Moisture meter

User Manual

humimeter RH2

Aw value measuring device

for determining the water activity of food

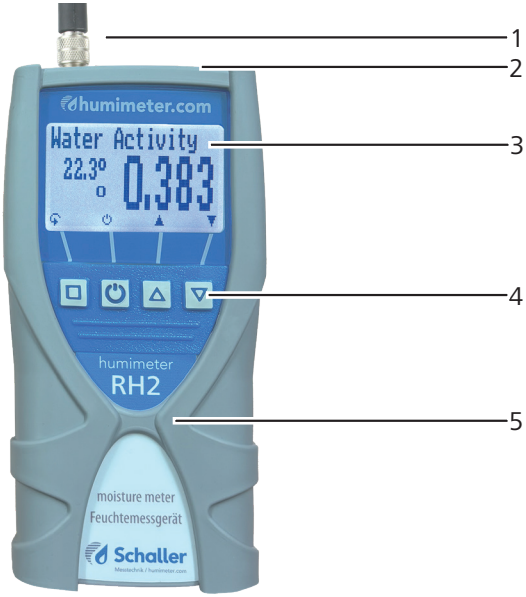
78,0 °F | 6,16% | 456 kg/m³ | −27,3 td | 0,64 aw | 51,9% r.H. | 14,8% abs | 100,4 g/m² | 09 m/s | 4,90 Ugl | 1

Version 3.2

Always read this user manual before using the humimeter RH2!

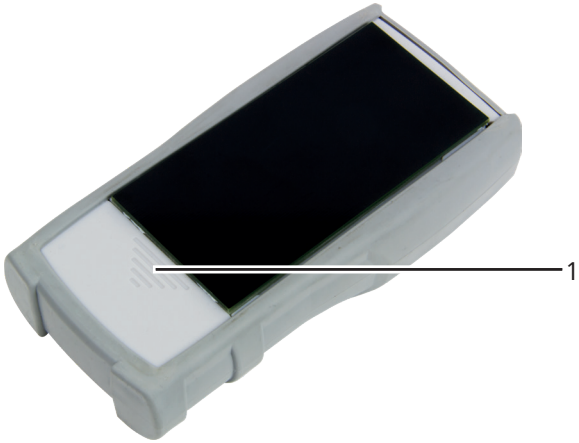
Your humimeter RH2 at a glance

The main unit



No.	Name
1	Connector for external sensor
2	USB port (optional)
3	Display
4	Keypad
5	Rubber protection cover

Rear of the main unit



No.	Name
1	Battery compartment

Overview Aw value measuring chamber

No.	Name
1	Screw-top jar
2	Protective grid

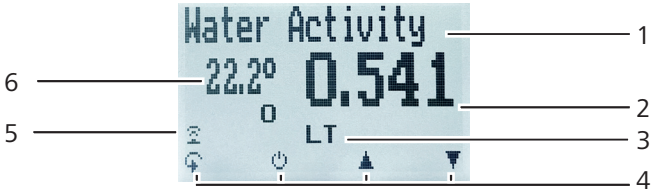
Measurement	Measuring range	Resolution	Accuracy
aw value	0 to 1	0.001 aw	
calibration:	0.00 to 0.98		see "16.2 Technical data"
temperature °C	0 °C to +50 °C	0.1 °C	+/- 0.5 °C (at 25 °C)
temperature °F	32 °F to 122 °F	0.2 °F	+/- 0.5 °F (at 77 °F)

Overview Aw value measuring cell

Nr	Bezeichnung
1	Bottom part
2	Sensor

Measurement	Measuring range	Resolution	Accuracy
aw value	0 to 1	0.001 aw	
calibration:	0.00 to 0.98		see "16.2 Technical data"
temperature °C	0 °C to +50 °C	0.1 °C	+/- 0.5 °C (at 25 °C)
temperature °F	32 °F to 122 °F	0.2 °F	+/- 0.5 °F (at 77 °F)

The display



No.	Name
1	Calibration curve
2	Water activity (see "8.1 Definition calibration curves")
3	AW Value Mode
4	Display symbols
5	Existing connection to the sensor
6	Temperature display

The display symbols

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

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

The menus

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

Product selection menu

1 2 3

No.	Name
1	Change menu
2	Display illumination / device on/off
3	For changing the calibration curve

Data Log menu

1 2 3 4

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

Detailed level measurement

No.	Name
1	Change level
2	Switching the display backlight on/device off
3	AW Value Mode
4	Start measurement

Main menu

The main menu comprises the following menu items:

- **Edit Logs:**
  Manual Logs, Auto Logs,Clear Logs
- **Print Logs:**
  Last Log, All Logs,Clear Logs
- **Send Logs:**
  Manual Logs, Auto Logs,Clear Logs
- **Options:**
  Bluetooth, Date/Time, Log Time, Emission ratio, Language, Unlock, °C/°F, BL On Time, Auto Off Time, Calibrate, Materialcalib., Online Send, 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 RH2 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 RH2. 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 Messtechnik GmbH.

Schaller Messtechnik 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.

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

Telephone: +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 water activity of food
- Easy to use device for climate and environmental applications

2.2 Improper use

- The device must not be used in ATEX.
- The device is not waterproof and must be protected from water and fine dust.

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 is not used for a prolonged period of time (4 weeks).
- In case of damages or loose parts on the device, remove the batteries and contact Schaller Messtechnik 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.

CAUTION

Risk of injury

Lacerations caused by breaking the ampoules during removal.

► Remove the ampoules from the packaging by their base, as shown in picture 82 on page 62.

► Avoid putting stress on the predetermined breaking point, as shown in picture 83 on page 62.

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
- Damage due to leaking batteries

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:

3.2.1 Scope of supply

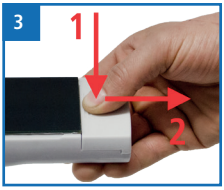
- humimeter RH2
- Water activity measuring chamber or aw value measuring cell
- 4 pieces of twist-off lids or 8 pieces filler jars plastic
- 2 pieces of screw-top jars 186ml
- 2 pieces of screw-top jars 245ml or specimen transducer with sealing ring
- Calibration ampoules (art.no. 10005)
- 4 pieces of AA Alkaline batteries
- Rubber protection cover
- Soft-Case
- Operating manual

Optional accessories:

- humimeter USB data interface module - USB flash drive with software and USB-cable or download using humimeter.com/software
- Replacement set with 14 pieces of screw-top jars 168ml with twist-off lid
- Replacement set with 14 pieces of screw-top jars 245ml with twist-off lid
- 14 pieces of plastic containers 200ml (PET) with twist-off lid
- Calibration ampoules - for checking the calibration of the humimeter RHx series
- Battery operated portable thermal printer (only possible together with humimeter USB data interface module) - Described in a separate operating manual
- Bluetooth module - Described in a separate operating manual
- Wall holder, mounted on humimeter RH2
- Replacement set - 20 pieces filler jars plastic

3.3 Inserting batteries

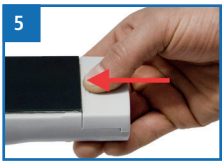
1. Remove the rubber protection cover. To do so, hold the rubber protection cover at the upper side and pull it over (figure 1 and 2). In case of a sensor being connected, disconnect it beforehand and if your device is provided with an optional USB port, remove the protection cap of the USB socket beforehand too.



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 (figure 5). Then mount the rubber protection cover onto the housing, beginning at the end where the battery compartment is situated.

4. Using the device - Basics

4.1 Switching on the device

- Press the ⏻ button for 3 seconds.

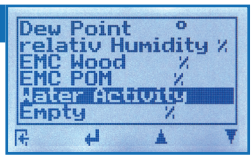
» The display will then show the status indicator (figure "10. Checking the device's status").

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

4.2 Selecting the calibration curve

To do so: The device has to be in the product selection menu.

For an overview of the different calibration curves and the criteria for selecting them, please refer to "8. Calibration curves".



