CAL</b> button	<ul style="list-style-type: none"> <li>Adjustment</li> </ul>
		Navigation button ▲
	<b>PRINT</b> button	<ul style="list-style-type: none"> <li>Start drying</li> </ul>
		<ul style="list-style-type: none"> <li>Calculate weighing data via interface</li> </ul>
	<b>TARE</b> button	Navigation button ←
		<ul style="list-style-type: none"> <li>Confirm / store settings</li> </ul>
	<b>TARE</b> button	<ul style="list-style-type: none"> <li>Taring</li> <li>Zeroing</li> </ul>

## 4 Basic Information (General)

### 4.1 Proper use

The device purchased by you is designed for a fast and reliable determination of material moisture in liquid, porous and solid materials by applying the method of thermogravimetrics.

### 4.2 Improper Use

Impacts and overloading exceeding the stated maximum load (max) of the device, minus a possibly existing tare load, must be strictly avoided.

This could damage the instrument.

Never operate device in explosive environment. The serial version is not explosion protected.

Changes to the unit's design are not permitted. This may lead to incorrect weighing results, safety-related faults and destruction of the appliance.

The unit may only be operated in accordance with the described default settings. Other areas of use must be released by KERN in writing.

### 4.3 Warranty

Loss of warranty due to

- Our conditions in the operation manual are ignored
- The appliance is used outside the described uses
- The appliance is modified or opened
- mechanical damage and damage caused by media, liquids
- natural wear and tear
- The appliance is improperly set up or incorrectly electrically connected
- The measuring system is overloaded

### 4.4 Monitoring of Test Resources

In the framework of quality assurance the measuring-related properties of the moisture analyser and, if applicable, the testing weight, must be checked regularly. The responsible user must define a suitable interval as well as type and scope of this test. Information is available on KERN's home page ([www.kern-sohn.com](http://www.kern-sohn.com)) with regard to the monitoring of balance test substances and the test weights required for this. In KERN's accredited DKD calibration laboratory test weights and balances may be calibrated (return to the national standard) fast and at moderate cost.

## 4.5 Danger Information

Individual parts of the case (e. g. the ventilation grids) may heat up considerably during operation. For this reason, please touch the device only at the designated handles. Sample materials developing aggressive vapours (e. g. acids) may cause corrosion problems on some parts of the device. The moisture meters should mainly be used for drying aqueous substances. Explosion prone, flammable samples must not be analysed using the moisture meter.



⇒ Do not open or touch drying chambers during the drying process as the device develops very high temperatures. Even after finishing the measurement the appliance remains hot.



- Careful when removing the sample. The sample itself, the sample dish and the heating unit may be very hot.



- Do not use the moisture meter for analysing explosion prone, easily flammable samples.

- Do not operate the humidity analyser in areas with hazard of explosion



- Sample materials emitting toxic substances must be dried with a special extraction system in place. Create an environment that prevents the inhalation of vapours hazardous to health.

- Do not place combustible materials on, under or next to the device.



- Ensure that there is sufficient empty space around the device in order to prevent heat accumulation (distance to device 20 cm, above it 1m).

- Make sure that liquids do not get in contact with the interior of the device or the connections at the rear of the device. If you spill liquid on the device, disconnect it immediately. Afterwards do not operate the appliance and have it checked by a competent KERN stockist before any further use.

## 5 Basic Safety Precautions

### 5.1 Pay attention to the instructions in the Operation Manual



Carefully read this operation manual before setup and commissioning, even if you are already familiar with KERN appliances.

### 5.2 Personnel training

The appliance may only be operated and maintained by trained personnel.

## 6 Transport and storage

### 6.1 Testing upon acceptance

When receiving the appliance, please check packaging immediately, and the appliance itself when unpacking for possible visible damage.

### 6.2 Packaging / return transport



- ⇒ Keep all parts of the original packaging for a possibly required return.
- ⇒ Only use original packaging for returning.
- ⇒ Prior to dispatch disconnect all cables and remove loose/mobile parts.
- ⇒ Reattach possibly supplied transport securing devices.
- ⇒ Secure all parts such as the glass wind screen, the weighing platform, power unit etc. against shifting and damage.

## 7 Unpacking, Setup and Commissioning

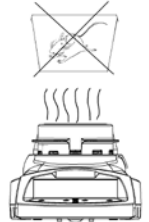
### 7.1 Installation Site, Location of Use

The unit is designed to achieve reliable weighing results under normal conditions of use. You will work accurately and fast, if you select the right location for the appliance.

**On the installation site observe the following:**



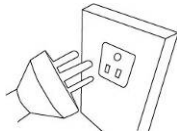
1. Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight;



2. Remove explosion prone, easily flammable material in the immediate vicinity. Emerging vapours, sample dish and all parts of the sample chamber are hot!

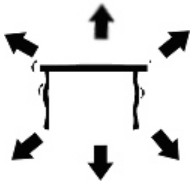


3. Place the device on a firm, level surface.

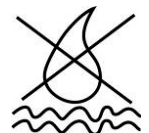


4. Major display deviations (incorrect weighing results) may be experienced should electromagnetic fields (e.g. due to mobile phones or radio equipment), static electricity accumulations or instable power supply occur. Change location or remove source of interference.

5. Avoid static charging of the material to be weighed, weighing container and windshield



6. Avoid jarring during weighing.



7. Protect the appliance against high humidity, vapours and dust,
8. Do not expose the device to extreme dampness for longer periods of time. Non-permitted condensation (condensation of air humidity on the appliance) may occur if a cold appliance is taken to a considerably warmer environment. In this case, acclimatize the disconnected appliance for ca. 2 hours at room temperature.



9. Protect the device against direct draughts due to open windows and doors.

## 7.2 Unpacking and checking

Open package, take out the appliance and accessories. Verify that there has been no damage and that all packing items are present.

### 7.2.1 Scope of delivery

#### Serial accessories:

- Moisture analyzer, see chap. 3
- 10 sample dishes
- Power cable
- Connection cable „Balance / Heating top“
- Operating instructions

## 7.3 Placing

The appliance is supplied part-assembled. Immediately after unpacking check if the delivered items are complete. Assemble the separate component parts according to their sequence.



