humimeter.com®
SCHALLER GMBH

User manual

humimeter FL2
Moisture meter
for straw and hay

Version 1.4_en

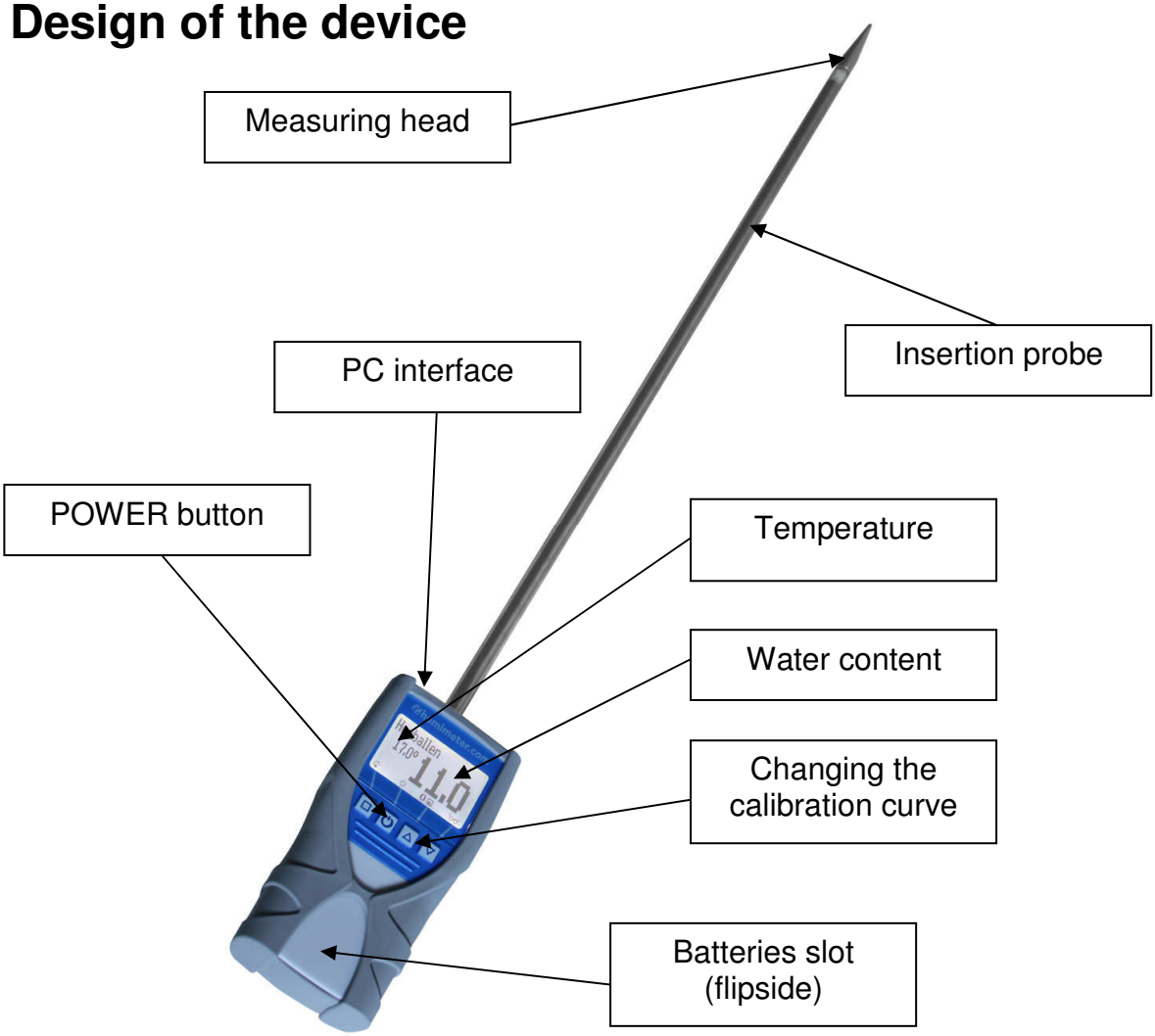
Calibration curves

Calibration curves	Declaration	Compressed density	Measuring range
straw round bal.	straw round bales	> 130kg/m³	8,5% - 30%
straw bales	straw bales	100 up to 130kg/m³	8,5% - 30%
straw loose	loose straw		8,5% - 30%
hay round bales	hay round bales	> 130kg/m³	8,5% - 25%
hay bales	hay bales	100 up to 130kg/m³	8,5% - 25%
hay loose	loose hay		8,5% - 25%
cellulose	insulting material	38 – 65kg/m³	10,0% - 35%
Digit	special products		0,0% - 100%
Test block	*! Only for testing the device with the test block !*		

Free Calibration curves:

- There are another 2 empty calibration curves stored in the measurement device. These can be used to add some curves of special materials.

