

User manual



humimeter FL1 Moisture meter for straw and hay

Version 1.7_en
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2014

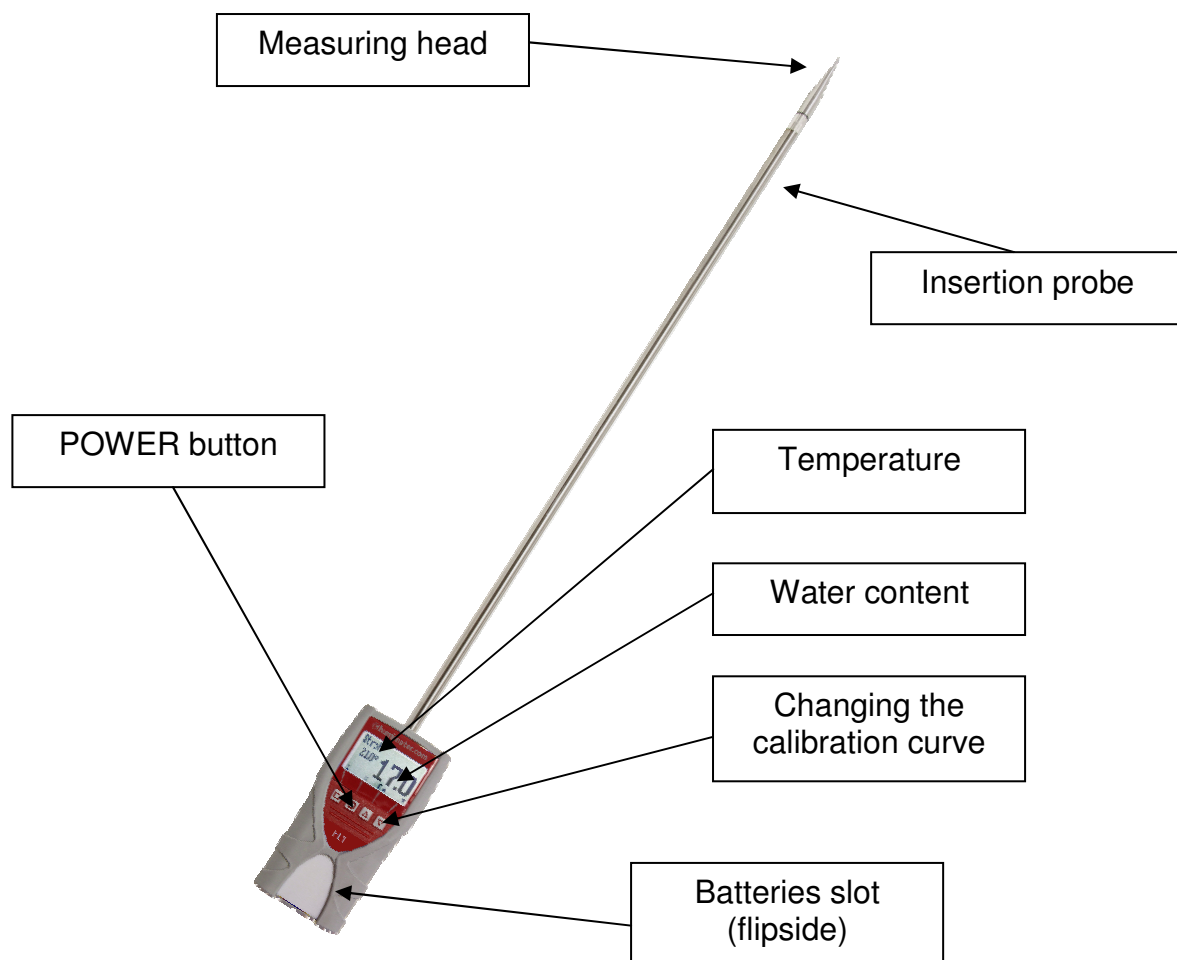
Calibration curves

| Calibration curves | Declaration | Compressed density | Measuring range limit |
|--------------------|--|--------------------------------|-----------------------|
| straw | bale of straw | 100 up to 130kg/m ³ | 30% |
| hay | hay bale | 100 up to 120kg/m ³ | 25% |
| Test block | <i>!Only for testing the device with the test block!</i> | | |





Packaging

The paperboard cylinder (or optional the wooden case), where your device has been delivered, should be used to store your device when it is not in use. Don't dispose the packaging. In case of warranty you have to return the device in this board cylinder. In case of damage during the transportation in another packaging the customer takes the responsibility.

Design of the device



Measuring procedure

1. For a correct measurement please ensure that the device has the same temperature than the material you want to measure ($\pm 3^{\circ}\text{C}$). For that reason, let your humimeter FL1 adjust to the surrounding temperature of the material for at least half an hour before measuring (protect from direct sunlight!).
- 2.) Switch on the device: Press the  key for 3 seconds.
- 3.) To change the calibration curve, please press the  or  key.
- 4.) Plug the probe into the material. The display shows the water content immediately.
- 5.) Pay attention to the direction of plugging in! (pay attention to the following page!)
- 6.) If you press the very left button (Hold button ) , the measuring value remains on the display until you press a button again.



