Schaller
Messtechnik / humimeter.com

Moisture meter

Operating Manual

humimeter RH2

Air humidity and temperature moisture meter

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

Version 3.4

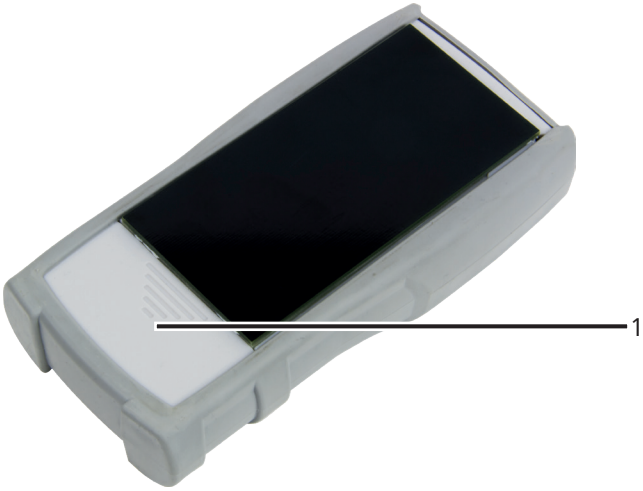
Always read this operating manual before using the humimeter RH2!

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 external sensors

Art.no. 12004 LF_TB 120 precision humidity and temperature plug-in sensor

Measurement	Measuring range	Resolution	Accuracy
rel. air humidity	0 % to 100 % rh	0.1 %	
calibration:	10 % to 90 % rh		+/- 1.5 % rh (at 25 °C)
temperature °C	-20 °C to +120 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
temperature °F	-4 °F to 248 °F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.no. 12032 humidity and temperature sensor

Measurement	Measuring range	Resolution	Accuracy
rel. air humidity	0 % to 100 % rh	0.1 %	
calibration:	10 % to 90 % rh		+/- 2.0 % rh (at 25 °C)
temperature °C	-20 °C to +85 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
temperature °F	-4 °F to 185 °F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.no. 13700 water activity measuring chamber

Measurement	Measuring range	Resolution	Accuracy
aw value:	0 to 1	0.001 aw	
calibration:	0.00 to 0.98		see "14.2 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)

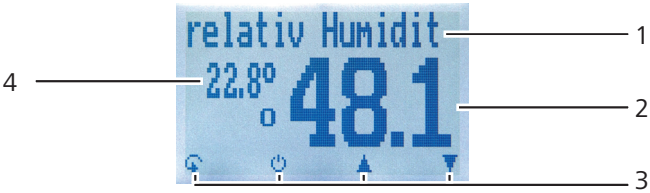
Art.no. 12514 air humidity and temperature sensor

Measurement	Measuring range	Resolution	Accuracy
rel. air humidity	0 % to 100 % rh	0.1 %	
calibration:	10 % to 90 % rh		+/- 2.0 % rh (at 25 °C)
temperature °C	-20 °C to +85 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
temperature °F	-4 °F to 185 °F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.no. 12513 infrared temperature sensor

Measurement	Measuring range	Resolution
IR temperature °C	-25 °C to +125 °C	0.1 °C
IR temperature °F	-13 °F to 257 °F	0.2 °F

The display



No.	Name
1	Calibration curve
2	Air humidity in % (see "7.1 Definition of calibration curves")
3	Display symbols
4	Temperature display

The display symbols

Symbol	Name
	Enter
	Up
	Down
	Back
	Enter numbers
	Enter letters
	Continue / go right
	Left
	Yes
	Auto save

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

The menus

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 calibration curve

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:

- **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**

Table of contents

Your humimeter RH2 at a glance 2
The main unit 2
Rear of the main unit 3
Overview external sensors 4
The display 6
The display symbols 7
The menus 7
1. Introduction 13
1.1 Information about this operating manual 13
1.2 Limitation of liability 13
1.3 Symbols used in this manual 14
1.4 Customer service 15
2. For your safety 16
2.1 Proper use 16
2.2 Improper use 16
2.3 User qualifications 16
2.4 General safety information 17
2.5 Warranty 17
3. On receipt of your device 18
3.1 Taking the device out of its packaging 18
3.2 Making sure that all of the components have been included 18
3.2.1 Scope of supply 18
3.3 Inserting batteries 19
4. Using the device - Basics 19
4.1 Switching on the device 19
4.2 Selecting the calibration curve 20
4.3 Exchanging the sensor 20

