

twilight

INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

Medidor de Humedad en Piel No Destructivo , Piel Automotriz/Piel Fina SH-LM

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Moisture meter

Operating Manual

humimeter LM5

Leather moisture meter

for measuring the moisture content of finished leather products



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

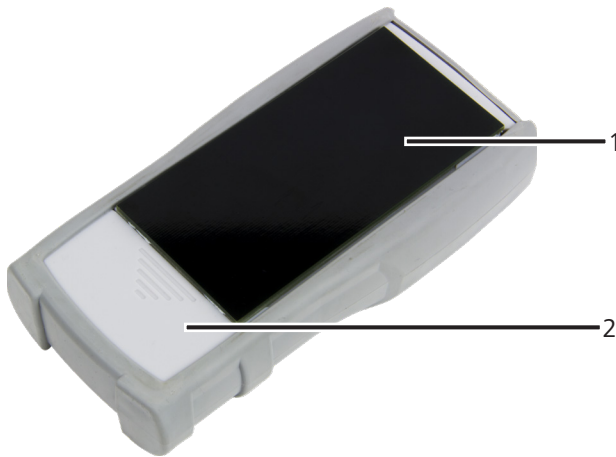
Your humimeter LM5 at a glance

The main unit



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

Rear of the main unit





















No.	Name
1	Sensor surface
2	Battery compartment

The display



No.	Name
1	Product type
2	Moisture content in % (see "6.2 How moisture content is defined")
3	Display symbols
4	Temperature display

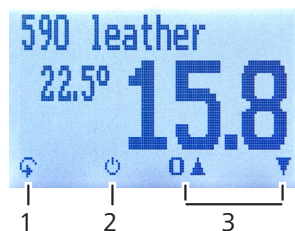
The display symbols

Symbol	Name	Symbol	Name
	Enter		No
	Up		Change input level
	Down		OK
	Back		Change menu
	Enter numbers		Enter data
	Enter letters		View measurements
	Continue / go right		Delete measurements
	Left		On/off button, display light
	Yes		Save measured value

The menus

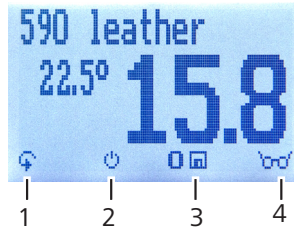
The device has three different menus: product selection, Data Log and main menu.

Product selection menu



No.	Name
1	Change menu
2	Display illumination / device on/off
3	For changing the 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, Clear Logs
- **Print Logs:**
Last Log, All Logs, Clear Logs
- **Send Logs:**
Manual Logs, Clear Logs
- **Options:**
Bluetooth, Date/Time, Log Time, Reinitialize, Language, Unlock, °C/°F, Userlevel, BL On Time, Auto Off Time, Materialcalibration, Password, Reset
- **Status**

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1. Introduction

1.1 Information about this operating manual

This operating manual is designed to enable you to use the humimeter LM5 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 LM5. All of the safety and operating instructions detailed in this manual have to be observed to ensure the safety of the device.

1.2 Limitation of liability

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

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

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

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

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

1.3 Symbols used in this manual

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



ATTENTION

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



Information

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

1.4 Customer service

For technical advice, please contact our customer service department at

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

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

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



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2. For your safety

The device complies with the following European directives:

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

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

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

2.1 Proper use

- Easy to use device for quickly measuring the moisture content of stacks of leather
- The device must only be used for taking measurements on the products defined in the following sections of this manual (see "[6. Product types](#)").

2.2 Improper use

- The device must not be used in ATEX.
- The device is not suitable for measuring the moisture content of individual leather hides.
- 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 isn't 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 GmbH or your dealer.

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

2.5 Warranty

The warranty does not apply to:

- Damage resulting from non-observance of the operating manual
- Damage resulting from third-party interventions
- Products that have been used improperly or modified without authorisation
- Products with missing or damaged warranty seals
- Damage resulting from force majeure, natural disasters, etc.
- Damage from improper cleaning
- Batteries older than six months

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 LM5
- 4 pieces of AA Alkaline batteries
- Wooden case with test plate

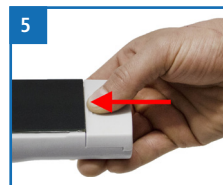
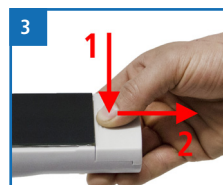
- Rubber protection cover
- Operating manual

Optional accessories:

- humimeter USB data interface module - USB stick with software and USB cable
- Battery operated portable thermal printer (only possible together with humimeter USB data interface module) - Described in a separate operating manual
- Bluetooth module (only possible together with humimeter USB data interface module) - Described in a separate operating manual


3.3 Inserting batteries

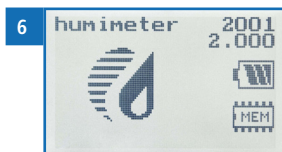
1. Remove the rubber protection cover. To do so, hold the rubber protection cover at the upper side and pull it over. If your device is provided with an optional USB port, remove the protection cap of the USB socket before (figure 1 and 2).
2. Take hold of the device with one hand, press your thumb onto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

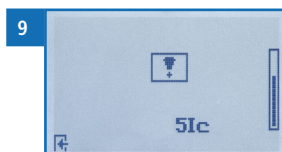
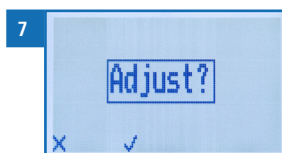
4.1 Switching the device on

- 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 Automatic calibration



- » The display will then show the message **Adjust?** (figure 7).
1. 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 8).
 2. Confirm by pressing .
 - » The display will now appear as shown in figure 9.
 - » 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.
 - » Once completed, the device will show the measuring window (see "Product selection menu" page 4).

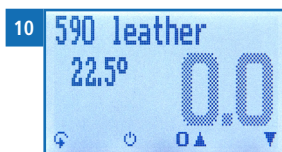





4.3 Selecting the product type

To do so: The device has to be in the product selection menu (figure 10).

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

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



-
- Press the  or  button for 3 seconds to open the product type overview (figure 11).
 - Use the arrow keys to move from one product type to the next
 - and keep any of them pressed to scroll through the types.
 - Confirm your selection by pressing .



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

4.4 Taking a measurement

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

4.5 Switching the device off



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

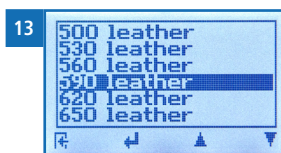
- Press the  button for 3 seconds.

5. The measuring process

5.1 Preparing a measurement

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

- Switch on the device (see "4.1 Switching the device on").
- Select the desired product type (see "6. Product types") by pressing the  or  button (see "4.3 Selecting the product type").



5.2 Taking a measurement

Due to the measuring principle and the consequentially required measuring depth it is only possible to measure stacked leather.

To do so: The stack has to have a minimum height of 10 mm and the device has to have nearly the same temperature than the leather.

- Take hold of the device with one hand and press it onto the top of the stack with a pressure of approx. 4 kg (figure 14).
- When doing so, the sensor surface (black area at the bottom of the device) must be firmly resting on the leather.
- » The device will now instantly display the moisture content on the display (figure 15).
- » Once the reading has been taken, it can be saved on the device (see "5.5 Saving individual readings" or "5.6 Saving several readings (a measurement series) at the same time").



i Information - Measuring accuracy

This rapid and non-destructive measuring procedure allows you to quickly take moisture readings at a number of different points. When saving the individual readings, the device will automatically calculate the readings' average (see "5.6 Saving several readings (a measurement series) at the same time").

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 "11. Faults").

5.3 Simplified user

The device can be configured in such a way that the access of the user is restricted to the product selection menu combined with the Hold function.