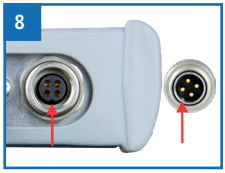
6

1. Press the ▽ or △ button to move from one calibration curve to the next
   Or
   Press the ▽ or △ button for 2 seconds to open the calibration curve overview (figure 6).
2. Use the arrow keys to move from one calibration curve to the next
3. and keep any of them pressed to scroll through the types.
4. Confirm your selection by pressing ↵.

» The calibration curve you selected will now be shown at the top of the display.

4.3 Exchanging the sensors

7


8

- If a sensor is already connected, unscrew it counterclockwise.
- Then plug the desired sensor into the device until both threads make contact.

» Pay attention to the elevation in the connector and its correct positioning (figure 8).

» Do not use excessive force to plug in the sensor, which is very easy to operate.

- Now tighten the thread.

4.4 Taking a measurement

- For information on how to take a measurement, see section "6. The measuring process".

4.5 Switching the device off

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

- Press the ⏻ button for 2 seconds.

5. Simplified user

5.1 Opening the main menu in the simplified user

To do so: The device is switched off and the advanced user is deactivated (see "5.3 Changing from advanced to simplified user").

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

» The display will now show the main menu.

5.2 Opening the main menu in the advanced user

To do so: The device has to be in the product selection menu and the advanced user is activated (see "5.4 Changing from simplified to advanced user").

- Press twice or hold for 2 seconds.

» The display will now show the main menu.

5.3 Changing from advanced to simplified user

To do so: All of the options must be activated (see "11.5 Activating options").

1. Open the main menu (see "5.1 Opening the main menu in the simplified user").
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.

5.4 Changing from simplified to advanced user

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

1. Open the main menu (see section "5.2 Opening the main menu in the advanced user").
2. Activate all of the options (see "11.5 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.

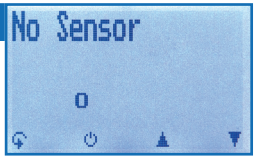
6. The measuring process

6.1 Preparing a measurement

To do so: The device has to have nearly the same temperature than the product being measured. It is recommended to let your humimeter device adjust to the surrounding temperature for at least 30 minutes before the measurement.

- Switch on the device (see "4.1 Switching on the device").
- Connect the desired sensor to the device (see "4.3 Exchanging the sensors").

» If no sensor is connected, the display will show **No Sensor** (figure 9).



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- Select the desired calibration curve (see "8. Calibration curves") by pressing or (see "4.2 Selecting the calibration curve" page 19).

6.2 Selection of measuring chamber or measuring cell for the respective application:

The measuring chamber has a large sample volume and can therefore be filled with large materials such as food, etc. In order to achieve a fast adjustment behavior and good measurement results, the chamber must be completely filled with the material. A lot of sample material achieves a good average value.

The measuring cell offers a small sample volume and inserts made of plastic. A much smaller sample volume is required here and can therefore be filled with crushed and ground samples or also with liquids such as sauces and pastes.
The plastic vessels must be almost completely filled in order to achieve a good measurement result and rapid adjustment behavior. After the measurement, they can be easily exchanged or cleaned.

In both applications it is important that the sensors are not exposed to acids, bases, solvents or excessive salt concentrations!

6.3 Taking a measurement - Aw value measuring chamber

To do so: Let the device adjust to the surrounding temperature for at least 30 minutes (see "6.6 Adjustment behaviour of the sensor" page 30).

10

1. Fill the screw-top jar to at least two thirds with material (figure 10).

» In case of coarse material the screw-top jar should be filled at least half-way. The higher the filling quantity, the quicker the adjustment.

» If the filling quantity is too low, this can lead to deviations in the measurement result.

» The material in the screw-top jar must not come into contact with the metal protective grid! The material must not enter the inside of the protective grid!

11

2. Close the water activity measuring chamber tightly (figure 11).

» Let the water activity measuring chamber and the material adjust until the displayed measuring value does not change any more over a longer period.

» In case of unpeeled materials such as nuts, the adjustment time may be longer, as it may take longer until the material releases moisture in its surroundings for the measurement.

» The adjustment time is extended when the device is switched off, as the water activity measuring chamber is equipped with a fan to accelerate the adjustment period (figure 12).

12

3. Now take the measured values shown on the display of the device (figure 13).

13

4. Once the reading has been taken, it can be saved on the device (see "7.2 Saving your readings manually" or "7.3 Auto save function (time-based)").

ATTENTION MEDIA COMPATIBILITY

Exposure of the sensor to harmful media, especially solvents, acids, alcohols and preservatives, can damage the sensor or cause changes in sensor calibration.

► The user is responsible to check the media compatibility before using the RH2 aw-value. If necessary, a consultation with the sales partner or the manufacturer has to made.

ATTENTION

Pollution of the sensor with material

If the screw-top jar is filled too high, the sensor can become polluted, which leads to incorrect measurements.

► Make sure that the metal protective grid does not come into contact with the material being measured.

ATTENTION

Pollution of or damage to the sensor

By tilting or turning over the filled water activity measuring chamber, the sensor can become polluted or damaged, which leads to incorrect measurements.

► Make sure to only lift the water activity measuring chamber straight up into the air.

Information - Measuring accuracy

This rapid and non-destructive measuring procedure allows you to take multiple moisture readings of the same sample material. When saving the individual readings, the device will automatically calculate the readings' average (see "7.2.2 Saving several readings (a measurement series) at the same time").

Information - Incorrect readings

Always make sure to select the correct calibration curve for the material you are measuring. This prevents taking incorrect readings (see "14. Faults").

6.4 Taking a measurement - Aw value measuring cell

To do so: Let the device adjust to the surrounding temperature for at least 30 minutes (see "6.6 Adjustment behaviour of the sensor" page 30).

14

1. Fill the plastic filling vessel with the sample.(figure 14).

» The filling vessel must be almost completely full.

» Too small a quantity of material can lead to deviations in the measurement result.

» It must be possible to close the filling vessel. The sample must not come into contact with the sensor!

15

2. Now place the filling vessel without lid in the lower part of the measuring cell (figure 15).

3. Now place the head of the sensor on the lower part of the measuring cell.

» To simplify the sealing of the measuring cell, place the sensor head at an angle. (figure)

» The sensor head is not tight until it is immovably and stably seated on the lower part of the measuring cell.

» Allow the aw-value measuring cell and the measured material to equalize until the displayed measured value no longer changes over a longer period of time.

4. Now take the measured values shown on the display of the device (figure 13).

5. Once the reading has been taken, it can be saved on the device (see "7.2 Saving your readings manually" or "7.3 Auto save function (time-based)")

ATTENTION: MEDIA COMPATIBILITY

Contact of the sensor with damaging media, in particular solvents, acids, alcohols and preservatives, can lead to damage to the sensor or to changes in the sensor calibration.

► It is the responsibility of the user to carry out a media compatibility test before using the humimeter RH2-AW value. It may be necessary to consult the sales partner or the manufacturer.

ATTENTION

Pollution of the sensor with material

If the screw-top jar is filled too high, the sensor can become polluted, which leads to incorrect measurements.

► Make sure that the metal protective grid does not come into contact with the material being measured.

ATTENTION

Pollution of or damage to the sensor

By tilting or turning over the filled water activity measuring chamber, the sensor can become polluted or damaged, which leads to incorrect measurements.

► Make sure to only lift the water activity measuring chamber straight up into the air.

Information - Measuring accuracy

This rapid and non-destructive measuring procedure allows you to take multiple moisture readings of the same sample material. When saving the individual readings, the device will automatically calculate the readings' average (see "7.2.2 Saving several readings (a measurement series) at the same time").

Information - Incorrect readings

Always make sure to select the correct calibration curve for the material you are measuring. This prevents taking incorrect readings (see "14. Faults").

6.5 Detailed level measurement

6.5.1 Selecting the measurement mode and setting

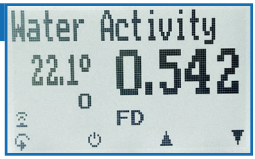
» The rolling menu consists of three different levels.

» The main overview is the product selection level.