4.4 Taking a measurement 20
4.5 Switching the device off 20
5. The measuring process 21
5.1 Preparing a measurement 21
5.2 Taking a measurement 21
5.2.1 Measurement with plug-in sensor 21
5.2.2 Measurement with humidity and temperature sensor 22
5.2.3 Measurement with the water activity measuring chamber 22
5.2.4 Measurement with the IR temperature sensor 22
5.3 Adjustment behaviour of the sensor 24
6. Saving your readings 25
6.1 Hold function - Freezing the displayed values 25
6.1.1 Activating the Hold function in the Options menu 25
6.1.2 Using the Hold function 25
6.2 Saving your readings manually 26
6.2.1 Saving individual readings 26
6.2.2 Saving several readings (a measurement series) at the same time 28
6.3 Auto save function (time-based) 29
6.3.1 Activating the Auto save function in the Options menu 29
6.3.2 Auto save function: Saving measured values 29
6.4 Viewing individual readings 30
6.5 Viewing individual readings from a series of measurements 31
6.6 Deleting all measured values (data log) 31
6.7 Deleting individual measurement series 32
6.8 Deleting individual values from a single series of measurements 33
7. Calibration curves 34
7.1 Definition of calibration curves 34
7.2 Application range 36
8. Using the LogMemorizer program 37

8.1 Installing/opening the program 37
8.2 Exporting measured values to a computer 38
9. Checking the device's status 40
10. Configuring the device 41
10.1 Turning on Bluetooth 41
10.2 Adjusting the date/time 41
10.3 Setting the emission ratio 42
10.4 Selecting a language 42
10.5 Activating options 43
10.6 Deactivating options 43
10.7 Selecting °C/°F 44
10.8 Reducing the device's power consumption 44
10.8.1 Configuring the display illumination time 44
10.8.2 Configuring automatic switch-off 45
10.9 Calibrating the device 45
10.10 Configuring the material calibration function 45
10.11 Online Send 45
10.12 Changing the password 46
10.13 Resetting the device to its factory settings 47
11. Cleaning and maintenance 48
11.1 Changing the batteries 48
11.2 Care instructions 48
11.3 Cleaning the device 49
12. Faults 50
13. Storage and disposal 51
13.1 Storing the device 51
13.2 Disposing of the device 51
14. Device information 52
14.1 EC declaration of conformity 52

14.2 Technical data 56

15. Notes 58

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

Information

Your purchased measuring instrument can be calibrated, and the adjustment checked by using suitable test ampoules / calibration ampoules. For this purpose, use only the calibration solutions distributed by Schaller Messtechnik Gmbh. You can download a calibration certificate for your test ampoules / calibration ampoules with the batch number printed on the ampoul fromhttps://www.humimeter.com/certificates/.

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 air humidity
- Easy to use device for automatic climate monitoring of rooms

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.

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
- 4 pieces of AA Alkaline batteries
- Rubber protection cover
- Operating manual

Required accessories:

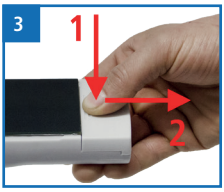
- External sensor (see "Overview external sensors" page 4).)

Optional accessories:

- humimeter USB data interface module - USB flash drive with software and USB-cable or download using humimeter.com/software
- Calibration equipment and 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
- Plastic case

3.3 Inserting batteries

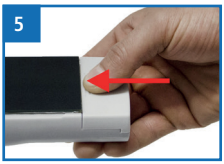
1. Remove the rubber protection cover. To do so, hold the rubber protection cover at the upper side and pull it over (figure 1 and 2). In case of a sensor being connected, disconnect it beforehand and if your device is provided with an optional USB port, remove the protection cap of the USB socket beforehand 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 (see section "9. Checking the device's status").