1. Insert stainless pan protection



2. Put on the dish retainer carefully.



3. Position removal aid in a way that the handle fits under the groove of the cover.



4. Put sample dish on the dish holder.



5. Level the appliance with the help of the foot screws until it is standing evenly.

6. Connect the heater to the balance via cable, insert the cable into the two connectors on the rear of the instruments as shown in the figure.



#### 7.4 Mains connection

Power supply is provided via the supplied mains cable.

Check, whether the voltage acceptance on the scales is set correctly. Do not connect the appliance to the power grid unless the information on the appliance (sticker) matches the local mains voltage.



#### **Important:**

Does the labelling match the local mains voltage?

- Do not connect if mains voltages are different!
- If matching, connect the scales.

The moisture analyzer must be connected to a standard socket with earth terminal. Do not eliminate the protective effect by using an extension lead without earth terminal. For power supplies from power grids without earth terminals call a specialist to establish equivalent protection according to the relevant installation regulations.

- The power plug must be always accessible.
- Before operating, check all cables for damage.
- Guide the cables so that they cannot become damaged or interfere with the measuring process.

### 7.4.1 Turning On the Power

Supply balance with power via the mains power cable. The display lights up and the equipment conducts a self-test. After completion of the test, the balance will set itself in stand-y mode.



To switch on the display press the **ON/OFF** button. As soon as the weight display appears, the instrument will be ready to weigh.



### 7.5 Connection of peripheral devices

Before connecting or disconnecting of additional devices (printer, PC) to the data interface, always disconnect the moisture analyser from the power supply. Only use accessories and peripheral devices by KERN, as they are ideally tuned to the appliance.

### 7.6 Initial Commissioning

In order to obtain exact results with the electronic balances, your balance must have reached the operating temperature (see warming up time chap. During this warming up time the balance must be connected to the power supply (mains, accumulator or battery).

The accuracy of the balance depends on the local acceleration of gravity. Strictly observe hints in chapter Adjustment.



## 8 Weighing

### Start-up

1. In stand-by mode press **ON/OFF** button.  
As soon as the weight display appears, the balance is ready for weighing.



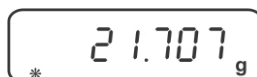
### Switching Off

2. Press the **ON/OFF** button, the balance returns into stand-by mode.



### Simple weighing

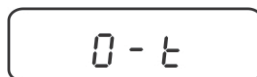
3. Place goods to be weighed on balance.
4. Wait until the stability display appears [\*]



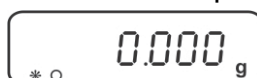
5. Read weighing result.

### Taring

6. Place the weighing box and press the **TARE** button.  
„0-t“ is displayed.



7. After standstill control the zero display appears.



The weight of the container is now internally saved.

8. Weigh the material, the net weight will be indicated.  
After removing the weighing container, the weight of the weighing container appears as negative display.  
The tare weight is saved until it is deleted. Remove the load from the balance and press the **TARE** button. „0-t“ is displayed, wait until the zero display appears.  
The tare procedure can be repeated as many times as necessary, for example with initial weighing of several components for a mix (add-on weighing). The limit is reached when the total weighing range capacity is full.

## 9 Adjustment

### 9.1 Adjust balance

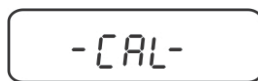
As the acceleration value due to gravity is not the same at every location on earth, each balance must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted to the location in the factory). This adjustment process must be carried out for the first commissioning, after each change of location as well as in case of fluctuating environment temperature. To receive accurate measuring values it is also recommended to adjust the balance periodically in weighing operation.



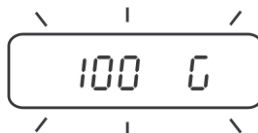
- Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization.
- Carry out adjustment with placed sample dish. Ensure that no objects are within the sample dish.
- Weight value of the required adjustment weight see chpt. 1 “Technical specifications“:



⇒ In weighing mode press the **CAL** button.



⇒ Wait until the weighed value for the required adjustment weight appears flashing.



Example 100 g

⇒ **During** the flashing display put the required adjustment weight carefully in the centre of the sample dish. The flashing display disappears.  
After successful adjustment the balance automatically returns to weighing mode.

⇒ Take away adjustment weight



In case of an adjustment error (e.g. objects on the weighing plate) the display will show an error message, repeat adjustment.

## 9.2 Calibrate / adjust temperature

We recommend sometimes to check the temperature value of the device using the optional temperature calibrating set DLB-A01N. Before you do this, allow the device to cool down for at least 3 hours after the last heating phase.

### Preparation:

⇒ Install the temperature-calibration set acc. to illustration.



⇒ Switch-on the drying unit on the rear side.

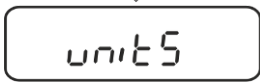
⇒ Close heating cover.

### Invoke service function:

- ⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute. Release the button and the menu item “units” will appear.



0.000 g



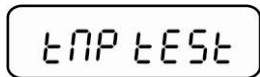
units

- ⇒ Press repeatedly the **MENU** button until „Service“ will be displayed.



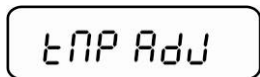
SERVICE

- ⇒ Confirm by pressing the **PRINT** button. Select the required settings by pressing the **MENU** button



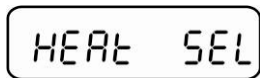
tNP tEST

Calibration of temperature, see chap. 9.2.1



tNP AdJ

Adjustment of temperature, see chap. 9.2.2



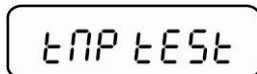
HEAt SEL

Settings of lamp

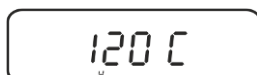
### 9.2.1 Calibration of temperature value

During temperature calibration only a check is carried out, i.e. no values are changed.

- ⇒ Invoke service function „Tmp test“, see chap.9.2



- ⇒ Confirm by pressing the **PRINT** button. The current setting will be displayed. Use the navigation buttons **↓** **↑** to select the temperature during the check, available 35- 160°C, e.g. 120°C.
- ⇒ Confirm using the **PRINT** button, the appliance heats up to the set temperature.

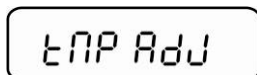


- ⇒ After approx. 15 minutes compare the test temperature with the displayed temperature of the DLB-A01N. If the two values do not match, we recommend a temperature adjustment, see chap. 9.2.2
- ⇒ Use the **ON/OFF** button to finish the calibration.
- ⇒ Use the **ON/OFF** button to return into weighing mode.