Design of the device



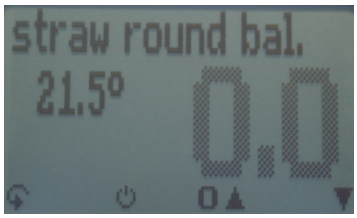
Measuring procedure

The general user manual is available at
www.humimeter.com

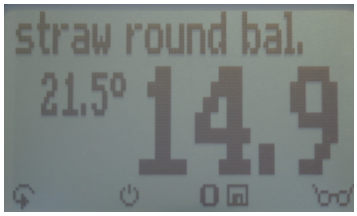
1. For a correct measurement please ensure that the device has the same temperature than the material you want to measure (+/-3°C). For that reason, let your device adjust to the surrounding temperature of the material for at least half an hour before measuring (protect from direct sunlight!).

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.



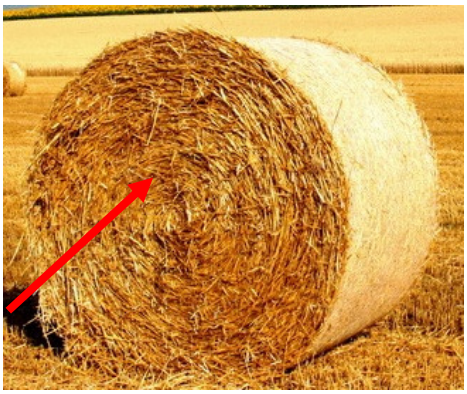
5.) Pay attention to the direction of plugging in! (pay attention to the following page!)!

6.) To save the results in the save menu press the 🖫 (▲ button). The storage was successful when the number in front of the symbol 🖫 increased. To reach the store menu please press (↻) until the 🖫 appears.

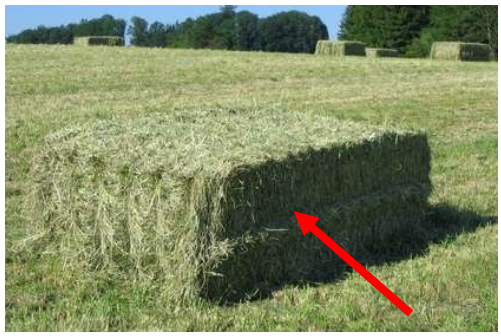
ATTENTION! Risk of injury!

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.

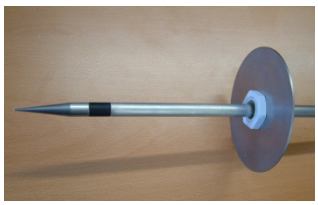


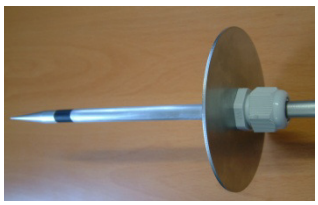
Round bales have to be measured on the face side. Measurements at the bearing surface lead to miss readings.



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

Measuring of loose material

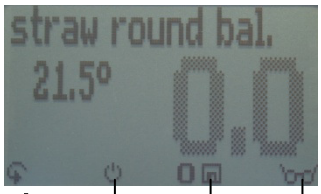




Fix the delivered compression plate like it is shown in the pictures. Switch to the right calibration curve (“straw loose” or “hay loose”) and stab in the material. It is very important that there is a good contact between the material and the plate.

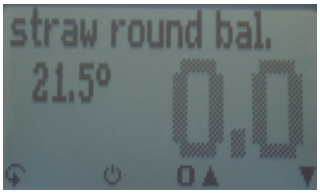
These curves should be used before you press the material to bales.

Menu level overview



Store menu

Watch the saved data (logs)
Save new value (log)
Power off (3 sec.)