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

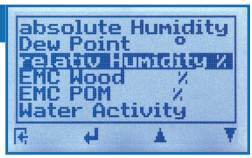
4.2 Selecting the calibration curve

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 "7. Calibration curves".

1. Press the ▽ or △ button to move from one calibration curve to the next Or
2. Press the ▽ or △ button for 2 seconds to open the calibration curve overview (figure 6).

6



» All calibration curves that are enabled for your sensor type are displayed in black and can be selected.

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

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

4.3 Exchanging the sensor

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

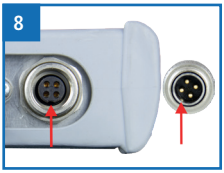
» Pay attention to the elevation in the connector and its correct positioning (figure 8).

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

- Now tighten the thread.

7

8



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 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. The measuring process

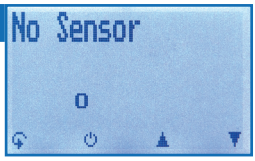
5.1 Preparing a measurement

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 sensor").

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

9



- Select the desired calibration curve (see "7. Calibration curves") by pressing  or  (see "4.2 Selecting the calibration curve").

5.2 Taking a measurement

5.2.1 Measurement with plug-in sensor

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

- Insert the measuring head of the device straight into the material being measured.

» Do not bend or drop the measuring head!

» Let the device adjust to the material being measured for an adequate time period (see "5.3 Adjustment behaviour of the sensor").

10

- Now take the measured values shown on the display of the device (figure 11).

» Once the reading has been taken, it can be saved on the device (see "6.2 Saving your readings manually" or "6.3 Auto save function (time-based)").

11

5.2.2 Measurement with humidity and temperature sensor

To do so: Let the device adjust to the surrounding temperature for at least 30 minutes (see "5.3 Adjustment behaviour of the sensor").

12

- Position your humimeter RH2 or sensor at a location that is representative for the room climate.
- » Make sure to avoid draft and unnatural temperature changes.
- » Do not expose the device to direct sunlight.
- » Let the device adjust to its surroundings for at least 30 minutes after changing its position.
- Now take the measured values shown on the display of the device (figure 12).
- » Once the reading has been taken, it can be saved on the device (see "6.2 Saving your readings manually" or "6.3 Auto save function (time-based)").

5.2.3 Measurement with the water activity measuring chamber

The measurement with the water activity measuring chamber is described in a separate operating manual.

5.2.4 Measurement with the IR temperature sensor

To do so: The product being measured must not be glossy or reflective.

- Hold the device with the sensor facing an object.
- » The infrared temperature measurement depends on the emission ratio of the product being measured.
- » The emission ratio can be entered into the device (see "10.3 Setting the emission ratio").
- » The default setting on delivery is the emission ratio of concrete and floor screed (0.950).
- The device will now instantly display the current temperature of the illuminated object.

material	emission ratio
wood	0.940
concrete, floor screed	0.950
asphalt	0.950
gypsum	0.925

- » The sensor has a 1:10 optics, which means a measuring area of 16 cm at a distance of 1 meter.
- » Once the reading has been taken, it can be saved on the device (see "6.2 Saving your readings manually" or "6.3 Auto save function (time-based)").

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.

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 "6.2.2 Saving several readings (a measurement series) at the same time").

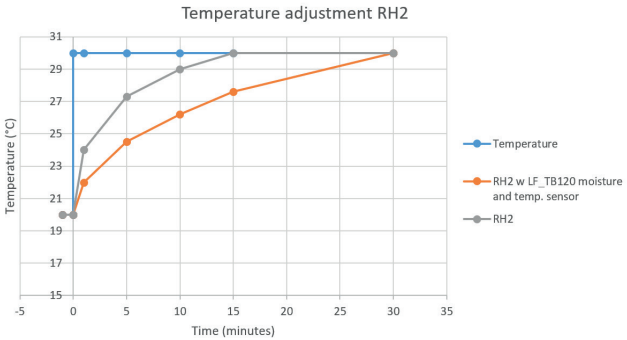
Information - Incorrect readings

Always make sure to select the correct calibration curve for the material you are measuring. This prevents taking incorrect readings (see "12. Faults").

