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User manual



grain moisture meter

humimeter FS1




Measuring procedure:

1. Place the empty provided cup (0.25 litre) on the scale and turn it on. The scale shows 0.0 gram.

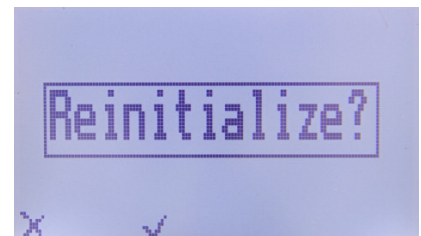




2. Make sure that the measuring chamber is completely empty. It is important that no material is left in the measuring chamber when you turn on the device.

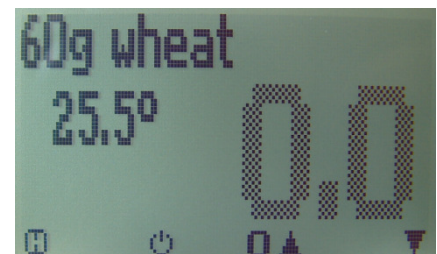
3. Switch on the device by pressing the power button () for 3 seconds.



4. The next step is the self calibration. The word “reinitialize” will show up on your display. Accept by pressing the button. ✓



5. Select the right calibration curve for your material under test using the  or  buttons.



6. Fill up the cup with the sample material (+/- 0.5g). The filling quantity needed is shown on the upper left corner on the display of the device.



7. Fill up the measuring device with the sample material. The filling needs to be done slowly and constantly to ensure reproducible results. There must not be used a funnel or anything similar for filling.



8. The display shows the measuring result.

9. If the measuring value is blinking, the valid measuring range is exceeded (limits see list on page 5). In this case the accuracy decreases.



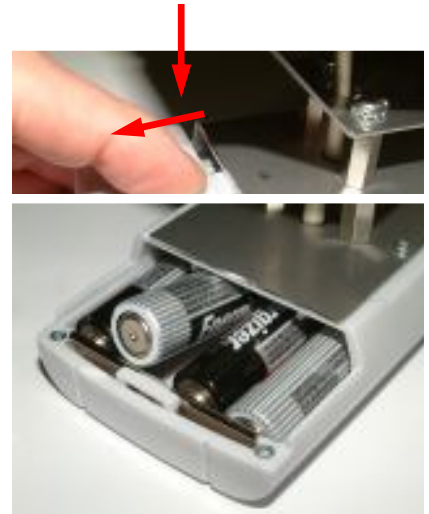
10. Empty the humimeter and ensure that no grain rests are accumulated in the measuring chamber.



Changing batteries

If the batteries are empty, please proceed as follows:

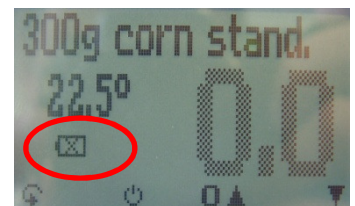
- 1.) Press with your finger onto the arrow of the battery cap und pull it back.
- 2.) Remove the empty batteries.
- 3.) Put four new 1.5 Volt AA Alkaline batteries in the device. Check the right position of the battery poles.
- 4.) Press down the batteries and close the cap.



If the battery symbol appears in the measuring window resp. if a critical charge of battery is shown in the status, the batteries have to be changed IMMEDIATELY.



Also remove the batteries if you do not use your humimeter device for a longer period. For eventual resulting damages we cannot provide any warranty.



Determination of the material reference moisture

The “humimeter FS1” determines the water content that means the moisture is calculated in relation to the total mass:

$$\%F = \frac{M_n - M_t}{M_n} \times 100$$
















M_n : Mass with average moisture content

M_t : Mass of the dried sample

%F: Calculated moisture content (corresponding to norm **EN ISO712**)



Calibration curves

50g corn 8..30% 	60g rye 8..23% 	60g triticale 8..23% 	60g wheat 8..23% 
50g barley 8..23% 	30g oats 8..23% 	55g rape 4..15% 	60g soybeans 6..18% 
60g horse beans 8..18% 	35g sunflower 5..18% 	65g rice peeled 8..18% 	40g rice unpeeled 5..22% 
50g buckwheat 8..18% 	60g mustard 5..18% 	60g millet 8..18% 	reference only for internal use!

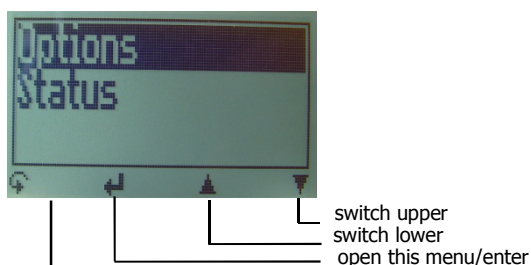
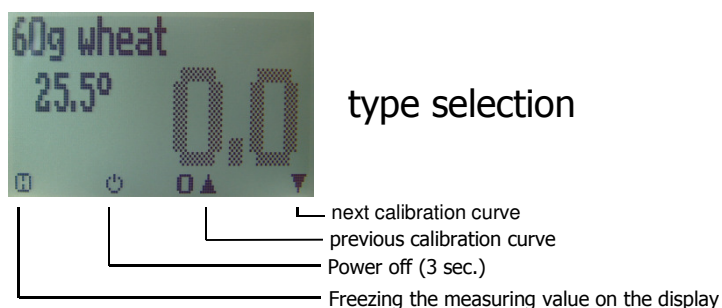
The samples must not be polluted resp. must not contain long ears. Otherwise the measuring results may be falsified.



