Moisture meter

Operating Manual

humimeter GF2
Building moisture meter

for building moisture, air humidity, wood moisture, indoor climate, dew point, equilibrium moisture content, air and surface temperature, thermal bridges and long term recording of climate data

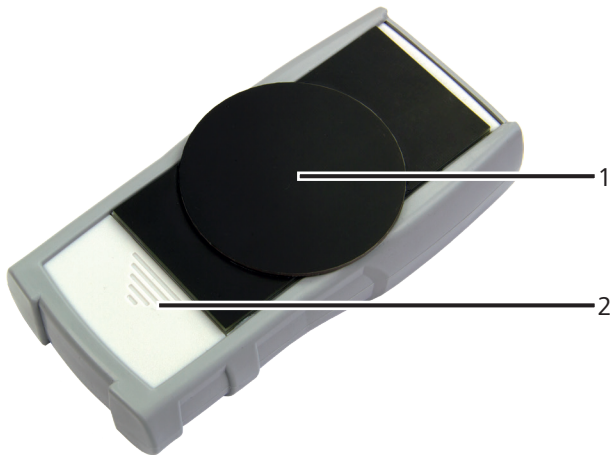78,0°F I 6,16%I 456kg/m³I −27,3td I 0,64aw I 51,9%r.H. I 14,8%abs I 100,4g/m² I 09m/s I 4,90Ugl I 1

Version 2.2   Always read this operating manual before using the humimeter GF2!

Your humimeter GF2 at a glance

The main unit

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

Rear of the main unit

No	Name
1	Sensor surface
2	Battery compartment

Overview external sensors

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

Dimensions (sensor tube without handle)			Weight
Ø 12 x 300 mm			270 g

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. 12514 air humidity and temperature sensor

Dimensions	Weight
Ø 12 x 70 mm	10 g

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. 12032 humidity and temperature sensor

Dimensions	Weight
Ø 12 x 100 mm	110 g

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. 13159 humidity and temperature sensor

Dimensions	Weight
Ø 8 x 150 mm	100 g

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	-10 °C to +60 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
temperature °F	14°F to 140 °F	0.3°F	+/- 0.5 °F (at 77 °F)

Art.no. 13066 integrated sensor for parquet floor
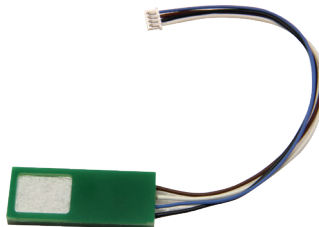
Dimensions	Weight
40 x 16 x 5 mm	20 g

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	-10 °C to +60 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
temperature °F	14°F to 140 °F	0.3°F	+/- 0.5 °F (at 77 °F)

Art.no. 13141 external conductance electronics

Dimensions	Weight
50 x 35 x 20 mm	40 g

Art.no. 13011 pair of plug-in electrodes

Dimensions	Weight
Ø 15 x 55 mm	65 g

Measurement	Measuring range	Resolution	Accuracy
moisture content	dependent on the sensor (see "7. Product types")	0.1 %	
temperature °C	-20 °C to +85 °C	0.5 °C	+/- 0.3 °C (at 25 °C)
temperature °F	-4 °F to 185 °F	0.5 °F	+/- 0.5 °F (at 77 °F)

Art.no. 13012 pair of flat electrodes

Dimensions	Weight
12 x 300 mm	140 g

Measurement	Measuring range	Resolution	Accuracy
moisture content	dependent on the sensor (see "7. Product types")	0.1 %	
temperature °C	-20 °C to +85 °C	0.5 °C	+/- 0.3 °C (at 25 °C)
temperature °F	-4 °F to 185 °F	0.5 °F	+/- 0.5 °F (at 77 °F)

Art.no. 12847 humimeter hand electrode

Dimensions	Weight
50 x 150 x 25 mm	120 g

Measurement	Measuring range	Resolution	Accuracy
moisture content	dependent on the sensor (see "7. Product types")	0.1 %	
temperature °C	-20 °C to +85 °C	0.5 °C	+/- 0.3 °C (at 25 °C)
temperature °F	-4 °F to 185 °F	0.5 °F	+/- 0.5 °F (at 77 °F)

Art.no. 12630 humimeter WLW hammer

Dimensions	Weight
Ø 49 x 350 mm	1500 g

Measurement	Measuring range	Resolution	Accuracy
moisture content	dependent on the sensor (see "7. Product types")	0.1 %	
temperature °C	-20 °C to +85 °C	0.5 °C	+/- 0.3 °C (at 25 °C)
temperature °F	-4 °F to 185 °F	0.5 °F	+/- 0.5 °F (at 77 °F)

Art.no. 12513 infrared temperature sensor

Dimensions	Weight
12 x 47 mm	10 g

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
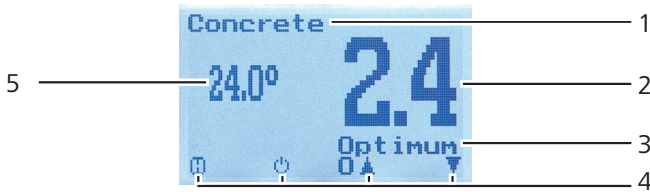
No	Name
1	Product type
2	Moisture content in % (see "7.6 How moisture is defined")
3	Measured value assessment
4	Display symbols
5	Temperature display

The display symbols

Symbol	Name	Symbol	Name
↵	Enter	✕	No
▲	Up	⇧	Change input level
▼	Down	OK	OK
↰	Back	⟳	Change menu
0..9	Enter numbers	▨	Enter data
A..Z	Enter letters	◡◡	View measurements
▶	Continue / go right	🗑	Delete measurements
◀	Left	⏻	On/off button, display light
✓	Yes	▣	Save measured value
⊞⟳	Auto save	Ⓗ	Hold function

The menus

Simplified user

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

Product selection menu
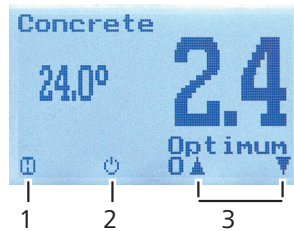
No.	Name
1	Hold measuring value (see "6.1 Hold function - Freezing the displayed values")
2	Display illumination / device on/off
3	For changing the product type

Advanced user

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

Product selection menu

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

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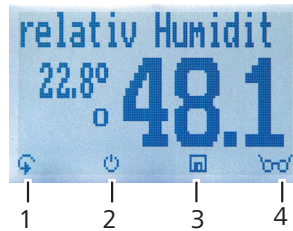
No.	Name
1	Change menu
2	Display illumination / device on/off
3	Save measured value
4	Show the last recorded values

Main menu

The main menu comprises the following menu items:

- **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, Emission ratio, Log Time, Language, Unlock, °C/°F, Adjust, Userlevel, BL On Time, Auto Off Time, Materialcalibration, Password, Reset

- **Status**

Table of contents

1. Introduction

1.1 Information about this operating manual

This operating manual is designed to enable you to use the humimeter GF2 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 GF2. 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.

