Humimeter RM1

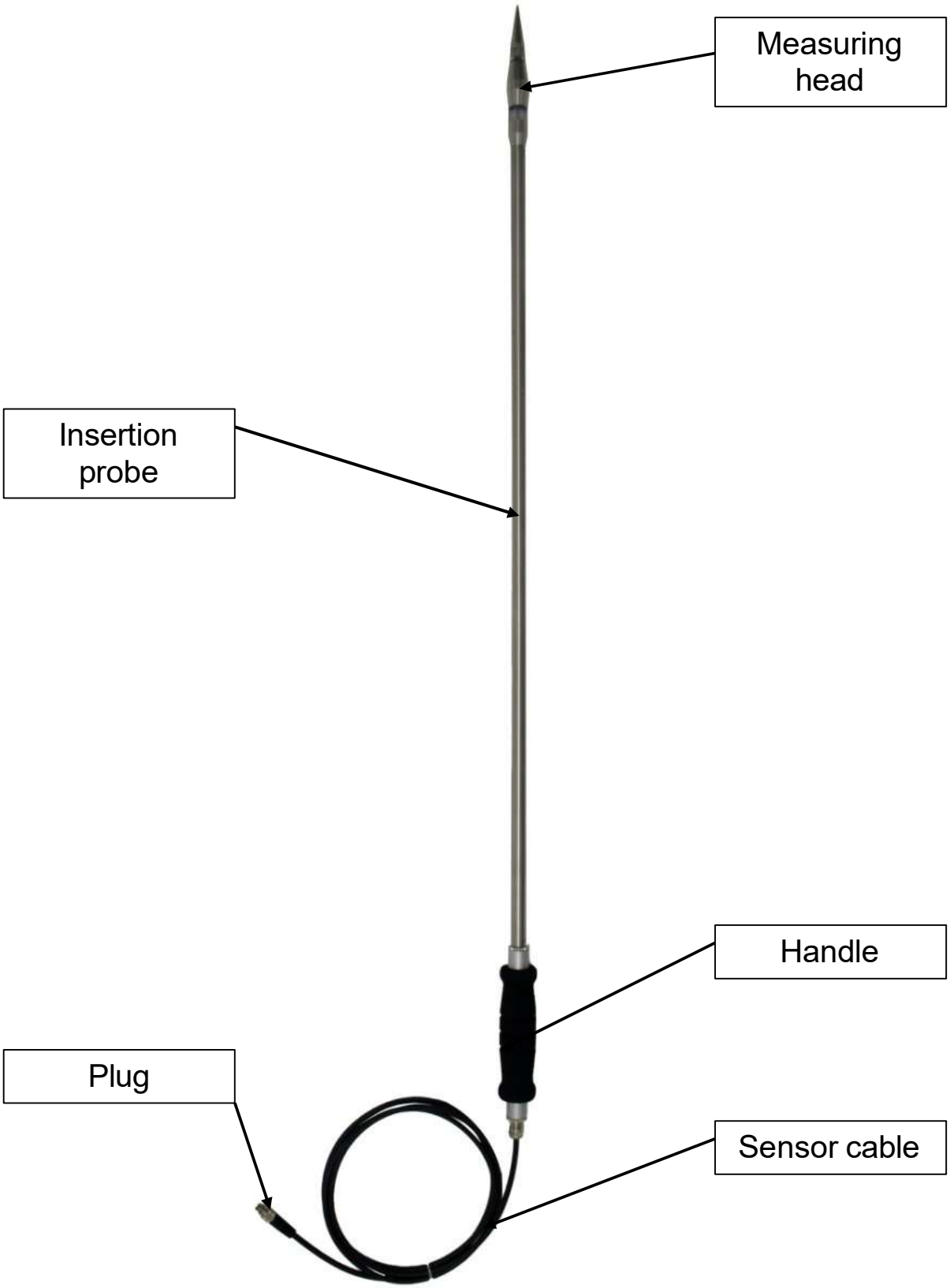
User Manual



Universal moisture meter for recycling-materials

Scigiene
1295 Morningside Avenue, Unit 16-18
Scarborough, ON M1B 4Z4 Canada
Phone: 416-261-4865 Fax: 416-261-7879
www.scigiene.com

Design RM1 recycling-material probe (HM-12518)



Measuring procedure RM1 recycling-material probe

1. For a correct measurement please ensure that the device has the same temperature than the recycling material (+/-3°C). For that reason, let your humimeter RM1 adjust to the surrounding temperature of the material for at least half an hour before measuring.



