

# User manual



grain moisture meter


**humimeter FS1**

Version 2.3\_en


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

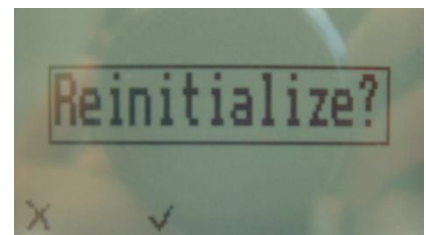




2. Make sure that the measuring chamber is completely empty. It is important that no material is left in the measuring chamber when you turn on the device.

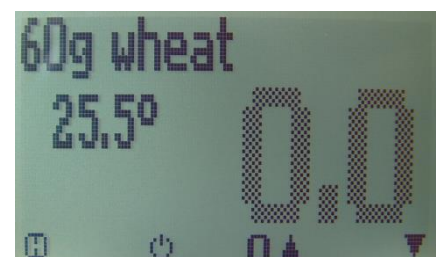
3. Switch on the device by pressing the power button (  ) for 3 seconds.



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.

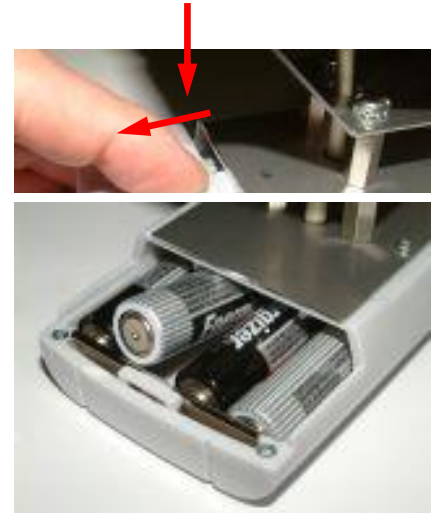


10. Empty the humimeter and ensure that no grain rests are accumulated in the measuring chamber.

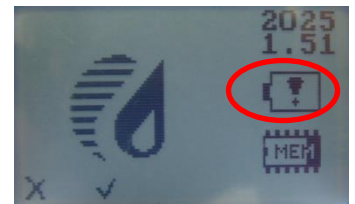
## Changing batteries

If the batteries are empty, please proceed as follows:

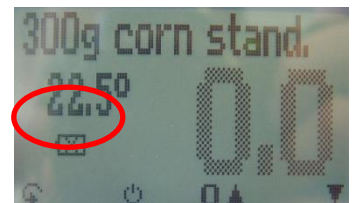
- 1.) Press with your finger onto the arrow of the battery cap und pull it back.
- 2.) Remove the empty batteries.
- 3.) Put four new 1.5 Volt AA Alkaline batteries in the device. Check the right position of the battery poles.
- 4.) Press down the batteries and close the cap.



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

name of calibration curves	material under test	filling quantity	measuring range
50g corn stand.	corn	50g	8 to 30%
60g rye	rye	60g	8 to 23%
60g triticale	triticale	60g	8 to 23%
60g wheat	wheat	60g	8 to 23%
50g barley	barley	50g	8 to 23%
30g oats	oats	30g	8 to 23%
55g rape	rape	55g	4 to 15%
60g soybeans	soybeans	60g	6 to 18%
60g horse beans	horse beans	60g	8 to 18%
35g sunflower	sunflower seeds	35g	5 to 18%
65g peeled rice	peeled rice	65g	8 to 18 %
reference	To test the humimeter – must not be used for measuring!		

### Additional calibration curves:

On request Schaller GmbH can develop customized calibration curves for your specific product.

## Design of the device



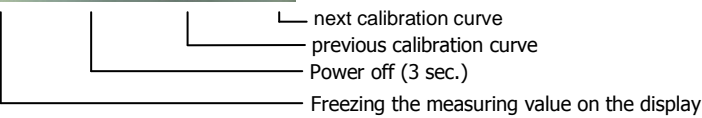
POWER  
button



## Menu level overview



type selection



switch upper  
switch lower  
open this menu/enter

## Overview main menu

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

## 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.

## 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. In case of a faulty device, please contact Schaller GmbH ([www.humimeter.com](http://www.humimeter.com)) or our dealer.

## Technical data

<b>Resolution of the display</b>	0.1% water content 0.5°C temperature
<b>Measuring range</b>	4 to 30% (depending on the material)
<b>Operation temperature</b>	0 to 40°C (32 to 104°F)
<b>Storage temperature</b>	-20 to +60°C
<b>Temperature compensation</b>	automatically
<b>Power supply</b>	4 pcs. 1.5Volt AA <u>Alkaline</u> batteries (900 measurements)
<b>Auto Switch OFF</b>	after approx. 6 minutes
<b>Current consumption</b>	60 mA (with light)
<b>Display</b>	128 x 64 matrix display, lighted
<b>Dimensions</b>	155 x 75 x 90 mm
<b>Weight</b>	ca. 360 g (with batteries)
<b>Degree of protection</b>	IP 40
<b>Scope of supply</b>	<b>FS1</b> incl. plastic case digital scale 150 gram 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.