Design of the device



Menu level overview



Overview main menu

Options Status	Options Language Unlock °C / °F Materialcalib. Password Reset
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Keypad symbols

Measuring window:

- Power ON / OFF
- Switch upper
- Switch lower
- Hold

Menu:

- Enter
- Switch upper
- Switch lower
- Exit
- Enter numbers
- Enter letters
- Next or right
- Left
- Yes
- No
- Shift
- OK

List of calibration curves

Press the ▲ or ▼ key in the measuring window for at least 3 seconds and a list with all available sorts will appear. Select your sort by pressing ▲ or ▼ and confirm with the ➤ key. The measurement will continue automatically.



Adaptation to other devices

name of calibration curves	filling quantity	change in weight	filling quantity display + 1%
50g corn stand.	50g	+ 2.4g	52.4g
60g rye	60g	+ 3.2g	63.2g
60g tritcale	60g	+ 2.8g	62.8g
60g wheat	60g	+ 3.3g	63.3g
50g barley	50g	+ 3.3g	53.3g
30g oats	30g	+ 5.0g	40.0g
55g rape	55g	+ 3.9g	58.9g
60g soybeans	60g	+ 4.0g	64.0g
60g horse beans	60g	+ 3.8g	63.8g
35g sunflower	35g	+ 4.7g	39.7g
65g peeled rice	65g	+ 4.5g	69.5g
40g unpeeled rice	40g	+ 2.8g	42.8g
50g buckwheat	50g	+ 3.3g	53.3g
60g mustard seed	60g	+ 3.7g	63.7g
60g millet	60g	+ 3.2g	63.2g
reference	To test the humimeter – must not be used for measuring!		

Table for grain with water content between 13% and 16% (not binding)

By means of changing the filling quantity, the displayed water content can be adapted to other devices.

Filling in **more material**, the device shows a **higher measuring value**,



filling in **less material**, the device shows a **lower measuring value**.

Example: Filling in 3g wheat more (filling weight of 63g wheat) leads to a 1% higher measuring value,

respectively the filling quantity can be modified to the extent that the displayed value corresponds to the other device.

notes

[illegible]

[illegible]

[illegible]

Exemption from liability

For miss-readings and wrong measurements and of this resulting damages we refuse any liability.

This is a device for the quick determination of moisture. The moisture depends on multiple conditions and multiple materials. Therefore we recommend a plausibility check of the measuring results. Each device includes a serial number and the guarantee stamp. If those are broken, no claims for guarantee can be made.

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Technical data

Resolution of the display	0.1% water content 0.5 °C temperature
Measuring range	4 to 30% (depending on the material)
Operation temperature	0 to 40 °C (32 to 104 °F)
Storage temperature	-20 to +60 °C
Temperature compensation	automatically
Power supply	4 pcs. 1.5Volt AA Alkaline batteries (900 <u>measurements</u>)
Auto Switch OFF	after approx. 6 minutes
Current consumption	60 mA (with light)
Display	128 x 64 matrix display, lighted
Dimensions	155 x 75 x 90 mm
Weight	ca. 360 g (with batteries)
Degree of protection	IP 40
Scope of supply	FS1 incl. plastic case digital scale measuring cup 0.25 liter



! IMPORTANT ! please read

Most common reasons for miss readings

- ***Product temperature out of application range***

Material **below 0°C** resp. **above 40°C** may cause faulty measurements. The storage of cold material in a warm storage area usually creates condensed water, which leads to major measuring errors.

- ***Not adjusted material under test***

Let your humimeter adjust to the surrounding temperature of the material for approx. half an hour. A very high temperature difference has a negative effect on the stability of the measurement results.

- ***Wrong calibration curve***

Before measuring your sample, please double-check the correct selection of the calibration curve.

- ***Wrong filling quantity***

Fill in exactly the right weight ($\pm 0,5$ gram) of material into the measuring chamber.

- ***Wet or mouldy material***

- ***Stored and fermented corn silage from whole grains may lead to higher value***

- ***Frozen measuring material***

If the material is frozen, the accuracy decreases significantly.

Device maintenance instructions

To provide a long life of your device please do not expose it to strong mechanical loads or heat e.g. dropping it or direct sunlight exposure. Clean your device using a dry cloth. The measuring chamber needs to be cleaned with a dry and soft brush.

Any kind of wet cleaning damages the device. The instrument is not rainproof. Keep it in dry areas.

When the device is not used for a longer period (6 months) or when the batteries are empty, remove the batteries to prevent a leakage of the battery acid.