2. Switch on the device: Press the ▲ **key for three seconds.**

3. Plug the probe of your RM1 recycling-material probe **straight into the recycling material.** It is not allowed to load the measuring head incorrect or drop it down!



4. Plug in the sensor cable into the socket of the RM1. Take care of the correct position and fix it with the knurled nut.



5. Change the calibration curve: Press one time the ↻ key and then the ▲ or ▼ key. The name of the calibration curve can be seen at the head of the display.

6. **Now the display shows the water content.** Left hand the temperature is displayed.



7. 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 (↻) until the 💾 appears.



8. To name the saved results press the ✎ button.

9. Remove the RM1 probe straight with caution and clean the measuring head.

Risk of injury by measuring head!
Keep away from children!

Calibration curves RM1 recycling-material probe

Calibration curves	Declaration	Measuring range
Wood chips	Standard wood chips	10 - 50 %
Waste wood	Wood chips out of waste wood	10 - 50 %
Sawdust	Sawdust	14 - 50 %
Recycling mater.	Standard recycling material	5 - 50 %
Recycling spez 1	Recycling material with a high plastic content	10 - 50 %
Recycling spez 2	Recycling material with a very high plastic content	10 - 50 %
Recycling spez 3	Recycling material with a high cellulose content	10 - 50 %
Recycling spez 4	Recycling material with a very high cellulose content	10 - 50 %
Digit 2	For **special product**	
Empty 1	*Customer calibration made by* ***Schaller GmbH***	
Empty 2	*Customer calibration made by* ***Schaller GmbH***	
Test block	! Only for testing the RM1 with the test block !	

Recycling spez 1 and Recycling spez 2 include the possibility of a thin water film on the plastic pieces, if the plastic content is really high. Recycling spez 3 and Recycling spez 4 include the moisture expansion by a high content of cellulose.

Compression of recycling material

The humimeter RM1 is calibrated for normally compressed recycling material. If the measured recycling material is compressed to a much lesser or greater extent, this will cause measuring imprecision.

Selection of calibration curve

Due to the different compositions of recycling material there is no standardised allocation of calibration curves. The different calibration curves refer to the different contents of plastic and cellulose in the material.

To ensure the best accuracy of your measurement you have to carry out a comparison measurement using your online moisture measuring system or by kiln-drying (according to DIN 287) once.

1.) Measure the water content of your recycling material using all calibration curves that offer realistic results and write down the measuring results of the different calibration curves.

2.) Now please note the effective water content determined by your online measurement system or carry out a reference measurement according to EN ISO 287.

3.) Compare the determined reference water content with the measuring results of the different calibration curves. Use the calibration curve with the measuring result nearest to the reference water content.

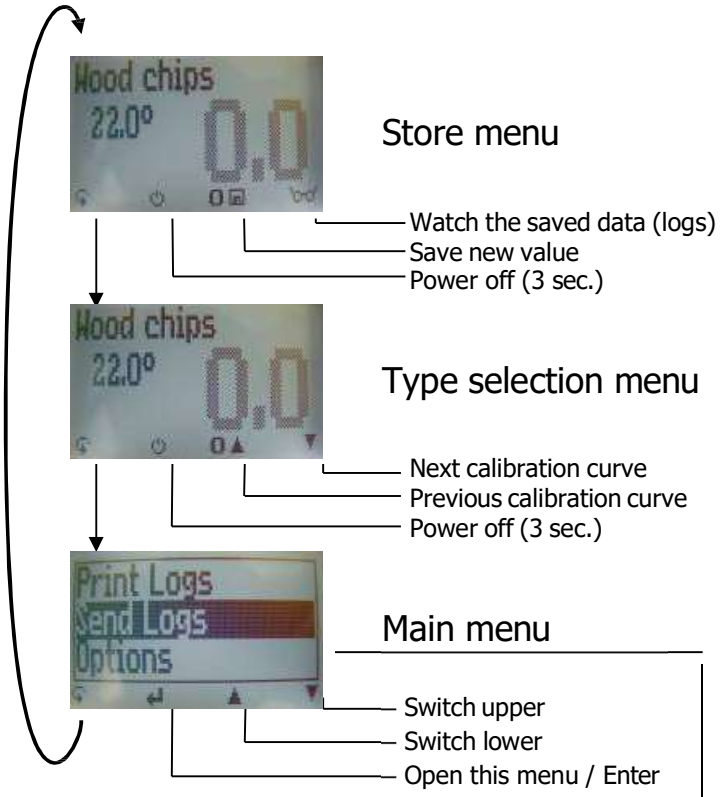
Determination of the reference water content

