Schaller
Messtechnik / humimeter.com

Moisture meter

Operating Manual

humimeter FL1

Moisture meter with insertion probe

for measuring the moisture content of hay and straw



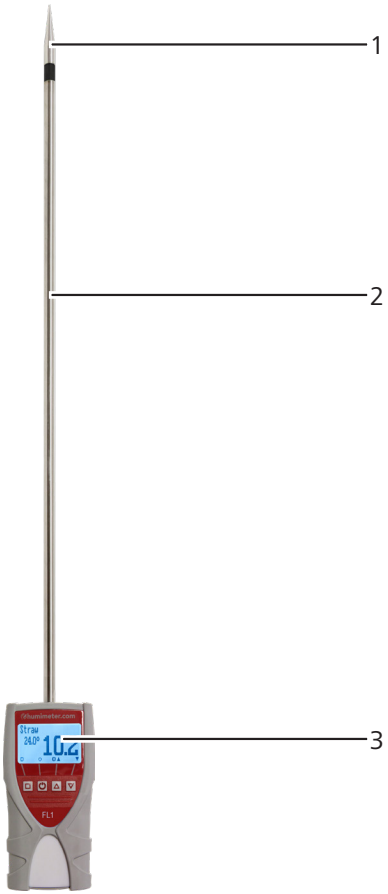
78,0 °F | 6,16% | 456kg/m³ | −27,3td | 0,64aw | 51,9%r.H. | 14,8%abs | 100,4g/m² | 09m/s | 4,90Ugl | 1

Version 2.0

Always read this operating manual before using the humimeter FL2

Your humimeter FL1 at a glance

The main unit



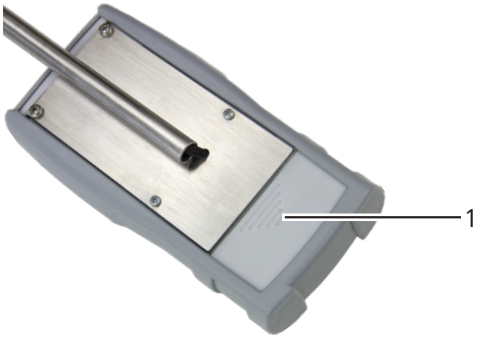
No	Name
1	Measuring head
2	Insertion probe
3	Electronics in plastic housing

The main unit in detail



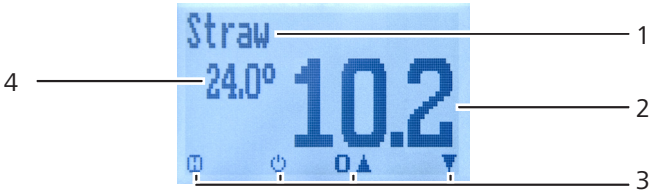
No	Name
1	USB port (optional)
2	Display
3	Keypad
4	Rubber protection cover

Rear of the main unit



No	Name
1	Battery compartment

The display



No	Name
1	Product type
2	Moisture content % ("6.1 How moisture is defined")
3	Display symbols
4	Temperature display

The display symbols

Symbol	Name
	Enter
	Up
	Down
	Back
0..9	Enter numbers
A..Z	Enter letters
	Continue / go right
	Left
	Yes

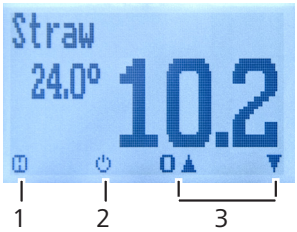
Symbol	Name
	No
	Change input level
OK	OK
	Change menu
	Enter data
	View measurements
	Delete measurements
	On/off button, display light
	Save measured value

The menus

Simplified user

The device has two different menus: product selection and main menu.

Product selection menu

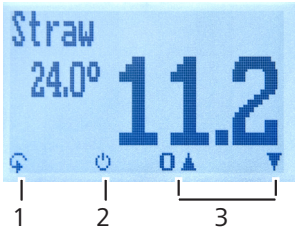


No	Name
1	Hold measuring value (see "5.3 Hold function - Freezing the displayed values")
2	Display illumination / device on/off
3	For changing the product type

Advanced user

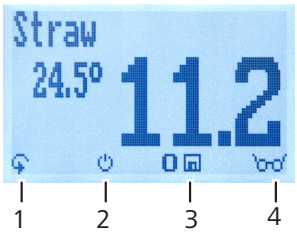
The device has three different menus: product selection, Data Log and main menu:

Product selection menu



No	Name
1	Change menu
2	Display illumination / device on/off
3	For changing the product type

Data Log menu



No	Name
1	Change menu
2	Display illumination / device on/off
3	Save measured value
4	Show the last recorded values

Main menu

The main menu comprises the following menu items:

- **Clear Logs:**
- **Options:**
  Language, Unlock, °C/°F, Userlevel, Materialcalib., Password, Reset
- **Status**

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1. Introduction

1.1 Information about this operating manual

This operating manual is designed to enable you to use the humimeter FL1 safely and effectively. It is part of the device, has to be stored nearby and must be easily accessible to users at all times.