- By pressing the button you reach the detailed measurement level and the following display appears(figure 16).
- Press the button again to access the data log menu (figure 17).
- Press the button again to access the menu (figure 18).
- Navigate to **AW-Value Mode**. To do this, press or and confirmwith .
- You can now select the desired measurement method (figure 18).

» For a more detailed description of the different modes, see "8.2 Definition AW Value Modes" page 42

- Select the desired mode and confirm with .
- You are now back in the menu.
- Now navigate to **Options**. To do this, press or and confirm with (figure 19).
- Now navigate to **AW-Value Setting**. To do this, press or and confirm with (figure 20).
- Here you can choose from the various settings.
- For a more detailed description of the individual settings, see "8.2 Definition AW Value Modes" page 42.
- Press the button to confirm your selection.
- Now press , then and agian . You are now back in the main overview.

16


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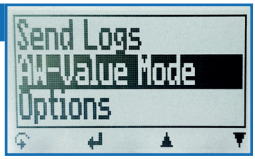

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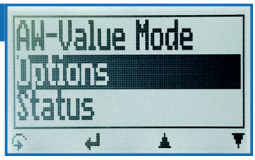


20

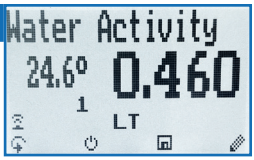
6.5.2 Taking a measurement

To do so: Desired modes and settings are already selected see "6.5.1 Selecting the measurement mode and setting".

Measuring Mode Live Tracking LT

- Your RH2 always displays the currently measured value on the sensor in the measuring cell or in the measuring chamber (figure 21).
- Press the button twice and then the button to save this measurement. Use the button to edit the saved measurement (figure 22).

21

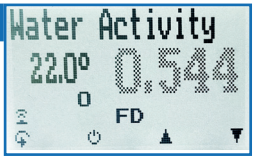
22


Measuring Mode Fast Detetction FD

- Your measuring device determines a final value for determining the water activity according to the specified settings (figure 23).
- Press the button once to access the detailed measurement level.
- The measurement is started by pressing the button .
- During the measurement process, the measurement can be interrupted at any time by pressing the button .
- The measurement is only successful when the time bar is completely filled and the value is clearly displayed (figure 24 and 25)

» If the measured value is not clearly displayed after the time bar has been filled, the measurement must be repeated and the following criteria (see "14. Faults" page 66) must be observed.

- Press the button to return to the data log menu and press the button to save the measured value.
- The measurement can be ended using the button (figure 26).

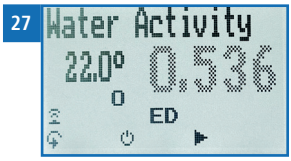
23


24

25

26

Measuring Mode Exact Detetction ED



27

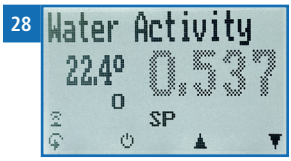
- Your measuring device determines a final value for determining the water activity according to the specified settings (figure 27).
- Press the button once to access the detailed measurement level.
- The measurement is started by pressing the button .
- During the measurement process, the measurement can be interrupted at any time by pressing the button .
- The measurement is only successful when the time bar is completely filled and the value is clearly displayed (figure 24 and 25)

» If the measured value is not clearly displayed after the time bar has been filled, the measurement must be repeated and the following criteria (see "14. Faults" page 66) must be observed.

- Press the button to return to the data log menu and press the button to save the measured value.
- The measurement can be ended using the button (figure 26).

Measuring Mode Single Point Detection SP

- Your measuring device determines a final value for determining the water activity according to the specified settings (figure 28).
- Press the button once to access the detailed measurement level.
- The measurement is started by pressing the button .



28

- During the measurement process, the measurement can be interrupted at any time by pressing the button .
- The measurement is only successful when the time bar is completely filled and the value is clearly displayed (figure 24 and 25)

» If the measured value is not clearly displayed after the time bar has been filled, the measurement must be repeated and the following criteria (see "14. Faults" page 66) must be observed.

- Press the button to return to the data log menu and press the button to save the measured value.
- The measurement can be ended using the button (figure 26).

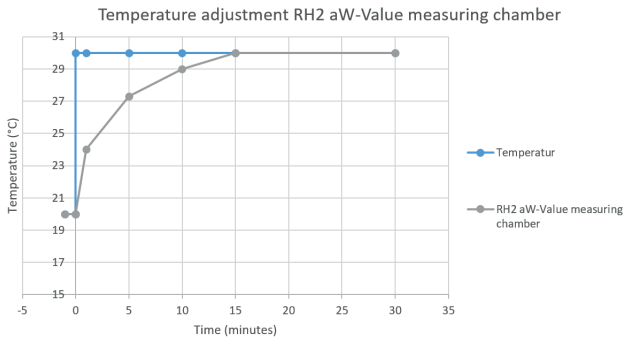
Information

Siehe "8.2 Definition AW Value Modes" page 42, um die richtige Messmethode mit dem passenenden Parameter auszuwählen.

6.6 Adjustment behaviour of the sensor

In humidity and temperature measurement, several parameters are responsible for the adjustment behaviour (time until the actual measuring value is displayed). The parameter responsible for the highest measuring error is a temperature discrepancy between the sensor resp. the whole measuring instrument and the material being measured resp. the air.

Therefore, allow your humimeter device to adjust until the displayed temperature corresponds to the actual temperature. The graph below shows how long it takes to adjust from 20 °C to 30 °C.



To demonstrate the importance of temperature adjustment, the table below shows the measuring errors due to a temperature difference between the measuring instrument and the material being measured of only 1 °C / 1.8 °F, at different ambient temperatures.

	10 °C (50 °F)	20 °C (68 °F)	30 °C (86 °F)
0.1 aw	+/- 0.007 aw	+/- 0.006 aw	+/- 0.006 aw
0.5 aw	+/- 0.035 aw	+/- 0.032 aw	+/- 0.03 aw
0.9 aw	+/- 0.063 aw	+/- 0.057 aw	+/- 0.054 aw

At room temperature (20 °C / 68 °F) and an assumed water activity of 0.5, a temperature difference between the sensor and the material being measured of 1 °C / 1.8 °F causes a measurement error of 0.032 aw. A temperature difference of 3 °C / 5.4 °F would cause a measurement error of more than 0.1 aw.

7. Saving your readings

7.1 Hold function - Freezing the displayed values

The device can be 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 used if you want the measuring value to remain on the display.

7.1.1 Activating the Hold function in the Options menu

To do so: The device has to be switched on and be in the product selection menu.

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Log Time** (figure 29). To do so, press or and confirm by pressing .
4. Select **Hold** (figure 30). To do so, press or and confirm by pressing .

» The setting has been saved.

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

29

30

7.1.2 Using the Hold function

To do so: The device has to be switched on and be in the Data Log menu.

- Press .

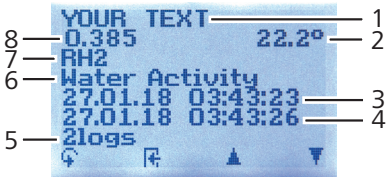
» The current reading will be frozen. All of the four symbols will now be displayed as (figure 31).

- To reactivate the frozen display, simply press any button.

31

7.2 Saving your readings manually

All of the readings can be saved, edited and viewed on the device. The figure below shows the overview screen of a single saved series of measurements.



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	Calibration curve
7	Device name
8	Water activity (average)

7.2.1 Saving individual readings

The device can be configured in such a way that the device will save a reading every time a button is pressed. This option (manual save function) is the device's default setting.

Activating the manual save function in the Options menu

To do so: The device has to be switched on and be in the product selection menu.

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

4. Select **Manual** (figure 32). To do so, press or and confirm by pressing .

» The setting has been saved.

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

6. Press to leave the main menu.

32

Using the manual save function

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 7).

1. Press .

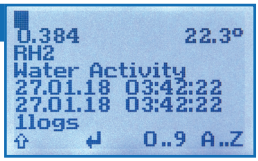
» The display will now appear as shown in figure 33 and the measured value will be preceded by the digit one.

33

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 34.

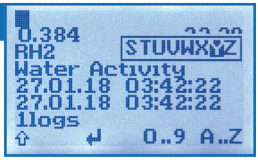
34



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 35).

