User Manual

Air Humidity and Temperature Moisture Meter RH2



Scigiene

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User manual

Measurement



To switch on the instrument, press the ⏻ key for three seconds.

After showing the logo, the measuring window opens and the current temperature and moisture value is displayed.



In the type selection menu the calibration curves can be changed by pressing ▲ or ▼. The calibration curves saved in the device can be found in the following list.

Calibration curves

calibration curve	description	unit	measuring range
rel. humidity	rel. humidity of air	%rh	0 to 100%
dew point	dew point	℃ resp. ℉	55 to +60℃ resp. -67 to 140℉
abs. humidity	abs. humidity of air	g/m³	0 to 130 g/m³
EMC wood	equilibrium moisture content of wood	%EMC	2 to 30% (wood moisture)
EMC POM	equilibrium moisture content of POM	%EMC	0 to 2%
Empty	equilibrium moisture content of wood	%rh	

Description of definitions

Relative air humidity: indicates the relation between the current water vapour pressure and the maximal possible water vapour pressure (called saturation vapour pressure)

The relative humidity shows the degree the air is saturated with water vapour. For example:

50% relative humidity indicates that at the current temperature and the current pressure the air is saturated with water vapour for half of its value, 100 % relative humidity means that the air is totally saturated. When the air has more than 100 % of relative humidity, the excessive moisture would condense or form fog.

Absolute humidity: shows the contained amount of water in gramme per cubic metre of air. The absolute humidity is a direct degree for the amount of water vapour contained in a certain air volume. It shows how much moisture can maximally condense or how much water has to be evaporated to receive a certain desired air humidity.

Dew point temperature: The dew point indicates the temperature that the not completely saturated air has to reach in order to be completely saturated with water vapour. If the room with the current relative humidity is cooled down to the dew point temperature, the water vapour begins to condense.

EMC wood: shows the equilibrium moisture content of wood (for timber stored under these conditions) in % moisture content of wood and the temperature in the selected unit (℃ or ℉).

EMC POM: shows the equilibrium moisture content of POM granulate (for granulate stored under these conditions) in % moisture content and the temperature in the selected unit (℃ or ℉).

Empty calibration curves: There are another 10 empty calibration curves stored in the measurement device. These can be used for special fruits or variety calibration.

"Scigiene Corporation" can request customized calibration curves of your product.

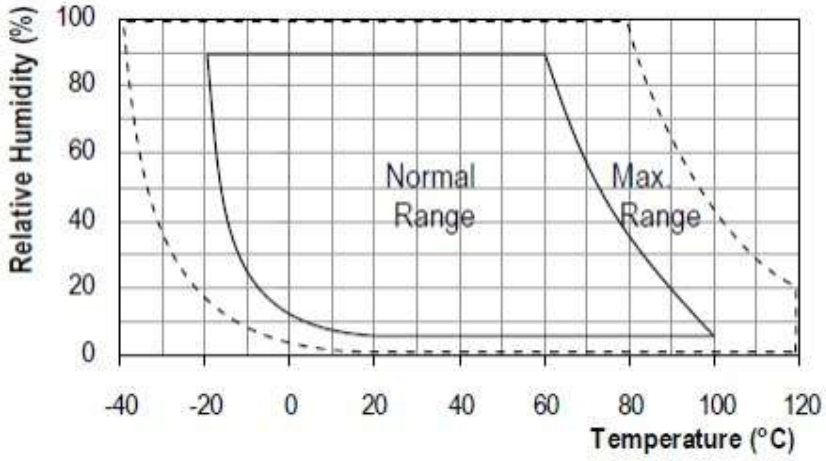
List of calibration curves

Pressing the ▲ or ▼ key in the measuring window for at least 3 seconds, a list with all available calibration curves appears. Select your sort by pressing ▲ or ▼ and confirm by pressing the ↵ key.



Application range

Within the normal application range (normal range) the accuracy of the device is as indicated. A long-term application beyond the normal application range (max. range), particularly at an air humidity of more than 80%, can lead to higher measuring errors (+3% after 60 hours). Back in the normal application range, the sensor will return to the indicated accuracy automatically.