5.3 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)
10 % r.h.	+/- 0.7 %	+/- 0.6 %	+/- 0.6 %
50 % r.h.	+/- 3.5 %	+/- 3.2 %	+/- 3.0 %
90 % r.h.	+/- 6.3 %	+/- 5.7 %	+/- 5.4 %

At room temperature (20 °C / 68 °F) and an assumed humidity value of 50 % relative humidity a temperature difference between the measuring sensor and the material being measured of 1 °C / 1.8 °F causes a measurement error of 3.2 % relative humidity. A temperature difference of 3 °C / 5.4 °F would cause a measurement error of more than 10 % relative humidity.

6. Saving your readings

6.1 Hold function - Freezing the displayed values

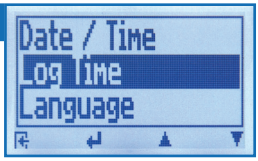
The device can be configured in such a way that the information being shown on the display will freeze at the touch of a button until a new button is pressed. This function can be very useful when e.g. taking readings in places where it is not possible to see the display (e.g. overhead).

6.1.1 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 13). To do so, press or and confirm by pressing .
4. Select **Hold** (figure 14). 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.

13



14

6.1.2 Using the Hold function

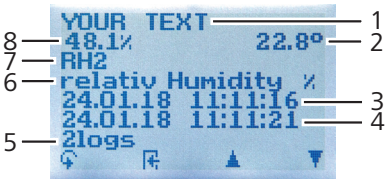
To do so: The device has to be switched on and be in the Data Log menu.

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

15

6.2 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	Relative air humidity (average)

6.2.1 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 16). To do so, press or and confirm by pressing .

16

» The setting has been saved.

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

6. Press  to leave the main menu.

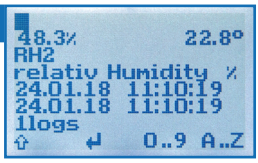
Using the manual save function

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 8).

17


1. Press  .

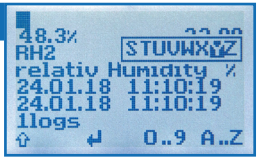
» The display will now appear as shown in figure 17 and the measured value will be preceded by the digit one.

18


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.

19


4. Inputting letters:
Press and hold  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  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.

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

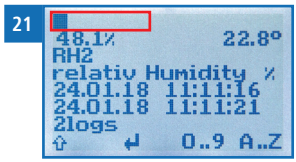
To do so: The device has to be in the Data Log menu (see "Data Log menu" page 8).

1. Take several readings (see "5. The measuring process").
2. To save a reading, press  as soon as the reading has been taken.

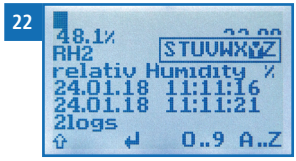
   » The display will now appear as shown in figure 20. The marked number shows the number of readings that have already been saved.

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

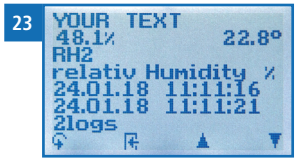
   » The display will now appear as shown in figure 21.



4. The data you have inputted can be overwritten at any time.
5. Inputting letters:
   Press and hold  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  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.

6.3 Auto save function (time-based)

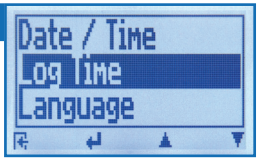
The device can be configured in such a way that it will automatically save a reading (log) at a selected time interval.

6.3.1 Activating the Auto save function in the Options menu

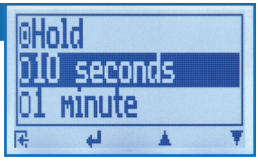
To do so: The device has to be switched on and be in the product selection menu.

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 24). To do so, press or and confirm by pressing .
4. Navigate to the desired time interval (figure 25). 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.

24



25



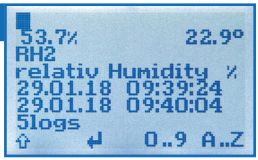
6.3.2 Auto save function: Saving measured values

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 8).

