



humimeter.com[®]

by Schaller Messtechnik

User manual



Portable leather moisture

humimeter LM6

Version 2.4_en

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2017

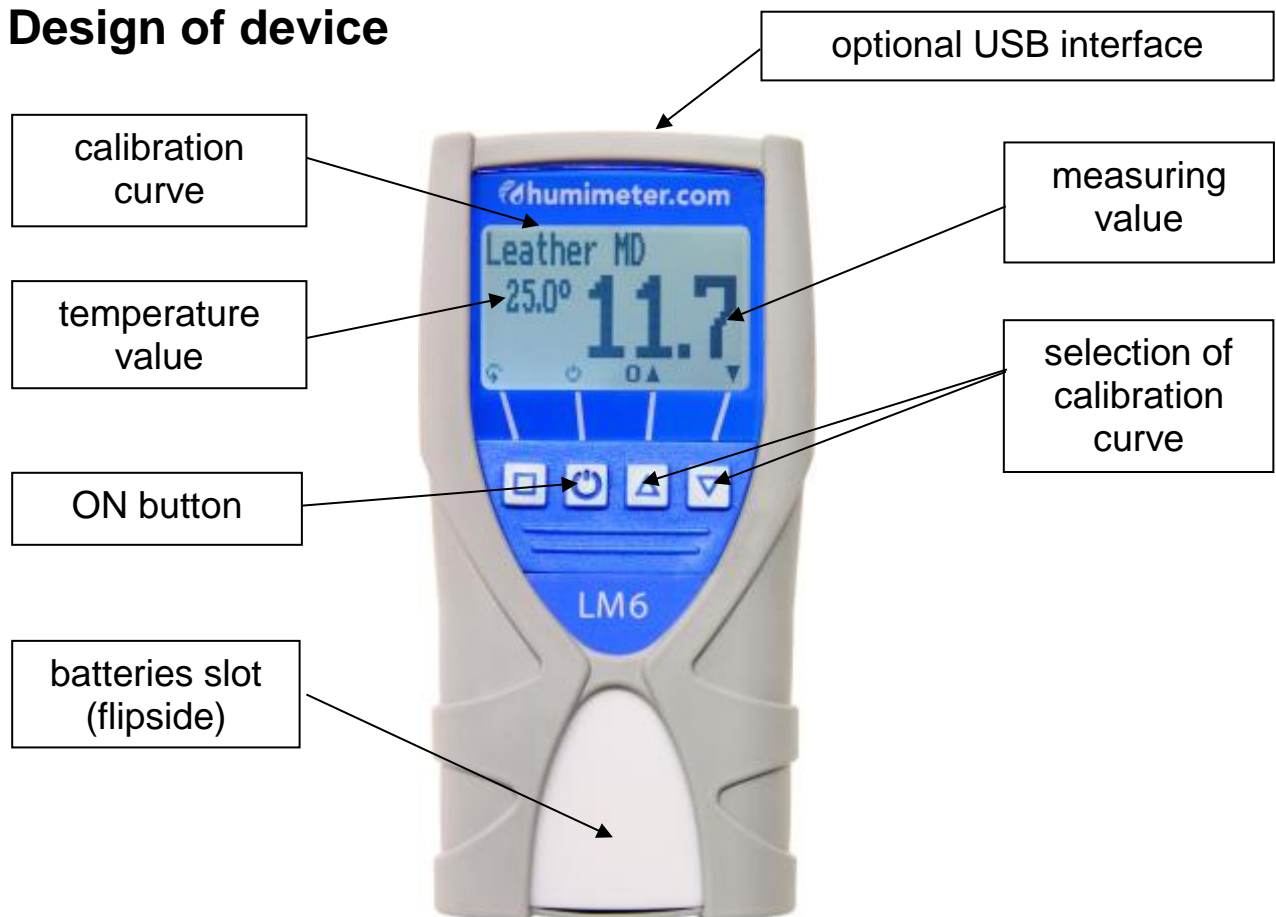
Start-up

Insert the four delivered 1.5V Alkaline AA batteries as follows:









- 1.) At first remove the rubber protection cover. For that, hold the rubber protection cover at the upper side and pull it over. If your moisture meter is provided with an optional USB port, you have to remove the protection cap before.
- 2.) Press with your finger onto the arrow of the battery cap und pull it back.
- 3.) Put the four 1.5V Alkaline AA batteries in the device. Make sure that the position of the battery poles is correct.
- 4.) Press down the batteries and close the cap.