All users are required to carefully read and make sure that they have understood this operating manual before using the humimeter FL1. All of the safety and operating instructions detailed in this manual have to be observed to ensure the safety of the device.

1.2 Limitation of liability

All of the information and instructions provided in this operating manual have been compiled on the basis of the current standards and regulations, the state of the art, and the extensive expertise and experience of Schaller GmbH.

Schaller GmbH does not accept any liability for damage associated with the following, which also voids the warranty:

- Non-observance of this operating manual
- Improper use
- Inadequately qualified users
- Unauthorised modifications
- Technical changes
- Use of unapproved spare parts

This fast measuring procedure can be affected by a range of different factors. For this reason, we recommend periodically checking the device's measurements with a standardised oven-drying method.

We as the manufacturer do not accept any liability for any incorrect measurements and associated consequential damage.

1.3 Symbols used in this manual

All the safety information provided in this manual is shown with a corresponding symbol.



CAUTION

It is essential to observe this warning. Non-compliance can lead to injury.



ATTENTION

It is essential to observe this warning. Non-compliance can lead to damage to property or equipment.



Information

This symbol indicates important information that enables users to use the device more efficiently and cost-effectively.

1.4 Customer service

For technical advice, please contact our customer service department at:

Schaller GmbH
Max-Schaller-Straße 99
A - 8181 St.Ruprecht an der Raab

Telefon: +43 (0)3178 28899
Fax: +43 (0)3178 28899 - 901

E-Mail: info@humimeter.com
Internet: www.humimeter.com

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2. For your safety

The device complies with the following European directives:

- Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)
- Electromagnetic compatibility (EMC)

The device corresponds to state-of-the-art technology. However, it is still associated with a number of residual hazards.

These hazards can be avoided through strict observance of our safety information.

2.1 Proper use

- Easy to use device for quickly measuring the moisture content of hay and straw bales.
- The device must only be used for taking measurements on the products defined in the following sections of this manual (see "6. Product types").

2.2 Improper use

- The device is not suitable for measuring mouldy or rain wet hay/straw.
- The device is not waterproof and must be protected from water and fine dust (IP40).

2.3 User qualifications

The device must only be operated by people who can be expected to reliably take the measurements. The device must not be operated by people whose reaction times may be slowed due to, e.g. the use of drugs, alcohol or medication.

All persons using this device must have read, understood and follow the instructions provided in the operating manual.

2.4 General safety information

The following safety information has to be observed at all times to avoid damage to objects and injury to people:

- Remove the batteries if the device isn´t used for a prolonged period of time.
- Keep the measuring head away from your body throughout all activities.
- Keep the measuring head away from other people throughout all activities.
- In case of damages or loose parts on the device, remove the batteries and contact Schaller GmbH or your dealer.

All of the device's technical features have been inspected and tested before delivery. Every device has a serial number. Do not remove the tag with the serial number.

2.5 Warranty

The warranty does not apply to:

- Damage resulting from non-observance of the operating manual
- Damage resulting from third-party interventions
- Products that have been used improperly or modified without authorisation
- Products with missing or damaged warranty seals
- Damage resulting from force majeure, natural disasters, etc.
- Damage from improper cleaning
- Batteries older than six months
- Damage resulting from improper strain (pressure, bending) of the insertion probe or the measuring head
- Damage by dropping the measuring head

3. On receipt of your device

3.1 Taking the device out of its packaging

- Take the device out of its packaging.
- Next, make sure that it is not damaged and that no parts are missing.

3.2 Making sure that all of the components have been included

Make sure that all of the components have been included by checking the package contents against the following list:

- humimeter FL1
- 4 pieces of AA Alkaline batteries
- Rubber protection cover
- Cardboard cylinder
- Operating manual

Optional accessories:

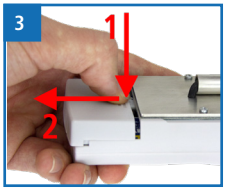
- Wooden case (replaces cardboard cylinder))
- Test block

3.3 Inserting batteries





1. Remove the rubber protection cover. To do so, hold the rubber protection cover at the upper side and pull it over. If your device is provided with an optional USB port, remove the protection cap of the USB socket before (figure 1 and 2).