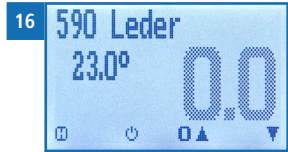
5.3.1 Activating/Deactivating the simplified user

- For information on how to activate/deactivate the simplified user, see section "9.7 Changing the Userlevel".

5.3.2 Using the simplified user

The simplified user offers the following limitations:

- The only usable menu is a slightly modified product selection menu (figure 16).
- » No access to the Data Log or main menu.
- The Hold function replaces the function to switch between the different menus (see "5.4 Hold function - Freezing the displayed values")















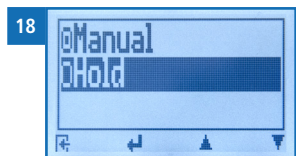
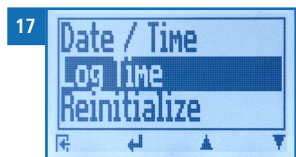
5.4 Hold function - Freezing the displayed values

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 spaces where it is not possible to see the display (e.g. overhead).

5.4.1 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 17). To do so, press  or  and confirm by pressing .
4. Select **Hold** (figure 18). 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.



5.4.2 Using the Hold function

To do so: The device has to be switched on and be in the Data Log menu (see "Data Log menu" page 5).

- Press .
- » The current reading will be frozen. All of the four symbols will now be displayed as  (figure 19).
- To reactivate the frozen display simply press any button.















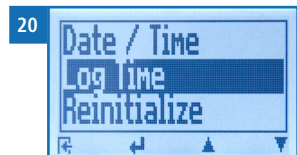
5.5 Saving individual readings

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 saving function) is the device's default setting.

5.5.1 Activating the manual saving function in the Options menu











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

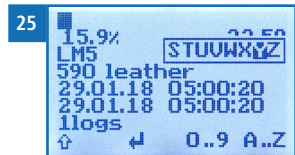
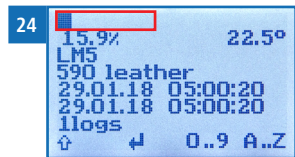
1. Press  twice or hold for 2 seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Log Time** (figure 20). To do so, press  or  and confirm by pressing .
4. Select **Manual** (figure 21). To do so, press  or  and confirm by pressing .
- » The setting has been saved.
5. Press  to leave the **Options** menu.
6. Press  to leave the main menu.



5.5.2 Using the manual saving function


To do so: The device has to be in the Data Log menu (see "Data Log menu" page 5). The device is set to Data Log Time - Manual.

1. Press .
 - » The display will now appear as in figure 23 and the disc symbol will be preceded by the digit one.
2. Press  to enter a name for the saved reading and to finish the measuring process.
 - » The display will now appear as shown in figure 24.
3. The data you have inputted can be overwritten at any time.
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 25).
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.




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

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

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

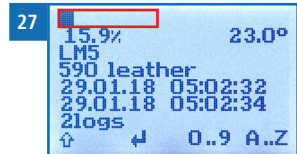
» The display will now appear as shown in figure 26. The marked number shows the number of readings that have already been saved.




3. Press  to enter a name for the saved series of measurements and to finish the measuring process.

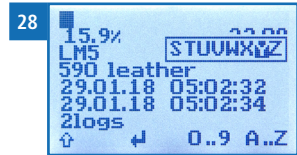
» The display will now appear as shown in figure 27.

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




5. Inputting letters:




Press and hold **A..Z** to quickly scroll to the required letter and either press it for 3 seconds or press  to confirm the selected letter (figure 28).




6. Inputting numbers:

Press and hold **0..9** to quickly scroll to the required number and either press it for 3 seconds or press  to confirm the selected number.

7. Moving forward/back:

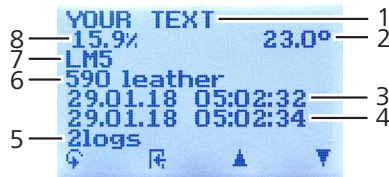
Press  to switch to another input level. Press  or  to move forward or back.

8. Confirm your entry by pressing .

» The data you entered has been saved.

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





» The display will show the following information:

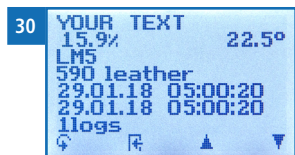


No.	Name
1	Name of the measurement series (editable)
2	Temperature (average)
3	Date & start time of the measurement series
4	Date & end time of the measurement series
5	Number of saved readings
6	Product type
7	Device name
8	Moisture content (average)

5.7 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 29.









1. Press .
2. Select the required reading. To do so, press  or .
 - » The display will now appear as shown in figure 30.
 - » Press  to leave this screen.

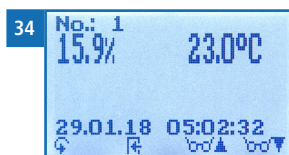
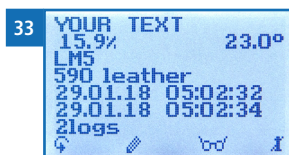
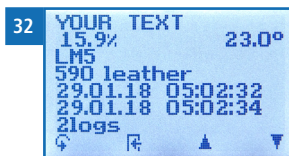


5.8 Viewing individual readings from a series of measurements

To do so: You must have saved a series of measurements (e.g. **2 logs**).









The display will now appear as shown in figure 31.

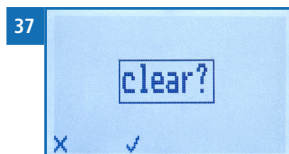
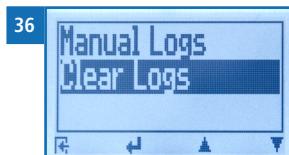
1. Press .
2. Navigate to the required measurement series. To do so, press  or .
 - » The display will now appear as shown in figure 32.
3. Press  to switch to another input level.
 - » The display will now appear as shown in figure 33.
4. Press  again.
 - » The display will now appear as shown in figure 34.
5. Navigate to the required reading (**No.: 1**, **No.: 2**, **No.: 3**). To do so, press  or .
6. Press  to leave this screen.





5.9 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 35). To do so, press  or  and confirm by pressing .
3. Select **Clear Logs** (figure 36). To do so, press  or  and confirm by pressing .
 - » The display will show the message **clear?**
4. Confirm by pressing .
 - » The data log has been deleted.

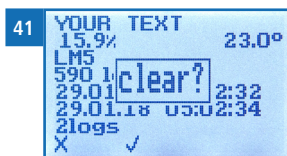
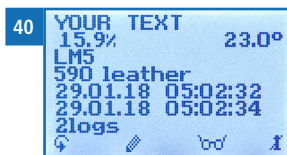
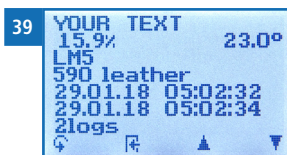


5. Press  to leave the **Edit Logs** menu.
6. Press  to leave the main menu.

5.10 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 38.

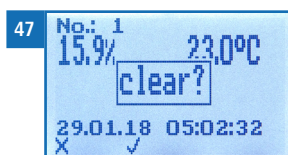
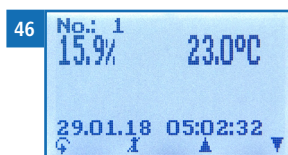
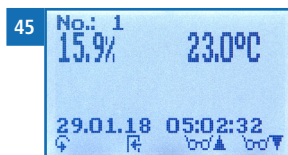
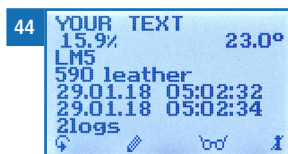
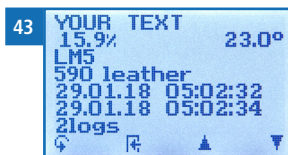
1. Press .
 - » The display will now appear as shown in figure 39.
2. Select the required reading. To do so, press  or .
3. Press  to switch to another input level.
 - » The display will now appear as shown in figure 40.
4. Press .
 - » The display will then show the message **clear?** (figure 41).
5. Confirm by pressing .
 - » The value has been deleted.