Design of device



Measuring procedure

1. To ensure best possible measuring results, please make sure that the device has nearly the same temperature than the material to measure.
2. Switch on the device: Press the  key **for three seconds**.
3. Select the right calibration curve (density of leather) using the buttons  or . The name of the calibration curve is shown at the top of the display.
4. Hold the device centrally in one hand and press it onto the leather with a **compacting pressure of 4 kg**. For the measurement, the leather has to be piled to guarantee a **minimum thickness of 10mm**!
5. The display immediately shows the water content (11.7%) and temperature.
6. To save the results in the save menu press the  ( button). The storage was successful when the number in front of the symbol  increased. To reach the store menu please press the left () button.
7. To name the saved results press the  button and additional data like batch number can be added.



Calibration curves overview

Name	Explanation
Leather LD	Leather with a density of 550 kg/m ³
Leather CR	Leather with a density of 600 kg/m ³
Leather MD	Leather with a density of 650 kg/m ³
Leather FOC	Leather with a density of 700 kg/m ³
Leather HD	Leather with a density of 750 kg/m ³
Leather VHD	Leather with a density of 800 kg/m ³
Reference	<i>! only for checking the moisture meter !</i>

Selection of calibration curves

Due to different manufacturing methods and different densities of the leather there is no standardised allocation of calibration curves.

In the above list of calibration curves you can find information regarding density that enables a pre-selection of the calibration curve.

To ensure the best accuracy of your measurement, we recommend carrying out a comparison measurement by kiln-drying (EN ISO 4684) once:

- 1.) Take a leather pile of 10-15 mm of the format A6 with average moisture content.
- 2.) Measure the water content of this leather pile using all available calibration curves and write down the measuring results of the different calibration curves.
- 3.) Take the 2 top leather pieces of the pile and carry out a reference measurement according to EN ISO 4684.
- 4.) Compare the determined reference water content with the measuring results of all calibration curves. Use the calibration curve with the measuring result nearest to the reference water content.

Reference water content

The humimeter LM6 determines the water content, which means that it calculates the moisture referred to the total mass (according to EN ISO 4684):






$$\%WG = \frac{Mn - Mt}{Mn} \times 100$$

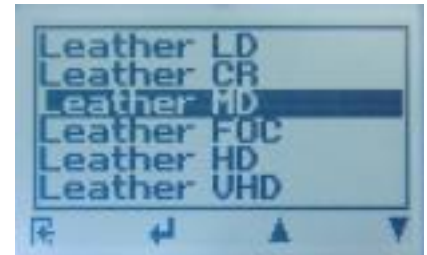
Mn: Mass with average moisture content

Mt: Mass of the dried sample

%WG: Calculated water content



List of calibration curves

Pressing the  or  key in the measuring window for at least three seconds, a list with all available sorts will appear. Select your sort by pressing  or  and confirm it with the  key. The measurement will continue automatically.



Activation of the “super user” function



2 times  - *Options* – Unlock

Enter the 4-digit password by using the  button (standard is the 4-digit serial number) and confirm by pressing the  button.



Changing the Userlevel


Changing from advanced user to single user:

Activate the “super user” functions according to the instructions above. Afterwards change to the menu and choose „Options“.

In the submenu please select „o Userlevel“ (2 times  - *Options* – o *Userlevel*). Confirm by pressing the  button. Now the single user is activated.

Changing from single user to advanced user:

Keep both the buttons  and  pressed directly after switching on the device. Your humimeter automatically starts the main menu. Activate the “super user” functions according to the instructions above.

Navigate to “Options – o Userlevel” and confirm by pressing the  button.

Checking the calibration

We recommend to check the calibration of the humimeter LM6 every 4 weeks, using the proof plate delivered with the device. For this check the device has to show a temperature between 20.0 and 26.0°C.


Switch on the instrument and select the calibration curve „**reference**“ using the arrow keys. Hold the humimeter LM6 in one hand and press it onto the grey proof plate (compacting pressure of 4.0kg).