ATTENTION! Risk of injury!

Direction of plug in

Insert the device into the bale like shown in the picture below. Any other direction of plugging lead to a significant deviation of the measuring results. Pull the unit straight out again. Any mechanical damage due to mishandling is no case of guarantee.



Round bales have to be measured on the face side. Measurements at the bearing surface lead to miss readings.



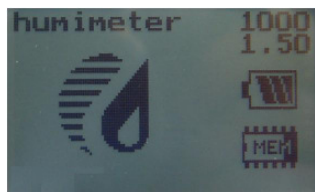
Rectangle bales have to be measured on the face side. Measurements at the other side can lead to miss readings.

Menu level overview

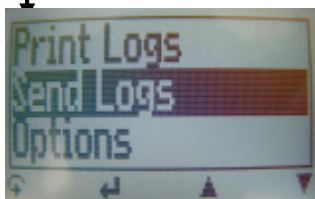


Type selection

Next calibration curve
Previous calibration curve
Power off (3 sec.)
Hold function



To reach the main menu, keep both arrow buttons pressed while the device boots up.



Main menu

Switch lower
Switch upper
Open this menu / Enter

Overview main menu

| | |
|---------|----------------|
| Options | <i>Options</i> |
| Status | Language |
| | Unlock |
| | °C / °F |
| | o Userlevel |
| | 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

Changing the User level

switching from simple user to advanced user:

Directly after switching on the device, keep both the ▲ and ▼ buttons pressed as long as the logo is shown at the display.

The device starts the main menu automatically. Navigate to “Options”, then “oUserlevel” and confirm by pressing ↵. Finally you have to enter the super user password using the ▲ button (factory setting: serial number 4-digit)

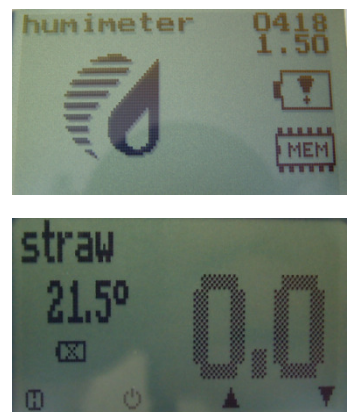
Changing batteries

Your new device is provided with batteries. Please find enclosed the manual for changing of batteries:

- 1.) At first remove the rubber protective housing. For that, hold the rubber housing at the upper side and pull it over.
- 2.) Press with your finger onto the arrow of the battery cap und pull it back.
- 3.) Remove the empty batteries.
- 4.) Put four new batteries in the device. Make sure that the position of the battery poles is correct.
- 5.) 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. If you do not use your humimeter device for a longer period, remove the batteries. For eventual resulting damages we cannot provide any warranty.



Determination of the material reference moisture

The humimeter FL1 determines the water content, that means that it calculates the moisture referred 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 absolute moisture (water content) (according to norm: CEN/TS 14774)

Exemption from liability

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

This is a device for 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) or your dealer.

Technical data

| | |
|------------------------------------|--|
| Resolution of the display | 0,5% water content 0,5°C temperature |
| Measuring range | 8 to 30 % (60%) |
| Operation temperature | 0°C to 40°C |
| Temperature measuring range | -20°C to 120°C (only measuring head) |
| Storage temperature | -20°C to 60°C |
| Temperature compensation | automatically |
| Power supply | 4 pcs. 1,5 Volt AA <u>Alkaline</u> batteries (for approx. 1000 measurements) |
| Auto Switch Off | after approx. 6 minutes |
| Current consumption | 55 mA (with light) |
| Display | 128 x 64 matrix display, lighted |
| Dimensions | 740 x 65 x 40 mm |
| Weight | approx. 450g (incl. batteries) |
| Degree of protection | IP 40 |
| Scope of supply | humimeter FL1 incl. rubber protection 4x1,5Volt AA Alkaline batteries |

!!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 may lead to major measuring errors.
- ***Discrepancy in temperature between device and material***
Please ensure that the device and the material under test are being stored at the same temperature (+/- 3°C) before measuring. Protect your measuring device from direct sunlight for a reasonable time period before taking a measurement. A high temperature difference has a negative effect on the stability of the measurement results.
- ***Wrong calibration curve***
Double check the correct selection of the calibration curve before measuring.
- ***Wet or mouldy material***
- ***Frozen measuring material or material containing snow***
This leads to a major decrease in accuracy.
- ***Direction of plugging in***
The Direction of plugging has a great influence on the accuracy. Necessarily follow the instructions according to the beginning of the manual!
- ***Compressed density outside the application range***
If the compressed density differs from that specified, there may be deviations!
- ***Moving the measuring head after the plug in leads to miss readings!***
- ***Water film at the measuring head***
After measuring wet material a water film can arise on the sensor head. This could lead to a too high result in the following measurements. After measuring wet material clean both black plastic parts of the measuring head accurately with a dry cloth.

ATTENTION: Risk of injury by measuring head!
Keep away from children younger than 16 years!