The humimeter RM1 determines the water content, which means that it calculates the moisture referred to the total mass (EN ISO 287):

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

Mn: Mass of the sample before drying
Mt: Mass of the dried sample
%WG: Calculated water content

Menu level overview



Overview main menu

Edit Logs	*Options*
Manual Logs	Date / Time
Clear Logs	Log Time
Print Logs	Language
Last Log	Unlock
All Logs	°C / °F
Clear Logs	o User level
Send Logs	BL On Time
Manual Logs	Auto Off Time
Clear Logs	Materialcalib.
Options	Password
Status	Reset

Keypad symbols

Measuring window:

- Rolling Menu
- Power ON / OFF
- Switch upper
- Switch lower
- Save
- Hold
- Watch the saved data
- Suppliers' data can be added
- Rotate display

Menu:

- Enter
- Switch upper
- Switch lower
- Exit
- 0..9 Enter numbers
- A..Z Enter letters
- Next or right
- Left
- Yes
- No
- Shift
- OK

Changing batteries

Please find enclosed the manual for changing of batteries:



1.) At first remove the rubber protective housing. For that, hold the rubber housing at the upper side and pull it over. If your RM1 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.

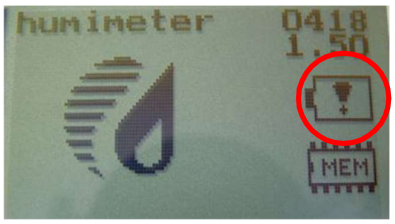
3.) Remove the empty batteries.



4.) Put four new batteries in the device. Make sure that the position of the battery poles is correct.

5.) Press down the batteries and close the cap.

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





Running the instrument

Switch on: Press the key for three seconds

Set the clock: Press three times the key -> Options -> Date/Time

Save measuring value: Save the measuring value by pressing the button below the symbol. The storage was successful when the number in front of the symbol increased. To name the saved results press the button.

Hold measuring value: At first activate the function in the menu Options -> Datalog time by choosing “Hold”. Then press the left key until appears. Press the key. The measuring value remains on the display until another button is pressed.

Display lighting: Press the key; Backlight will turn off automatically after 30 seconds. Backlight will be activated by pressing any key.

Power off: Press the key for five seconds; the device will be switched off when you leave the key. The device also switches off automatically when no key is pressed for four minutes.

Measuring range limit: If the measuring value is blinking, the valid measuring range is exceeded. In this case the accuracy will be decreasing.



List of calibration curves

Pressing the or key in the measuring for at least three seconds and 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

Two 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 User level

Changing from advanced user to single user:

Make sure that you have activated the “super user” functions according to the instructions above. Afterwards change to the menu and choose „Options“.

In the submenu please select „o User level“ (two times ↶ - *Options* – o *User level)*

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 the “super user” functions according to the instructions above.

Navigate to “*Options* – o *User level”* and confirm by pressing the ↵ button.

Device maintenance instructions

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

It is not allowed to load the measuring head incorrect (stress, bending), otherwise it can be broken. Plug and remove the insertion probe of your RM1 straight into the recycling material.

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.

Transfer saved data to the PC

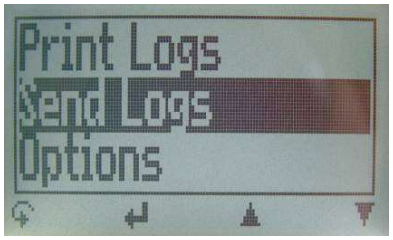
(Only possible with humimeter USB interface module)





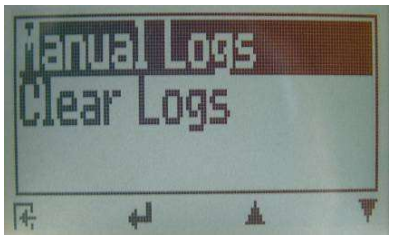
To send your saved logs to the PC, connect the humimeter device to your PC using the USB cable that was delivered with your device. Carefully loose the protection cap on your humimeter and plug in the USB mini B connector. The bigger connector has to be connected to a USB slot on your PC.
Start the LogMemorizer software on your PC and switch on your humimeter RM1.