Other instrument functions – overview

Manual saving of single measuring values in a measurement series

Display of measuring series and measuring values directly on the instrument

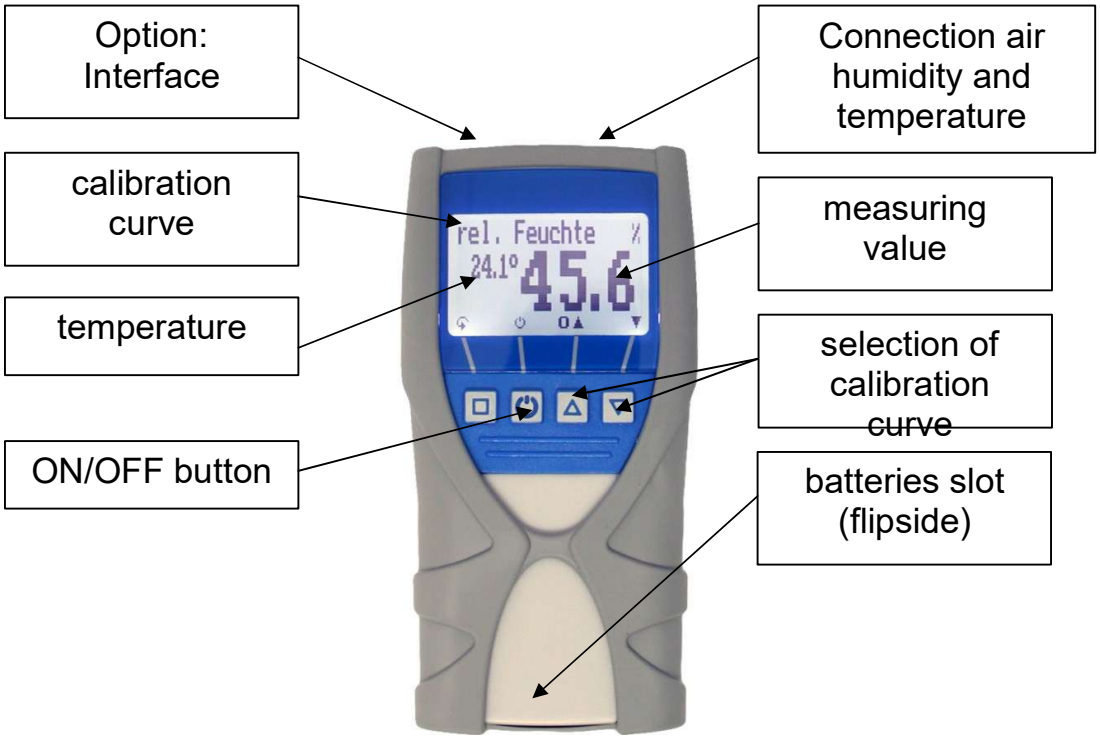
Printing the saved measuring series (only with PC interface and printer)

Transfer and saving of measuring series on a PC (only with PC interface)

Automatic single-point adjustment with 50% humidity standard

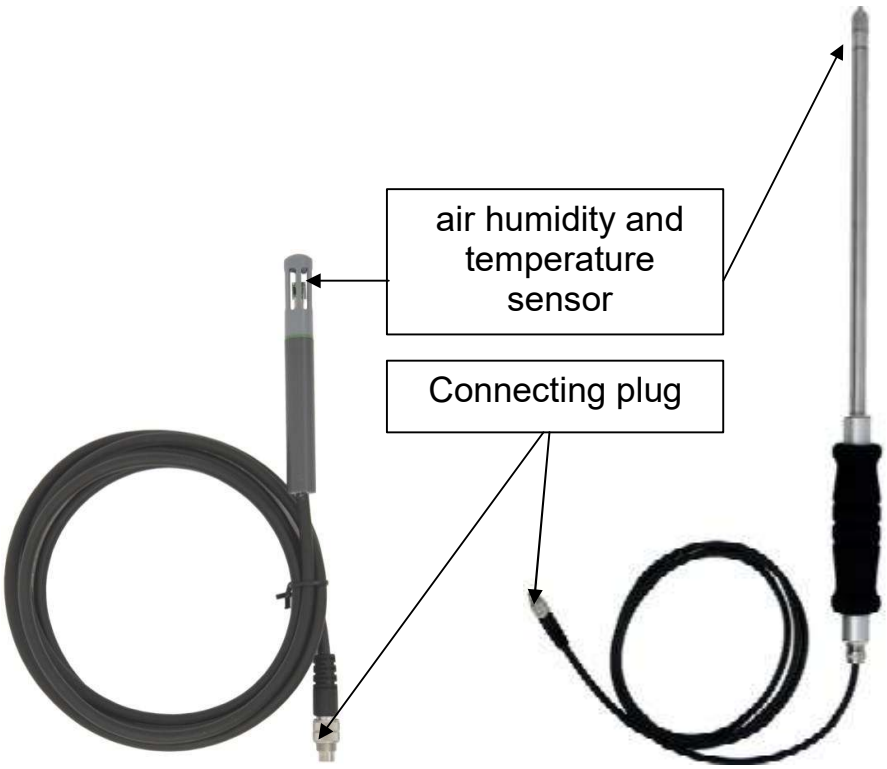
Selection of menu language (DE, EN, FR, IT, ES, RU) Display of temperature in Celsius or Fahrenheit