5.11 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 42.

1. Press .
 - » The display will now appear as shown in figure 43.
2. Select the required reading. To do so, press  or .
3. Press  to switch to another input level.
 - » The display will now appear as shown in figure 44.
4. Press .
 - » The display will now appear as shown in figure 45.
5. Select the required measured value. To do so, press  or .
6. Press  to switch to another input level.
 - » The display will now appear as shown in figure 46.
7. Press  to delete the value shown.
 - » The display will then show the message **clear?** (figure 47).
8. Confirm by pressing .
 - » The value has been deleted.



6. Product types

Product type	Leather type	Density [kg/m ³]
500 leather	Natural leather with a density of:	500 kg/m ³
530 leather	Natural leather with a density of:	530 kg/m ³
560 leather	Natural leather with a density of:	560 kg/m ³
590 leather	Natural leather with a density of:	590 kg/m ³
620 leather	Natural leather with a density of:	620 kg/m ³
650 leather	Natural leather with a density of:	650 kg/m ³
680 leather	Natural leather with a density of:	680 kg/m ³
710 leather	Natural leather with a density of:	710 kg/m ³
740 leather	Natural leather with a density of:	740 kg/m ³
770 leather	Natural leather with a density of:	770 kg/m ³
800 leather	Natural leather with a density of:	800 kg/m ³
830 leather	Natural leather with a density of:	830 kg/m ³
860 leather	Natural leather with a density of:	860 kg/m ³
Reference	! Only for testing the moisture meter !	

6.1 Selecting the product type

Due to different manufacturing processes and different densities of leather, there are no default product type categories. The humimeter LM5's readings are based on densities, which is why it is the decisive factor for the different product types.

If you wish to obtain very precise moisture content readings, please take a one-off comparative measurement with the standardised oven-drying method (EN ISO 4684). To do so, proceed as follows:

1. Take a leather pile of 10 - 15 mm of the format A6 with average moisture content.
2. Take a number of moisture readings using the product types most likely to deliver realistic values and record those readings with the corresponding product type.
3. Next, record the actual moisture content reading obtained through performing a reference moisture content analysis in accordance with EN ISO 4684.

4. Compare the readings recorded for the different product types with those of the actual moisture content established using the reference measurement. From now on, always use the product type that most closely matches the reference measurement.
 - » Note: You can change the product type name to a name of your choice (e.g. to the name of the leather). For more information on doing so, please contact your dealer.

6.2 How moisture content is defined

The device measures and shows a material's moisture content. The moisture content readings it displays 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

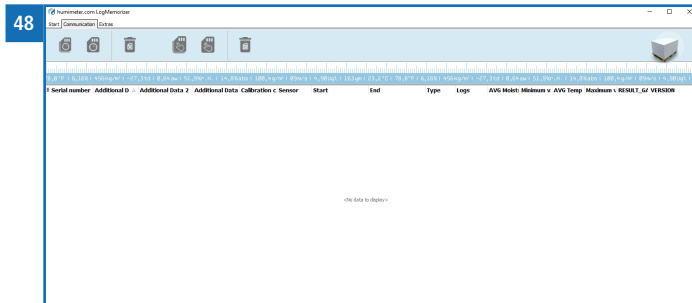
%WG: Moisture content (in accordance with EN ISO 4684)

7. 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.

7.1 Installing / opening the program

1. Insert the USB stick with the LogMemorizer program into the USB port on your computer.
2. Open the **setup** application.
3. Follow the installation instructions.
4. Open LogMemorizer.
 - » The screen will now display the LogMemorizer's interface (figure 48).
 - » 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.








7.2 Exporting measured values to a computer

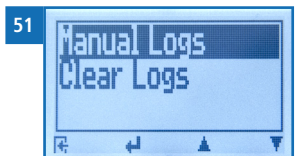
To do so: LogMemorizer must be installed. And you must have taken and saved one or several moisture readings.

Options: You can export moisture readings from the humimeter LM5 or initiate the export at your computer.

Exporting moisture readings from the humimeter LM5

Connect the humimeter LM5 to your computer using the supplied USB cable:

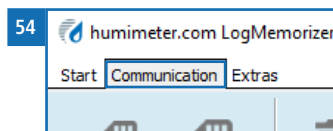
1. Insert the USB Mini B connector into the humimeter LM5 (figure 49).
2. Insert the USB connector into the computer.
3. Open LogMemorizer on your computer.
4. Switch on the humimeter LM5.
5. Press  twice or hold for 2 seconds.
6. Select **Send Logs** (figure 50). To do so, press  or  and confirm by pressing .
7. Select **Manual Logs** (figure 51). To do so, press  or  and confirm by pressing .
8. The display will then show the message **Send** (figure 52).
 - » All of the measuring values saved on the humimeter LM5 will now be sent to your computer.



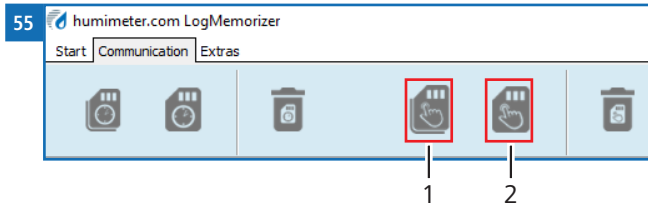
Initiating the data export at your computer

Connect the humimeter LM5 to your computer using the supplied USB cable:

1. Insert the USB Mini B connector into the humimeter LM5 (figure 53).
2. Insert the USB connector into the computer.
3. Open LogMemorizer on your computer.
4. Switch on the humimeter LM5.
5. Open the **Communication** tab in LogMemorizer (figure 54).







6. Select and click on one of the two buttons shown in figure 55.
 - » **Import all manual logs** (for importing all manually saved readings) or
 - » **Import most recent manual log** (for importing the most recent manually saved logs)



No.	Name
1	Import all manual logs
2	Import most recent manual log



- » The measuring values saved on the humimeter LM5 will now be sent to your computer.

8. 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:



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.

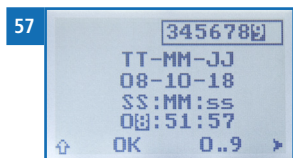
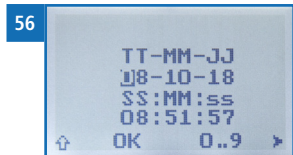
9. Configuring the device

9.1 Turning on Bluetooth


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

9.2 Adjust 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 
 - » 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).
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 57).
5. **Moving forward:**
To move forward between **DD-MM-YY** and **hh:mm:ss**, press .
6. **Moving back:**
Press  to switch to another input level. To move backward between **DD-MM-YY** and **hh:mm:ss**, press .
7. Confirm the date/time by pressing 
 - » The settings have been saved.



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




9. Press  to leave the main menu.

9.3 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.

9.4 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 .

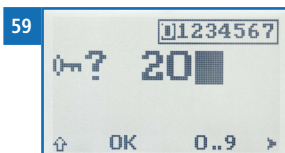
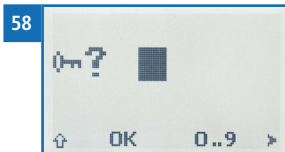
3. Select **Unlock**. To do so, press  or  and confirm by pressing .






» 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**, **Userlevel**, **BL On Time**, **Auto Off Time**, **Materialcalibration**, **Password**, **Reset** options are now activated.
7. Press  to leave the **Options** menu.
8. Press  to leave the main menu.

9.5 Deactivating options

Once the device has been switched restarted, the **°C/°F**, **Userlevel**, **BL On Time**, **Auto Off Time**, **Materialcalibration**, **Password**, **Reset** options will be deactivated again.

9.6 Selecting °C/°F










To do so: All of the options must be activated (see "9.4 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.

9.7 Changing the Userlevel








9.7.1 Changing from the advanced to the simplified user

To do so: All of the options must be activated (see "9.4 Activating options").