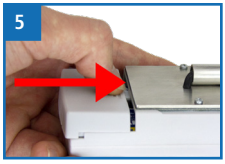


2. Take hold of the device with one hand, press your thumb onto the engraved area of the battery compartment (1) and drag downwards (2) (figure 3).



3. Insert the batteries with negative and positive terminals matching those indicated on the battery compartment. Press down the batteries so that they lay flat on the bottom of the housing (figure 4).

   » As soon as all batteries have been inserted, the device switches on automatically.



4. Push the battery cover onto the housing until it clicks into place. Then mount the rubber protection cover onto the housing, beginning at the end where the battery compartment is situated (figure 5).

4. Using the device - Basics

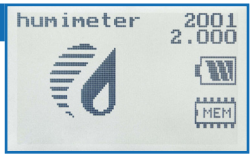
4.1 Switching the device on

- Press the ⏻ button for 3 seconds.

» The display will then show the status indicator (figure 6).

» After inserting the batteries, the device switches on automatically.

6



4.2 Simplified user

At delivery, the simplified user is activated. The simplified user restricts the user´s access to the product selection menu with Hold function.

4.2.1 Deactivating/activating simplified user

- For deactivating/activating the simplified user, see section "8.5 Changing the Userlevel".

4.2.2 Using the simplified user

The simplified user has the following restrictions:

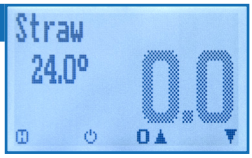
- The only useable menu is a slightly modified product selection menu (figure 7).

» No access to the Data log menu.

» No access to the main menu unless the device is restarted (see "8.5 Changing the Userlevel").

- Hold function replaces the function to switch between the different menus (see "5.3 Hold function - Freezing the displayed values").

7



4.2.3 Opening the main menu in the simplified user level

To do so: The devices is switched off.

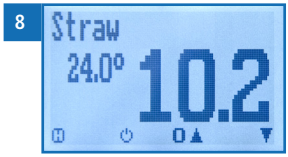
- Switch on the device (see "4.1 Switching the device on").
- While switching on, keep both the ▽ and △ buttons pressed.

» The display will then show the main menu.

4.3 Selecting the product type

To do so: The device has to be in the product selection menu (figure 8).

For an overview of the different product types and the criteria for selecting them, please refer to "6. Product types".



1. Press the ▽ or △ button to move from one product to the next Or
2. Press the ▽ or △ button for 3 seconds to open the product type overview (figure 9).



3. Use the arrow keys to move from one product type to the next
4. and keep any of them pressed to scroll through the types.
5. Confirm your selection by pressing ↵.

» The product type you selected will now be shown at the top of the display.

4.4 Taking a measurement

- For information on how to take a measurement, see section "5. The measuring process".

4.5 Switching the device off

To do so: The device has to be in the product selection, the Data Log or the additional function menu. It is not possible to switch off the device when it is in the main menu.

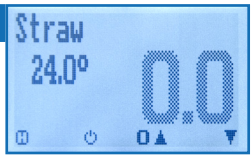
- Press the ⏻ button for 3 seconds.

5. The measuring process

5.1 Preparing a measurement

To do so: The device has to have nearly the same temperature than the product to measure. It is recommended to let your humimeter device adjust to the surrounding temperature before the measurement.

1. Switch on the device (see "4.1 Switching the device on").
2. Select the desired product type (see "6. Product types") by pressing the  or  (see "4.3 Selecting the product type") (figure 11).

10


11


5.2 Taking a measurement

To do so: The device has to have nearly the same temperature than the product to measure.

- Insert the measuring head of the device straight into the hay or straw bale (figure 12).

» Do not bend or drop the measuring head!

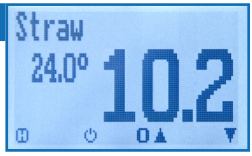
» Both round bales and rectangle bales have to be measured on the face side of the bale!

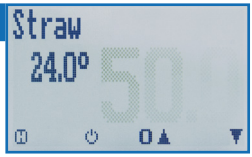
- The device will now instantly display the moisture content on the display (figure 13).

» The displayed value flashes when the moisture content exceeds the measuring range of the selected product type (figure 14). A flashing value signals lowered accuracy of the measurement. The measuring range is dependent on the product type (see "6. Product types").

» Once the reading has been taken, it can be saved on the device (see "5.4 Saving individual readings" or "5.5 Saving several readings (a measurement series) at the same time").

12


13


14


CAUTION

Risk of injury

Risk of injury due to the measuring head

- ► Keep the measuring head away from your body throughout all activities.
- ► Keep the measuring head away from other people throughout all activities.