Design of the device

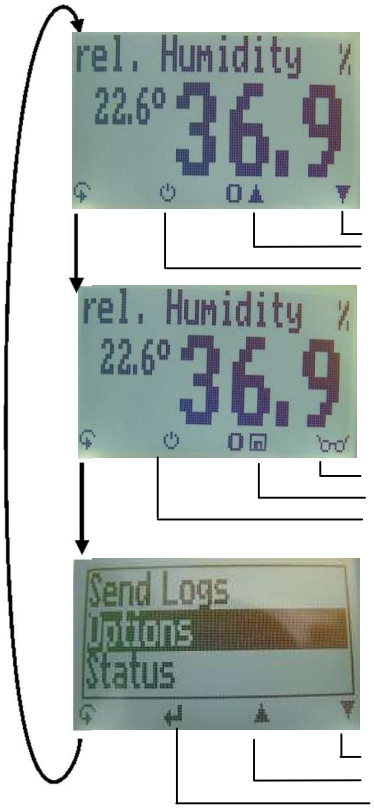


Moisture and temperature sensor

LF-TB 120



Menu level overview



Edit Logs	*Options*
Manual Logs	Date/Time
Auto Logs	Datalog Time
Clear Logs	Language
Print Logs	Unlock
Last Logs	℃/℉
All Logs	User level
Clear Logs	BL On Time
Send Logs	Auto Off Time
Manual Logs	Calibrate
Auto Logs	Material calib.
Clear Logs	Online Send
	Online Print
	Adjust
	Password
	Reset
	Status

Keypad symbols

Measuring window:

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

Menu:

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

Operating the instrument

Switching on: Press for three seconds.

Changing the calibration curve: ▲ or ▼.

Setting date and time: two times - *Options – date / time*

Set date and time using the button 0..9, according to the format indicated (JJ.MM.TT). After entering the year, press the button for entering the month and again for entering the day. For changing from date to time also press the button . After finishing, press OK for saving the entered data.

Datalog: Select your desired interval in the menu *Options – Log Time* using the arrow keys, and confirm by pressing **OK**. Now in the store menu appears the symbol . By pressing this symbol, you can activate the AutoLog.

Info: In order to save battery power, the device switches off automatically at a log interval of 1 minute or longer, and activates again for saving the logs!

For completing the AutoLog, switch on the device (if necessary) and press the button. If you want to add supplier´s data please press the button. Supplier´s data can also be entered on the PC subsequently.

Switching on the display lighting: Press the key briefly; the display lighting switches off automatically after approx. 20 seconds. Pressing any key activates the display lighting again, and the period for switching off again is prolonged to 4 minutes (The display lighting time can be modified in menu level *Options – BL On Time).*

Switching off: Press the key for five seconds. The instrument switches off after releasing the key. The instrument switches off automatically after approx. four minutes. (The turn-off time can be modified in menu level O*ptions – Auto Off Time).*

Transfer saved data to the PC

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 connect to a USB slot on your PC.





Start the LogMemorizer software on your PC and switch on your humimeter RH2.

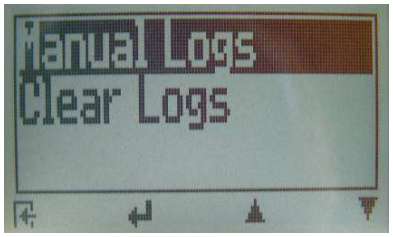
The data transfer can be started on your humimeter or on the software:

You can download the software by scanning the QR Code:

Starting 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“ or „Auto Logs“ and confirm with ↵ again. All saved logs will be transferred to your PC.