1. Press  twice or hold for 2 seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Userlevel**. To do so, press  or  and confirm by pressing .
 - » The simplified user is now activated.
4. Press  to leave the **Options** menu.
5. Press  to leave the main menu.

9.7.2 Changing from the simplified user to the advanced user













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

1. Switch the device on (see "4.1 Switching the device on").
2. Press and hold  and  at the same time, directly after switching the device on.
 - » The device will automatically boot into the main menu.
3. Activate all of the options (see "9.4 Activating options").
4. Select **Userlevel**. To do so, press  or  and confirm by pressing .
 - » The advanced user is now activated.
5. Press  to leave the **Options** menu.
6. Press  to leave the main menu.

9.8 Reducing the device's power consumption













9.8.1 Configuring the display illumination time

To do so: All of the options must be activated (see "9.4 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.

9.8.2 Configuring automatic switch-off

To do so: All of the options must be activated (see "9.4 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). 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.

9.9 Configuring the material calibration function

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

9.10 Changing the password



To do so: All of the options must be activated (see "9.4 Activating options").

1. Press  twice or hold for 2 seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Password**. To do so, press  or  and confirm by pressing 
 - » The display will show the current password.
4. Overwrite the current password. To do so, press and hold **0..9** to quickly scroll to the required number and either press it for 3 seconds or press  to confirm the selected number.

Moving back:









Press  to switch to another input level.

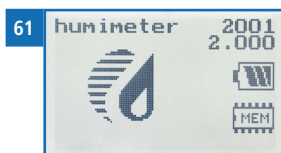
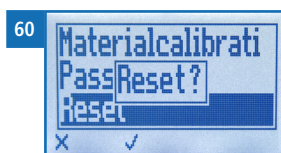
To move back, press .

5. Confirm the new four-digit password by pressing **OK**.
 - » The setting has been saved.
6. Press  to leave the **Options** menu.
7. Press  to leave the main menu.

9.11 Resetting the device to its factory settings

To do so: All of the options must be activated (see "9.4 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.



10. Cleaning and maintenance

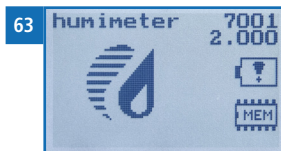
Regularly cleaning and maintaining the device will ensure that it will have a long service life and stay in good condition.

10.1 Changing batteries

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

If the battery's charge is very low, the battery symbol will be shown with an exclamation mark. In that case, the batteries must be changed immediately (figure 63).

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



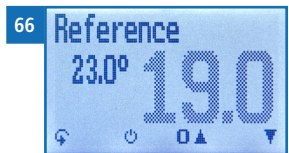
As the device's user, you are responsible by law for properly disposing of all used batteries, which must not be disposed of as domestic waste (Battery Directive).

10.2 Checking the calibration

The device's calibration should be checked every four weeks. When doing so, use the test plate supplied with the device.











To do so: The device and test plate must have a temperature of between 20 °C and 26 °C. Place the case on top of a wooden table. (The case must not be placed on top of or above metal.)

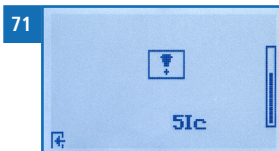
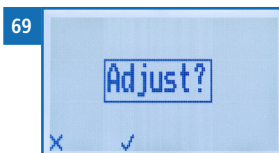
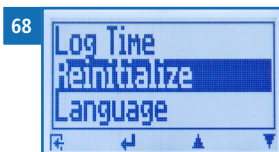
1. Switch on the device.
2. Use the arrow keys to select the product type "Reference" (see "4.3 Selecting the product type").
3. Take hold of the device with one hand and press it onto the top of the grey test plate with a pressure of approx. 4 kg (figure 65).
 - » The moisture content reading shown must be between 19.8 and 20.8 (the moisture reading will be displayed in black) (figure 64).
 - » If the moisture value is outside this range, in which case it will be displayed in grey (figure 66), the moisture meter has to be calibrated (see "10.3 Calibrating the moisture meter").
4. Lift the device up into the air with one hand (figure 67).
 - » 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).
 - » The moisture content reading shown must be between 3.0 and 3.6.
 - » If the moisture value is outside this range, the moisture meter has to be calibrated (see "10.3 Calibrating the moisture meter").



10.3 Calibrating the moisture meter

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

1. Switch on the device.
2. Press  twice or hold for 2 seconds.
3. Select **Options**. To do so, press  or  and confirm by pressing .
4. Select **Reinitialize** (figure 68). To do so, press  or  and confirm by pressing .
5. The display will then show the message **Adjust?** (figure 69).
6. 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 70).
7. Confirm by pressing 
 - » The display will now appear as shown in figure 71.
 - » 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 68.
8. Press  and then  to return to the product selection menu.
9. Then check the calibration (see "10.2 Checking the calibration").



10.4 Care instructions

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

10.5 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.

11. Faults

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

Fault	Cause	Remedy
Measuring error	The temperature of the material being measured is too low or high. I.e. the material's temperature is lower than 0 °C or higher than +40 °C.	The temperature of the material being measured has to be between 0 °C and +40 °C.
	Temperature discrepancy between device and material being measured	Let the temperature adjust to the material being measured (permitted difference of max. 3 °C).
	Wrong product type	Check whether you have selected the right product type (product) before taking a reading (see " 6.1 Selecting the product type ").
	Material stack is not high enough	The stack of leather being measured has to be at least 10 mm high.
	Incorrect contact pressure	Press the device against the leather with a pressure of approx. 4 kg.

Fault	Cause	Remedy
	Metal or similar conductive materials in the device's measuring range	Remove all metal or other conductive materials from the device's measuring range.
	Foreign materials below the material being measured	Stack the material being measured to avoid influences from foreign materials.
	Mouldy or rain wet material	In this case the accuracy decreases significantly.
Incorrect calibration (the exclamation mark on the display does not go away)	There is an object/material behind the sensor plate (during calibration)	Hold the device up into the air - make sure your fingers do not touch the sensor plate.
	Rubber protection cover mounted in the wrong direction	Mount the rubber protection cover as shown in "The main unit" page 2 and "Rear of the main unit" page 3 .
	Polluted sensor surface	Clean the sensor surface (see "10.5 Cleaning the device")
Data transfer to Log-Memorizer 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.

12. Storage and disposal

12.1 Storing the device

The device must be stored as follows:

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

12.2 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.

13. Device information

13.1 EC declaration of conformity

CE DECLARATION OF CONFORMITY

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

in accordance with the following Directives:

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

hereby declare that the following product types:

Product: **humimeter**
Types: **GE1 ; GF2 ; LM5 ; LM6 ; MS4 ; M20**

are in conformity with the applicable requirements of the following documents

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

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

13.2 Technical data

Display resolution	0.1 % moisture content, 0.5 °C/°F temperature
Measuring range	3 % to 20 % moisture content
Operating temperature	0 °C to +40 °C
Storage temperature	-20 °C to +60 °C
Temperature compensation	Automatic
Data memory	Up to 10,000 measuring values
Measuring depth	5 mm
Minimum material thickness	10 mm
Leather density range	500 to 860 kg/m ³
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
Dimensions of device + case	192 x 130 x 52 mm
Weight of device + case	660 g
Device IP rating	IP 40