35



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 .

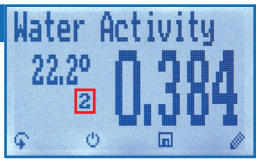
» The data you entered has been saved.

7.2.2 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 7).

1. Take several readings (see "6. The measuring process").
2. To save a reading, press as soon as the reading has been taken.

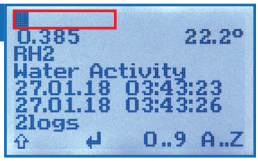
» The display will now appear as shown in figure 36. The marked number shows the number of readings that have already been saved.



36

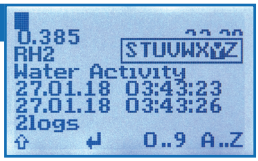
3. Press to enter a name for the saved reading and to finish the measuring process.

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



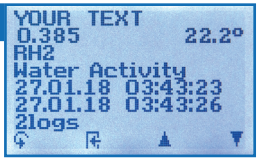
37

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 38).



38

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 .



39

» The data you entered has been saved.

7.3 Auto save function (time-based)

The device can be configured in such a way that it will automatically save a reading (log) at a selected time interval.

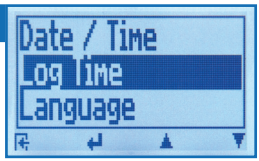
7.3.1 Activating the Auto save function in the Options menu

To do so: The device has to be switched on and be in the product selection menu.

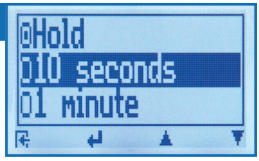
1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Log Time** (figure 40). To do so, press or and confirm by pressing .
4. Navigate to the desired time interval (figure 41). To do so, press or and confirm by pressing .

   » The setting has been saved.
5. Press to leave the **Options** menu.
6. Press to leave the main menu.

40



41



7.3.2 Auto save function: Saving measured values

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 7).

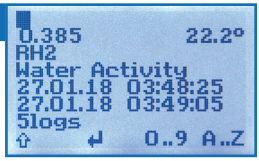
1. Press .

   » The device will save a reading at the selected time interval. The number of data saves will increase by one every time a reading is saved. The display will now appear as shown in figure 42.
2. Press to finish the measuring process and to enter a name for the saved readings.

   » The display will now appear as shown in figure 43.
3. The data you have inputted can be overwritten at any time.

42

43



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.

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.

7.4 Viewing individual readings

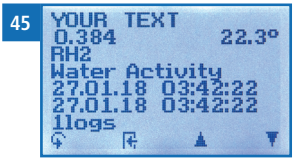
To do so: You must have saved a reading (e.g. **1 log**). The display will now appear as shown in figure 44.

44

1. Press 👓.

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

» The display will now appear as shown in figure 45



45

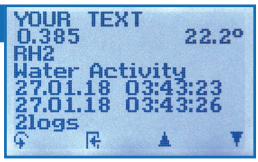
» Press ⇦ to leave this screen.

7.5 Viewing individual readings from a series of measurements

To do so: You must have saved a series of measurements (e.g. **2 logs**). The display will now appear as shown in figure 46.

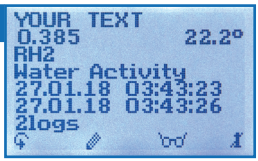
46

1. Press .
2. Navigate to the required measurement series. To do so, press or .
   » The display will now appear as shown in figure 47.



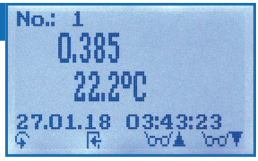
47

3. Press to switch to another input level.
   » The display will now appear as shown in figure 48.



48

4. Press again.
   » The display will now appear as shown in figure 49.



49

5. Navigate to the required reading (**No.: 1, No.: 2, No.: 3**). To do so, press .
6. Press to leave this screen.

7.6 Deleting all measured values (data log)

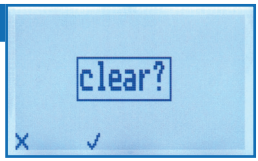
To do so: You must have taken and saved one or several readings.

50

1. Press twice or hold for 2 seconds.
2. Select **Edit Logs** (figure 50). To do so, press or and confirm by pressing .

51

3. Select **Clear Logs** (figure 51). To do so, press or and confirm by pressing .
4. The display will then show the message **clear?** (figure 52).



52

5. Confirm by pressing .
   » The data log has been deleted.

6. Press to leave the **Edit Logs** menu.

7. Press to leave the main menu.

7.7 Deleting individual measurement series

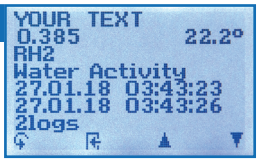
To do so: You must have saved a measured value (e.g. **1 log**) or a series of measurements (e.g. **3 logs**). The display will now appear as shown in figure 53.

53

1. Press .

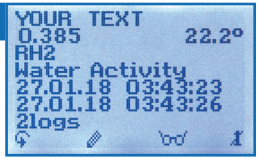
2. Select the required reading. To do so, press or .

» The display will now appear as shown in figure 54.

54


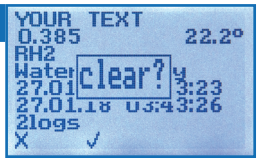
3. Press to switch to another input level.

» The display will now appear as shown in figure 55.

55


4. Press .

» The display will then show the message **clear?** (figure 56).

56


5. Confirm by pressing .

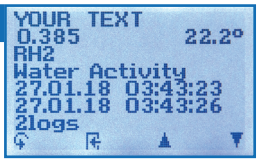
» The value has been deleted.

7.8 Deleting individual values from a single series of measurements

To do so: You must have saved a series of measurements comprising at least 2 logs. The display will now appear as shown in figure 57.

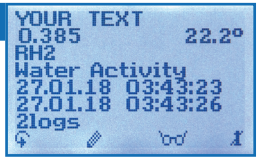
57

1. Press .
2. Select the required reading. To do so, press or .
   » The display will now appear as shown in figure 58.



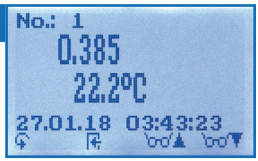
58

3. Press to switch to another input level.
   » The display will now appear as shown in figure 59.



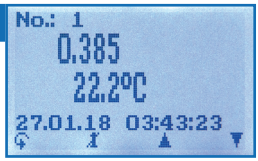
59

4. Press .
5. The display will now appear as shown in figure 60.



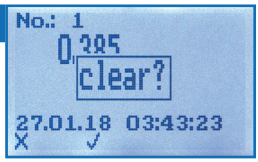
60

6. Select the required measured value. To do so, press or .
7. Press to switch to another input level.
   » The display will now appear as shown in figure 61.



61

8. Press to delete the value shown.
   » The display will then show the message **clear?** (figure 62).



62

9. Confirm by pressing .
   » The value has been deleted.
   » Deleted measuring values will be transferred to the LogMemorizer (see "9. LogMemorizer") and have to be deleted separately there.

8. Calibration curves

Calibration curve	Definition	Unit	Measuring range
Absolute Humidity	Absolute air humidity	g/m³	0 to 130 g/m³
Dew Point	Dew Point	°C °F	-55 °C to +60 °C -67 °F to 140 °F
Relativ Humidity	Relative air humidity	% RH	0 to 100 %
EMC Wood	Wood equilibrium moisture content	% EMC.	2 to 30 % (wood moisture)
EMC POM	POM equilibrium moisture content	% EMC.	0 to 2 %
Water Activity	Water activity	aw	0 to 1
Empty 1 - 5	Free calibration curves for special products		

8.1 Definition calibration curves

Absolute humidity

The absolute air humidity shows the contained amount of water in gramme per cubic metre of air. The absolute humidity is a direct degree for the amount of water vapour contained in a certain air volume. It shows how much condensate can precipitate or how much water has to be evaporated in order to obtain the desired humidity.