The shown measuring value should range **between 14.5 and 15.5**. If the shown value is out of this range, you have to carry out a calibration (see instructions below)




Calibration

If the deviation revealed in the calibration check is out of tolerance, it can be corrected as follows:

Press the left key twice to reach the menu level. Navigate to the menu item „**Options**“ using the arrow keys. Confirm by pressing the  button.

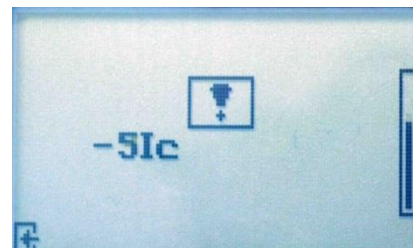
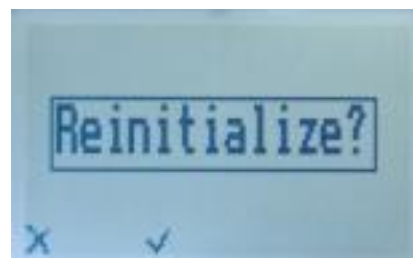
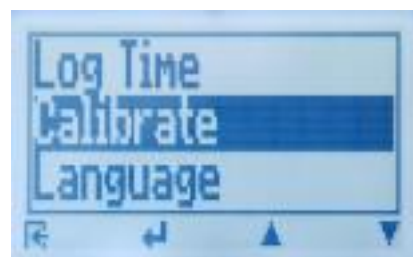
Select the menu item „**Calibrate**“ using the arrow keys and confirm by pressing the  key.

The request „**Reinitialize?**“ will appear at the display.

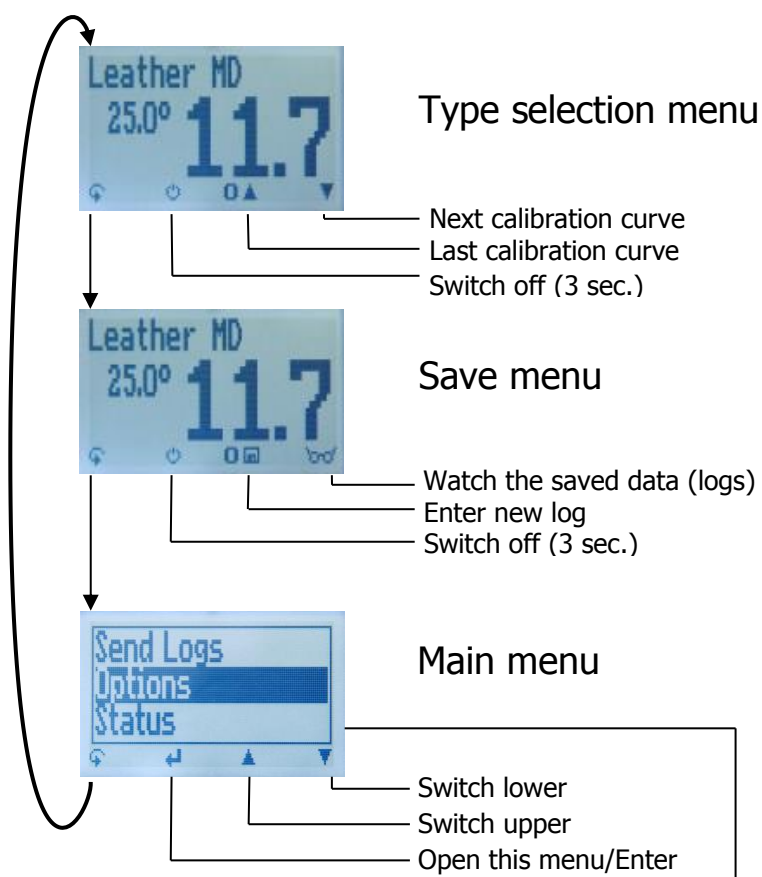
Hold the humimeter LM6 in one hand and make sure that nothing stands behind the measuring field (black plate). Now press the second button () with one finger.

The calibration procedure will take a few seconds. During that time, the instrument has to be held up in the air and the measuring field must NOT be touched.

The device is ready when the shown picture on the right disappears automatically.