Climate
Environment



Materials



Food



Buildings



Bioenergy



Paper / Board

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

Moisture meter

Operating Manual

humimeter LM6

Leather moisture meter

for measuring the absolute moisture content of leather



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

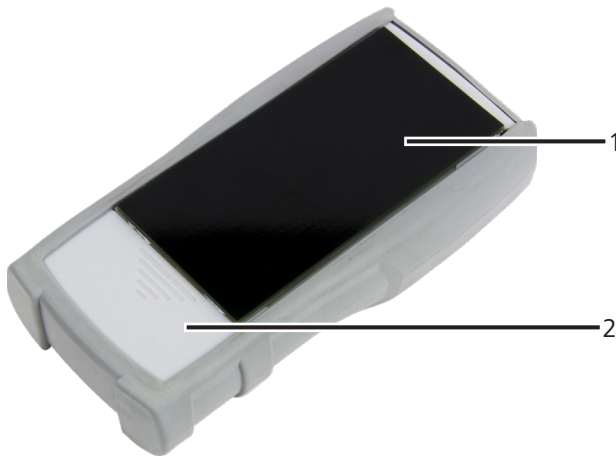
Your humimeter LM6 at a glance

The main unit



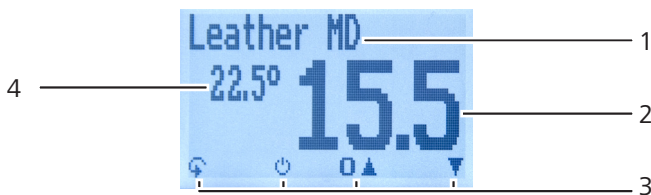
No	Name
1	USB Port (optional)
2	Display
3	Keypad
4	Rubber protection cover

Rear of the main unit





















No	Name
1	Sensor surface
2	Battery compartment

The display



No	Name
1	Product type
2	Moisture content in % (see "6.2 How moisture content is defined")
3	Display symbols
4	Temperature display

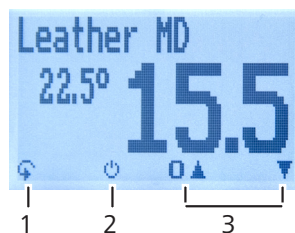
The display symbols

Symbol	Name	Symbol	Name
	Enter		No
	Up		Change input level
	Down		OK
	Back		Change menu
	Enter numbers		Enter data
	Enter letters		View measurements
	Continue / go right		Delete measurements
	Left		On/off button, display light
	Yes		Save measured value

The menus

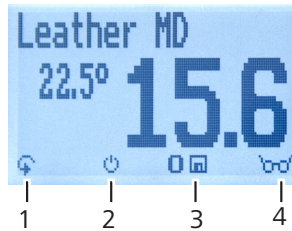
The device has three different menus: product selection, Data Log and main menu.

Product selection menu



No	Name
1	Change menu
2	Display illumination / device on/off
3	For changing the 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, Clear Logs
- **Print Logs:**
Last Log, All Logs, Clear Logs
- **Send Logs:**
Manual Logs, Clear Logs
- **Options:**
Bluetooth, Date/Time, Log Time, Reinitialize, Language, Unlock, °C/°F, Userlevel, BL On Time, Auto Off Time, Materialcalib., Password, Reset
- **Status**

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1. Introduction

1.1 Information about this operating manual

This operating manual is designed to enable you to use the humimeter LM6 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 LM6. All of the safety and operating instructions detailed in this manual have to be observed to ensure the safety of the device.

1.2 Limitation of liability

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

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

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

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

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

1.3 Symbols used in this manual

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



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.

For technical advice, please contact our customer service department at
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Max-Schaller-Str. 99
A-10701 St. Margareten im Pott
Tel: +43 (0)1 72 32 89
Fax: +43 (0)1 72 32 89 101
E-Mail: info@schaller.com
Internet: www.humimex.com
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2. For your safety

The device complies with the following European directives:

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

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

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

2.1 Proper use

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

2.2 Improper use

- The device must not be used in ATEX.
- The device is not suitable for measuring the moisture content of individual leather hides.
- 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 isn't 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 GmbH or your dealer.

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

2.5 Warranty

The warranty does not apply to:

- Damage resulting from non-observance of the operating manual
- Damage resulting from third-party interventions
- Products that have been used improperly or modified without authorisation
- Products with missing or damaged warranty seals
- Damage resulting from force majeure, natural disasters, etc.
- Damage from improper cleaning
- Batteries older than six months

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 LM6
- 4 pieces of AA Alkaline batteries
- Wooden case with test plate

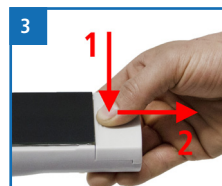
- Rubber protection cover
- Operating manual

Optional accessories:

- humimeter USB data interface module - USB stick with software and USB cable
- Battery operated portable thermal printer (only possible together with humimeter USB data interface module) - Described in a separate operating manual
- Bluetooth module (only possible together with humimeter USB data interface module) - Described in a separate operating manual.


3.3 Inserting batteries

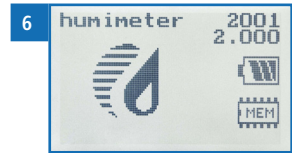
1. Remove the rubber protection cover. To do so, hold the rubber protection cover at the upper side and pull it over. If your device is provided with an optional USB port, remove the protection cap of the USB socket before (figure 1 and 2).
2. Take hold of the device with one hand, press your thumb onto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

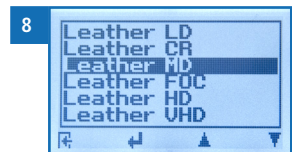
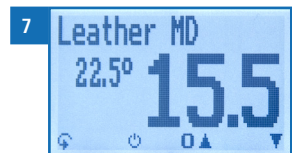


4.2 Selecting the product type

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 "6. Product types".

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

4.3 Taking a measurement

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

4.4 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 3 seconds.

5. The measuring process

5.1 Preparing a measurement

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

1. Switch on the device (see "4.1 Switching the device on").
2. Select the desired product type (see "6. Product types") by pressing the  or  button (see "4.2 Selecting the product type").

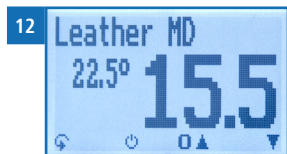


5.2 Taking a measurement

Due to the measuring principle and the consequentially required measuring depth it is only possible to measure stacked leather.

To do so: The stack has to have a minimum height of 10 mm and the device has to have nearly the same temperature than the leather.

- Take hold of the device with one hand and press it onto the top of the stack with a pressure of approx. 4 kg (figure 11).
- When doing so, the sensor surface (black area at the bottom of the device) must be firmly resting on the leather.
- » The device will now instantly display the moisture content on the display (figure 12).



- » Once the reading has been taken, it can be saved on the device (see "5.5 Saving individual readings" or "5.6 Saving several readings (a measurement series) at the same time").

i Information - Measuring accuracy

This rapid and non-destructive measuring procedure allows you to quickly take moisture readings at a number of different points. When saving the individual readings, the device will automatically calculate the readings' average (see "5.6 Saving several readings (a measurement series) at the same time").

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 "11. Faults").

5.3 Simplified user

The device can be configured in such a way that the access of the user is restricted to the product selection menu combined with Hold function.

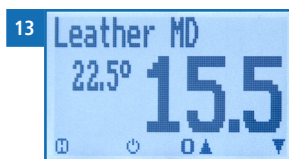
5.3.1 Activating/Deactivating the simplified user

- For information on how to activate/deactivate the simplified user, see section "9.7 Changing the Userlevel").

5.3.2 Using the simplified user

The simplified user offers the following limitations:

- The only useable menu is a slightly modified product selection menu (figure 13).
- » No access to the Data Log or main menu.
- The Hold function replaces the function to switch between the different menus (see "5.4 Hold function - Freezing the displayed values").















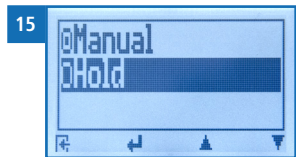
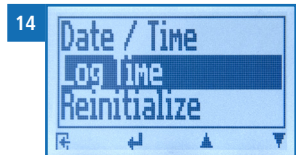
5.4 Hold function - Freezing the displayed values

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 spaces where it is not possible to see the display (e.g. overhead).

5.4.1 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.