⚠ **WARNING**

It is essential to observe this warning. Non-compliance can lead to serious irreversible or fatal injury.

⚠ **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.

ℹ **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 with external sensors for quickly measuring the moisture content of floor screed, concrete and other building materials.
- The device must only be used for taking measurements on the products defined in the following sections of this manual (see "7. Product types").

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).
- Keep the measuring tips of the hand electrode or ram electrode away from your body throughout all activities.

- Keep the measuring tip of the hand electrode or ram electrode away from other people throughout all activities.
- 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
- Damage resulting from improper strain (pressure, bending) of the insertion probe or the measuring head
- Damage by dropping the measuring head

3.   On receipt of your device

3.1   Taking the device out of its packaging

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

3.2   Making sure that all of the components have been included

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

- humimeter GF2
- 4 pieces of AA Alkaline batteries
- Rubber protection cover
- humimeter USB data interface module - USB flash drive with software and USB-cable or download using humimeter.com/software
- Operating manual

Optional sensor:

- LF_TB 120 humidity and temperature plug-in sensor (art.no. 12004)
- Air humidity and temperature sensor (art.no. 12514)
- Humidity and temperature sensor (art.no. 12032)
- Humidity and temperature sensor (art.no. 13159)
- Integrated sensor for parquet floor (art.no. 13066)
- » requires art.no. 12857 Cable for integrated sensor for parquet floor!
- Pair of plug-in electrodes (art.no. 13011)
- » requires art.no. 13141 External conductance electronics!
- humimeter hand electrode (art.no. 12847)
- » requires art.no. 13141 External conductance electronics!
- humimeter WLW hammer (art.no. 12630)
- » requires art.no. 13141 External conductance electronics!
- Contactless infrared temperature sensor (art.no. 12513)

Optional accessories:

- humimeter USB data interface module - USB flash drive with software and USB cable
- Portable thermal printer (only possible together with humimeter USB data interface module) - Described in a separate operating manual
- External conductance electronics (art.no.: 13141)
- Wall holder / anti-theft protection
- Plastic case 340 x 275 x 83 mm
- Plastic case 450 x 360 x 106 mm

Optional accessories for art.no. 13159 Humidity and temperature sensor:

- Measuring sleeve set for screed (art.no.: 13160)

Optional accessories for art.no. 13011 pair of plug-in electrodes:

- Pair of flat electrodes (art.no. 13012)

Optional accessories for art.no. 12630 humimeter WLW hammer and art.no. 13011 pair of plug-in electrodes:

- Set of 20 replacement tips for measuring electrodes, without insulation, 40 mm length (art.no. 12146)
- Set of 20 replacement tips for measuring electrodes, without insulation, 60 mm length (art.no. 11775)
- 2 replacement tips for measuring electrodes, insulated, 60 mm length (art.no. 11482)

3.3 Inserting batteries

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

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

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

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

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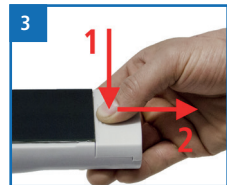
4.   Using the device - Basics

4.1   Switching the device on

- Press the ⏻ button for 3 seconds.
- » The display will then show the status indicator (figure 6).
- » After inserting the batteries, the device switches on automatically.
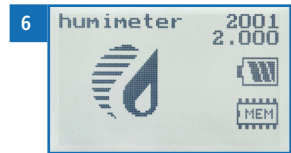
4.2   Opening the main menu

4.2.1   With the simplified user activated

To do so: The device is switched off and the advanced user is deactivated (see "10.8 Changing the Userlevel").

- Switch on the device (see "4.1 Switching the device on").
- While switching on, keep both the ▽ and △ buttons pressed.
- » The display will now show the main menu.

4.2.2   With the advanced user activated

To do so: The device has to be in the product selection menu and the advanced user is activated (see "10.8 Changing the Userlevel").

- Press ⊕ twice or hold for 2 seconds.
- » The display will now show the main menu.

4.3   Selecting the product type

To do so: The device has to be in the product selection menu (figure 7).

For an overview of the different product types and the criteria for selecting them, please refer to "7. Product types".

1. Press the ▽ or △ button to move from one product to the next Or

2. Press the ▽ or △ button for 3 seconds to open the product type overview (figure 8).
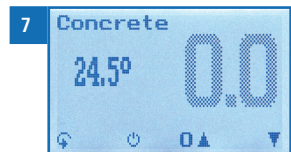
3. Use the arrow keys to move from one product type to the next

4. and keep any of them pressed to scroll through the types.

5. Confirm your selection by pressing

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

4.4   Exchanging the sensor

- If a sensor is already connected, unscrew it counterclock-wise. 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 10).

   » Do not use excessive force to plug in the sensor, which is very easy to operate.
- Now tighten the thread.
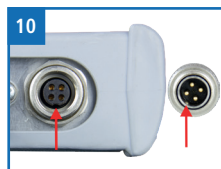
4.5   Plugging a sensor into the external conductance electronics

- Connect the sensor to the external conductance electronics.

   » Pay attention to the elevation at the socket and the guides in the plug and their correct positioning (figure 11).
- Now tighten the plug clockwise by turning it a quarter of a turn.
   » The plug engages noticeably at the end of the guides.
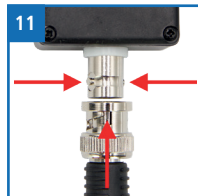
4.6   Disconnecting a sensor from the external conductance electronics

- Push the plug towards the device with little force (figure 12).
- Now turn the plug counterclockwise with a quarter turn at the beginning of the guides (figure 13).

- Now pull the plug straight off the device.
   » This should be done without great effort.

4.7   Inserting the measuring tips

1.   Hand electrode and ram electrode:

- Unscrew the two nuts located on the head of the ram electrode counterclockwise (figure 14)

» Loosen only the upper nuts. The (flat) nuts below must not be loosened!

2.   Pair of plug-in electrodes:

- Unscrew the two cap nuts located on the heads of the plug-in electrodes counterclockwise (figure 15).
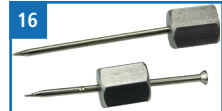
3.   Insert one measuring tip per nut from behind through the nut (figure 16).

» Measuring tips without insulation (article no. 12146 & 11775) always measure the wettest spot over the entire insertion depth.

» By using insulated measuring tips (article no. 11482) it is possible to determine the humidity at a defined measuring depth, as these only measure at the measuring tip.

4.   Hand electrode and ram electrode:

- Now screw the nuts with measuring tips to the threads located on the head of the hand or ram electrode and tighten the nuts with the open-end wrench included in the scope of delivery (figure 17).

5.   Pair of plug-in electrodes:

- Nuts with measuring tips

» Now screw the nuts with measuring tips to the threads located on the heads of the plug-in electrodes and tighten the nuts with the open-end wrench included in the scope of delivery (figure 18).

- Pair of flat electrodes:

» Now screw the nuts with the flat electrodes to the threads located on the heads of the plug-in electrodes and tighten the nuts with the open-end wrench included in the scope of delivery.