ATTENTION - HIGH MEASURING INTERVAL

The measuring head will heat up when taking a high amount of measurements on bales with a high compressed density, in a rapid succession. This will decrease the accuracy of the measurement significantly.

Information - Measuring accuracy

This rapid and non-destructive measuring procedure allows you to take moisture readings at a number of different points. When saving the individual readings, the device will automatically calculate the readings' average (see "5.5 Saving several readings (a measurement series) at the same time").

Information - Incorrect readings

Always make sure to select the correct product type for the material you are measuring. This prevents taking incorrect readings (see "10. Faults").

5.3 Hold function - Freezing the displayed values

With the simplified user active, the device is configured in such a way that the information being shown on the display will freeze at the touch of a button until a new button is pressed. This function can be very useful when e.g. taking readings in spaces where it is not possible to see the display (e.g. overhead).

5.3.1 Using the hold function

To do so: The device has to be switched on and be in the product selection menu (see "The menus" page 5) and the simplified user has to be active (see "4.2 Simplified user").



- Press [H].
- » The current reading will be frozen. All of the four symbols will now be displayed as [H] (figure 15).
- To reactivate the frozen display, simply press any button.

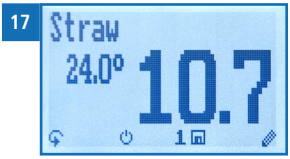
5.4 Saving individual readings

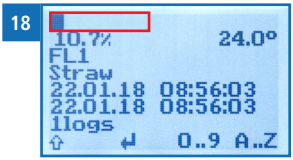
By activating the advanced user, the device will be configured in such a way that the device will save a reading every time a button is pressed.

5.4.1 Using the manual saving option

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 6) and the advanced user has to be active (see "8.5 Changing the Userlevel").



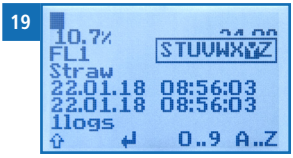




1. Press [m].
   - » The display will now appear as shown in figure 17 and the disc symbol will be preceded by the digit one.
2. Press [✎] to enter a name for the saved reading and to finish the measuring process.
   - » The display will now appear as shown in figure 18.

3. The data you have inputted can be overwritten at any time.

4. Inputting letters:
   Press and hold A..Z to quickly scroll to the required letter and either press it for 3 seconds or press ↵ to confirm the selected letter (figure 19).



5. Inputting numbers:
   Press and hold 0..9 to quickly scroll to the required number and either press it for 3 seconds or press ↵ to confirm the selected number.

6. Moving forward/back:
   Press ⇧ to switch to another input level. Press ⇥ or ⇤ to move forward or back.

7. Confirm your entry by pressing ↵.

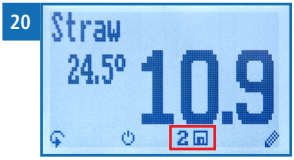
» The data you entered has been saved.

5.5 Saving several readings (a measurement series) at the same time

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 6) and the advanced user has to be active (see "8.5 Changing the Userlevel").

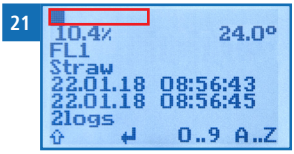
1. Take several measurements at different points (see "5. The measuring process").

2. After each measurement, press 2 to save the reading.



» The display will appear as shown in figure 20. The marked number shows the number of readings that have already been saved.

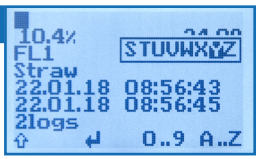
3. Press ✎ to enter a name for the saved measurement series and to finish the measuring process.



» The display will now appear as shown in figure 21.

4. The data you have inputted can be overwritten at any time.

5. Inputting letters:
Press and hold A..Z to quickly scroll to the required letter and either press it for 3 seconds or press ↵ to confirm the selected letter (figure 22).



6. Inputting numbers:
Press and hold 0..9 to quickly scroll to the required number and either press it for 3 seconds or press ↵ to confirm the selected number.

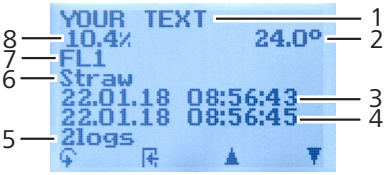
7. Moving forward/back:
Press ⇧ to switch to another input level. Press → or ← to move forward or back.

8. Confirm your entry by pressing ↵.

» The data you entered has been saved.

» The device automatically determines the average moisture content of the saved measuring values.