Type selection

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

Main menu

Switch lower
Switch upper
Open this menu / Enter

Overview main menu

Edit Logs Manual Logs Clear Logs *Print Logs* Last Log All Logs Clear Logs *Send Logs* Manual Logs Clear Logs	*Options* Date / Time Log Time Language Unlock °C / °F o Userlevel BL On Time Auto Off Time o Online Send o Online Print Materialcalib. Password Reset

Keypad symbols

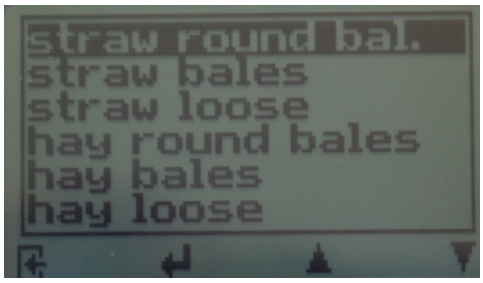
Measuring window:

- Rolling Menu
- Power ON / OFF
- Switch upper
- Switch lower
- Save
- Hold
- Watch the saved data
- Suppliers data can be added

Menu:

- Enter
- Switch upper
- Switch lower
- Exit
- 0..9 Enter numbers
- A..Z Enter letters
- Next or right
- Left
- Yes
- No
- Shift
- OK OK

List of calibration curves



Pressing 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 it with the ↵ key. The measurement will continue automatically.

Activation of the “super user” function

2 times ↻ - *Options* – Unlock

Enter the 4-digit password by using the ▲ button (standard is the 4-digit serial number) and confirm by pressing the ↵ button.

Changing the Userlevel

Changing from advanced user to single user:

Make sure that you have activated the “super user” functions according to the instructions above. Afterwards change to the menu and choose „Options“.

In the submenu please select „o Userlevel“ (2 times ↻ - *Options* – o *Userlevel)*

Confirm by pressing the ↵ button. Now the single user is activated.

Changing from single user to advanced user:

Keep both the buttons ▲ and ▼ pressed directly after switching on the device. Your humimeter automatically starts the main menu. Activate the the “super user” functions according to the instructions above.

Navigate to “*Options* – o *Userlevel”* and confirm by pressing the ↵ button.

Measuring value out of range

If the measure value is blinking, the valid measuring range is exceeded (limits see list on page 2). In this case the accuracy will be decreasing.

Transfer saved data to the PC

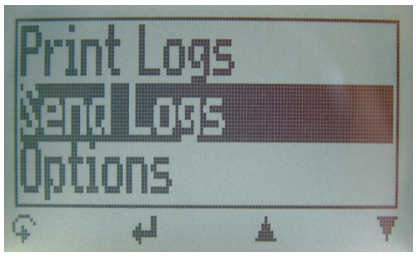
To send your saved logs to the PC, connect the humimeter device to your PC using the USB cable that was delivered with your device. Carefully loose the protection cap on your humimeter and plug in the USB mini B connector. The bigger connector has to be connected to a USB slot on your PC.

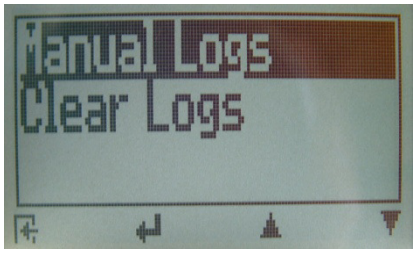
Start the LogMemorizer software on your PC and switch on your humimeter.

The data transfer can be started on your humimeter or on the software.

Starting the data transfer on the humimeter:

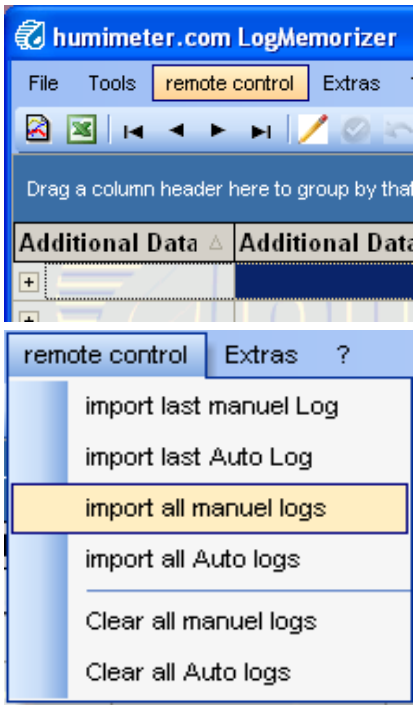
Press the ↻ key until you reach the menu (see image on the right). Then choose „Send Logs“ and confirm by pressing the ↵ key. Now choose „Manual Logs“ and confirm with ↵ again. All saved logs will be sent to your PC.





Starting the data transfer on your PC:

Press the button „remote control“ in the LogMemorizer software. A drop-down menu with several options opens (see image below).