Dew Point

The dew point is the temperature to which the air that is not completely saturated with water vapour must be cooled so that it is completely saturated. When a room with the current relative humidity cools down to the dew point temperature, the water vapour begins to condense.

Relative humidity

Indicates the relationship between the current water vapour pressure and the maximum possible, the so-called saturation vapour pressure.

The relative humidity shows the degree the air is saturated with water vapour. Examples:

50% relative humidity: At the current temperature and pressure, the air is half saturated with water vapour. 100% relative humidity means that the air is totally saturated with water vapour. If the air has more than 100% humidity, the excessive humidity would condense or precipitate as mist.

EMC wood

Shows the wood equilibrium moisture content (for wood stored under these conditions) in % wood moisture and the temperature in the selected unit (°C or °F).

EMC POM

Shows the POM granulate equilibrium moisture content (for granulate stored under these conditions) in % moisture content and the temperature in the selected unit (°C or °F).

Water activity

Water activity is also described as free, non-cellularly bound water in products such as food. The water activity is described in chapter "8.3 Definition water activity".

Free calibration curves

There are free calibration curves in the measuring device. These can be used for special products.

On request Schaller Messtechnik GmbH can develop customer-specific calibration curves for your product.

8.2 Definition AW Value Modes

The humimeter RH2 with measuring cell or measuring chamber is equipped with 4 different measuring modes for determining the water activity (the Aw value). These modes can be selected in the menu under AW value measuring method.

If a measuring mode is started (exact detection or quick detection), the measuring device uses an algorithm to determine the stability of the measured value. The interval represents the minimum measurement duration and the set stability class the maximum deviation of the AW value that may lie within the fluctuation range.

As soon as two consecutive measured values fulfill the criterion of the stability class, the measurement is ended with the following measuring point and is considered stable. If experience shows that the measurement is not stable, the interval can be increased or the stability class reduced.

Adjusting the settings for the measurement mode AW value

The settings can be adapted to the respective requirements in the menu Options -> Submenu AW Value Setting.

The preset standard values are recommended by the manufacturer and cover 80% of applications.

8.2.1 Live Tracking

If this mode is selected, your RH2 always displays the currently measured value at the sensor in the measuring cell or in the measuring chamber. Any changes are shown immediately on the display.

8.2.2 Fast detection

If this mode is selected and the measurement is started your measuring device determines a final value for determining the water activity (the AW value) according to the specified settings.

For fast detection, the average measurement time is 10 minutes with an expected stability of +/-0.005 aw

Standard Value Interval Fast Detection

Standard Value Accuracy Fast Detection

- Interval: 5 minutes
- Stability: 0.005 aW
- Average measurement duration: 10 minutes

8.2.3 Exact detection

If this mode is selected and the measurement is started your measuring device determines a final value for determining the water activity (the AW value) according to the specified settings.

For exact detection, the average measurement time is 25 minutes with an expected stability of +/-0.002 aw.

Standard Value Interval Exact Detection

Standard Value Accurancy Exact Detection

- Interval: 15 minutes
- Stability: 0.002 aW
- Average measurement duration: 25 minutes

8.2.4 Single point detection

If this mode is selected and the measurement is started your measuring device determines a final value for determining the water activity (the AW value) according to the specified settings.

With single point detection, the measurement duration is exactly the time interval defined in the options.

Single point detection time: 3 minutes

Fast Detection
- Interval Fast Detection
- Stability Fast Detection

Exact Detection
- Intervall Exact Detection
- Stability Exact Detection

Single Point Detection — Single Point Detection Time

8.3 Definition water activity

Water activity is the ratio of the partial water vapour pressure in food (p) to the saturation vapour pressure of pure water (p0). It is an important indicator for the product quality in the food, tobacco and pharmaceutical industry and is represented in an aw value from 0 to 1.

The water activity is synonymous with the equilibrium moisture content – the relative humidity at which the material to be measured is in equilibrium with the ambient air. The relative humidity of air however is expressed in %.

The water activity is temperature-dependent. For the determination of the water activity at a desired temperature, the measuring device and the material being measured should be stored at the same temperature before starting the measurement.

The humimeter RH2 water activity measuring chamber is suited for the measurement of materials such as cereal products, coffee, cocoa, muesli, butter, mixtures of dried fruit, spices, granulates, mushrooms, sugar, xylitol, biscuits or dried sausage as well as many other types of food where a check of the water activity is necessary.

The humimeter RH2 water activity measuring chamber is generally not suited for liquids as well as juices (syrup), acidic food such as onions, fruits and tropical fruits or food and beverages containing alcohol, such as filled chocolates. Vinegar and acids destroy the calibration and the sensor.

Materials with a moisture content above the fibre saturation point, this means an aw value above 1, cannot be measured. For such materials only the water content can be determined.

The water activity must not be confused with the water content – the percentage of water contained in a product.
The water content is used for billing according to the dry content of food and materials, it shows the ratio of water to the total mass in percent (kg/kg)x 100.

The water activity influences the following characteristics of a product:

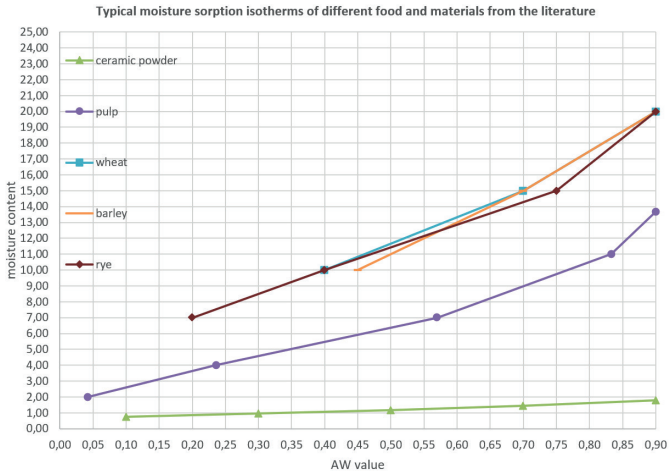
- microbiological stability
- chemical stability
- enzymatic stability
- colour, taste and nutritional value
- content of proteins and vitamins
- stability of composition
- shelf life
- storage and packaging

All forms of life are dependent on water. The water activity indicates the amount of water available for micro-organisms such as bacteria, fungi, moulds, etc. Each type of microorganism needs a certain minimum water activity value for being able to grow.

Typical minimum water activity values taken from literature:

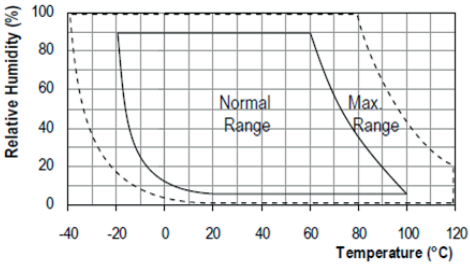
Water activity	Organism
aw = 0.91 - 0.95	Bacteria
aw = 0.88	Yeast
aw = 0.80	Mould
aw = 0.75	Halophilic bacteria
aw = 0.70	Osmiophilic yeast
aw = 0.65	Xerophilic mould

Typical sorption isotherms of various foods and materials taken from literature:



8.4 Application range

Within the normal application range (normal range) the accuracy of the device is as indicated. A long-term application beyond the normal application range (max. range), particularly at an air humidity of more than 80%, can lead to higher measuring errors (+3 % after 60 hours). Back in the normal application range, the sensor will return to the indicated accuracy automatically.



9. LogMemorizer

Note: Your device is equipped with the optional USB port or Bluetooth module.