Starting data transfer on the PC:

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

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 RH2. At first plug in the side of the connector with the close plastic casing at the humimeter RH2. 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.

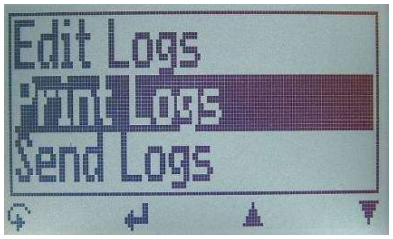


Press the ↶ button at your humimeter until you reach the menu (see image on the right). Choose „Print Logs“ and confirm by pressing ↵.



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.





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

Single-point adjustment with 50% humidity standard

For the adjustment the appropriate calibration equipment as well as calibration ampoules resp. humidity standards of 50 % rh are required.

Proceedings

Preparation

To ensure as good as possible inspection results it is essential that the measuring device, the calibration equipment and the calibration ampoules have approximately the same temperature.

This temperature has to be between 20℃ and 26℃.

The best way to ensure the same temperature of the different components is to store all components together in a room with only small temperature fluctuations minimum overnight – better for 24 hours.

Components of calibration equipment

In this image you can see the components of the calibration equipment and a calibration ampoule with humidity standard.



Assembly of calibration equipment

1. Push in the sensor completely into the upper part.
2. Lie in the textile pad in the bottom part of the calibration device, and pour the humidity standard carefully at the textile pad.



3. Take the upper part with the RH2 and attach these carefully at the bottom part of the calibration device.
4. Pick up the RH2 together with the calibration device **STRAIGHT** and **DON´T TURN IT AROUND**. Screw it up like shown in the picture.



Then put the RH2 with the calibration device down on a table carefully and proceed as follows:

Conditioning the sensor

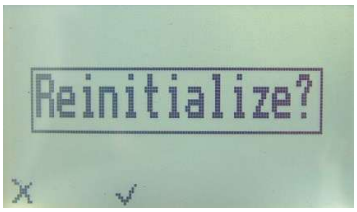
To achieve best results, let the sensor adjust for two hours.

The temperature has to be between 20℃ and 26℃.

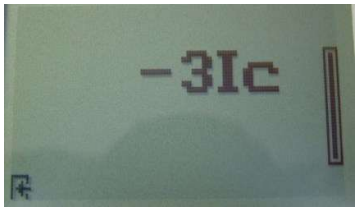
If the shown measuring value differs more than the factory tolerance (1.5% rh), we recommend to carry out a recalibration as follows:

Offset adjustment

1. Leave the measuring device in the calibration equipment, and switch it on.
2. Press the Rolling Menu button ↻ until you reach the main menu.
3. Select the menu item *Options* by pressing the button ▼ and confirm by pressing **OK**.
4. Navigate to **Setting** using the ▼ button and confirm by pressing **OK** again.
5. Enter the superuser password using the buttons **0..9** resp. **A..Z** and confirm by pressing ↵.
    - The superuser password after consignment is the serial number of the device, shown on the display after switching on the device or in menu item **Status**.
6. A query if a setting is desired appears. Confirm by pressing ✓.



7. Wait until the bar has risen completely. The device adjusts by itself and automatically jumps back to the measuring window. The adjustment is completed now.



8. Check the result before you remove the device from the calibration equipment. Depending on the temperature the display should show a water content of about 50% now.

In case of a mistake during the setting, you can reset to the factory calibration as follows:

Reset to factory calibration

1. Press the button two times to reach the menu point *Options.*
2. Select the menu item *Reset* using the ▼ button and confirm by pressing OK.
3. Enter the superuser password using the buttons 0..9 resp. A..Z and confirm by pressing ↵.
   - The query **reset?** appears on the display.
4. Press the button ✓ for resetting the device to the factory calibration.
   - The software reloads the factory calibration data and reboots the device. This will need about 15 to 20 seconds.
5. Pressing the button X you can exit without any changes.

Conditioning of the sensor

The conditioning of the sensor (time until the device shows the actual measuring value) depends on several parameters. The parameter responsible for the highest measuring error is a temperature discrepancy between the sensors resp. the whole measuring instrument and the material to measure resp. the air.