> ⚠️ **WARNING**
>
> **Risk of injury**
> Risk of injury due to measuring tips
> ► Keep the measuring tips away from your body throughout all activities.
> ► Keep the measuring tips away from other people throughout all activities.

4.8 Taking a measurement

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

4.9 Measured value evaluation

Some characteristic curves in the device are evaluated on the display in four stages depending on the humidity and the material. This evaluation is based on Schaller's experience. Since the gradations can be different depending on the trade or operation, a plausibility check of the values is recommended.

The conditions with increasing humidity:

- » Dry
- » Optimal
- » Humid
- » Wet

The evaluation points vary depending on the material!

4.10 Switching the device off

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

- Press the ⏻ button for 3 seconds.

5. The measuring process

5.1 The measuring process with the main unit

5.1.1 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.

1. Choose several representative positions suitable for the observation of floor screed/concrete.

   » The concrete layer in these positions must be at least 30 mm thick.

   » Make sure that no pipes, electrical lines or building grids are located at these positions.

2. If necessary, clean the measuring position with a wide spatula before measurement.

   » The measuring device must rest flush and without an air gap.

   » The measuring position must not be soiled by sand.

3. Switch on the device (see "4.1 Switching the device on").

4. Select the desired product type (see "7. Product types") by pressing ▼ or ▲ (see "4.3 Selecting the product type").
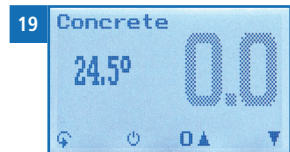
5.1.2 Taking a measurement

To do so: The concrete layer must be at least 30 mm thick and the device has to have nearly the same temperature than the material.

   • Take hold of the device with one hand and press it onto the cleaned measuring position with a pressure of approx. 4 kg (figure 21).

   • When doing so, the sensor surface ("Rear of the main unit" page 3) must be firmly resting on the measuring position.

   • The device will now instantly display the moisture content on the display (figure 22).

» The interpretation of the shown floor screed water content needs the experience of the user as well as the recommendations of the floor screed producer.

» The thickness of floor screed can differ. The device always measures the supreme layer of 30 mm!

» If the thickness of the floor screed is less than 30 mm, iron gratings, heating pipes and other metal can cause an incorrect measuring value. Therefore please look for a measuring position without any metal in the measuring field.

» The device displays the average moisture value of the upper layer of 30 mm. The moisture of deeper layers may be considerably higher than that value.

» The water content of deeper layers can only be determined by the CM method or in a drying chamber.

» 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)".

5.1.3   Information regarding the measurement

The degree of drying and the moisture dispersal can differ significantly. Therefore we recommend to find out the wettest area by effecting a large number of measurements. Then knock off the bottom layer of the wettest area and effect a final evaluation by drying in a drying chamber or via a CM device.

5.2   The measuring process with the optional sensors

5.2.1   Preparing a measurement

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

• Switch on the device (see "4.1 Switching the device on").

• Connect the desired sensor (see "4.4 Exchanging the sensor") or the optional external conductance electronics to the device ("4.5 Plugging a sensor into the external conductance electronics").

• Select the desired product type (see "7. Product types") by pressing the 🌡 or ⛰ button (see "4.3 Selecting the product type").

5.2.2   Measurement with insertion probe (art.no. 12004)

To do so: The sensor 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").
- • The device will now instantly display the moisture content on the display (figure 24).
- » 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 humidity and temperature sensor (art.no. 12514, 12032, 13159 and 13066)

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

- • Position the 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 25).
- » 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)").
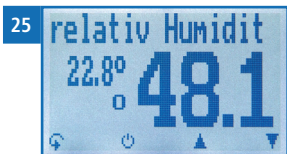
5.2.4   Measurement of the corresponding relative humidity (KRL method)

To do so: Art.no. 13159 humidity and temperature sensor and art.no. 13160 measuring sleeve set for screed required. The sensor has to have nearly the same temperature than the product being measured.

1. Break open the measuring sleeve at the desired measuring depth using the driving-in aid (figure 26).

2. Drill a hole of 12 mm diameter with the depth of the measuring sleeve in the screed.

3. Hammer the measuring sleeve into the screed with the aid of the driving aid (figure 27).

4. Now insert the sensor into the measuring sleeve.

    »   Let the sensor adjust for at least 30 minutes (see "5.3 Adjustment behaviour of the sensor").

5. Now take the measured values shown on the display of the device (figure 28).

    »   For further measurement at a later time, close the measuring sleeve with the cap.

⚠️ **CAUTION**

Risk of injury
Crushing by the hammer when hammering in the measuring sleeve
►   Hold the measuring sleeve centrally and pay attention to the position of your fingers.

5.2.5 The measuring process with sensors for the external conductance electronics

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.

1. Insert the measuring tips (see "4.7 Inserting the measuring tips").

2. Select a suitable position for taking a measurement.

    » Make sure that there are no knots, resin pockets or cracks in this area.

3. Switch on the device (see "4.1 Switching the device on").

4. Select the desired product type (see "7. Product types"). To do so, press ![icon] or ![icon] (see "4.3 Selecting the product type") (figure 29).
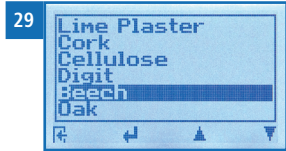
Ram electrode: Taking a measurement

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

1. Put the ram electrode with measuring tips straight to the point being measured (figure 30).

    » Make sure that the measuring tips are placed at a right angle to the grain of the wood.

    » The ram electrode must not be dropped!

2. Hold the upper side of the ram electrode firmly, lift the metal handle and strike it downwards with force until the measuring tips penetrate the wood to the desired measuring depth (figure 31).

3. Connect the sensor cable (see "4.5 Plugging a sensor into the external conductance electronics").

4.   The device will now instantly display the moisture content on the display (figure 32).

»   The displayed value flashes when the moisture content exceeds the measuring range of the selected product type (figure 33). A flashing value signals lowered accuracy of the measurement. The measuring range is dependent on the product type (see "7. Product types").

»   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)").

⚠ WARNING

Risk of injury

Risk of injury due to the measuring tips.
►   Keep the measuring tips away from your body throughout all activities.
►   Keep the measuring tips away from other people throughout all activities.

⚠ CAUTION

Risk of injury

Crushing when striking the metal handle downwards.
►   Hold the metal handle centrally and pay attention to the position of your fingers.

Hand electrode and pair of plug-in electrodes: Taking a measurement

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

1. Put the hand electrode with measuring tips straight to the point to be measured (figure 34).

   » When measuring with the pair of plug-in electrodes, the distance between the two electrodes should be approx. 8 - 10 cm (figure 35).

   » Make sure that the measuring tips are placed at a right angle to the grain of the wood.

2. Now press the measuring tips into the material to the desired measuring depth.

3. Connect the sensor cable (see "4.5 Plugging a sensor into the external conductance electronics").

4. The device will now instantly display the moisture content (figure 36).

   » 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)").