## 9.2.2 Adjustment of temperature value

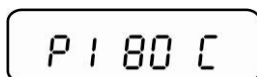
The temperature is measured at two selectable points and it is possible to correct it there.

- ⇒ Invoke service function „Tmp Adj“, see chap. 9.2



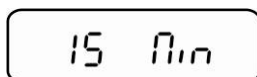
The LCD display shows the text "tNP Adj" in a monospaced font.

- ⇒ Confirm by pressing the **PRINT** button. The current setting for the first temperature point is displayed. Or leave it on factory setting 80°C or select a desired temperature with the help of the navigation buttons ↓ ↑ (available 50-130°C).



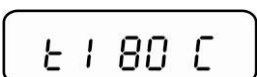
The LCD display shows the text "P1 80 C" in a monospaced font.

- ⇒ Confirm with the **PRINT** button, the first heat-up phase is started. The remaining time is displayed.



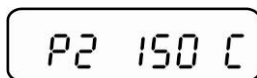
The LCD display shows the text "15 min" in a monospaced font.

- ⇒ Temperature calibration for the first point takes 15 min. Compare the temperature displayed on the DLB-A01N with that of the moisture analyzer. If the two values do not match, correct them using the navigation buttons ↓ ↑ and confirm with the **PRINT** button



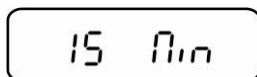
The LCD display shows the text "t1 80 C" in a monospaced font.

- ⇒ The current setting for the second temperature point is displayed. Or leave it on factory setting 150°C or select the desired temperature with the help of the navigation buttons ↓ ↑. The second temperature point has to be at least 30°C over the first one, max. 160°C.



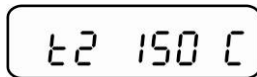
The LCD display shows the text "P2 150 C" in a monospaced font.

- ⇒ Confirm with the **PRINT** button, the second heat-up phase is started. The remaining time is displayed.



The LCD display shows the text "15 min" in a monospaced font.

- ⇒ Temperature calibration for the second point takes 15 min. Compare the temperature displayed on the DLB-A01N with that of the moisture analyzer. If the two values do not match, correct with the help of the navigation buttons ↓ ↑.



The LCD display shows the text "t2 150 C" in a monospaced font.

- ⇒ Confirm by pressing the **PRINT** button. The adjustment is completed, the appliance returns into the menu. Use the **ON/OFF** button to return into weighing mode.

## 10 Appliance configuration

Via the configuration menu the appliance can be individually adapted to your weighing needs.

### Navigation in the menu

**Access to menu** In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute. Release the button, the first menu point „unitS“ is displayed.

**How to select menu items** Using the **MENU** button the individual menu items can be selected one after the other.

⇒ Scroll forward using navigation button ↓ (**MENU** button)

⇒ Scroll backward using navigation button ↑ (**CAL** button)

**Change settings** Acknowledge selected menu item using **PRINT** button, the current setting is displayed. Each time the navigation buttons ↓ ↑ are pressed the next setting will be displayed.

⇒ Scroll forward using navigation button ↓ (**MENU** button)

⇒ Scroll backward using navigation button ↑ (**CAL** button)

**Save settings** Take over selection using the **PRINT** button. Weighing balance returns to menu. Either make more settings in the menu or go back to menu mode as follows.

**Exit menu/ back to weighing mode** Press the **MENU** button and keep it pressed until the acoustic signal gets mute. The balance returns automatically into weighing mode.

### Menu overview

Menu item	Display	Selection	Description
Weighing unit	<b>units</b>	<b>GrAM</b>	not documented
Data output type (see chap. 10.1)	<b>SEriAL</b>	<b>Manu Prt</b>	Not documented
		<b>Auto Prt</b>	Not documented
		<b>Manu PC</b>	Data output after pressing the <b>PRINT</b> button
		<b>Auto PC</b>	Automatic data output
		<b>Weig PC</b>	Continuous data output residual weight
		<b>Manu T50</b>	Not documented
		<b>Auto T50</b>	Not documented

Baudrate (see chap. 10.2)	<b>bAud rt</b>	<b>br 1200</b>	
		<b>br 2400</b>	
		<b>br 4800</b>	
		<b>br 9600</b>	
Service menu (see chap. 9.2)	<b>SERviceE</b>	<b>tMP tEst</b>	Calibration of temperature
		<b>tMP AdJ</b>	Adjustment of temperature
		<b>HEAT SEL</b>	Settings of lamp
		<b>END</b>	Exit service menu
Automatic zero point correction (see chap. 10.3)	<b>Auto 0</b>	<b>Au0 OFF</b>	Auto Zero switched off
		<b>Au0 1</b>	Auto Zero range $\pm \frac{1}{2}$ digit
		<b>Au0 2</b>	Auto Zero range $\pm 3$ digits
		<b>Au0 3</b>	Auto Zero range $\pm 7$ digits
		<b>Au0 3E</b>	Auto Zero range $\pm 7$ digits in the whole weighing range
Filter (see chap. 10.4)	<b>FiltEr</b>	<b>Filt 1</b>	Setting for dispensing
		<b>Filt 2</b>	Sensitive and fast, very quiet set-up location.
		<b>Filt 3</b>	Robust but slow, busy set-up location.
Stability display (see chap. 10.5)	<b>StAbil</b>	<b>Stab 1</b>	Standstill control fast / very quiet set-up location
		<b>Stab 2</b>	Standstill control fast + exact/ quiet set-up location
		<b>Stab 3</b>	Standstill control exact /very set-up location.
Contrast of the display (see chap. 10.6)	<b>Contr</b>	<b>1-15</b>	Select contrast
Background illumination of the display (see chap. 10.7)	<b>Blit</b>	<b>on</b>	Background illumination on
		<b>off</b>	Background illumination off
		<b>Auto</b>	Backlighting automatically switched off 3 seconds after achieving stable weighing value. Changes in weight or pressing of keys will automatically result in backlight switching on again.
Tablet mode	<b>tbl ModE</b>	<b>off</b>	
		<b>on</b>	Setting for DLB 160-3A
Adjustment	<b>CALib</b>	<b>E-CAL</b>	Adjustment with external weight
	<b>End</b>		Exit the menu



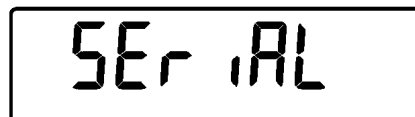
## Description of individual menu items:

### 10.1 Data output type

⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute.