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 26.
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 27.
3. The data you have inputted can be overwritten at any time.

26

27



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.

6.4 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 28.

1. Press 👓.

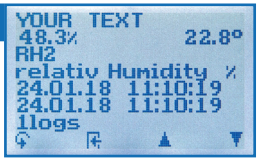
2. Select the required reading. To do so, press ⇑ or ⇓.

» The display will now appear as shown in figure 29

» Press ↩ to leave this screen.

28

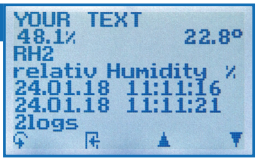
29

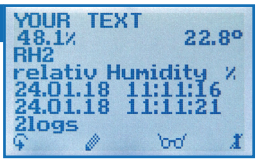


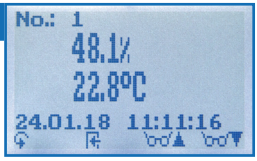
6.5 Viewing individual readings from a series of measurements

To do so: You must have saved a series of measurements (e.g. **2 logs**). The display will now appear as shown in figure 30.

1. Press .
2. Navigate to the required measurement series. To do so, press or .
   » The display will now appear as shown in figure 31.
3. Press to switch to another input level.
   » The display will now appear as shown in figure 32.
4. Press again.
   » The display will now appear as shown in figure 33.
5. Navigate to the required reading (**No.: 1, No.: 2, No.: 3**). To do so, press .
6. Press to leave this screen.





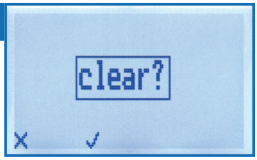


6.6 Deleting all measured values (data log)

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

1. Press twice or hold for 2 seconds.
2. Select **Edit Logs** (figure 34). To do so, press or and confirm by pressing .

3. Select **Clear Logs** (figure 35). To do so, press or and confirm by pressing .
4. The display will then show the message **clear?** (figure 36).



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.

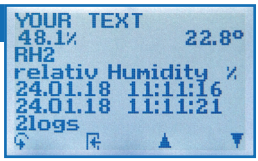
6.7 Deleting individual measurement series

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 37.

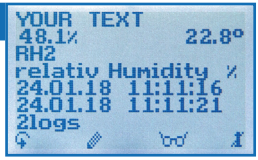
1. Press .
2. Select the required reading. To do so, press or .
   » The display will now appear as shown in figure 38.
3. Press to switch to another input level.
   » The display will now appear as shown in figure 39.
4. Press .
   » The display will then show the message **clear?** (figure 40).
5. Confirm by pressing .
   » The value has been deleted.

37

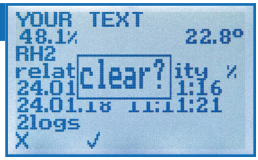
38



39



40

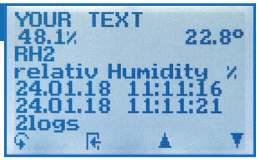


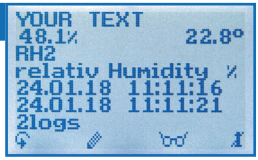
6.8 Deleting individual values from a single series of measurements

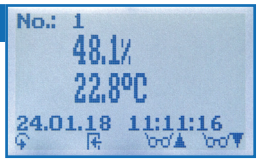
To do so: You must have saved a series of measurements comprising at least 2 logs. The display will now appear as shown in figure 41.

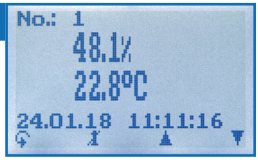
1. Press .
2. Select the required reading. To do so, press or .
   » The display will now appear as shown in figure 42.
3. Press to switch to another input level.
   » The display will now appear as shown in figure 43.
4. Press .
5. The display will now appear as shown in figure 44.
6. Select the required measured value. To do so, press or .
7. Press to switch to another input level.
   » The display will now appear as shown in figure 45.
8. Press to delete the value shown.
   » The display will then show the message **clear?** (figure 46).
9. Confirm by pressing .
   » The value has been deleted.
   » Deleted measuring values will be transferred to the LogMemorizer (see "8. Using the LogMemorizer program") and have to be deleted separately there.