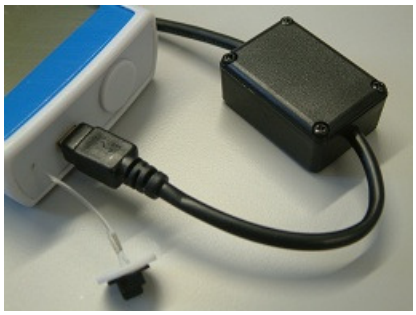
For transferring the data you can select „Import last manual log“ (the last saved measuring series is transferred) or „Import all manual logs“ (all saved logs are transferred).

If you click on one of these menu items, the transfer starts immediately.

For the basic adjustments of the software please look through the instructions on the LogMemorizer CD.

Print saved data

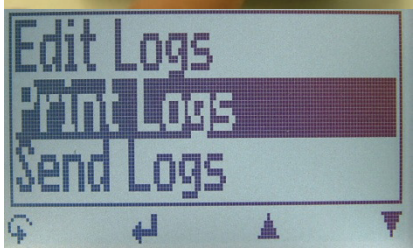
To print your saved data, connect the device to the printer using the printer cable that was delivered with your device. Carefully loose the protection cap on the humimeter BM2. At first plug in the side of the connector with the close plastic casing at the humimeter. Then switch on the device.



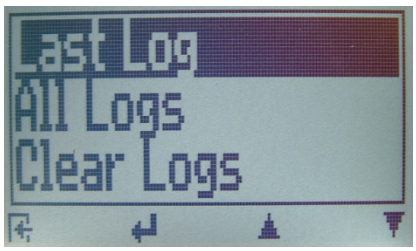
Not till then the other side of the cable has to be plugged in at the printer. Switch on the printer by pressing ⏻. Now the green LED is blinking. If it does not blink, please change the batteries and try again.

Press the ↻ button at your humimeter until you reach the menu (see image on the right). Choose „Print Logs“ and confirm by pressing ↵.

Now you can select if you want to print the last saved measuring series or all saved measuring series (logs).



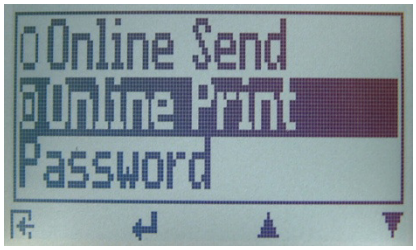
Confirm by pressing ↵ again. The selected logs are printed out now.



To save paper, please think of clearing the data storage regularly.

Online Print and Online Send

Your device supports the function “Online Print” and “Online Send”, this can be activated in the menu „Options“. If an option is active, every newly recorded log will immediately be printed or transferred to the PC after pressing 🖫 key.



Changing batteries

Your new device is provided with batteries.

Please find enclosed the manual for changing of batteries:

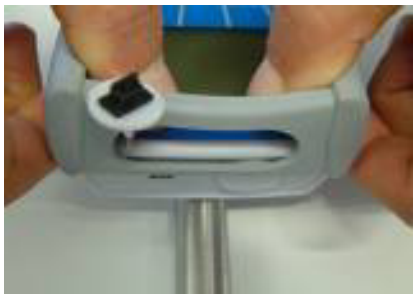
1.) At first remove the rubber protective housing. For that, hold the rubber housing at the upper side and pull it over. You have to remove the protection cap before.

2.) Press with your finger onto the arrow of the battery cap und pull it back.

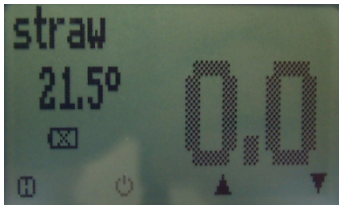
3.) Remove the empty batteries.

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 FL2 determines the water content, which means that it calculates the moisture referred to the total mass:

$$\%F = \frac{Mn - Mt}{Mn} \times 100$$

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)

Cooling time

If you measure in very fast intervals and bales with a high density the measuring head can become warm because of the friction. These can lead to fault measurements!

Let your device cool down during the measurements.

Digit calibration curve

The digit curve is a unitless calibration curve with a range from 0 up to 100% which corresponds to the entire measurement range of the device. With this curve special products can be measured.

The higher the value is, the wetter the material is. Using a comparative measurements to a reference method a table with comparison values can be created with this reference values

very dry: 0 very wet: 100

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	0,1% 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 Alkaline 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	FL2, wooden case Software LogMemorizer USB cable 4x1,5Volt AA Alkaline batteries Compression plate

!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!