⚠️ **WARNING**

Risk of injury
Risk of injury due to the measuring tips.
► Keep the measuring tips away from your body throughout all activities.
► Keep the measuring tips away from other people throughout all activities.

Pair of flat electrodes: Taking a measurement

To do so: Pair of plug-in electrodes (art.no. 13011) for carrying the flat electrodes required. The device has to have nearly the same temperature than the product being measured.

1. With the flat electrodes, edge or floating joints as well as the insulation or fill can be tested for moisture.

   » By insulating the flat electrodes with a shrink hose, it is possible to determine the moisture at a defined measuring depth.

   » If the shrinking hose is damages, faulty measurements may occur!

2. Make sure that the plug-in electrodes with the flat electrodes are placed at a right angle to the point being measured (figure 37).

   » The distance between the two flat electrodes should be approx. 8 - 10 cm!

3. Now press the flat electrodes into the material to the desired measuring depth.

4. Connect the sensor cable (see "4.5 Plugging a sensor into the external conductance electronics").

5. The device will now instantly display the moisture content.

   » 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 flat electrodes.
- ► Keep the flat electrodes away from your body throughout all activities.
- ► Keep the flat electrodes away from other people throughout all activities.

5.2.6   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.
- » 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)").

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

---

i   Information - Measuring accuracy

This rapid measuring procedure allows you to take moisture readings at a number of different points.

---

i   Information - Incorrect readings

Always make sure to select the correct product type 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.

Temperature adjustment RH2
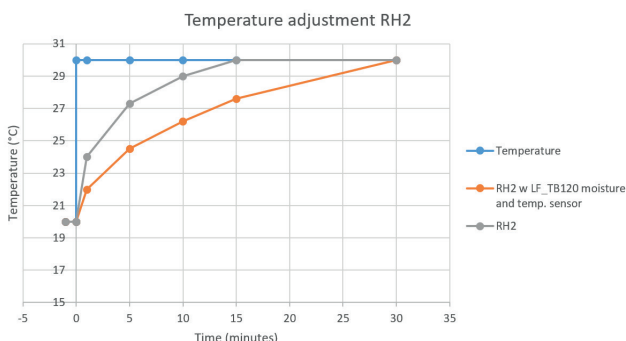
To demonstrate the importance of temperature adjustment, the table below shows the measuring errors due to a temperature difference between the measuring instrument and the material being measured of only 1 °C / 1.8 °F at different ambient temperatures.

	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

To access the memory function, the simplified user must be deactivated (see "10.8 Changing the Userlevel").

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 38). To do so, press 🔽 or 🔼 and confirm by pressing ⏎.


4. Select **Hold** (figure 39). 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.
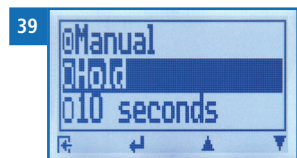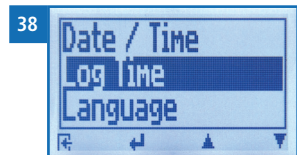
6.1.2 Using the Hold function

To do so: The device has to be switched on and be in the Data Log menu (see "The menus" page 11).

• Press 🔘.

» The current reading will be frozen. All of the four symbols will now be displayed as 🔘 (figure 40).

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

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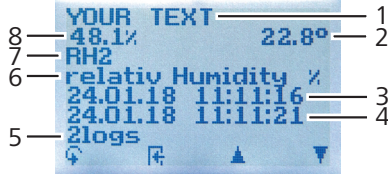
No.	Name
1	Name of the measurement series (editable)
2	Temperature (average)
3	Date & start time of the measurement series
4	Date & end time of the measurement series
5	Number of saved readings
6	Product type
7	Device name
8	Relative air humidity (average)

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 41). To do so, press ▼ or ▲ and confirm by pressing ↵.
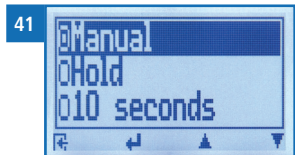
» The setting has been saved.

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

6. Press ⬆ to leave the main menu.

Using the manual save function

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 12).

1. Press ▦.

» The display will now appear as shown in figure 42 and the measured value will be preceded by the digit one.

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

» The display will now appear as shown in figure 43.

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 44).

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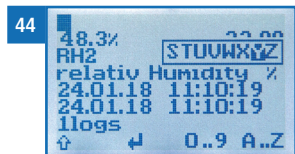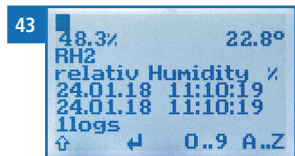
6.2.2   Saving several readings (a measurement series) at the same time

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 12).

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 45. The marked number shows the number of readings that have already been saved.
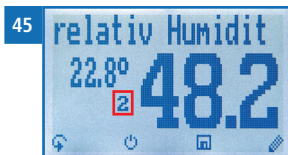
3.   Press 🖊 to enter a name for the saved reading and to finish the measuring process.

» The display will now appear as shown in figure 46.

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 47).
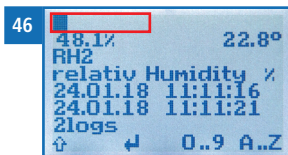
6.   Inputting numbers:
Press and hold 0..9 to quickly scroll to the required number and either press it for 3 seconds or press 🔽 to confirm the selected number.
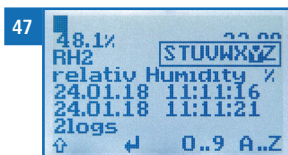
7.   Moving forward/back:
Press ⬆ to switch to another input level.
Press ▶ or ◀ to move forward or back.

8.   Confirm your entry by pressing 🔽.

» The data you entered has been saved.
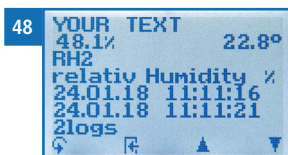
6.3 Auto save function (time-based)

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 49). To do so, press ⏷ or ⏶ and confirm by pressing ↵.

4. Navigate to the desired time interval (figure 50). 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.
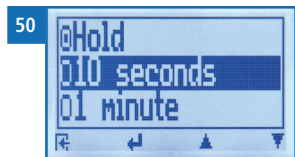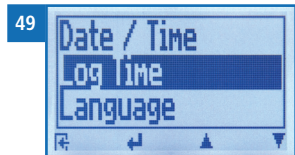
6.3.2 Auto save function: Saving measured values

To do so: The device has to be in the Data Log menu (see "Data Log menu" page 12).

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 51.

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 52.

3. The data you have inputted can be overwritten at any time.
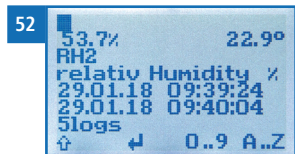
4. Inputting letters:
    Press and hold ![A..Z] to quickly scroll to the required letter and either press it for 3 seconds or press ![↵] to confirm the selected letter.

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 53.

1. Press ![∞].

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

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

    »   Press ![↵] to leave this screen.
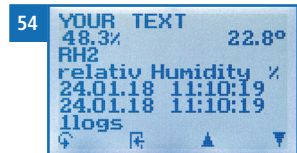
6.5   Viewing individual readings from a series of measurements

To do so: You must have saved a series of measurements (e.g. **2 logs**). The display will now appear as shown in figure 55.