Menu level overview



Overview main menu

<i>Edit Logs</i>	<i>Options</i>
Manual Logs	Bluetooth
Clear Logs	Date / Time
<i>Print Logs</i>	Log Time
Last Logs	Calibrate
All Logs	Language
Clear Logs	Unlock
<i>Send Logs</i>	°C / °F
Manual Logs	O Userlevel
Clear Logs	BL On Time
<i>Options</i>	Auto Off time
<i>Status</i>	Materialcalib.
	Password
	Reset

Keypad symbols

Measuring window:

	Rolling Menu
	Power ON / OFF
	Switch upper
	Switch lower
	Save
	Hold
	Watch saved data
	Enter supplier's data

Menu:









	Enter
	Switch upper
	Switch lower
	Exit
	Enter numbers
	Enter letters
	Next or right
	Left
	Yes
	No
	Shift
	OK

Changing battery

If the battery symbol appears in the measuring window or if a critical charge of battery is shown in the status (!), the batteries have to be changed IMMEDIATELY. Also remove the batteries if you do not use your humimeter device for a longer period. For eventual resulting damages we cannot provide any warranty.



Operating the instrument

- Switching on: Press  for three seconds.
- Setting date and time: Two times  -> Options -> Date / Time
- Saving: Press the  button to switch to the save menu level. Press the  button to save the shown measuring value. To name the saved results press the  button.
- Hold: Select the menu item „Options“, then select „Log time“. Activate the Hold function there and change to the measuring window again. When the  symbol is pressed, the shown measuring value is frozen on the display until another button is pressed.
- Display lighting: Press the  key briefly; the display lighting switches off automatically after 30 seconds. The lighting is activated automatically when pressing any button.
- Switching off: Press the  key in the measuring window for five seconds. The instrument switches off after releasing the key. The instrument switches off automatically after approx. four minutes.
- Measuring range: If the measuring value is blinking in grey, the measuring range has been exceeded. In this case the measuring accuracy is decreasing.



Transfer saved data to the PC

(only possible with optional USB interface!)




To send your saved logs to the PC, connect the humimeter device to your PC using the USB cable that was delivered with your device. Carefully loose the protection cap on your humimeter and plug in the USB mini B connector. The bigger connector has to be connected to a USB slot on your PC.

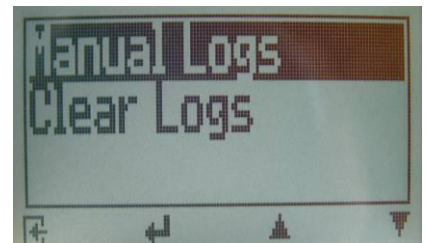
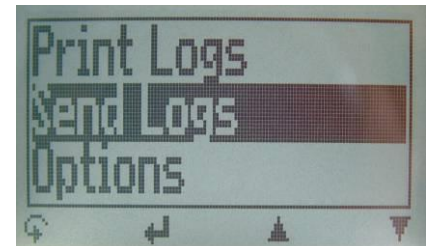
Start the LogMemorizer software on your PC and switch on your humimeter.

The data transfer can be started on your humimeter or on the software.



Starting the data transfer on the humimeter:

Press the  key until you reach the menu (see image on the right). Then choose „Send Logs“ and confirm by pressing the  key. Now choose „Manual Logs“ and confirm with  again. All saved logs will be sent to your PC.

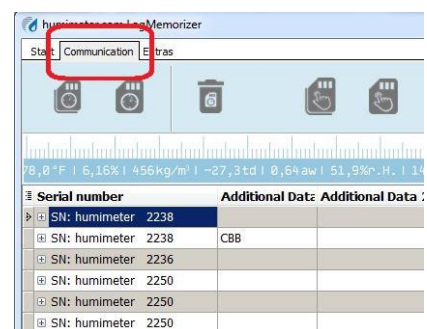


Starting the data transfer on your PC:

Press the button „communication“ in the LogMemorizer software. A menu with several options opens (see image below).

For transferring the data you can select „get last manual log“ (the last saved measuring series is transferred) or „get all manual logs“ (all saved logs are transferred).

If you click on one of these buttons, the transfer starts immediately.