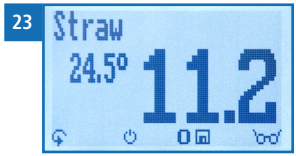
» The display will show the following information:



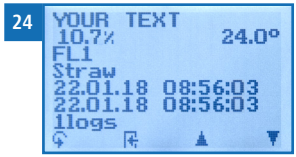
No	Name
1	Name of the measurement series (editable)
2	Temperature (average)
3	Date & start time of the measurement series
4	Date & end time of the measurement series
5	Number of saved readings
6	Product type
7	Device name
8	Moisture content (average)

5.6 Viewing individual readings

To do so: You must have saved a reading (e.g. **1 Log**) and the advanced user has to be active (see "8.5 Changing the Userlevel").
The display will now appear as shown in figure 23.

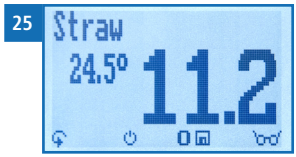


1. Press .
2. Select the required reading. To do so, press or .
   » The display will now appear as shown in figure 24.
   » Press to leave this screen.

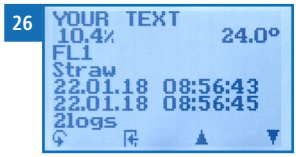


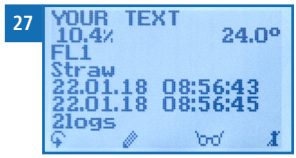
5.7 Viewing individual readings from a series of measurements

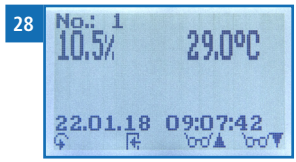
To do so: You must have saved a series of measurements (e.g. **2 logs**) and the advanced user has to be active (see "8.5 Changing the Userlevel").
The display will now appear as shown in figure 25.



1. Press .
2. Navigate to the required measurement series. To do so, press or .
   » The display will now appear as shown in figure 26.
3. Press to switch to another input level.
   » The display will now appear as shown in figure 27.
4. Press again.
   » The display will now appear as shown in figure 28.
5. Navigate to the required reading (**No.: 1, No.: 2, No.: 3**). To do so, press or .
6. Press to leave this screen.







5.8 Deleting all measured values (data log)

To do so: You must have taken and saved one or several readings.

1. Open the main menu.

   » Simplified user: see section "4.2.3 Opening the main menu in the simplified user level".

   » Advanced user: Press twice or hold for 2 seconds.

2. Select **Clear Logs** (figure 29). To do so, press or and confirm by pressing .

   » The display will show the message **clear?** (figure 30).

3. Confirm by pressing .

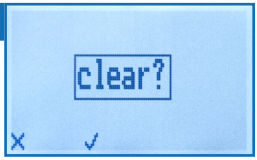
   » The data log has been deleted.

4. Press to leave the main menu.

29



30



5.9 Deleting individual measurement series

To do so: You must have saved a measured value (e.g. **1 log**) or a series of measurements (e.g. **3 logs**) and the advanced user has to be active (see "8.5 Changing the Userlevel"). The display will now appear as shown in figure 31.

1. Press .

   » The display will now appear as shown in figure 32.

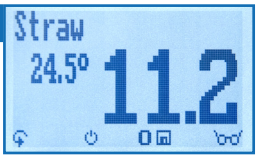
2. Select the required reading. To do so, press or .

3. Press to switch to another input level.

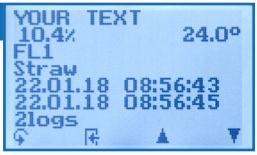
   » The display will now appear as shown in figure 33.

4. Press .

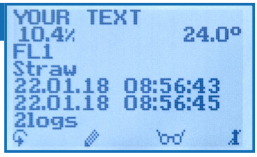
31



32



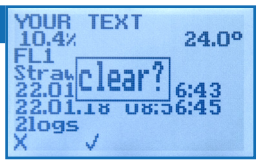
33



» The display will then show the message **clear?** (figure 34).

5. Confirm by pressing ✓.

» The value has been deleted.

34


5.10 Deleting single values from a series of measurements

To do so: You must have saved a series of measurements comprising of at least 2 logs and the advanced user has to be active (see "8.5 Changing the Userlevel"). The display will now appear as shown in figure 35.

1. Press .

» The display will now appear as shown in figure 36.

2. Select the required reading. To do so, press or .

3. Press to switch to another input level.

» The display will now appear as shown in figure 37.

4. Press .

» The display will now appear as shown in figure 38.

5. Select the required measured value. To do so, press or .

6. Press to switch to another input level.

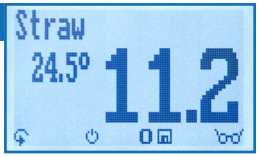
» The display will now appear as shown in figure 39.