⇒ Press **MENU** button



⇒ Acknowledge using **PRINT** button, the current setting is displayed.

⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

<b>Manu Prt</b>	Not documented
<b>Auto Prt</b>	Not documented
<b>Manu PC</b>	Data output after pressing the <b>PRINT</b> button
<b>Auto PC</b>	Automatic data output
<b>Weig PC</b>	Continuous data output residual weight
<b>Manu T50</b>	Not documented
<b>Auto T50</b>	Not documented

⇒ Take over selection using the **PRINT** button.  
Weighing balance returns to menu. Either make more settings in the menu or go back to weighing mode as follows.

⇒ Press the **MENU** button and keep it pressed until the acoustic signal gets mute.  
The balance returns automatically into weighing mode.



## 10.2 Baud rate

- ⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute.

A rectangular box containing the text 'Units' in a digital font.

- ⇒ Press **MENU** button repeatedly

A rectangular box containing the text 'baud rt' in a digital font.

A rectangular box containing the text 'baud rt' in a digital font.

- ⇒ Acknowledge using **PRINT** button, the current setting is displayed.
- ⇒ Use the navigation buttons ↓ ↑ to select the desired setting.

A rectangular box containing the text 'br 1200' in a digital font.



A rectangular box containing the text 'br 2400' in a digital font.



A rectangular box containing the text 'br 4800' in a digital font.



A rectangular box containing the text 'br 9600' in a digital font.

- ⇒ Take over selection using the **PRINT** button.  
Weighing balance returns to menu. Either make more settings in the menu or go back to weighing mode as follows.
- ⇒ Press the **MENU** button and keep it pressed until the acoustic signal gets mute.  
The balance returns automatically into weighing mode.

A rectangular box containing the text '\* O' on the left and '0.0000 g' on the right in a digital font.

### 10.3 Auto Zero

Under this menu item the automatic zero point correction can be switched on or off. In switched-on-state the zero point is automatically corrected at drift or when dirty.

Note:

In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation“. (e.g. slow flow of liquids from a container placed on the balance, evaporating processes). When apportioning involves small variations of weight, it is advisable to switch off this function.

⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute.

A rectangular digital display showing the word "Units" in a black, seven-segment font.

⇒ Press **MENU** button repeatedly

A rectangular digital display showing the text "Auto 0" in a black, seven-segment font.

⇒ Acknowledge using **PRINT** button, the current setting is displayed.

Use the navigation buttons  $\downarrow$   $\uparrow$  to select the desired setting.



- Au0 OFF** = Auto Zero switched off
- Au0 1** = Auto Zero range  $\pm \frac{1}{2}$  digit
- Au0 2** = Auto Zero range  $\pm 3$  digits
- Au0 3** = Auto Zero range  $\pm 7$  digits
- Au0 3E** = Auto Zero range  $\pm 7$  digits in the whole weighing range

- $\Rightarrow$  Take over selection using the **PRINT** button.  
Weighing balance returns to menu. Either make more settings in the menu or go back to weighing mode as follows.
- $\Rightarrow$  Press the **MENU** button and keep it pressed until the acoustic signal gets mute.  
The balance returns automatically into weighing mode.



## 10.4 Filter

This menu item allows the balance to be set according to specific ambient conditions and measuring purposes.

- ⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute.

A rectangular box containing the text 'Units' in a black, seven-segment digital font.

- ⇒ Press **MENU** button repeatedly

A rectangular box containing the text 'Filter' in a black, seven-segment digital font.

- ⇒ Acknowledge using **PRINT** button, the current setting is displayed.
- ⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

A rectangular box containing the text 'Filter 1' in a black, seven-segment digital font.



A rectangular box containing the text 'Filter 2' in a black, seven-segment digital font.



A rectangular box containing the text 'Filter 3' in a black, seven-segment digital font.

**Filter 1:** Setting for dispensing

**Filter 2:** The balance reacts quickly and in a sensitive manner, very quiet set-up location.

**Filter 3:** The balance reacts slowly and in a robust manner, busy set-up location

- ⇒ Take over selection using the **PRINT** button.  
Weighing balance returns to menu. Either make more settings in the menu or go back to weighing mode as follows.
- ⇒ Press the **MENU** button and keep it pressed until the acoustic signal gets mute.  
The balance returns automatically into weighing mode.

A rectangular box containing a digital display. On the right, it shows '0.0000' followed by a small 'g' for grams. On the left, it shows '\* O'.

## 10.5 Standstill control display

- ⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute.

A rectangular digital display showing the word "Units" in a seven-segment font.

- ⇒ Press **MENU** button repeatedly

A rectangular digital display showing "STAB IL" in a seven-segment font.

- ⇒ Acknowledge using **PRINT** button, the current setting is displayed.
- ⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

A sequence of three digital displays. The first shows "STAB 1", the second shows "STAB 2", and the third shows "STAB 3". Downward-pointing arrows are positioned between the first and second displays, and between the second and third displays.

- Stab 1:** Standstill control fast / very quiet set-up location
- Stab 2:** Standstill control fast + exact / quiet set-up location
- Stab 3:** Standstill control exact / very set-up location.

- ⇒ Take over selection using the **PRINT** button.  
Weighing balance returns to menu. Either make more settings in the menu or go back to weighing mode as follows.
- ⇒ Press the **MENU** button and keep it pressed until the acoustic signal gets mute.  
The balance returns automatically into weighing mode.

A rectangular digital display showing "0.000" g in a seven-segment font. Below the display, on the left side, is the text "\* O".

## 10.6 Setting the contrast of the display

To set the contrast of the display you can choose between 15 values.

- ⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute.

A rectangular box containing the text 'Units' in a digital, seven-segment font.

- ⇒ Press **MENU** button repeatedly

A rectangular box containing the text 'Contr' in a digital, seven-segment font.

- ⇒ Acknowledge using **PRINT** button, the current setting is displayed.
- ⇒ Press the arrow keys **↓** **↑** to select desired setting.  
Scroll forward using **MENU** button  
Scroll backward using **CAL** button

A rectangular box containing the text '-01-' in a digital, seven-segment font.