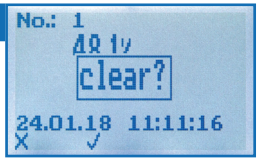
41


42


43


44


45


46


7. Calibration curves

Calibration curve	Definition	Unit	Measuring range	Sensor
Absolute Humidity	Absolute air humidity	g/m³	0 to 130 g/m³	12004/12032/ 12514/13700
Dew Point	Dew Point	°C °F	-55 °C to +60 °C -67 °F to 140 °F	12004/12032/ 12514/13700
Relativ Humidity	Relative air humidity	% RH	0 to 100 %	12004/12032/ 12514/13700
EMC Wood	Wood equilibrium moisture content	% EMC.	2 to 30 % (wood moisture)	12004/12032/ 12514/13700
EMC POM	POM equilibrium moisture content	% EMC.	0 to 2 %	12004/12032/ 12514/13700
Water Activity	Water activity	aw	0 to 1	12004/12032/ 12514/13700
Empty 1 - 5	Free curve for special products			
Infrared temperature	Infrared sensor temperature	°C °F	-25 °C to +125 °C -13 °F to 257 °F	12513

The device automatically recognises the connected sensor and provides the corresponding calibration curves.

7.1 Definition of 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 (Activity of water) is described as free, not cellularly bound water in products such as food. It is defined as the quotient of the water vapour pressure of a material to the water vapour pressure of pure water at a given temperature.

Free calibration curves

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

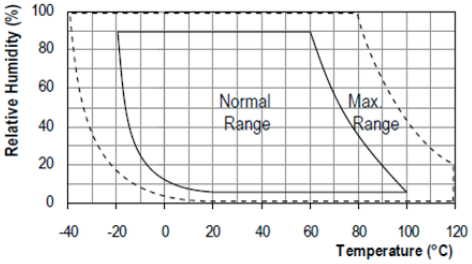
On request Schaller Messtechnik GmbH can develop customer-specific calibration curves for your special product.

Infrared temperature

Shows the current temperature of the object illuminated by the sensor. The sensor has a 1:10 optic. This means that at a distance of 1 meter, a measuring area of 16 cm is created. Info: No shiny or reflective materials can be measured.

7.2 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.



8. Using the LogMemorizer program

To do so: The device is provided with USB interface, and the USB stick with LogMemorizer software and USB cable are available. Otherwise, you can also install the software at humimeter.com/software or by scanning the QR code.

8.1 Installing/opening the program

1. Insert the USB stick with the LogMemorizer program into the USB port on your computer or

   » download the LogMemorizer software at humimeter.com/software or use the QR code.

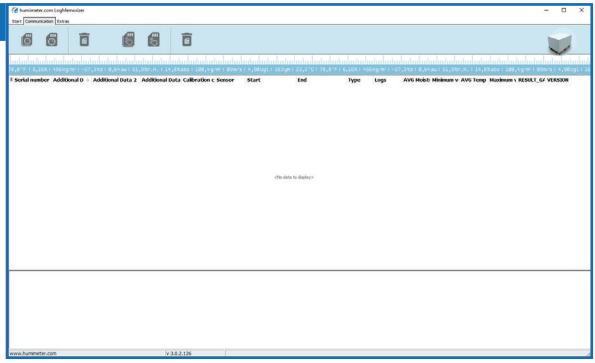
2. Open the **setup** application.

3. Follow the installation instructions.

4. Open LogMemorizer.

   » The screen will now display the LogMemorizer's interface (figure 47).

47



   » Before using LogMemorizer, please refer to the the separate LogMemorizer operating manual for the correct configuration of the USB COM Port.

For more information on LogMemorizer, please refer to the separate LogMemorizer operating manual supplied with the device.

8.2 Exporting measured values to a computer

To do so: LogMemorizer must be installed. And you must have taken and saved one or several moisture readings.