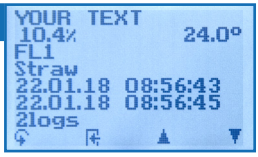
7. Press to delete the value shown.

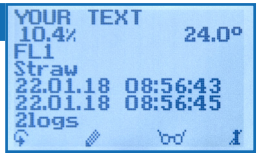
» The display will then show the message **clear?** (figure 40).

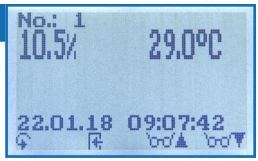
8. Confirm by pressing ✓.

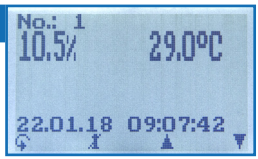
» The value has been deleted.

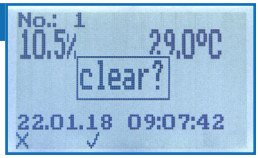
35


36


37


38


39


40


6. Product types

Product type	Product type	Compressed density	Measuring range
Straw	Straw bales	100 to 130 kg/m³	8.5 % - 30 %
Hay	Hay bales	100 to 130 kg/m³	8.5% - 25%
Reference	! Only for testing the moisture meter !		

» A divergent compressed density may lead to deviations in the measuring result.

6.1 How moisture is defined

The device measures and shows the material moisture content. The moisture content readings are calculated in relation to the material's overall mass:

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

M_n: Mass of the sample with average moisture content

M_t: Mass of the sample with zero moisture content

%WG: Moisture content (in accordance with EN ISO 18134-2)

6.2 Selecting the product type

If you are not sure which calibration curve is the best suited for your material, it is recommended to carry out a reference measurement by kiln-drying (EN ISO 18134-2).

Schaller GmbH will be happy to advise you on the selection of the right calibration curve for special hay and straw types.

The insertion direction for both round and rectangle bales is from the face side of the bale as shown on the following figures. Measurements taken from any other direction may lead to incorrect readings.

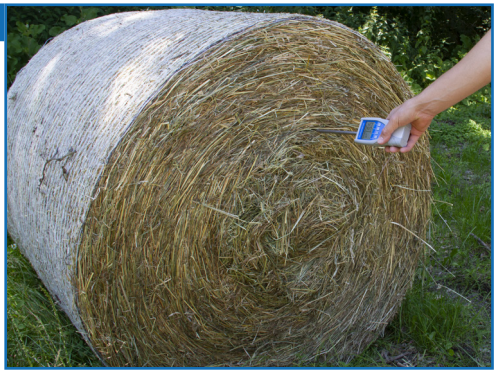
Straw

41



Hay

42



Incorrect measurement

43



6.3 Notes for comparative measurement with oven-drying method

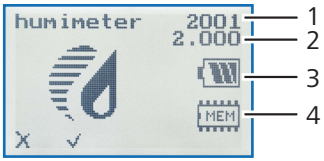
The device uses a much higher sample quantity than the drying oven (12-fold to 20-fold quantity of kiln-drying method). Furthermore, to determine a more accurate average moisture value in case of inhomogeneous material, there can be effected several measurements within a short time.

Considering a sampling error due to the considerably smaller sample quantity as well as the content of volatile matters (resin etc.) that are not water, the kiln-drying method will practically reach an accuracy of approx. +/- 3 %. Therefore, if the measuring values of these two very different methods of determining the water content are compared, differences of +/- 3 % can be considered to be normal.

In the standard EN ISO 18134-2 is declared that the drying oven method provides no absolute values, but only comparable values.

7. Checking on the device's status

1. Press  twice or hold for 2 seconds.
2. Select **Status**. To do so, press  or  and confirm by pressing .
   - » The display will then show the status indicator **humimeter**.
   - » The display will show the following information:



No	Name
1	Serial number
2	Software version
3	Battery status
4	Memory status

3. Confirm by pressing .
4. Press  to leave the main menu.

8. Configuring the device

8.1 Selecting a language

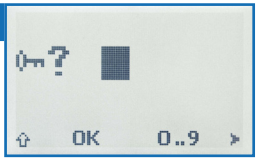
1. Open the main menu.
   » Simplified user: see section "4.2.3 Opening the main menu in the simplified user level" .
   » Advanced user: Press  twice or hold for two seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Date/Time**. To do so, press  or  and confirm by pressing .
4. Navigate to the required language. To do so, press  or  and confirm by pressing .
   » The settings have been saved.
5. Press  to leave the **Options** menu.
6. Press  to leave the main menu.

8.2 Activating options

To do so: Some of the options must be deactivated.