A rectangular box containing the text '-08-' in a digital, seven-segment font.



A rectangular box containing the text '-15-' in a digital, seven-segment font.

**01:** small contrast  
**08:** medium contrast  
**15:** high contrast

- ⇒ Take over selection using the **PRINT** button.  
Weighing balance returns to menu. Either make more settings in the menu or go back to weighing mode as follows.
- ⇒ Press the **MENU** button and keep it pressed until the acoustic signal gets mute.  
The balance returns automatically into weighing mode.

A rectangular box containing the text '\* O' on the left and '0.0000 g' on the right in a digital, seven-segment font.

## 10.7 Display background illumination

⇒ In weighing mode press the **MENU** button and keep it pressed until the acoustic signal gets mute.

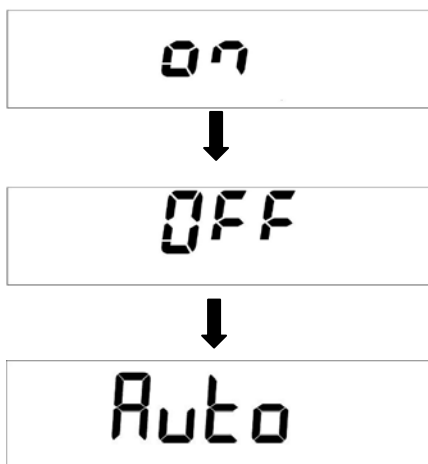
A rectangular box containing the text "Units" in a digital font.

⇒ Press **MENU** button repeatedly

A rectangular box containing the text "bLk" in a digital font.

⇒ Acknowledge using **PRINT** button, the current setting is displayed.

⇒ Use the navigation buttons **↓** **↑** to select the desired setting.



**ON** Background illumination on

**OFF** Background illumination off

**Auto** Backlighting automatically switched off 3 seconds after achieving stable weighing value. Changes in weight or pressing of keys will automatically result in backlight switching on again

⇒ Take over selection using the **PRINT** button.  
Weighing balance returns to menu. Either make more settings in the menu or go back to weighing mode as follows.

⇒ Press the **MENU** button and keep it pressed until the acoustic signal gets mute.  
The balance returns automatically into weighing mode.

A rectangular box containing a digital display. The main display shows "0.000" followed by a small "g" unit. Below the main display, on the left, is a small "\* O" symbol.



## 11 Operator menu – moisture analysis

### Menu selection:

**PrG 1**

**PrG 2**

**PrG 3**

**PrG 4**

**PrG 5**

The appliance offers the possibility to occupy and to save 5 different drying programs (Prg1, Prg2, Prg3, Prg4, Prg5) with individual drying parameters which may be invoked and started whenever necessary.

**PrG time**

Time drying mode:

Drying is completed after the set time, adjustable:

Drying time 1 – 99 minutes

Temperature 35 – 160 °C

**PrG Auto**

Autostop drying mode:

Drying is completed, when a weight constancy has been reached.

Options:

Weight loss 0.1 - 9.9%

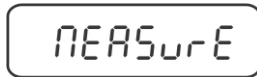
Temperature 35 – 160 °C

## 11.1 How to implement drying

Place removal aid with empty sample dish on the sample dish retainer. Make sure that the sample dish is resting flat on the sample dish retainer. Use the sample retainer at all times as it allows safe working and prevents burns.

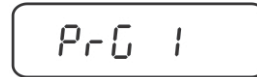
Prior to start the moisture analysis select a suitable drying program.

⇒ In weighing mode press the **MENU** button, „Measure “ is displayed.



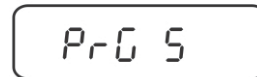
⇒ Acknowledge using **PRINT** button, the current setting is displayed.

⇒ Use the navigation buttons **↓** **↑** to select the desired drying program.

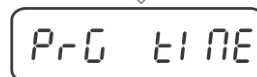


.....

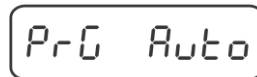
s. chap. 11.1.1



s. chap. 11.1.2



s. chap. 11.1.3



### 11.1.1 Moisture analysis with drying program PrG1 – PrG5

After invoking a drying program PrG1, PrG2, PrG3, PrG4 or PrG5 previously stored (see chap. 10.2) you are queried whether the preheating stage „PrH“ shall be connected.

**i** If the preheating stage is added, the appliance will heat up to the set temperature before starting the drying.

PrG 1

⇒ Confirm the selected drying program, e.g. PrG1 (see chap. 11.1) using the **PRINT** button. The query whether the preheating stage „PrH“ shall be connected, will appear.

PrH no



PrH YES

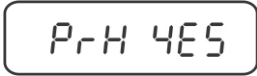
⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

**PrH no** = preheating stage switched off

**PrH yes** = preheating stage connected

## Start of moisture analysis:

### Preheating stage enabled



- ⇒ Confirm by the **PRINT** button, close the sample chamber and wait for the warm-up phase.



- ⇒ After reaching the set temperature „ready“ will be displayed.



- ⇒ Confirm by pressing the **PRINT** button. The weight display and the indicator „▼“ are displayed.
- ⇒ If required, tare by using **TARE** button.



- ⇒ Put prepared sample (see chap. 13.4) in the sample dish and close the sample chamber.



- ⇒ Wait for stability display, then press the **PRINT** button. Drying is started.



The result display appears.

The indicator „H“ displays the active drying process.

### Preheating stage disabled



- ⇒ Confirm by pressing the **PRINT** button. The weight display and the indicator „▼“ are displayed.
- ⇒ If required, tare by using **TARE** button.



- ⇒ Put prepared sample (see chap. 13.4) in the sample dish and close the sample chamber.



- ⇒ Wait for stability display, then press the **PRINT** button. Drying is started.



The result display appears.

The indicator „H“ displays the active drying process.

⇒ During drying the display can be switched over by repeated pressing of the **MENU** button.

Moisture [%] = loss of weight (GV) from start weight (SG)

0 – 100%



Dry mass [%] = residual weight (RG) of SG

100% - 0 %



ATRO [%] =  $SG : RG \times 100\%$

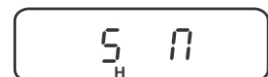
100 – 999 %



Current temperature



Remaining time



Using the **ON/OFF** button drying can be finished at any moment if required.