9.1 LogMemorizer install/open

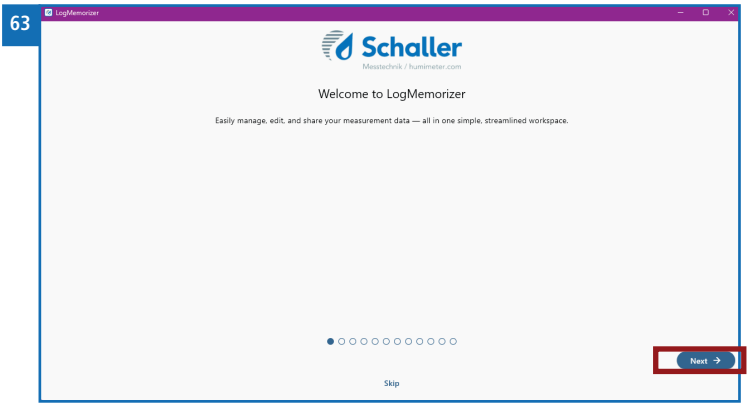
1. Install LogMemorizer on your PC or as an app on your smartphone. Alternatively, use LogMemorizer as a web app in your browser - no installation required.
   Note: The web app is only for viewing measurement data that has already been uploaded to the cloud.

» Download LogMemorizer from humimeter.com/software or scan the following QR codes for your applications.

Desktop version	Android app	iOS app	Web app

2. Open LogMemorizer after installation.

» The interactive introduction will appear.



9.2 Introduction

Follow the introduction by clicking “Next.” This will help you learn all the important features. After the introduction, you will be taken to the user interface.

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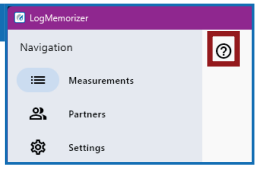

» You can access the introduction again at any time by clicking the “?” icon.

9.3 Establishing the connection

Note: A connection can only be established via LogMemorizer. Before you can transfer measurement data, you must establish a connection between LogMemorizer and your humimeter. Make sure the humimeter is turned on before establishing the connection.

1. Open LogMemorizer on your PC.
2. Go to “Select Source.”
3. Select the interface that your device has here.

9.3.1 USB

Note: Install the USB driver before using LogMemorizer with the optional USB interface.

1. Plug the USB Mini-B connector into the humimeter.
2. Select your humimeter under “Connection.” Do not change the baud rate unless instructed to do so by the manufacturer.
3. Click “Apply.”

» The connection has now been established.

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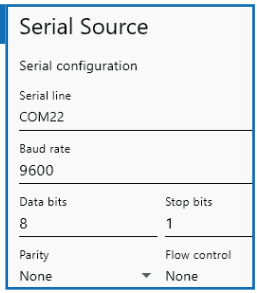


9.3.2 Bluetooth

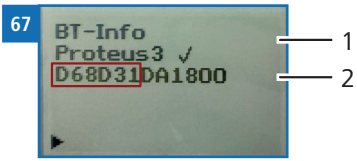
1. LogMemorizer automatically starts searching for Bluetooth devices.
2. The humimeter devices you find will be shown in a list.
   » The first 6 numbers of the Bluetooth MAC address are displayed for easier identification (**see** Check Bluetooth status).
3. Click on your humimeter.
4. Confirm the connection.

9.3.3 Check Bluetooth status

1. Press twice or hold for 2 seconds.
2. Go to **Options/Bluetooth/Info**. To do this, press or and confirm by clicking .

   » The status indicator appears on the display **humimeter**.

   » The display shows the following information:



No.	Description
1	Name of the Bluetooth module
2	MAC address of the Bluetooth module

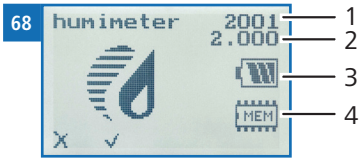
3. Confirm by clicking .
4. Press , to close the main menu.

10. Checking 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 (figure 68):



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.

11. Configuring the device

11.1 Turning on Bluetooth

The information on Bluetooth is provided in a separate operating manual.

11.2 Adjusting the date/time

1. Press twice or hold for 2 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. The display will now appear as shown in figure 69.

» The format for the date is **DD-MM-YY** (Day-Month-Year).

» The format for the time is **hh:mm:ss** (hour:minutes:seconds).

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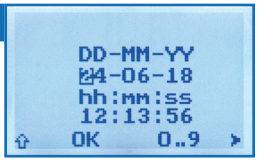
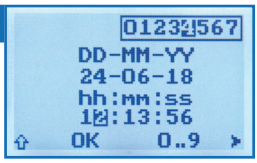


70



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 (figure 70).
6. Moving forward:
   To move forward between **DD-MM-YY** and **hh:mm:ss**, press .
7. Moving back:
   Press to switch to another input level. To move backward between **DD-MM-YY** and **hh:mm:ss**, press .
8. Confirm the date/time by pressing OK.

» The settings have been saved.

9. Press to leave the **Options** menu.
10. Press to leave the main menu.

11.3 Setting the emission ratio

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Emission ratio**. To do so, press or and confirm by pressing .
4. Overwrite the current emission ratio. To do so, 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.

   Moving back:
   Press to switch to another input level.
   To move back, press .
5. Confirm the new emission ratio by pressing .

» The setting has been saved.

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

11.4 Selecting a language

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Language**. 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 setting has been saved.

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

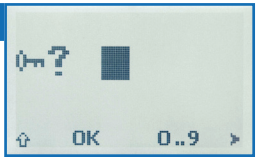
11.5 Activating options

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

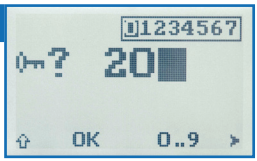
1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Unlock**. To do so, press or and confirm by pressing .

» The display will now appear as shown in figure 71.

» On delivery, the four-digit password is the device's serial number.



71



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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 72).
5. Moving back:
   Press to switch to another input level.
   To move back, press .
6. Confirm the four-digit password by pressing OK.

» The setting has been saved.

» The **°C/°F, BL On Time, Auto OFF Time, Calibrate, Materialcalib., Online Send, Password, Reset** options are now activated.

7. Press to leave the **Options** menu.
8. Press to leave the main menu.

11.6 Deactivating options

Once the device has been switched restarted, the **°C/°F, BL On Time, Auto OFF Time, Calibrate, Materialcalib., Online Send, Password, Reset** options will be deactivated again.

11.7 Selecting °C/°F

To do so: All of the options must be activated (see "11.5 Activating options").

1. Press twice or hold for 2 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 setting has been saved.

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

11.8 Reducing the device's power consumption

11.8.1 Configuring the display illumination time

To do so: All of the options must be activated (see "11.5 Activating options").

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **BL On Time**. To do so, press or and confirm by pressing .
4. Select the required display illumination period (30 seconds, 2 minutes, 5 minutes, 10 minutes). To do so, press or and confirm by pressing .

» The setting has been saved.

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

11.8.2 Configuring automatic switch-off

To do so: All of the options must be activated (see "11.5 Activating options").

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Auto Off Time**. To do so, press or and confirm by pressing .
4. Select the period of time you want the device to stay switched on (3 minutes, 5 minutes, 10 minutes, 20 minutes, 30 minutes). To do so, press or and confirm by pressing .

» The setting has been saved.

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

11.9 Calibrating the device

The calibration function is described in a separate operating manual.

11.10 Configuring the material calibration function

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

11.11 Online Send

To do so: All of the options must be activated (see "11.5 Activating options").

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

» The setting has been saved.

» The device now automatically sends the stored measured value to the PC each time the memory button is pressed.

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

11.12 Changing the password

To do so: All of the options must be activated (see "11.5 Activating options").

1. Press twice or hold for 2 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.

4. Overwrite the current password. To do so, 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.

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

5. Confirm the new four-digit password by pressing OK.

» The setting has been saved.

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

11.13 Resetting the device to its factory settings

To do so: All of the options must be activated (see "11.5 Activating options").

1. Press twice or hold for 2 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 .

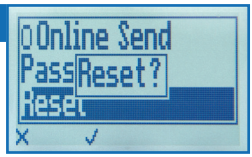
» The display will then show the message **Reset?** (figure 73).

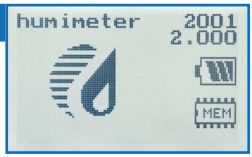
4. Confirm by pressing .

» 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 74).

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

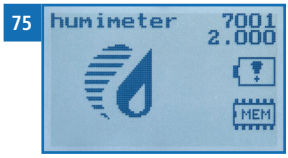
73


74


12. Cleaning and maintenance

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

12.1 Changing the batteries



75

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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 75).