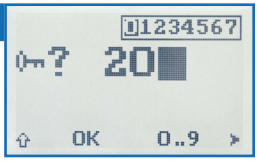
1. Open the main menu.
   - » Simplified user: see section "4.2.3 Opening the main menu in the simplified user level".
   - » Advanced user: Press twice or hold for two seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Unlock**. To do so, press or and confirm by pressing .
   - » The display will now appear as shown in figure 44.
   - » On delivery, the four-digit password is the device's serial number.

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4. Inputting numbers:
   Press and hold 0..9 to quickly scroll to the required number and either press it for 3 seconds or press to confirm the selected number (figure 45).

45



5. Moving back:
   Press to switch to another input level.
   To move back, press .
6. Confirm the four-digit password by pressing OK.
   - » The settings have been saved.
   - » The **°C/°F**, **BL On Time**, **Auto Off Time**, **Materialcalib.**, **Password**, **Reset** options are now activated.
7. Press to leave the **Options** menu.
8. Press to leave the main menu.

8.3 Deactivating options

Once the device has been restarted, the **°C/°F**, **Userlevel**, **Materialcalib.**, **Password**, **Reset** options will be deactivated again.

8.4 Selecting °C/°F

To do so: All of the options must be activated (see "8.2 Activating options").

1. Open the main menu.
   - » Simplified user: see section "4.2.3 Opening the main menu in the simplified user level".
   - » Advanced user: Press  twice or hold for two seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **°C/°F**. To do so, press  or  and confirm by pressing .
4. Navigate to the required temperature scale, i.e. Celsius (**°C**) or Fahrenheit (**°F**). To do so, press  or  and confirm by pressing .
   - » The settings have been saved.
5. Press  to leave the **Options** menu.
6. Press  to leave the main menu.

8.5 Changing the Userlevel

8.5.1 Changing from simplified to advanced user

To do so: The device has to be turned off.

1. Open the main menu (see section "4.2.3 Opening the main menu in the simplified user level").
2. Activate all of the options (see "8.2 Activating options").
3. Select **Userlevel**. To do so, press  or  and confirm by pressing .

   » The advanced user is now activated.
4. Press  to leave the **Options** menu.
5. Press  to leave the main menu.

8.5.2 Changing from advanced to simplified user

To do so: All of the options must be activated (see "8.2 Activating options").

1. Press  twice or hold for two seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Userlevel**. To do so, press  or  and confirm by pressing .

   » The simplified user is now activated.
4. Press  to leave the **Options** menu.
5. Press  to leave the main menu.

8.6 Configuring the material calibration function

The type calibration function is described in a separate operating manual.

8.7 Changing the password

To do so: All of the options must be activated (see "8.2 Activating options").

1. Open the main menu.

» Simplified user: see section "4.2.3 Opening the main menu in the simplified user level".

1. Advanced user: Press  twice or hold for two seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Password**. To do so, press  or  and confirm by pressing .

» The display will show the current password.

» Overwrite the current password. To do so, press and hold  to quickly scroll to the required number and either press it for 3 seconds or press to confirm the selected number.

Moving back:
Press  to switch to another input level.
To move back, press .

4. Confirm the new four-digit password by pressing .

» The settings have been saved.

5. Press  to leave the **Options** menu.
6. Press  to leave the main menu.

8.8 Resetting the device to its factory settings

To do so: All of the options must be activated (see "8.2 Activating options").

1. Open the main menu.

   » Simplified user: see section "4.2.3 Opening the main menu in the simplified user level".

1. Advanced user: Press twice or hold for two seconds.

2. Select **Options**. To do so, press or and confirm by pressing .

3. Select **Reset**. To do so, press or and confirm by pressing .

   » The display will then show the message **Reset?** (figure 46).

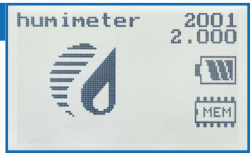


46

4. Confirm by pressing .

   » The device will now be reset to its factory settings. All of your personal settings will be lost.

   » The display will show the status indicator **humimeter** (figure 47).



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   » Resetting the device will not affect the saved measuring values.

9. Cleaning and maintenance

Regularly cleaning and maintaining the device will ensure that it will have a long service life and stay in good condition.

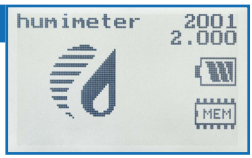
9.1 Changing batteries

The device constantly monitors the charge level of the batteries. The current battery status is shown on the status screen.

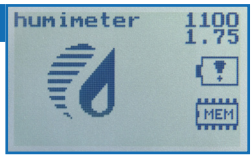
If the battery´s charge is very low, the battery symbol will be shown with an exclamation mark. In that case, the batteries must be changed immediately (figure 49).