⇒ When drying is finished, you will hear an acoustic signal and the heating will be shut off. The indicator „OK“ displays the measuring result. Use the **MENU** button to switch over into the result display.



Moisture [%]



Dry mass [%]



ATRO [%]



Residual weight in „g“

- ⇒ When an optional printer is connected, the measurement log will be edited independently on the settings in the menu, see chap. 12.3
- ⇒ For further measurement press the **ON/OFF** button, the appliance returns into the menu.
- ⇒ For exiting the menu press anew the **ON/OFF** button, the appliance returns into weighing mode
- ⇒ Open the sample chamber and remove the sample with the help of the removal aid.  
**Caution:** Caution! Sample dish and all parts of the sample chamber are hot!

### 11.1.2 Moisture analysis with drying program PrG time

After setting the drying time (available 1 -99 Min) and the drying temperature (available 35 – 160°C), moisture will be analyzed with the help of these two parameters.

PrG tIME

⇒ Confirm by pressing the **PRINT** button. The currently set drying time is displayed.

10 Min

⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

⇒ Confirm by pressing the **PRINT** button. The currently set drying temperature is displayed.

120 C

⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

⇒ Confirm by pressing the **PRINT** button. The query whether the preheating stage „PrH“ shall be connected, will appear.

PrH no



PrH YES

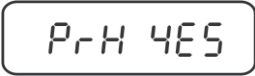
⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

**PrH no** = preheating stage switched off


**PrH yes** = preheating stage connected

## Start of moisture analysis:

### Preheating stage enabled



- ⇒ Confirm by the **PRINT** button, close the sample chamber and wait for the warm-up phase.



- ⇒ After reaching the set temperature „ready“ will be displayed.



- ⇒ Confirm by pressing the **PRINT** button. The weight display and the indicator „▼“ are displayed.
- ⇒ If required, tare by using **TARE** button.



- ⇒ Put prepared sample (see chap. 13.4) in the sample dish and close the sample chamber.



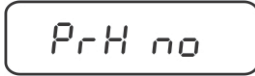
- ⇒ Wait for stability display, then press the **PRINT** button. Drying is started.



The result display appears.

The indicator „H“ displays the active drying process.


### Preheating stage disabled



- ⇒ Confirm by pressing the **PRINT** button. The weight display and the indicator „▼“ are displayed.
- ⇒ If required, tare by using **TARE** button.



- ⇒ Put prepared sample (see chap. 13.4) in the sample dish and close the sample chamber.



- ⇒ Wait for stability display, then press the **PRINT** button. Drying is started.



The result display appears.

The indicator „H“ displays the active drying process.



⇒ During drying the display can be switched over by repeated pressing of the **MENU** button.

Moisture [%] = loss of weight (GV) from start weight (SG)



0 – 100%



Dry mass [%] = residual weight (RG) of SG



100% - 0 %



ATRO [%] =  $SG : RG \times 100\%$



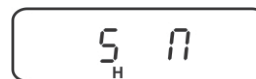
100 – 999 %



Current temperature



Remaining time



Using the **ON/OFF** button drying can be finished at any moment if required.

⇒ When drying is finished, you will hear an acoustic signal and the heating will be shut off. The indicator „OK“ displays the measuring result. Use the **MENU** button to switch over into the result display.



Moisture [%]



Dry mass [%]



ATRO [%]



Residual weight in „g“

- ⇒ When an optional printer is connected, the measurement log will be edited independently on the settings in the menu, see chap. 12.3
- ⇒ For further measurement press the **ON/OFF** button, the appliance returns into the menu.
- ⇒ For exiting the menu press anew the **ON/OFF** button, the appliance returns into weighing mode
- ⇒ Open the sample chamber and remove the sample with the help of the removal aid.  
**Caution:** Caution! Sample dish and all parts of the sample chamber are hot!

### 11.1.3 Moisture analysis with drying program PrG Auto Mode

Drying will be completed, when the set loss of weight (available 0.1 - 9.9% humidity) per time unit (60 sec) is less than the nominal value.

PrG Auto

- ⇒ Confirm by pressing the **PRINT** button. The currently set nominal value is displayed.

1.0 d%/h

- ⇒ Use the navigation buttons **↓** **↑** to select the desired setting.
- ⇒ Confirm by pressing the **PRINT** button. The currently set drying temperature is displayed.

120 C

- ⇒ Use the navigation buttons **↓** **↑** to select the desired setting.
- ⇒ Confirm by pressing the **PRINT** button. The query whether the preheating stage „PrH“ shall be connected, will appear.

PrH no



PrH YES

- ⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

**PrH no** = preheating stage switched off  
**PrH yes** = preheating stage connected

## Start of moisture analysis:

### Preheating stage enabled

- ⇒ Confirm by the **PRINT** button, close the sample chamber and wait for the warm-up phase.

- ⇒ After reaching the set temperature „ready“ will be displayed.

- ⇒ Confirm by pressing the **PRINT** button. The weight display and the indicator „▼“ are displayed.
- ⇒ If required, tare by using **TARE** button.

- ⇒ Put prepared sample (see chap. 13.4) in the sample dish and close the sample chamber.

- ⇒ Wait for stability display, then press the **PRINT** button. Drying is started.

The result display appears.  
The indicator „H“ displays the active drying process.

### Preheating stage disabled

- ⇒ Confirm by pressing the **PRINT** button. The weight display and the indicator „▼“ are displayed.
- ⇒ If required, tare by using **TARE** button.

- ⇒ Put prepared sample (see chap. 13.4) in the sample dish and close the sample chamber.

- ⇒ Wait for stability display, then press the **PRINT** button. Drying is started.

The result display appears.  
The indicator „H“ displays the active drying process.

⇒ During drying the display can be switched over by repeated pressing of the **MENU** button.

Moisture [%] = loss of weight (GV) from start weight (SG)



0 – 100%



Dry mass [%] = residual weight (RG) of SG



100% - 0 %



ATRO [%] =  $SG : RG \times 100\%$



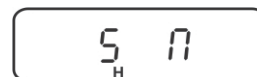
100 – 999 %



Current temperature



Remaining time



Using the **ON/OFF** button drying can be finished at any moment if required.

⇒ When drying is finished, you will hear an acoustic signal and the heating will be shut off. The indicator „OK“ displays the measuring result. Use the **MENU** button to switch over into the result display.