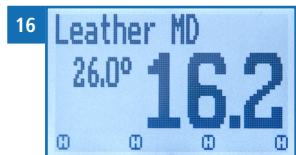
1. Press  twice or hold for 2 seconds.
 2. Select **Options**. To do so, press  or  and confirm by pressing .
 3. Select **Log Time** (figure 14). To do so, press  or  and confirm by pressing .
 4. Select **Hold** (figure 15). To do so, press  or  and confirm by pressing .
- » The setting has been saved.
5. Press  to leave the **Options** menu.
 6. Press  to leave the main menu.



5.4.2 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 4).

- Press .
- » The current reading will be frozen. All of the four symbols will now be displayed as  (figure 16).
- To reactivate the frozen display simply press any button.















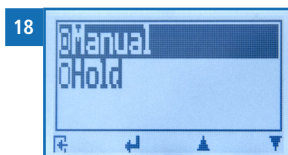
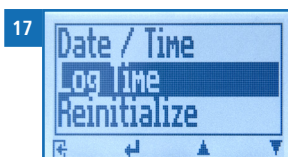
5.5 Saving individual readings

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 saving function) is the device's default setting.

5.5.1 Activating the manual saving function in the options menu



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

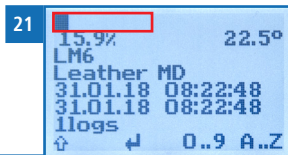
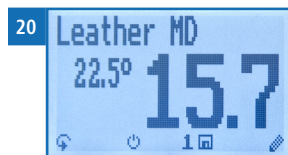
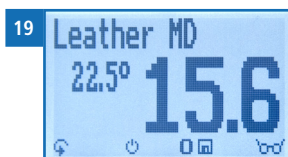
1. Press  twice or hold for 2 seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Log Time** (figure 17). To do so, press  or  and confirm by pressing .
4. Select **Manual** (figure 18). To do so, press  or  and confirm by pressing .
 - » The setting has been saved.
5. Press  to leave the **Options** menu.
6. Press  to leave the main menu.




5.5.2 Using the manual saving function

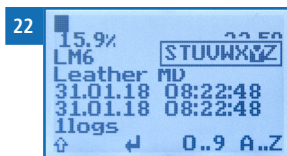
To do so: The device has to be in the Data Log menu (see "Data Log menu" Page 5). The device is set to Data Log Time - Manual.

1. Press .
 - » The display will now appear as in figure 20 and the disc symbol will be preceded by the digit one.
2. Press  to enter a name for the saved reading and to finish the measuring process.
 - » The display will now appear as shown in figure 21.
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 22).




5. **Inputting numbers:**

Press and hold **0..9** to quickly scroll to the required number and either press it for 3 seconds or press  to confirm the selected number.

6. **Moving forward/back:**

Press  to switch to another input level. Press  or  to move forward or back.

7. Confirm your entry by pressing .

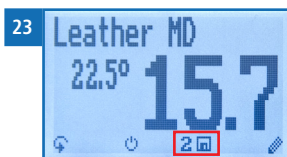
- » The data you entered has been saved.

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


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

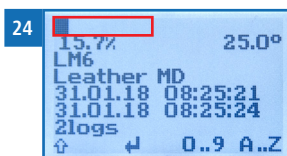
1. Take several readings (see "5. The measuring process").

2. To save a reading, press  as soon as the reading has been taken.



- » The display will now appear as shown in figure 23. The marked number shows the number of readings that have already been saved.


3. Press  to enter a name for the saved series of measurements and to finish the measuring process.

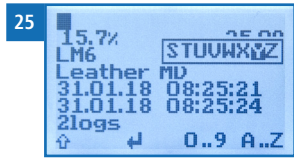


- » The display will now appear as shown in figure 24.


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

5. **Inputting letters:**




Press and hold **A..Z** to quickly scroll to the required letter and either press it for 3 seconds or press  to confirm the selected letter (figure 25).




6. **Inputting numbers:**

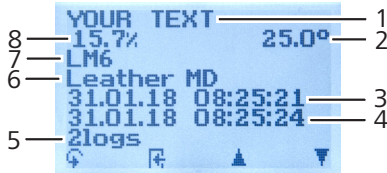
Press and hold **0..9** to quickly scroll to the required number and either press it for 3 seconds or press  to confirm the selected number.

7. **Moving forward/back:**

Press  to switch to another input level. Press  or  to move forward or back.

8. Confirm your entry by pressing .





- » The data you entered has been saved.
- » The device automatically determines the average moisture content of the saved measuring values.
- » The display will show the following information:

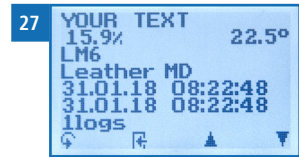
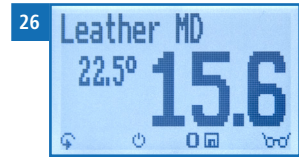


No	Name
1	Name of the measurement series (editable)
2	Temperature (average)
3	Date & start time of the measurement series
4	Date & end time of the measurement series
5	Number of saved readings
6	Product type
7	Device name
8	Moisture content (average)

5.7 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 26.

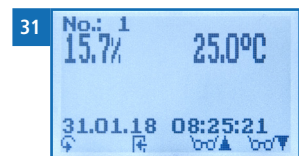
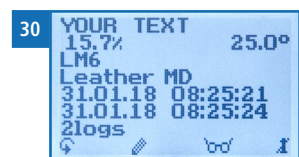
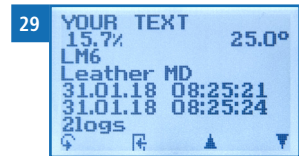
1. Press .
2. Select the required reading. To do so, press  or .
 - » The display will now appear as shown in figure 27.
 - » Press  to leave this screen.



5.8 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 28.

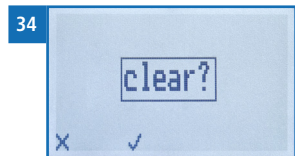
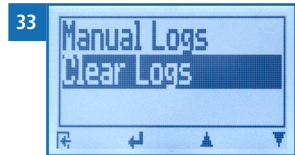
1. Press .
2. Navigate to the required measurement series. To do so, press  or .
 - » The display will now appear as shown in figure 29.
3. Press  to switch to another input level.
 - » The display will now appear as shown in figure 30.
4. Press  again.
 - » The display will now appear as shown in figure 31.
5. Navigate to the required reading (**No.: 1, No.: 2, No.: 3**). To do so, press  or .
6. Press  to leave this screen.



5.9 Deleting all measured values (data log)






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

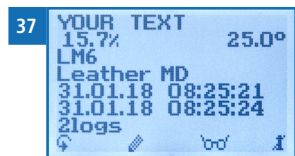
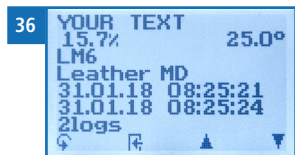
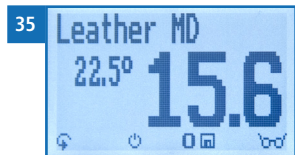
1. Press  twice or hold for 2 seconds.
2. Select **Edit Logs** (figure 32). To do so, press  or  and confirm by pressing .
3. Select **Clear Logs** (figure 33). To do so, press  or  and confirm by pressing .
 - » The display will show the message **clear?**
4. Confirm by pressing .
 - » The data log has been deleted.
5. Press  to leave the **Edit Logs** menu.
6. Press  to leave the main menu.



5.10 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 35.

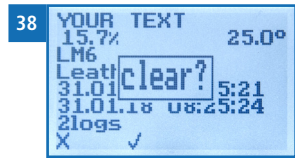
1. Press .
 - » The display will now appear as shown in figure 36.
2. Select the required reading. To do so, press  or .
3. Press  to switch to another input level.
 - » The display will now appear as shown in figure 37.
4. Press .



- » The display will then show the message **clear?** (figure 38).

5. Confirm by pressing .

- » The value has been deleted.