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

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).

12.2 Care instructions

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

12.3 Cleaning the device

ATTENTION

Do not clean with fluids

Water or cleaning fluid getting inside the device can destroy the device.

► Only clean with dry materials.

Plastic housing

Clean the plastic housing with a dry cloth.

Water activity measuring chamber

Clean the screw-top jar with a cloth and cleaning alcohol.
The sensor cannot be cleaned. In case of a polluted sensor please contact your dealer.

Water activity measuring cell

Clean the aluminum bottom part with a cloth and cleaning alcohol. It is not possible to clean the sensor, contact your dealer in case of contamination.

12.4 Replace defective sensor

12.4.1 Measuring chamber

1. Remove the protective grille of the sensor head (Bild 77).

   » To do this, you need to unscrew the four screws.

2. Now you can remove the protective grille.

3. Pull the sensor straight and evenly from the sensor head.

   » Be careful not to bend or damage the pins of the sensor.

4. Now you can plug the replacement sensor straight onto the sensor head (Bild 78).

   » Pay attention to the pin arrangement to avoid damage to the sensor or sensor head.

   » Be careful not to bend or damage the pins of the sensor.

   » Make sure that the sensor is fully inserted on the sensor head.

5. Now place the protective grid on the sensor head and fasten it with the four screws.

77

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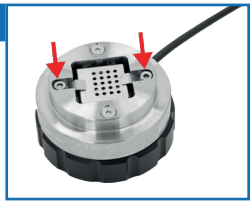
12.4.2 Measuring cell

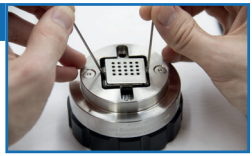
1. Remove the two screws with the retaining clips that secure the sensor. (Bild 79)



79

2. Lift the sensor straight off the sensor head using the supplied tool (Bild 80).

» Be careful not to bend or damage the pins of the sensor.



80

3. Now you can plug the replacement sensor straight onto the sensor head.

» Pay attention to the pin arrangement to avoid damage to the sensor or sensor head.

» Be careful not to bend or damage the pins of the sensor.

» Make sure that the sensor is fully inserted on the sensor head.

4. Fix the sensor with the two screws.

13. Checking the calibration

Requirement: Calibration ampoules (humidity standards art.no.10005). Use for the calibration one of the screw-top jars with a filling quantity of 186 ml. The device, the water activity measuring chamber and the humidity standards must have a temperature between 20.0 °C and 26.0 °C. It is recommended to store the device, the water activity measuring chamber and the calibration ampoules for 24 hours in a room with low temperature fluctuation.

Perform the calibrationin in the approximate application range.
Example: For measurements between 0.2 and 0.5 aw use the humidity standards 35 % and 50 % rh.

13.1 Preparing the water activity measuring chamber

1. Clean the screw-top jar thoroughly (see "12.3 Cleaning the device").

2. Place the textile pad into the screw-top jar (figure 81) and carefully pour the humidity standard onto the pad.

81

3. Hold the ampoule by the neck and release the entire liquid into the lower part of the ampoule by light tapping.

4. Now carefully break the head of the ampoule on the marked spot.

5. Pour the solution completely onto the textile pad in the glass. Tighten the aw-Value measuring chamber well.

» Recommendation: Keep the screw-top jar on the table while screwing.

» If necessary, only lift the water activity measuring chamber straight up, do not tilt or turn it over.

6. In case it has been lifted, carefully place the water activity measuring chamber onto an even table.

» Make sure to lift the water activity measuring chamber straight up and not to tilt or turn it over. Otherwise the sensor may be damaged.

CAUTION

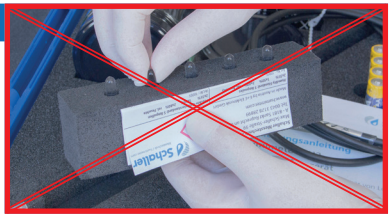
Risk of injury

Lacerations caused by breaking the ampoules during removal.

- ► Remove the ampoules from the packaging by their base, as shown in picture 82.
- ► Avoid putting stress on the predetermined breaking point, as shown in picture 83.

82

83



ATTENTION

Damage to or destruction of the sensor

The sensor can be damaged by tilting or turning over the water activity measuring chamber with the textile pad inside.

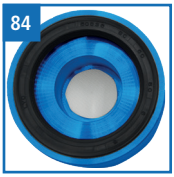
- ► Make sure to only lift the water activity measuring chamber straight up into the air.

12.2 Preparing the water activity measuring cell

7. Clean the screw-top jar thoroughly (see "12.3 Cleaning the device").

8. Place the textile pad into the screw-top jar and carefully pour the humidity standard onto the pad (Bild 84).

84



9. Hold the ampoule by the neck and release the entire liquid into the lower part of the ampoule by light tapping.

10. Now carefully break the head of the ampoule on the marked spot.

11. Pour the solution completely onto the textile pad in the glass. Tighten the aw-Value measuring chamber well.

» To simplify the sealing of the measuring cell, place the sensor head at an angle.

» The sensor head is not tight until it is immovably and stably seated on the lower part of the measuring cell.

» If necessary, lift the aw-value measuring cell only straight up, do not tilt or turn it over.

12. If lifted, carefully place the aw-value measuring cell on a table.

» Make sure that you only lift the aw-value measuring cell straight up and do not tilt or turn it over. Otherwise the sensor may be damaged by the liquid.

CAUTION

Risk of injury

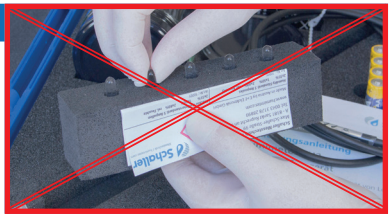
Lacerations caused by breaking the ampoules during removal.

► Remove the ampoules from the packaging by their base, as shown in picture 85.

► Avoid putting stress on the predetermined breaking point, as shown in picture 86.

85

86



ATTENTION

Damage to or destruction of the sensor

The sensor can be damaged by tilting or turning over the water activity measuring chamber with the textile pad inside.

► Make sure to only lift the water activity measuring chamber straight up into the air.

12.3 Determining the deviation

1. Ensure that the sensor is sufficiently equalized to the humidity standard.

» We recommend an equalization period of at least 3 hours and a maximum of 20 hours for humidity standards of 35% and 50% rel. humidity.

» For 10%, 80% and 95% relative humidity, we recommend an equalization period of at least 6 hours and a maximum of 20 hours

» Make sure that you do not draw in false air from outside, as this can significantly distort the result.

2. Switch on the device (see "4.1 Switching on the device") and select the calibration curve "relativ Humidity" by pressing or (see "4.2 Selecting the calibration curve" page 19).

3. Then note down the measured relative humidity and temperature.

4. At ideal temperature conditions (device, water activity measuring chamber and humidity standard have a temperature of 23 °C), the value printed on the humidity standard can be used as reference value.

5. In case of deviation from the factory temperature (23.0 °C), the real humidity value must first be determined according to the table below.

Temperature	Humidity standards		
	35 %	**50 %**	**80 %**
20 °C	34.8 %	49.8 %	79.8 %
21 °C	34.9 %	49.9 %	79.9 %
22 °C	34.9 %	50.0 %	79.9 %
23 °C	35.0 %	50.0 %	79.9 %
24 °C	35.1 %	50.1 %	80.0 %
25 °C	35.2 %	50.2 %	80.0 %
26 °C	35.3 %	50.2 %	80.0 %

6. Note down the real humidity value.

7. Compare the noted displayed measuring value with the real humidity value.

» If the indicated value shows a difference higher than 1.5 % relative humidity, it is recommended to perform a adjustment. A calibration/adjustment can be performed by the company Schaller Messtechnik GmbH.

» It is also possible to run the calibration/adjustment by yourself using the calibration ampoules: For instructions on how to perform calibration/adjustment, please contact Schaller Messtechnik GmbH or your distributor.

8. Open the measuring chamber and clean the glass jar with plenty of water. The textile pad must be washed out well and can then be dispossed.