Moisture [%]



Dry mass [%]



ATRO [%]



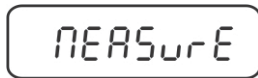
Residual weight in „g“

- ⇒ When an optional printer is connected, the measurement log will be edited independently on the settings in the menu, see chap. 12.3
- ⇒ For further measurement press the **ON/OFF** button, the appliance returns into the menu.
- ⇒ For exiting the menu press anew the **ON/OFF** button, the appliance returns into weighing mode
- ⇒ Open the sample chamber and remove the sample with the help of the removal aid.  
**Caution:** Caution! Sample dish and all parts of the sample chamber are hot!

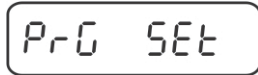
## 11.2 Save the drying programs PrG1, PrG2, PrG3, PrG4, PrG5

The appliance has more than 5 memory locations for often used drying programs. For every drying program the respective drying parameters are stored, which may be invoked and started according to needs (see chap. 11.1.1)

⇒ In weighing mode press the **MENU** button, „Measure “ is displayed.

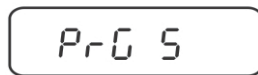
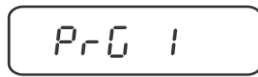


⇒ Use the navigation buttons ↓ ↑ „PrG Set“



⇒ Confirm by pressing the **PRINT** button.

⇒ Use the navigation buttons ↓ ↑ to select the desired drying program.



⇒ Confirm with the **PRINT** button, the currently set drying mode will be displayed.

PrG Auto



PrG time

- ⇒ Use the navigation buttons **↓** **↑** to select the desired drying mode.
- ⇒ Acknowledge using **PRINT** button, the current setting is displayed. Enter the drying parameters as specified in chap. 11.1.2 (PrG time) and chap. 11.1.3 (PrG Auto).
- ⇒ Confirm using the **PRINT** button, the query „Save no / yes“ appears.
- ⇒ Use the navigation buttons **↓** **↑** to select the desired setting.

SAVE no

Do not save



SAVE YES

store

- ⇒ Confirm using the **PRINT** button, the appliance returns into the menu.
- ⇒ For exiting the menu press anew the **ON/OFF** button, the appliance returns into weighing mode.

## 12 RS 232C interface

The moisture analyser is typically equipped with a RS 232C interface.

The following conditions must be met to provide successful communication between the moisture analyser and the printer.

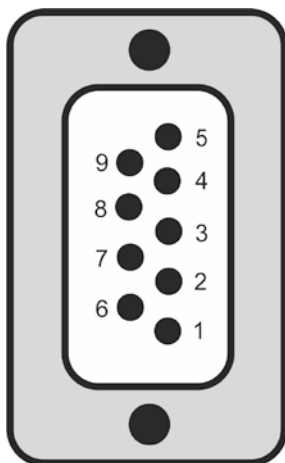
- Use a suitable cable to connect the moisture analyser to the interface of the printer. Faultless operation requires an adequate KERN interface cable.
- Communication parameters (baud rate, bits and parity) of moisture analyser and printer must match.
- Data may only be transferred in moisture analysis mode.

The measurement data may be edited according to the setting in the menu item „Serial“ automatically or by pressing the **PRINT** button via the interface.

### 12.1 Technical data

- 8-bit ASCII Code
- 8 data bits, 1 stop bit, no parity bit
- Baudrate selectable from 1200 - 9600 Baud.
- For operation with interface faultless operation is only ensured with the correct KERN – interface cable (max. 2m)

### 12.2 Pin allocation of the output plug



Pin 2:	Tx Signal
Pin 3:	Rx Signal
Pin 5:	GND



## 12.3 Printout examples (YKB-01N)

### 1. Menu setting „Serial“→“Manu PC“

Printout occurs when drying is completed by pressing the **PRINT** button.

Temp.	130	°C	Drying temperature
Time:	5	Min	Drying time
W.Start	19.998	g	Start weight
-----			
W-End:	19.994	g	Residual weight
Moist.:	0.02	%	Moisture [%]
-----			

### 2. Menu setting „Serial“→“Auto PC“

The first part of the printout occurs automatically when drying starts

Temp.	130	°C	Drying temperature
Time	5	Min	Drying time
W.Start	19.998	g	Start weight
-----			
The second part of the printout occurs automatically when drying is completed			
-----			
W-End:	19.994	g	Residual weight
Moist.:	0.02	%	Moisture [%]
-----			

## 13 General information concerning moisture analysis

### 13.1 Application

In all cases where moisture is added to or removed from products, a fast determination of the moisture content is of enormous importance. For countless products the moisture content is not only a quality feature but also an important cost factor. Very often fixed limits for moisture content apply to the trade in industrial or agricultural goods as well as chemical or food products which are defined by terms of delivery and general standards.

### 13.2 Basics

Moisture does not only mean water but includes all substances that evaporate when heated up. In addition to water this includes,

- Fats
- Oils
- Alcohol
- Solvents
- etc...

There are various methods to analyse moisture in a product.

KERN MLB uses a method called thermogravimetrics. In accord with this method, the sample is weighed before and after heating, determining the material moisture by looking at the difference.

The conventional drying chamber method follows the same principle, with the exception that this method requires a considerably longer measuring period. . In accord with the drying chamber method, the sample is heated from the outside to the inside by a hot air current, so as to remove the moisture. The radiation applied in the KERN DLB penetrates mainly the sample in order to be transformed inside it into heat energy that is, warming from the inside to the outside. A minor amount of radiation is reflected by the sample, a reflection that is less in dark samples than in light-coloured ones. The depth of penetration of the radiation depends on the permeability of the sample. In samples of low permeability the radiation only penetrates the outer layers of the sample, possibly resulting in imperfect drying, incrustation or burning. For that reason the preparation of a sample is of great importance.

### 13.3 Adjustment to existing measuring method

Quite frequently the KERN DLB replaces a different drying method (such as a drying chamber) as the KERN DLB achieves shorter measuring times during a simplified operation. For that reason the conventional measuring method must be matched to the KERN DLB in order to achieve comparable results.