5.11 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 39.

1. Press .

- » The display will now appear as shown in figure 40.



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

3. Press  to switch to another input level.

- » The display will now appear as shown in figure 41.

4. Press .

- » The display will now appear as shown in figure 42.

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

6. Press  to switch to another input level.

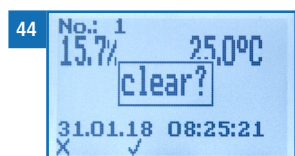
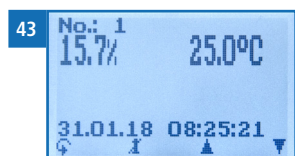
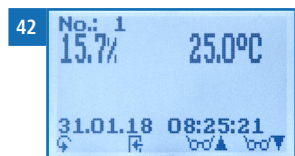
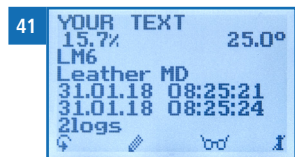
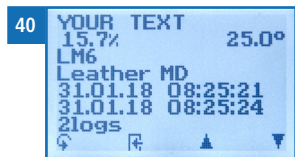
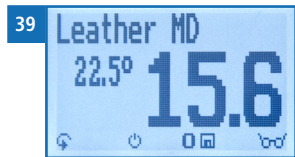
- » The display will now appear as shown in figure 43.

7. Press  to delete the value shown.

- » The display will then show the message **clear?** (figure 44).

8. Confirm by pressing .

- » The value has been deleted.



6. Product types

Product type	Leather type	Density [kg/m ³]
Leather LD	Natural leather with a density of:	550 kg/m ³
Leather CR	Natural leather with a density of:	600 kg/m ³
Leather MD	Natural leather with a density of:	650 kg/m ³
Leather FOC	Natural leather with a density of:	700 kg/m ³
Leather HD	Natural leather with a density of:	750 kg/m ³
Leather VHD	Natural leather with a density of:	800 kg/m ³
Reference	! Only for testing the moisture meter !	

6.1 Selecting the product type

Due to different manufacturing processes and different densities of leather, there are no default product type categories. The humimeter LM6's readings are based on densities, which is why it is the decisive factor for the different product types.

If you wish to obtain very precise moisture content readings, please take a one-off comparative measurement with the standardised oven-drying method (EN ISO 4684). To do so, proceed as follows:

1. Take a leather pile of 10 - 15 mm of the format A6 with average moisture content.
2. Take a number of moisture readings using the product types most likely to deliver realistic values and record those readings with the corresponding product type.
3. Next, record the actual moisture content reading obtained through performing a reference moisture content analysis in accordance with EN ISO 4684.
4. Compare the readings recorded for the different product types with those of the actual moisture content established using the reference measurement. From now on, always use the product type that most closely matches the reference measurement.
 - » Note: You can change the product type name to a name of your choice (e.g. to the name of the leather). For more information on doing so, please contact your dealer.

6.2 How moisture content is defined

The device measures and shows a material's moisture content. The moisture content readings it displays 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

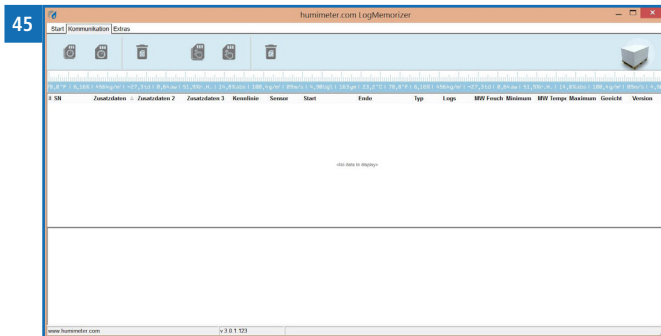
%WG: Moisture content (in accordance with EN ISO 4684)

7. 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.

7.1 Installing / opening the program

1. Insert the USB stick with the LogMemorizer program into the USB port on your computer.
2. Open the **setup** application.
3. Follow the installation instructions.
4. Open LogMemorizer.
 - » The screen will now display the LogMemorizer's interface (figure 45).
 - » 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.








7.2 Exporting measured values to a computer

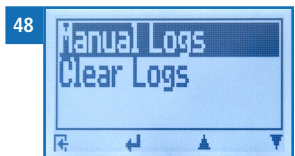
To do so: LogMemorizer must be installed. And you must have taken and saved one or several moisture readings.

Options: You can export moisture readings from the humimeter LM6 or initiate the export at your computer.

Exporting moisture readings from the humimeter LM6

Connect the humimeter LM6 to your computer using the supplied USB cable:

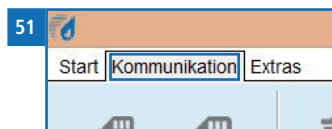
1. Insert the USB Mini B connector into the humimeter LM6 (figure 46).
2. Insert the USB connector into the computer.
3. Open LogMemorizer on your computer.
4. Switch on the humimeter LM6.
5. Press  twice or hold for 2 seconds.
6. Select **Send Logs** (figure 47). To do so, press  or  and confirm by pressing .
7. Select **Manual Logs** (figure 48). To do so, press  or  and confirm by pressing .
 - » The display will then show the message **Send** (figure 49).
 - » All of the measuring values saved on the humimeter LM6 will now be sent to your computer.



Initiating the data export at your computer

Connect the humimeter LM6 to your computer using the supplied USB cable:

1. Insert the USB Mini B connector into the humimeter LM6 (figure 50).
2. Insert the USB connector into the computer.
3. Open LogMemorizer on your computer.
4. Switch on the humimeter LM6.
5. Open the **Communication** tab in LogMemorizer (figure 51).







6. Select and click on one of the two buttons shown in figure 52.
- » **Import all manual logs** (for importing all manually saved readings) **or**
 - » **Import most recent manual log** (for importing the most recent manually saved logs).

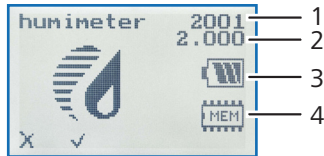


No	Name
1	Import all manual logs
2	Import most recent manual log



- » The measuring values saved on the humimeter LM6 will now be sent to your computer.

8. 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:



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.

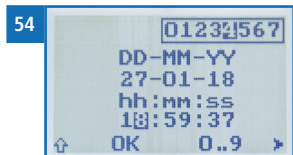
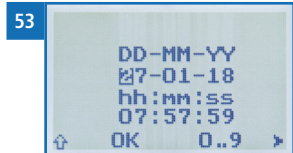
9. Configuring the device

9.1 Turning on Bluetooth













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

9.2 Adjust 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 .
 - » The display will now appear as shown in figure 53.
 - » 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  to quickly scroll to the required number and either press it for 3 seconds or press  to confirm the selected number (figure 54).
5. **Moving forward:**
 To move forward between **DD-MM-YY** and **hh:mm:ss**, press .
6. **Moving back:**
 Press  to switch to another input level. To move backward between **DD-MM-YY** and **hh:mm:ss**, press .
7. Confirm the date/time by pressing .
 - » The settings have been saved.
8. Press  to leave the **Options** menu.
9. Press  to leave the main menu.














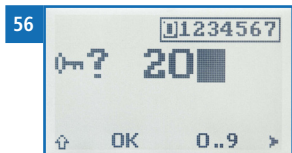
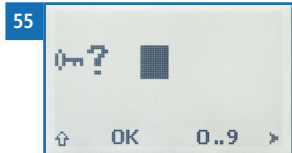
9.3 Selecting a language

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.



9.4 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 55.
- » 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 56).
5. **Moving back:**
Press  to switch to another input level.
To move back, press .
6. Confirm the four-digit password by pressing **OK**.- » The setting has been saved.



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













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

9.5 Deactivating options

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

9.6 Selecting °C/°F










To do so: All of the options must be activated (see "9.4 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.