1.   Press 👓.

2.   Navigate to the required measurement series. To do so, press ▼ or ▲.

    »   The display will now appear as shown in figure 56.

3.   Press 🔄 to switch to another input level.

    »   The display will now appear as shown in figure 57.

4.   Press 👓 again.

    »   The display will now appear as shown in figure 58.

5.   Navigate to the required reading (**No.: 1, No.: 2, No.: 3**). To do so, press 👓/▲.

6.   Press 🔄 to leave this screen.
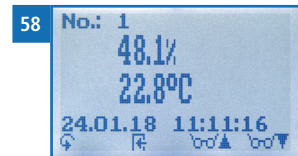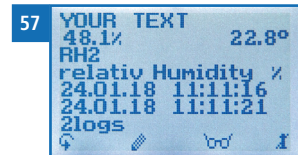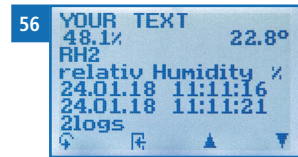
6.6   Deleting all measured values (data log)

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 59). To do so, press ▼ or ▲ and confirm by pressing ↵.

3.   Select **Clear Logs** (figure 60). To do so, press ▼ or ▲ and confirm by pressing ↵.

4.   The display will then show the message **clear?** (figure 61).

5.   Confirm by pressing ✓.

    »   The data log has been deleted.

55 relativ Humidit
22.8°
48.1

56 YOUR TEXT
48.1%   22.8°
RH2
relativ Humidity %
24.01.18 11:11:16
24.01.18 11:11:21
2logs

57 YOUR TEXT
48.1%   22.8°
RH2
relativ Humidity %
24.01.18 11:11:16
24.01.18 11:11:21
2logs

58 No.: 1
48.1%
22.8°C
24.01.18 11:11:16

59 Edit Logs
Print Logs
Send Logs

60 Manual Logs
Auto Logs
Clear Logs

61 clear?
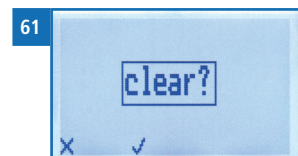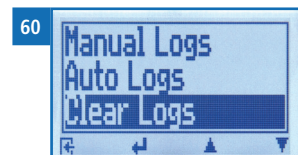
6. Press ⊞ to leave the **Edit Logs** menu.

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 62.
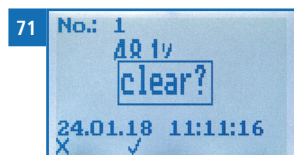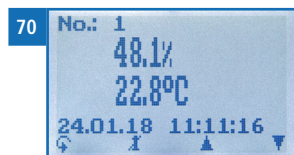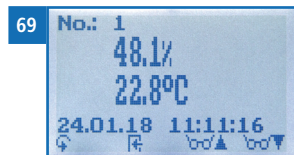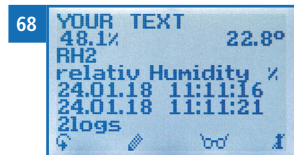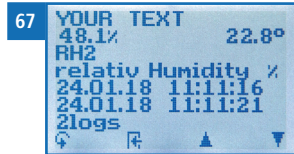
1. Press 👓.

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

    »   The display will now appear as shown in figure 63.

3. Press ⬆ to switch to another input level.

    »   The display will now appear as shown in figure 64.

4. Press 🗑.

    »   The display will then show the message **clear?** (figure 65).

5. Confirm by pressing ✓.

    »   The value has been deleted.
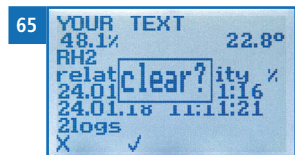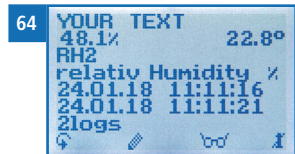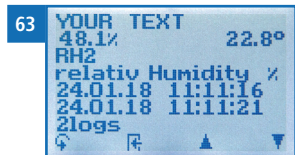
6.8   Deleting individual values from a single series of measurements

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 .

1. Press 👓.

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

    »   The display will now appear as shown in figure 67.

3. Press 🔄 to switch to another input level.

    »   The display will now appear as shown in figure 68.

4. Press 👓.

5. The display will now appear as shown in figure 69.

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 70.

8. Press 🗑 to delete the value shown.

    »   The display will then show the message **clear?** (figure 71).

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.

66
relativ Humidit
22.8°
o 48.1

67
YOUR TEXT
48.1%   22.8°
RH2
relativ Humidity %
24.01.18 11:11:16
24.01.18 11:11:21
2logs

68
YOUR TEXT
48.1%   22.8°
RH2
relativ Humidity %
24.01.18 11:11:16
24.01.18 11:11:21
2logs

69
No.: 1
48.1%
22.8°C
24.01.18 11:11:16

70
No.: 1
48.1%
22.8°C
24.01.18 11:11:16

71
No.: 1
48.1%
clear?
24.01.18 11:11:16
X ✓

7. Product types

The device automatically recognises the connected sensor and provides the corresponding calibration curves. If no external sensor is connected, the internal building moisture sensor is activated.

7.1 Internal building moisture sensor

Product type	Definition	Density range	Measuring range
Floor screed	cement screed normally compacted	1800 kg/m³ to 2200 kg/m³	0.5 to 4.5%
Floor screed CM	cement screed normally compacted conversion CM %	1800 kg/m³ to 2200 kg/m³	0.2 to 4.0%
Concrete	concrete normally compacted	2200 kg/m³ to 2600 kg/m³	0.5 to 5.0%
Anhydrite floor	anhydrite floor screed normally compacted	approx. 2600 kg/m³	0.5 to 5.0%
Aerated Concrete	blocks of aerated concrete	300 kg/m³ to 800 kg/m³	4 to 20%
Special Floor Screed	cement screed lowly compacted	< 1800 kg/m³	0.5 to 4.5%
Special Concrete	concrete lowly compacted	< 2200 kg/m³	0.5 to 5.0%
Drywall 12,5	drywall 12.5mm thickness		0.1 to 4%
Drywall 15,0	drywall 15.0mm thickness		0.1 to 4%
Light Concrete Brick	concrete bricks	< 2100 kg/m³	0.2 to 3.0%
Concrete Brick	concrete bricks	approx. 2200 kg/m³	0.2 to 2.5%
Heavy Concrete Brick	concrete bricks	> 2300 kg/m³	0.2 to 1.5%
Clinker Brick			0.2 to 1.5%
Ashlar			0.1 to 10 %
Digit			0 to 100%
Reference	! Only for testing the moisture meter !		

7.1.1 CM method

Another common method of determining the moisture of the bottom layer of screed is the CM method. The accuracy of the CM method depends on various parameters and is not suited for a comparison with the humimeter GF2 resp. for material calibration. In the following chart of producers of CM devices you can find comparative values of measurements in drying chamber in weight% to CM% for some concrete types. For comparative values for other concrete types, please refer to the user manual of your CM device.