Care instructions

Do not drop the instrument or expose it to excessive temperatures. The instrument is not waterproof. Do not immerse the sensor in liquid.

The intervals for checking the instrument depend on your operational demands and the required level of accuracy. In general, the drift of the sensor according to the degree of use (constant humidity or use within the whole moisture measuring range) is beneath 0.5% per year. You can check instruments of the **humimeter RHx** series by yourself using the calibration equipment (see optional accessories). For a fee, Scigiene Corporation can also carry out a calibration at their factory. On demand you will also receive a calibration certificate

Notes

Changing the batteries

First of all, remove the rubber protection cover. For that, hold the rubber protection cover at the upper side and pull it over. If your humimeter is provided with an optional USB port, you have to remove the protection cap before. Press with your finger onto the arrow of the battery cap and pull it back.
Remove the empty batteries. Put four new **1.5 Volt AA Alkaline batteries** in the device. Make sure that the position of the battery poles is correct. Press down the batteries and close the cap.

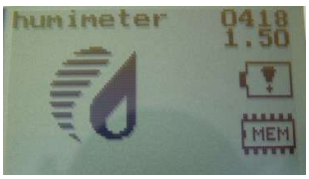




Exemption from liability

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.

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.





In case of a faulty device, please contact Scigiene Corporation at www.scigiene.com.

Technical data

Measurement: measuring range / resolution / accuracy

Humidity and Temperature Sensor (HM-12032):

rel. humidity:	0 to 100%RH	/ 0.1%	
calibration	10 to 90%		/±2.0%rh (at 25℃)
temperature ℃:	-20 to +85℃	/ 0.1℃	/ ±0.3℃ (at 25℃)
temperature ℉:	-4 to 185℉	/ 0.3℉	/ ±0.5℉ (at 77℉)

LF-TB 120 (HM-12004):

rel. humidity:	0 to 100%RH	/ 0.1%	
calibration	10 to 90%		/±1.5%rh (at 25℃)
temperature ℃:	-20 to +120℃	/ 0.1℃	/ ±0.3℃ (at 25℃)
temperature ℉:	4-to 248℉	/ 0.3℉	/ ±0.5℉ (at 77℉)
dew point ℃:	-55 to +60℃	/ 0.1℃	
dew point ℉:	-67 to 140℉	/ 0.3℉	

Operating temperature range:	-10℃ to 60℃ / 14 to 140℉
Storage temperature:	-20℃ to 60℃ / -4 to 140℉
Temperature compensation:	automatically
Data storage:	approx. 10.000 measuring values
Menu languages:	English, German, French, Italian, Spanish, Russian
Power supply:	4 pcs. 1.5Volt AA Alkaline batteries (for approx. 1800 measurements)
Auto Off time:	after approx. 4 minutes
Power consumption:	30 mA (with display lighting)
Display:	128 x 64 matrix display, with LED backlighting
Dimensions housing:	145 x 63 x 24mm
Weight:	approx. 210g (incl. batteries)
Protection class:	IP 40
Scope of supply:	wooden case, rubber protection cover, 4 pcs. 1.5Volt AA Alkaline batteries, user manual

!IMPORTANT! Please read!

Common reasons for incorrect measurements

- **Sunlight or other sources of heat or cold that doesn´t correspond to the surrounding temperature**
- **Dripping or sprayed water**
- **Irreversible damage of the sensor due to aggressive gases**
- **Danger of condensation because of changing temperature**
- **Polluted moisture sensor**
- **Foreign objects on the sensor**
- **Measuring errors due to too short conditioning**

To demonstrate the importance of temperature adjustment, the table below shows measuring errors due to a temperature difference of only 1℃ / 1.8℉ between the measuring instrument and the substance to be measured at different ambient temperatures.

	10℃ (50℉)	20℃ (68℉)	30℃ (86℉)
10%r.h.	±0,7%	±0,6%	±0,6%
50%r.h.	±3,5%	±3,2%	±3,0%
90%r.h.	±6,3%	±5,7%	±5,4%

At room temperature (20℃/68℉) and an assumed moisture value of 50%r.h. a deviation of 1℃ / 1.8℉ between the measuring sensor and the substance to be measured results in a measuring error of 3.2%r.h. A deviation of 3℃ / 5.4℉ would result in a measuring error of over 10%.

Further examples can be found in the Mollier h-x diagram.

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