Options: You can export moisture readings from the humimeter RH2 or initiate the export at your computer.

Exporting moisture readings from the humimeter RH2

Connect the humimeter RH2 to your computer using the supplied USB cable.

48

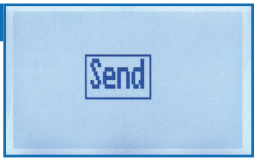
1. Insert the USB Mini B connector into the humimeter RH2 (figure 48).
2. Insert the USB connector into the computer.
3. Open LogMemorizer on your computer.
4. Switch on the humimeter RH2.
5. Press twice or hold for 2 seconds.
6. Select **Send Logs** (figure 49). To do so, press or and confirm by pressing .
7. Select **Manual Logs** or **Auto Logs** (figure 50). To do so, press or and confirm by pressing .
8. The display will then show the message **Send** (figure 51).

» All of the measuring values saved on the humimeter RH2 will now be sent to your computer.

49

50

51



Initiating the data export at your computer

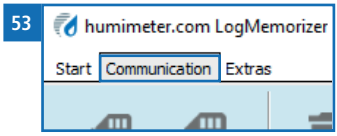
Connect the humimeter RH2 to your computer using the supplied USB cable.

52

1. Insert the USB Mini B connector into the humimeter RH2 (figure 52).
2. Insert the USB connector into the computer.
3. Open LogMemorizer on your computer.

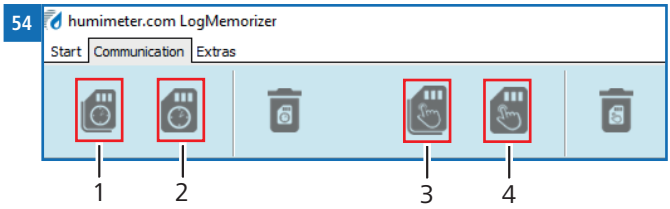
4. Switch on the humimeter RH2.

5. Open the **Communication** tab in LogMemorizer (figure 53).



6. Select and click on one of the buttons shown in figure 54:

» **Import all auto save logs** (for importing all automatically saved readings)
» **Import most recent auto save series** (for importing the most recent automatically saved logs)
» **Import all manual logs** (for importing all manually saved readings)
» **Import most recent manual log** (for importing the most recent manually saved logs).



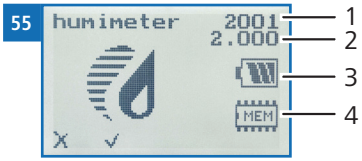
No.	Name
1	Import all auto save logs
2	Import most recent auto save series
3	Import all manual logs
4	Import most recent manual log

» The measuring values saved on the humimeter RH2 will now be sent to your computer.

9. 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 55):

55



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.

10. Configuring the device

10.1 Turning on Bluetooth

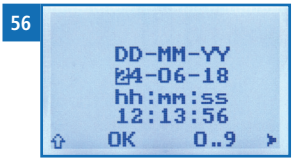
The information on Bluetooth is provided in a separate operating manual.

10.2 Adjusting the date/time

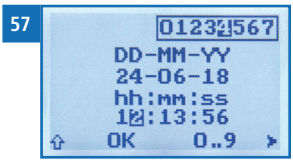
1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Date/Time**. To do so, press or and confirm by pressing .
4. The display will now appear as shown in figure 56.

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

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



56



57

5. Inputting numbers:
   Press and hold 0..9 o quickly scroll to the required number and either press it for 3 seconds or press to confirm the selected number (figure 57).
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.

10.3 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  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.

10.4 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  .

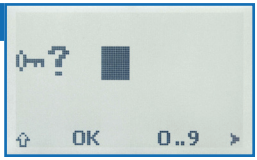
» The setting has been saved.

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

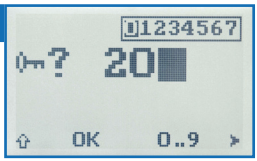
10.5 Activating options

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 58.
   - » On delivery, the four-digit password is the device's serial number.



4. Inputting numbers:
   Press and hold  to quickly scroll to the required number and either press it for 3 seconds or press to confirm the selected number (figure 59).