Floor screed	Weight %	1.8	2.2	2.7	3.2	3.6	4.1	4.5	5.0
	CM %	0.7	1.0	1.4	1.8	2.1	2.5	2.9	3.2
Anhydrite floor	Weight %	0.1	0.3	0.6	1.0	1.4	1.8	2.2	2.5
	CM %	0.1	0.3	0.6	1.0	1.4	1.8	2.2	2.5
Concrete B15,B25,B35	Weight %		1.3	1.9	2.5	3.2	3.8	4.4	5.0
	CM %		0.3	0.8	1.3	1.7	2.2	2.7	3.2

7.1.2 Product type "Floor screed CM"

The calibration curve "Floor screed CM" is a conversion from water content into CM %. The measurement values of this calibration curve are guidance values and do not replace the CM method. However, via the non-destructive measuring process of the GF2 device the measurement is simplified. Subsequently a CM measurement according to the norm is recommended.

7.1.3 Product type "Digit"

The digit calibration curve offers a dimensionless measuring range from 0 to 100, which corresponds to the total measuring range of the device. This calibration curve is destined for measuring special material.

The digit calibration curve is also suitable for detecting water or damp areas in the wall. The higher the shown value, the wetter the measured area.

very dry: 0 %   very wet: 100 %

NOTE: Also electric cables or pipes can cause a high digit value.

7.2   Hand electrode (art.no. 12847), pair of plug-in electrodes (art. no. 13011) & WLW hammer (art.no. 12630)

Product type	Definition	Density range	Measuring range
Gypsum			0.5 to 14%
Lime Mortar			0.5 to 10%
Lime Gypsum Plaster		approx. 1150 kg/m³	0.1 to 10%
Lime Cement Plaster		approx. 1250 kg/m³	0.4 to 10%
Lime Plaster		approx. 1450 kg/m³	0.8 to 10%
Cork			4 to 30%
Cellulose	injected insulation material	approx. 55 kg/m³	10 to 40%
Digit			0 to 100

Due to the large number of different plaster mixtures and producers, the calibration curves were determined from a selection of different manufacturers and combined into the main groups mentioned above.

The calibration curves were determined in the plastered state. It is not possible to measure the powder or unprocessed plaster.

Wood type	Sub categories	Measuring range limit
Beech	Rubber, Eucalyptus	47 %
Oak	Mahogany, Wenge	47 %
Alder	Acacia, Alstonia, Birch, European chestnut, Horse chestnut, Cherry Tree, Walnut, Okan	54 %
Ash	Keruing	54 %
Spruce		67 %
Pine	Balsa, Yew Tree, Stone Pine	54 %
Larch	Maple, Douglas Fir, Hemlock, Poplar, Elm	47 %
Fir	Ceiba, Lime	59 %
Willow	Pear, Hickory, Olive wood, Ramin, Teak	59 %
Test block	! Only for testing the moisture meter !	

7.3   Air humidity and temperature sensor (art.no. 12514, 12032, 12004, 13159 and 13066)

Product type	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)

7.3.1   Definition of product types

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).

7.4   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.
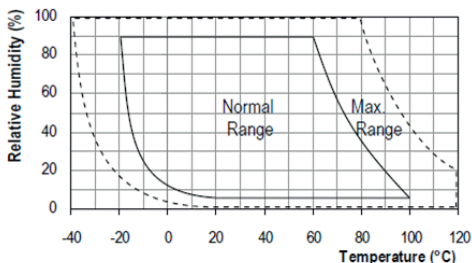
7.5   Definition of wood moisture

In the wood characteristic curves, the device calculates the wood moisture.

The wood moisture defines the amount of water contained in the material in relation to the material´s dry weight:

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

M_n: Mass of the sample with average moisture content

M_t: Mass of the sample with zero moisture content

%HF: Wood moisture (in accordance with EN 13183)

Example: 0.6 kg wood with 0.4 kg water
The dry weight of 0.6 kg corresponds to 100 %. In relation to the dry weight, the 0.4 kg water result in a wood moisture of 66.7 %.

7.6   How moisture is defined

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

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

M_n: Mass of the sample with average moisture content

M_t: Mass of the sample with zero moisture content

%WG: Moisture content (in accordance with EN ISO 12570)

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 72).
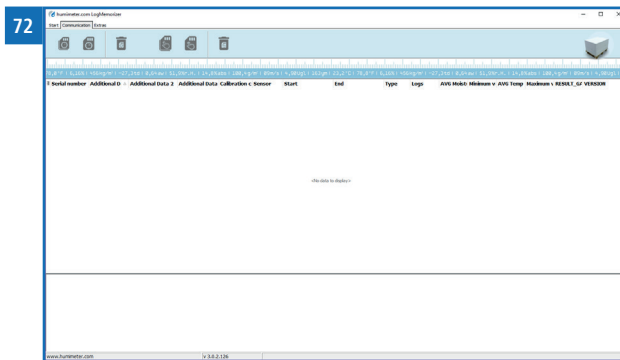
   »   Before using LogMemorizer, please refer to the the separate LogMemorizer operating manual for the correct configuration of the USB COM Port.

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 GF2 or initiate the export at your computer.

Exporting moisture readings from the humimeter GF2

Connect the humimeter GF2 to your computer using the supplied USB cable.

1.   Insert the USB Mini B connector into the humimeter GF2 (figure 73).

2.   Insert the USB connector into the computer.

3.   Open LogMemorizer on your computer.

4.   Switch on the humimeter GF2.

5.   Press ⟳ twice or hold for 2 seconds.

6.   Select **Send Logs** (figure 74). To do so, press ▼ or ▲ and confirm by pressing ↵.

7.   Select **Manual Logs** or **Auto Logs** (figure 75). To do so, press ▼ or ▲ and confirm by pressing ↵.

8.   The display will then show the message **Send** (figure 76).

»   All of the measuring values saved on the humimeter GF2 will now be sent to your computer.
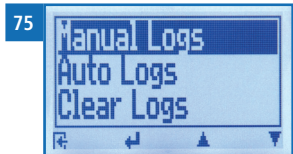
Initiating the data export at your computer

Connect the humimeter GF2 to your computer using the supplied USB cable.

1.   Insert the USB Mini B connector into the humimeter GF2 (figure 77).

2.   Insert the USB connector into the computer.

3.   Open LogMemorizer on your computer.

4.   Switch on the humimeter GF2.

5.   Open the **Communication** tab in LogMemorizer (figure 78).
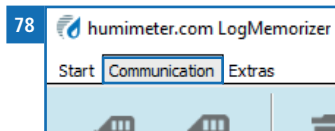
6.   Select and click on one of the buttons shown in figure 79:

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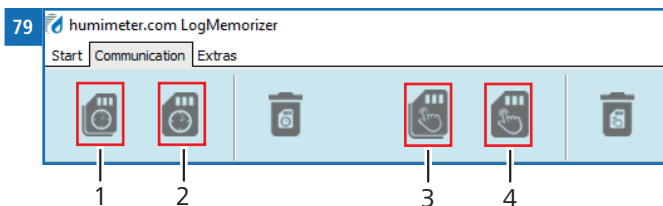
No.	Name
1	Import all auto save logs
2	Import most recent auto save series
3	Import all manual logs
4	Import most recent manual log

»   The measuring values saved on the humimeter GF2 will now be sent to your computer.