For changing the batteries, see section "3.3 Inserting batteries".

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As the device's user, you are responsible by law for properly disposing of all used batteries, which must not be disposed of as domestic waste (Battery Directive).

9.2 Care instructions

- Do not leave the device out in the rain. The device is not waterproof.
- Do not expose the device to extreme temperatures.
- Protect the device from strong mechanical shocks and loads.

9.3 Cleaning the device

Plastic housing

- Clean the plastic housing with a dry cloth.

Measuring head

- The measuring head can be cleaned with a cloth and cleaning alcohol.

ATTENTION

Do not clean with fluids
Water or cleaning fluid getting inside the device can destroy the device.

► Only clean with dry materials.

10. Faults

If the measures listed below fail to remedy any faults or if the device has faults not listed here, please contact Schaller GmbH.

Fault	Cause	Remedy
Measuring error	The temperature of the material being measured is too low or high	The temperature of the material being measured has to be between 0 °C and +40 °C.
	Temperature discrepancy between device and material being measured	Let the temperature adjust to the material being measured (permitted difference of max. 3 °C).
	Wrong product type	Check whether you have selected the right product type (product) before taking a reading (see "6. Product types").
	Mouldy or rain wet material Accuracy decreases significantly	Only measure dry, not mouldy hay and straw.
	Frozen material or material mixed with snow Accuracy decreases significantly	The measured material most not be frozen or mixed with snow.
	Insertion direction	The insertion direction has a great effect on the accuracy of the measurement (see "6.2 Selecting the product type").
	Wrong compressed density	The compressed density has to correspond to the selected product type (see "6. Product types").
	Water film on the measuring head	After measuring wet material, on the measuring head may arise a water film. Clean the measuring head (see "9.3 Cleaning the device").

Fault	Cause	Remedy
	Heating of the measuring head because of friction in bales with high compressed density	Let the device cool down.

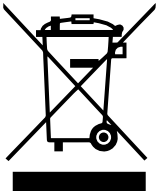
11. Storage and disposal

11.1 Storing the device

The device must be stored as follows:

- Do not store outdoors.
- Store in a dry and dust-free place.
- Protect the device from sunlight.
- Avoid mechanical shocks/loads.
- Remove the batteries if the device isn´t used for a period of 4 weeks or longer.
- Store the device in its original packaging if it isn´t used for a longer period of time.
- Storage temperature: -20 °C to +60 °C

11.2 Disposing of the device



Devices marked with this symbol are subject to Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).
If the device is being operated outside the European Union, the national regulations on the disposal of such devices that apply in the country of use must be observed.

Electronic devices must not be disposed of as domestic waste.

The device must be disposed of appropriately using appropriate collection systems.

12. Device information

12.1 CE declaration of conformity

CE DECLARATION OF CONFORMITY

We **Schaller GmbH**
Max-Schaller-Straße 99
A – 8181 St. Ruprecht

in accordance with the following Directives:

EMV - Richtlinie 2014/30/EU,
RoHS - Directives 2011/65/EG,

hereby declare that the following product types:

Product: **humimeter**

Types: **BL2 ; BLL ; BLH ; BLW ; FL1 ; FL2 ; FLH ; FLM ; FLS ; SLW ; WLW**

are in conformity with the applicable requirements of the following documents

- **EN 61326–1:2013** Electrical equipment for measurement, control and laboratory use – EMC requirements
- **EN 50581:2012** Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances:

I hereby declare that the equipment named above has been designed to comply with the relevant Sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives.

St. Ruprecht a.d. Raab, 13.09.2018

Max Schaller

Schaller GmbH
Maximilian Schaller
General Manager

12.2 Technical data

Display resolution	0.1 % moisture content, 0.5 °C/°F temperature
Measuring range	8 % to 30 % water content
Operating 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	Automatic
Data memory	Up to 10,000 measuring values
Power supply	4 pcs. of 1.5 Volt AA Alkaline batteries
Current consumption	60 mA (incl. display illumination)
Menu languages	English, German, French, Italian, Spanish, Portuguese, Czech, Polish, Russian, International
Display	128 x 64 illuminated matrix display
Device dimensions	740 x 65 x 40 mm
Device weight	450 g (with batteries)
Device IP rating	IP 40



Climate
Environment



Materials



Food



Buildings



Bioenergy



Paper / Board

Schaller Messtechnik develops, produces and sells professional moisture meters and turnkey solutions.

Schaller GmbH

Max-Schaller-Straße 99, A - 8181 St. Ruprecht an der Raab

Tel +43 (0)3178 - 28899 , Fax +43 (0)3178 - 28899 - 901

info@humimeter.com, www.humimeter.com