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

10.6 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.

10.7 Selecting °C/°F

To do so: All of the options must be activated (see "10.5 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.

10.8 Reducing the device's power consumption

10.8.1 Configuring the display illumination time

To do so: All of the options must be activated (see "10.5 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.

10.8.2 Configuring automatic switch-off

To do so: All of the options must be activated (see "10.5 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.

10.9 Calibrating the device

The calibration function is described in a separate operating manual.

10.10 Configuring the material calibration function

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

10.11 Online Send

To do so: All of the options must be activated (see "10.5 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.

10.12 Changing the password

To do so: All of the options must be activated (see "10.5 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  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  .

   » The setting has been saved.

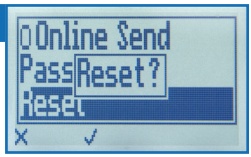
6. Press  to leave the **Options** menu.
7. Press  to leave the main menu.

10.13 Resetting the device to its factory settings

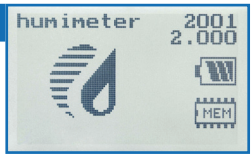
To do so: All of the options must be activated (see "10.5 Activating options").

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 60).
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 61).
   - » Resetting the device will not affect the saved measuring values.

60



61



11. Cleaning and maintenance

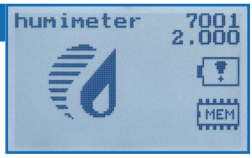
Regularly cleaning and maintaining the device will ensure that it will have a long service life and stay in good condition.

11.1 Changing the batteries

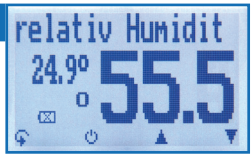
The device constantly monitors the charge level of the batteries. The current battery status is shown on the status screen.

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 62).

62



63



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).

11.2 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.

11.3 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.

Humidity and temperature sensor art.no. 12032 & air humidity and temperature sensor art.no. 12514

Clean the sensor tube with a dry cloth.

The air humidity and temperature sensor cannot be cleaned. In case of a polluted sensor please contact your dealer.

Precision humidity and temperature plug-in sensor art.no. 12004

The precision humidity and temperature plug-in sensor can be cleaned with a cloth and cleaning alcohol.

IR temperature sensor art.no. 12964

Clean the plastic housing of the IR temperature sensor with a dry cloth.

The air humidity and temperature sensor cannot be cleaned. In case of a polluted sensor please contact your dealer.

12. 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 "5.3 Adjustment behaviour of the sensor").
	Sources of heat or cold that do not correspond to the surrounding temperature	Reposition your device at a location that is representative for the room climate.
	Wrong calibration curve	Check whether you have selected the right calibration curve before taking a reading (see "7. Calibration curves").
	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 air humidity and temperature sensor	Please contact your dealer.
	Foreign particles on the sensor	Please contact your dealer.

Fault	Cause	Remedy
Data transfer to Log-Memorizer failed	Interface has not been confi-gured	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.

13. Storage and disposal

13.1 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

13.2 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.

14. Device information

14.1 EC declaration of conformity

CE 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 substances.*

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

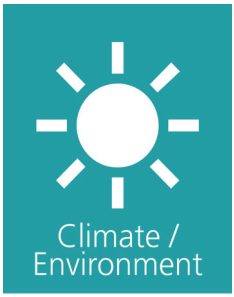
Bernhard Maunz
Legal binding signature of the issuer

14.2 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, 1 ppm
Measuring range relative air humidity	0 % to 100 % rh
Calibration relative 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 relative 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	249 x 75 x 30 mm
Dimensions art.no. 12004 precision humidity and temperature plug-in sensor	ø 12 x 300 mm
Dimensions art.no. 12032 moisture and temperature sensor	ø 12 x 100 mm
Dimensions art.no. 12514 air humidity and temperature sensor	ø 12 x 70 mm
Dimensions art.no. 12513 IR temperature sensor	ø 12 x 47 mm
Device weight	210 g
Device IP rating	IP 40

15. Notes



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

Schaller Messtechnik GmbH

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