9. Checking the device's status

1. Open the main menu (see "4.2 Opening the main menu").

2. Select **Status**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

   » The display will then show the status indicator **humimeter**.

   » The display will show the following information:
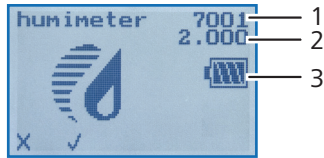
No.	Name
1	Serial number
2	Software version
3	Battery status
4	Memory status

3. Confirm by pressing ![icon].

4. Press ![icon] 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. Open the main menu (see "4.2 Opening the main menu").

2. Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3. Select **Date/Time**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

   » The display will now appear as shown in **figure** 80.

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

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

4. Inputting numbers:
   Press and hold ![icon] to quickly scroll to the required number and either press it for 3 seconds or press ![icon] to confirm the selected number (figure 81).

5. Moving forward:
   To move forward between **DD-MM-YY** and **hh:mm:ss**, press ![icon].

6. Moving back:
   Press ![icon] to switch to another input level. To move backward between **DD-MM-YY** and **hh:mm:ss**, press ![icon].

7. Confirm the date/time by pressing ![icon].

   » The settings have been saved.

8. Press ![icon] to leave the **Options** menu.

9. Press ![icon] to leave the main menu.
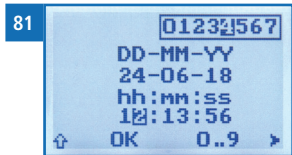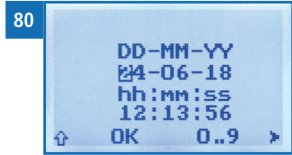
10.3   Setting the emission ratio

1.   Open the main menu (see).

2.   Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3.   Select **Emission ratio**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

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 ![icon] to confirm the selected number.

Moving back:
Press ![icon] to switch to another input level.
To move back, press ![icon].

5.   Confirm the new emission ratio by pressing ![icon].

»   The setting has been saved.

6.   Press ![icon] to leave the **Options** menu.

7.   Press ![icon] to leave the main menu.

10.4   Selecting a language

1.   Open the main menu (see).

2.   Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3.   Select **Language**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

4.   Navigate to the required language. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

»   The setting has been saved.

5.   Press ![icon] to leave the **Options** menu.

6.   Press ![icon] to leave the main menu.

10.5   Activating options

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

1.   Open the main menu (see "4.2 Opening the main menu").

2.   Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3.   Select **Unlock**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

  »   The display will now appear as shown in figure 82.

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

4.   Inputting numbers:
Press and hold ![icon] to quickly scroll to the required number and either press it for 3 seconds or press ![icon] to confirm the selected number (figure 83).

5.   Moving back:
Press ![icon] to switch to another input level.
To move back, press ![icon].

6.   Confirm the four-digit password by pressing ![icon].

  »   The setting has been saved.

  »   The **°C/°F, Adjust, Userlevel, BL On Time, Auto Off Time, Materialcalibration, Password, Reset** options are now activated.

7.   Press ![icon] to leave the **Options** menu.

8.   Press ![icon] to leave the main menu.
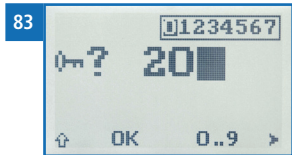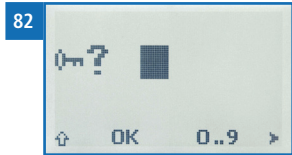
10.6   Deactivating options

Once the device has been switched restarted, the **°C/°F, Adjust, Userlevel, BL On Time, Auto Off Time, Materialcalibration, 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.   Open the main menu (see "4.2 Opening the main menu").

2.   Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3.   Select **°C/°F**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

4.   Navigate to the required temperature scale, i.e. Celsius (**°C**) or Fahrenheit (**°F**). To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

   »   The setting has been saved.

5.   Press ![icon] to leave the **Options** menu.

6.   Press ![icon] to leave the main menu.

10.8   Changing the Userlevel

10.8.1   Changing from advanced to simplified user

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

1.   Open the main menu (see "4.2 Opening the main menu").

2.   Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3.   Select **Userlevel**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

   »   The simplified user is now activated.

4.   Press ![icon] to leave the **Options** menu.

5.   Press ![icon] to leave the main menu.

10.8.2 Changing from simplified to advanced user

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

1. Open the main menu (see section "4.2 Opening the main menu").

2. Activate all of the options (see "10.5 Activating options").

3. Select **Userlevel**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

   » The advanced user is now activated.

4. Press ![icon] to leave the **Options** menu.

5. Press ![icon] to leave the main menu.

10.9 Reducing the device's power consumption

10.9.1 Configuring the display illumination time

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

1. Open the main menu (see "4.2 Opening the main menu").

2. Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3. Select **BL On Time**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

4. Select the required display illumination period (30 seconds, 2 minutes, 5 minutes, 10 minutes). To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

   » The setting has been saved.

5. Press ![icon] to leave the **Options** menu.

6. Press ![icon] to leave the main menu.

10.9.2 Configuring automatic switch-off

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

1. Open the main menu (see "4.2 Opening the main menu").

2. Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3. Select **Auto Off Time**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

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 ![icon] or ![icon] and confirm by pressing ![icon].

   » The setting has been saved.

5. Press ![icon] to leave the **Options** menu.

6. Press ![icon] to leave the main menu.

10.10 Configuring the material calibration function

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

10.11 Changing the password

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

1. Open the main menu (see "4.2 Opening the main menu").

2. Select **Options**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

3. Select **Password**. To do so, press ![icon] or ![icon] and confirm by pressing ![icon].

   » The display will show the current password.

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

   Moving back:
   Press ![icon] to switch to another input level.
   To move back, press ![icon].

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.

10.12 Resetting the device to its factory settings

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

1. Open the main menu (see "4.2 Opening the main menu").

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 84).

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 85).

    »   Resetting the device will not affect the saved measuring values.
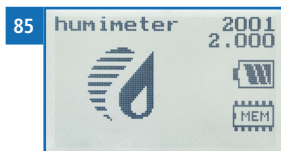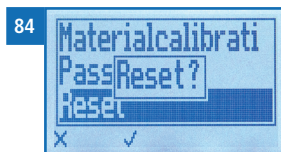
11.   Cleaning and maintenance

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 87).

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

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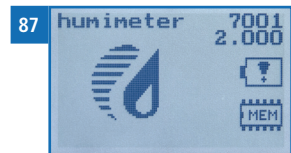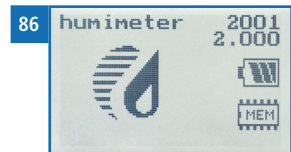
11.2   Calibrating the moisture meter

To do so: The device must have a temperature of between 20 °C and 26 °C.