For the basic adjustments of the software please press the F1 key and look into the help file.

Print saved data


(only possible with optional USB interface and Schaller thermo printer!)

To print your saved data, connect the device to the printer using the printer cable that was delivered with your device. Carefully loose the protection cap on the humimeter. At first plug in the side of the connector with the close plastic casing at the humimeter. Then switch on the device.

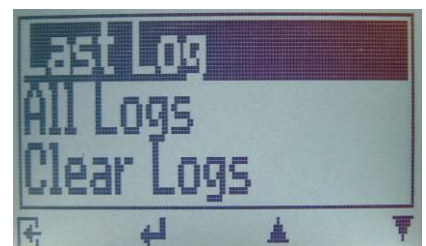
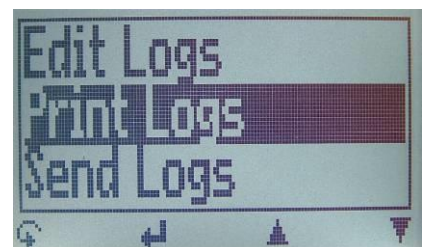
Not till then the other side of the cable has to be plugged in at the printer. Switch on the printer by pressing . Now the green LED is blinking. If it does not blink, please change the batteries and try again.

Press the  button at your humimeter until you reach the menu (see image on the right). Choose „Print Logs“ and confirm by pressing .

Now you can select if you want to print the last saved measuring series or all saved measuring series (logs).

Confirm by pressing  again. The selected logs are printed out now.

To save paper, please think of clearing the data storage regularly.



Technical Data

Measuring depth	5 mm
Minimum material thickness	10 mm
Range of leather density	525 to 825 kg/m ³
Resolution	0.1 % water content; 0.5 °C/°F temp.
Measuring range	3 to 65 % water content
Operating temperature	0 °C to 40 °C, 32 to 104 °F
Storage temperature	-20 °C to +60 °C, -4 to 140 °F without batteries
Measuring value storage	up to 10,000 measuring values
Temperature compensation	automatically
Menu languages	German, English, French, Italian, Spanish, Russian
Power supply	4 x 1.5 Volt AA Alkaline batteries
Current draw	60 mA (incl. display backlight)
Display	128 x 64 matrix display with backlight
Dimensions	147 x 75 x 30 mm
Weight (incl. batteries)	265 g
Protection class	IP 40
Scope of supply	humimeter LM6, 4 x 1.5Volt AA Alkaline batteries, rubber protection cover, wooden case with test plate, user manual
Options	USB interface incl. cable and PC software, portable printer (only with USB available), bluetooth modul (only with USB available)

Device maintenance instructions

To provide a long life of your device please do not expose it to strong mechanical loads or heat e.g. dropping or direct sunlight exposure. Clean your device using a dry cloth. Any kind of wet cleaning damages the device.

The instrument is not rainproof. Keep it in dry areas. When the device isn't used for a longer period (2 months) or when the batteries are empty, they should be removed to prevent a leakage of the battery acid.

Exemption from liability

For misreadings and wrong measurements and of this resulting damage we refuse any liability. This is a device for quick determination of moisture. The moisture depends on multiple conditions and multiple materials. Therefore we recommend a plausibility check of the measuring results. Each device includes a serial number and the guarantee stamp. If those are broken, no claims for guarantee can be made. In case of a faulty device, please contact Schaller GmbH (www.humimeter.com) or your dealer.

Common reasons for incorrect measurements

- ***Product temperature out of application range***

Material below 0°C resp. above +40°C may lead to wrong measurements.

- ***Inadequate thickness of the leather pile***

A single leather hide MUST NOT be measured. Pile the leather to ensure a thickness of at least 10 mm.

- ***Discrepancy in temperature between device and material***

Please ensure that the device and the material under test are being stored at the same temperature before measuring (+/- 3°C). A high temperature difference has a negative effect on the stability of the measurement results.

- ***Wrong calibration curve***

Double-check the selected calibration curve before measuring curve.

- ***Contact pressure is too low***

Ideal is a contact pressure of 4 kg.

- ***Interfering material***

To prevent that the measuring value is influenced by the bottom (table or similar), we recommend to pile the material to measure.

- ***Rain-wet and mouldy material***