- Carry out parallel measurement  
Lower temperature setting for KERN DLB than drying chamber method
- Result of KERN DLB does not match reference
  - Repeat measurement with changed temperature setting
  - Vary shutoff criterion

### 13.4 Preparing a sample

Prepare one sample at a time for measuring. This prevents the sample from exchanging moisture with its surroundings. If several samples have to be taken at the same time, they should be packed in airtight boxes so that they do not undergo changes during storage.

To receive reproducible results, spread the sample thinly and evenly on a sample dish. Patchy spreads will produce inhomogeneous heat distribution in the sample to be dried resulting in incomplete drying and increased measuring time. Sample clusters generate increased heating of the upper layers resulting in combustion or incrustation. The high layer thickness or possibly arising incrustation makes it impossible for the moisture to escape from the sample. Due to this residual moisture, measured results calculated in this way will not be comprehensible or reproducible.

#### Preparing a sample from solids:



- Spread powdery or grainy samples evenly on the sample dish.
- Grind coarse samples using a mortar or a shredder. When grinding the sample avoid any heat supply as this may cause loss of humidity.

#### Preparing a sample from liquids:



For liquids, pastes or melting samples we recommend to use a glass fibre filter. The glass fibre filter has the following advantages:

- Even distribution thanks to capillary attraction
- no formation of droplets
- fast evaporation due to a greater surface

### 13.5 Sample material

Easy to determine are usually samples with the following characteristics:

- Grainy to powdery, pourable solids
- Thermally stable materials, emitting the moisture to be determined easily without other substances evaporating at the same time
- Liquids that vaporize to leave a dry substance without developing a film

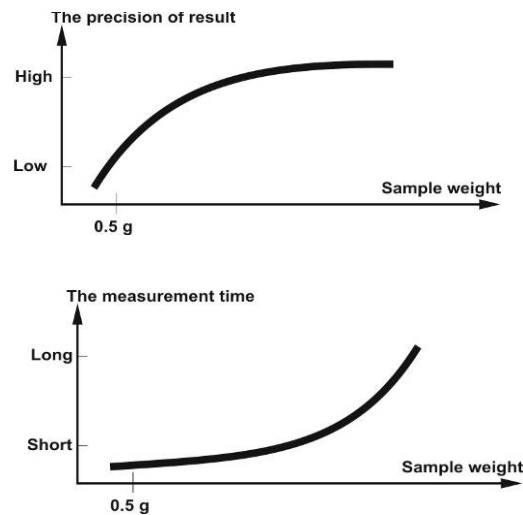
Difficult to determine may be samples that are:

- Glutinous or sticky
- Become incrustated easily or tend to form a film
- Decompose easily under the influence of heat or emit various elements

### 13.6 Sample size / originally weighted in quantity

Drying times, as well as achievable accuracy, are significantly influenced by sample distribution. In the course of this arise two opposed requirements:

The lighter the originally weighted in quantity, the easier it is to achieve shorter drying times.



However, the heavier the originally weighted in quantity, the more accurate a result.

## 13.7 Drying temperature

Bear in mind the following factors when setting the drying temperature:

### Surface of the sample:

Compared with powdery or grainy samples, liquid and spreadable samples have a smaller surface for the transmission of heat energy.

The use of a glass fibre filter improves the heat application.

### Colour of sample:

Light-coloured samples reflect more heat radiation than dark ones and therefore require a higher drying temperature.

### Availability of volatile substances:

The better and faster the water or other volatile substances can be disposed, the lower a drying temperature is required. If water is difficult to get to (e. g. in synthetics), it has to be calcined at high temperatures (the higher the temperature, the higher the water vapour pressure).

Results equivalent to other moisture analysing methods (e. g. drying chamber) can be achieved by experimentally optimising the setting parameters such as temperature, heating level and shutoff criteria.

## 13.8 Recommendations / Guidelines

### Prepare standard sample:

- Crush sample, as required, and spread it evenly in the aluminium dish.



### Prepare special samples:

- For sensitive or hard to spread test materials (e. g. mercury) a glass fibre filter is available for use.
- Apply the sample equally on the glass fibre filter and cover it with a second glass fibre filter.
- The glass fibre filter is also useful as a protection when splashing materials are dealt with (each splash falsifies the final result).



You will find examples taken from actual use in our application manual, available from the KERN home page ([www.kern-sohn.com](http://www.kern-sohn.com)).

## 14 Error messages

ERR01	Weight value instable or zeroing not possible. Check the environmental conditions.
ERR02	Adjustment error, e.g. instable environmental conditions
ERR03	Adjustment error e.g. incorrect adjustment weight}
ERR05	Data transfer not possible, as weighing value is instable. Check the environmental conditions.
ERR07	Faulty data reading
ERR10	Instable display when drying starts, check environmental conditions
ERR11	Sample weight too small
“UNLOAD”:	Sample or sample dish wrongly positioned.
“Err thb”	Heating top does not work, check current supply
	Weighing range exceeded, placed load exceeds the capacity of the appliance. Unload appliance.
	Weighing range not reached, e.g. Dish holder / removal help is missing.

## 15 Service, maintenance, disposal



Before any maintenance, cleaning and repair work disconnect the appliance from the operating voltage.

### 15.1 Cleaning

Please do not use aggressive cleaning agents (solvents or similar agents), but a cloth dampened with mild soap suds. Ensure that no liquid penetrates into the device. Polish with a dry soft cloth.

Loose residue sample/powder can be removed carefully with a brush or manual vacuum cleaner.

**Spilled weighing goods must be removed immediately.**

## 15.2 Service, maintenance

- ⇒ The appliance may only be opened by trained service technicians who are authorized by KERN.
- ⇒ Ensure that the balance is regularly calibrated, see chap. Testing instruments control.

## 15.3 Disposal

- ⇒ Disposal of packaging and appliance must be carried out by operator according to valid national or regional law of the location where the appliance is used.

## 16 Instant help

### Fault

### Possible cause

Display is not lit up.

- The display unit is not switched on.
- The mains supply connection has been interrupted (mains cable not plugged in/faulty).
- Power supply interrupted.

Measurement is taking too long

- Incorrect setting shutoff criterion

Measurement is not reproducible

- Sample is not homogenous
- Drying time is too short
- Drying temperature too high (e.g. oxidation sample material, boiling point of sample exceeded)
- Temperature sensor soiled or defective

The displayed weight is permanently changing

- Draught/air movement
- Table/floor vibrations
- Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)