1. Open the main menu (see "4.2 Opening the main menu").

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

3. Select **Adjust** (figure). To do so, press ▼ or ▲ and confirm by pressing ↵.

4. The display will then show the message **Adjust?** (figure 89).

5. Lift the device up into the air with one hand. When doing so, there must be a minimum of 0.5 metres of empty space behind the sensor surface (black plate at the bottom of the device (figure 90).
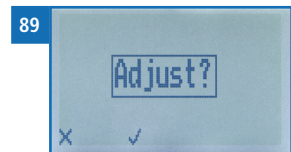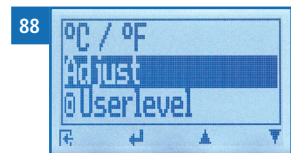
6.   Confirm by pressing [✓].

   »   The display will now appear as shown in figure 91.

   »   The bar will run upwards. The device must be held up in the air throughout this entire process,

   »   which only takes a couple of seconds to complete. When completed, the display will look as shown in figure 88.

7.   Press [⊞] to leave the **Options** menu.

8.   Press [⊡] to leave the main menu.
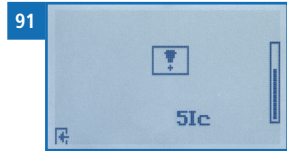
11.3   Care instructions

•   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.

11.4   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.

Sensor surface

•   Clean the sensor surface with a cloth.

Plastic housing

•   Clean the plastic housing with a dry cloth.

Measuring tips for the ram electrode art.no. 12630 &
Measuring tips for pair of plug-in electrodes art.no. 13011 &
Measuring tips for the hand electrode art.no. 12847 &
Pair of flat electrodes art.no. 13012

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

Humidity and temperature sensor art.no. 12032 &
air humidity and temperature sensor art.no. 12514 &
Humidity and temperature sensor art.no. 13159

- Clean the sensor tube with a dry cloth.
- The sensor itself cannot be cleaned. In case of a polluted sensor please contact your dealer.

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

- The 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 sensor itself 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 general	Temperature discrepancy between device and material being measured	Let the temperature adjust to the material being measured (permitted difference of max. 3 °C).
	Wrong product type	Check whether you have selected the right product type before taking a reading (see "7. Product types").
Measuring error internal building moisture sensor	The temperature is outside the operating temperature: lower than 0 °C or higher than +50 °C	The temperature of the material being measured has to be between 0 °C and +50 °C.
	Uneven measuring position	The measuring device must rest flush and without an air gap on the measuring point.
	Material thickness too low	Please ensure a minimum material thickness of 30 mm.
	Incorrect contact pressure	Press the device against an even measuring point with a pressure of approx. 4 kg.
	Foreign materials in the measuring field	Wires, insulation and metal grids in the measuring field lead to measuring errors.
	Incorrect calibration due to changed material compositions	The device is not calibrated for admixtures of various kinds, e.g. insulation material or building chemical substances.
	Danger of condensation on the device or sensor in case of temperature change	Condensation will affect calibration and may damage the device. Make sure that the device is completely dry before switching it on.

Fault	Cause	Remedy
Measuring error humidity measurement	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.
	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.
Measuring error Ram electrode	The temperature is outside the operating temperature: lower than 0 °C or higher than +50 °C	The temperature of the material being measured has to be between 0 °C and +50 °C.
	Bark beetle infested wood	The accuracy of the measurement decreases significantly.
	Measurement through the bark	The accuracy of the measurement decreases significantly, even if using insulated measuring tips.

Fault	Cause	Remedy
Measuring error IR temperature sensor	Wrong emission ratio set	Set the emission ratio according to the table of point "5.2.6 Measurement with the IR temperature sensor" or other sources.
	Polluted sensor	Clean the sensor with light compressed air.
	Incorrect distance to measuring object	Due to an incorrect distance to the measurement object, a too large measurement area is created.
	Measurement of shiny or reflective materials	Shiny or reflective materials cannot be measured.
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.
	Driver not installed	Install the driver for the USB interface of the device. FTDI VCP D2XX Virtual COM Port Driver - Download under www.ftdichip.com

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

KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY

Name/ Adresse des Herstellers:	**Schaller Messtechnik GmbH**
Name/ address of manufacturer:	**Max-Schaller-Straße 99**
	A – 8181 St. Ruprecht

Produktbezeichnung:	**humimeter**
Product designation:	

Typenbezeichnung:	**GE1 ; GF2 ; LM5 ; LM6 ; M05 ; M20 ; M30 ; M50**
Type designation:	

Produktbeschreibung:	**Messgerät zur Bestimmung des Wassergehalts und abgeleiteten Größen in diversen Materialien von der Oberflächennähe bis in die Materialtiefe**
Product description	***Measuring instrument for determining the water content and derived variables in various materials from near the surface to the depth of the material***

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

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

UKCA *DECLARATION OF CONFORMITY*

Name/ address of manufacturer:	**Schaller Messtechnik GmbH**
	Max-Schaller-Straße 99
	A – 8181 St. Ruprecht

Product designation:	**humimeter**

Type designation:	**GE1 ; GF2 ; LM5 ; LM6 ; M05 ; M20 ; M30 ; M50**

Product description	**Measuring instrument for determining the water content and derived variables in various materials from near the surface to the depth of the material**

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	Dependent on the sensor (see "Overview external sensors" page 4)
Measuring range	Dependent on the sensor (see "Overview external sensors" page 4)
Operating temperature	0 °C to +50 °C dependent on the sensor (see "Overview external sensors" page 4)
Temperature range	Dependent on the sensor (see "Overview external sensors" page 4)
Storage temperature	-20 °C to +60 °C
Temperature compensation	Automatic
Data memory	Up to 10,000 measuring values
Measuring depth internal building moisture sensor	30 mm
Minimum material thickness internal building moisture sensor	30 mm
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	147 x 75 x 30 mm
Device weight	265 g
Device IP rating	IP 40

15. Notes

Climate / Environment	Material
Food	Buildings
Bioenergy	Paper / Board
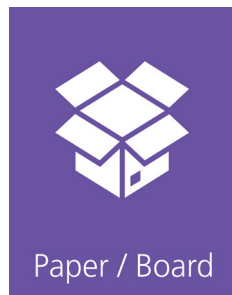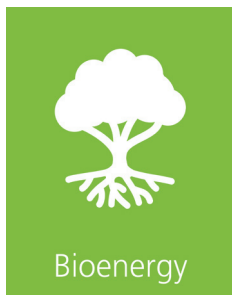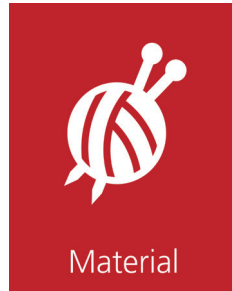
Schaller Messtechnik develops, produces and sells professional moisture meters and turnkey solutions.

Schaller Messtechnik GmbH

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