9.7 Changing the Userlevel








9.7.1 Changing from the advanced to the simplified user

To do so: All of the options must be activated (see "9.4 Activating options")

1. Press  twice or hold for 2 seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Userlevel**. To do so, press  or  and confirm by pressing .
 - » The simplified user is now activated.
4. Press  to leave the **Options** menu.
5. Press  to leave the main menu.

9.7.2 Changing from the simplified user to the advanced user













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

1. Switch the device on (see "4.1 Switching the device on").
2. Press and hold  and  at the same time, directly after switching the device on.
 - » The device will automatically boot into the main menu.
3. Activate all of the options (see "9.4 Activating options").
4. Select **Userlevel**. To do so, press  or  and confirm by pressing .
 - » The advanced user is now activated.
5. Press  to leave the **Options** menu.
6. Press  to leave the main menu.

9.8 Reducing the device's power consumption













9.8.1 Configuring the display illumination time

To do so: All of the options must be activated (see "9.4 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.

9.8.2 Configuring automatic switch-off

To do so: All of the options must be activated (see "9.4 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). 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.

9.9 Configuring the material calibration function


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

9.10 Changing the password



To do so: All of the options must be activated (see "9.4 Activating options").

1. Press  twice or hold for 2 seconds.
2. Select **Options**. To do so, press  or  and confirm by pressing .
3. Select **Password**. To do so, press  or  and confirm by pressing 
 - » The display will show the current password.
4. Overwrite the current password. To do so, press and hold **0..9** to quickly scroll to the required number and either press it for 3 seconds or press  to confirm the selected number.

Moving back:









Press  to switch to another input level.

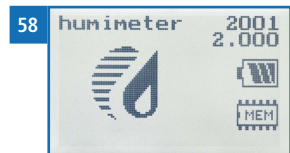
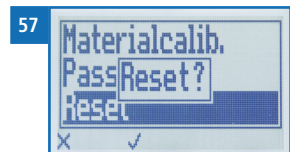
To move back, press .

5. Confirm the new four-digit password by pressing **OK**.
 - » The setting has been saved.
6. Press  to leave the **Options** menu.
7. Press  to leave the main menu.

9.11 Resetting the device to its factory settings

To do so: All of the options must be activated (see "9.4 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 57).
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 58).
 - » Resetting the device will not affect the saved measuring values.



10. Cleaning and maintenance

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

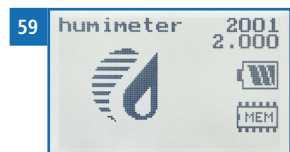
10.1 Changing batteries

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

If the battery's charge is very low, the battery symbol will be shown with an exclamation mark. In that case, the batteries must be changed immediately (figure 60).

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).

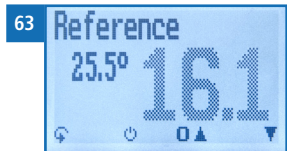


10.2 Checking the calibration

The device's calibration should be checked every four weeks. When doing so, use the test plate supplied with the device.











To do so: The device and test plate must have a temperature of between 20 °C and 26 °C. Place the case on top of a wooden table. (The case must not be placed on top of or above metal.)

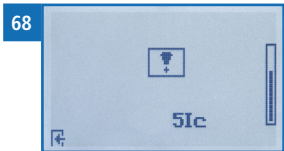
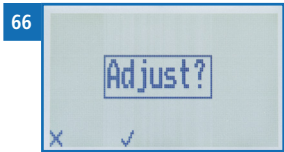
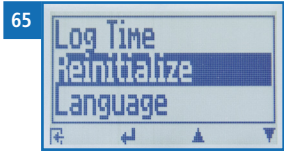
1. Switch on the device.
2. Use the arrow keys to select the product type "Reference" (see "6.1 Selecting the product type").
3. Take hold of the device with one hand and press it onto the top of the grey test plate with a pressure of approx. 4 kg (figure 62).
 - » The moisture content reading shown must be between 14.5 and 15.5 (the moisture reading will be displayed in black) (figure 61).
 - » If the moisture value is outside this range, in which case it will be displayed in grey (figure 63), the moisture meter has to be calibrated (see "10.3 Calibrating the moisture meter").
4. Lift the device up into the air with one hand (figure 64).
 - » 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).
 - » The moisture content reading shown must be between 3.0 and 3.6.
 - » If the moisture value is outside this range, the moisture meter has to be calibrated (see "10.3 Calibrating the moisture meter").



10.3 Calibrating the moisture meter

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

1. Switch on the device.
2. Press  twice or hold for 2 seconds.
3. Select **Options**. To do so, press  or  and confirm by pressing .
4. Select **Reinitialize** (figure 65). To do so, press  or  and confirm by pressing .
 - » The display will then show the message **Adjust?** (figure 66).
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 67).
6. Confirm by pressing .
 - » The display will now appear as shown in figure 68.
 - » 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 65.
7. Press  and then  to return to the product selection menu.
8. Then check the calibration (see "10.2 Checking the calibration").



10.4 Care instructions

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

10.5 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.

11. Faults

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

Fault	Cause	Remedy
Measuring error	The temperature of the material being measured is too low or high. I.e. the material's temperature is lower than 0 °C or higher than +40 °C.	The temperature of the material being measured has to be between 0 °C and +40 °C.
	Temperature discrepancy between device and material being measured	Let the temperature adjust to the material being measured (permitted difference of max. 3 °C).
	Wrong product type	Check whether you have selected the right product type (product) before taking a reading. See " 6.1 Selecting the product type ".
	Material stack is not high enough	The stack of leather being measured has to be at least 10 mm high.
	Incorrect contact pressure	Press the device against the leather with a pressure of approx. 4 kg.
	Metal or similar conductive materials in the device's measuring range	Remove all metal or other conductive materials from the device's measuring range.
	Foreign materials below the material being measured	Stack the material being measured to avoid influences from foreign materials.
	Mouldy or rain wet material	In this case the accuracy decreases significantly.
Incorrect calibration (the exclamation mark on the display does not go away)	There is an object/material behind the sensor plate (during calibration)	Hold the device up into the air - make sure your fingers do not touch the sensor plate

Fault	Cause	Remedy
	Rubber protection cover mounted in the wrong direction	Mount the rubber protection cover as shown in "The main unit" Page 2 and "Rear of the main unit" Page 3 .
	Polluted sensor surface	Clean the sensor surface (see "10.5 Cleaning the device").
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.

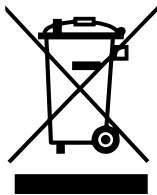
12. Storage and disposal

12.1 Storing the device

The device must be stored as follows:

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

12.2 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.

13. Device information

13.1 CE declaration of conformity

CE DECLARATION OF CONFORMITY

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

in accordance with the following Directives:

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

hereby declare that the following product types:

Product: **humimeter**
Types: **GE1 ; GF2 ; LM5 ; LM6 ; MS4 ; M20**

are in conformity with the applicable requirements of the following documents

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

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

13.2 Technical data

Display resolution	0.1 % moisture content, 0.5 °C/°F temperature
Measuring range	3 % to 65 % moisture content
Operating temperature	0 °C to +40 °C
Storage temperature	-20 °C to +60 °C
Temperature compensation	Automatic
Data memory	Up to 10,000 measuring values
Measuring depth	5 mm
Minimum material thickness	10 mm
Leather density range	525 kg/m ³ to 825 kg/m ³
Power supply	4 pcs. of 1.5 Volt AA Alkaline batteries
Current consumption	60 mA (incl. display illumination)
Menu languages	English, German, French, Italian, Spanish, Portuguese, Czech, Polish, Russian, International
Display	128 x 64 illuminated matrix display
Device dimensions	147 x 75 x 30 mm
Device weight	265 g
Dimensions of device + case	192 x 130 x 52 mm
Weight of device + case	660 g
Device IP rating	IP 40



Climate
Environment



Materials



Food



Buildings



Bioenergy



Paper/Board

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