Information

Accuracy of the result

Contamination can falsify the displayed moisture content during calibration or adjustment.

» Make sure that the measuring chamber is free of any external materials.

» Make sure that no false air is drawn into the measuring chamber.

» Make sure that the measuring cell is free of any external materials. If necessary, remove the plastic filling cup,

» Make sure that no false air is drawn into the measuring cell.

14. Faults

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

Fault	Cause	Remedy
Measuring error	The temperature is outside the operating temperature: lower than -10 °C or higher than +60 °C	Only use the device in temperatures between -10 °C and +60 °C.
	Measurement error due to too short temperature adjustment time	Let the device adjust to the surroundings (see "6.6 Adjustment behaviour of the sensor").
	Wrong calibration curve	Check whether you have selected the right calibration curve before taking a reading (see "8. Calibration curves").
	Filling volume too low	Fill the screw-top jar to at least two thirds with fine material or at least half-way with coarse material.
	Dripping water or sprayed water	Direct contact of the sensor with dripping or sprayed water will destroy it.
	Irreversible damage of the sensor due to aggressive gases	Please contact your dealer.
	Condensation caused by a change in temperature	Condensation on the sensor interferes with the calibration. Let the device adjust to the surrounding temperature.
	Polluted sensor	Please contact your dealer.
	Foreign particles on the sensor	Please contact your dealer.

Fault	Cause	Remedy
Measured value in measurement mode does not turn black after the measurement	The measuring device was unable to achieve a stable value according to the specified criteria	Adjust the accuracy class in the AW measurement mode options (less accuracy e.g: increase from 0.002 Aw to 0.005 Aw). Or Adjusting the interval in the AW measurement mode options (increased measurement duration e.g: increase from 5 minutes to 10 minutes)
Data transfer to LogMemorizer failed	Interface has not been configured	The interface only has to be configured once. To do so, press the F1 key on your computer and read the Help file for your LogMemorizer program.

15. Repair

If your humimeter needs repair, please pack it securely for transport and send it to:
Schaller GmbH
Max-Schaller-Straße 99
A - 8181 St.Ruprecht an der Raab

Download the repair form at humimeter.com/reparatur. Please fill out the form completely and enclose it with your package. This will allow us to clearly identify your repair request and process it quickly.

WARNING

For safety reasons, deeply discharged, damaged, or swollen rechargeable or non-rechargeable batteries are not allowed to be sent. Rechargeable and non-rechargeable batteries must be removed from the device before sending.

16. Storage and disposal

16.1 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 is not used for a period of 4 weeks or longer.
- Storage temperature: -20 °C to +60 °C

16.2 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.

17. Device information

17.1 EC declaration of conformity

KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY

Name/ Adresse des Herstellers: *Name/ address of manufacturer:*	**Schaller Messtechnik GmbH** **Max-Schaller-Straße 99** **A – 8181 St. Ruprecht**
Produktbezeichnung: *Product designation:*	**humimeter**
Typenbezeichnung: *Type designation:*	**RH1 ; RH2 ; RH2 AW ; RH5 ; RH5.1 ; RH5.2 ; RH6 ; RHL ; SW1**
Produktbeschreibung: *Product description*	**Messgerät zur Bestimmung der rel.Feuchte und abgeleiteter Messgrößen** ***Measuring instrument for determining relative humidity and derived measured variables***

Das bezeichnete Produkt erfüllt die Bestimmungen der Richtlinien:

The designated product is in conformity with the European directives:

EMV - Richtlinie 2014/30/EC	***EMC Directive 2014/30/EU***
RoHS - Richtlinie 2011/65/EG	***RoHS-Directive 2011/65/EU***

Die Übereinstimmung des bezeichneten Produktes mit den Bestimmungen der Richtlinien wird durch die vollständige Einhaltung folgender Normen nachgewiesen:

Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned EC Directives:

EN 61326–1:2013	Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen *Electrical equipment for measurement, control, and laboratory use – EMC requirements*
EN IEC 63000:2019-05 *ersetzt / replaced* **EN 50581:2012**	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährliche Stoffe. *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous*

Für das angeführte Produkt ist eine vollständige Dokumentation mit Betriebsanleitung in Originalfassung vorhanden.

For the mentioned product a complete documentation with manual of instruction in original version is available.

Bei Änderungen, die nicht vom Hersteller spezifiziert sind, verliert diese Konformitätserklärung die Gültigkeit.

In case of any changes not agreed upon with the manufacturer, this declaration of conformity loses its validity.

St. Ruprecht a.d. Raab, 31.07.2022

Schaller
Messtechnik / humimeter.com
Schaller Messtechnik GmbH
Raab - Schaller - Straße 99
AT - 8181 St. Ruprecht a. d. Raab
www.humimeter.com | info@humimeter.com

Bernhard Maunz
Rechtsverbindliche Unterschrift des Ausstellers
Legal binding signature of the issuer

UK CA

DECLARATION OF CONFORMITY

Name/ address of manufacturer:	**Schaller Messtechnik GmbH** **Max-Schaller-Straße 99** **A – 8181 St. Ruprecht**
Product designation:	**humimeter**
Type designation:	**RH1 ; RH2 ; RH2 AW ; RH5 ; RH5.1 ; RH5.2 ; RH6 ; RHL ; SW1**
Product description	**Measuring instrument for determining relative humidity and derived measured variables**

The designated product is in conformity with the following directives:

- **Electromagnetic Compatibility Regulations 2016 Great Britain**
- **RoHS-Directive 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment**

Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned Directives:

EN 61326–1:2013	Electrical equipment for measurement, control, and laboratory use – EMC requirements
EN IEC 63000:2019-05 replaced **EN 50581:2012**	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

For the mentioned product, a complete documentation with manual of instruction in original version is available.

In case of any changes not agreed upon with the manufacturer, this declaration of conformity loses its validity.

St. Ruprecht a.d. Raab, 31.07.2022

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Messtechnik / humimeter.com
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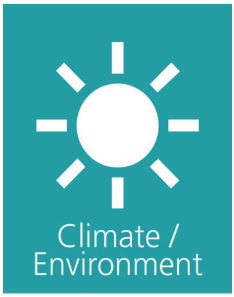
Bernhard Maunz
Legal binding signature of the issuer

17.2 Technical data

Display resolution	0.1 g/m³ absolute humidity, 0.1 % rel. air humidity, 0.1 °C / 0.3 °F dew point, 0.1 °C/ 0.3 °F temperature, 0.1 % EMC Wood, 0.01 % EMC POM, 0.001 aw
Measuring range rel. air humidity	0 % to 100 % RH
Calibration rel. air humidity	0 % to 90 % RH
Measuring range dew point	-55 °C to +60 °C
Measuring range EMC Wood	2 % to 30 %
Calibration EMC Wood	5 % to 15 %
Measuring range EMC POM	0 % to 2 %
Calibration EMC POM	0 % to 2 %
Measuring range Water Activity	0 to 1.00
Calibration Water activity	0 to 0.98
Accuracy rel. air humidity	+/- 1.5 % (at 25 °C)
Accuracy temperature	+/- 0.3 °C (at 25 °C) / +/- 0.5 °F (at 77 °F)
Accuracy EMC Wood	+/- 0.5 % (at 25°C)
Accuracy EMC POM	+/- 0.05 % (at 25°C)
Accuracy Water activity (at 25 °C)	+/- 0.01 from 0.10 to 0.80 +/- 0.04 from 0.00 to 0.10 & 0.80 to 0.98
Operating temperature	-10 °C to +60 °C
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	German, English, French, Italian, Spanish, Portuguese, Czech, Polish, Russian, International
Display	128 x 64 illuminated matrix display

Device dimensions	145 x 75 x 30 mm
Dimensions water activity measuring chamber	ø 85 x 102 mm (186 ml) ø 85 x 111 mm (245 ml)
Device weight	210 g
Weight water activity measuring chamber	542 g (186 ml) 556 g (245 ml)
Dimensions water activity measuring cell	ø 88 x 86 mm
Weight water activity measuring cell	1,2 kg
Device IP rating	IP 40

18. Notes



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

Schaller Messtechnik GmbH

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