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



<u>Starting the data transfer on the humimeter:</u>

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.

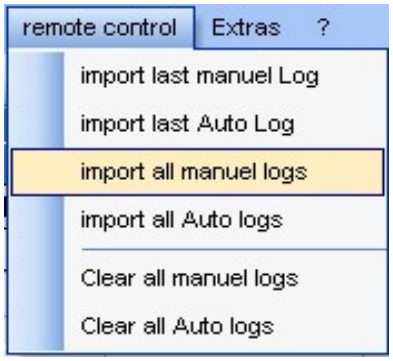


<u>Starting the data transfer on your PC:</u>

Press the button „remote control“ in the LogMemorizer software. A drop-down menu with several options opens (see image below).



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

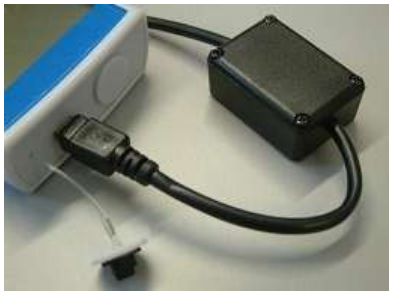


If you click on one of these menu items, the transfer starts immediately.

For the basic adjustments of the software please look through the instructions on the LogMemorizer CD.

Print saved data

(Only possible with humimeter USB interface module in combination with Schaller thermo printer)



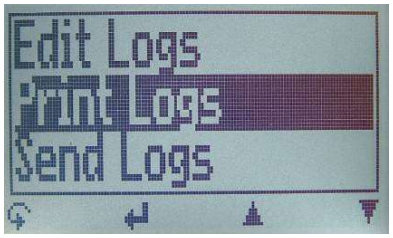
To print your saved data, connect the device to the printer using the printer cable that was delivered with your device. Carefully loose the protection cap on the humimeter RM1. At first plug in the side of the connector with the close plastic casing at the humimeter RM1. Then switch on the device.



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 RM1 (Art. Nr. 12109)

Operation temperature	0°C to +50°C
Storage temperature	-20°C to +60°C
Temperature compensation	Automatically
Data logger	approximately 10.000 values
Menu languages	German, English, French, Italian, Spanish, Russian
Power supply	4 pcs. 1.5 Volt AA Alkaline batteries (900 measurements)
Auto Switch off	After approx. four minutes
Current consumption	60mA (with light)
Display	128 x 64 matrix display, lighted
Dimension	150 x 75 x 30 mm
Weight	270 g (with batteries)
Protection class	IP 40
Scope of supply	humimeter RM1, 4 x 1,5Volt AA Alkaline batteries, rubber protective housing
Optional	wooden case for RM1, test block, humimeter USB-data interface module, portable thermo-printer

Exemption from liability

For miss-readings 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 our dealer.

Technical data RM1 recycling-material probe (art. no. 12518)

Resolution of display	0.5% water content 0.5°C temperature
Measuring range	10% to 50% water content
Operation temperature	0°C to +40°C
Temperature measuring range	-10°C to +80°C
Dimension	1150 x 35 x 35 mm
Weight	710 g
Protection class	IP 40



Most common reasons for miss readings with RM1 recycling-material probe

- ***Product temperature out of application range***
  Material below 0°C resp. above +40°C (32 to 104 °F) may cause faulty measurements.

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

- ***Wrong calibration curve***
  Before you measure your sample, double check the correct selection of the calibration curve.

- ***Frozen or mouldy material***
  If you measure such products, the accuracy will decrease.

- ***Water film at the measuring head***
  After measuring wet material a water film can arise on the sensor head. This could lead to a too high result in the following measurement. After measuring wet material clean both black plastic parts accurately with a dry cloth.

It is not allowed to load the measuring head incorrect (stress, bending), otherwise it can be broken. Plug and remove the insertion probe of your RM1 recycling-material probe straight into the recycling material.



Do not move the RM1 probe crosswise to the insertion direction after plugging in.



Do not drop the measuring head or use it for any ulterior purposes.

A broken measuring head is no case of warranty!

Scigiene
1295 Morningside Avenue, Unit 16-18
Scarborough, ON M1B 4Z4 Canada
Phone: 416-261-4865 Fax: 416-261-7879
www.scigiene.com