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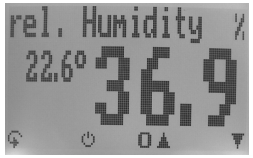
1.0 POSITIONING THE INSTRUMENT

Insert the sword-sensor into the stack for only approx. 10 cm, and push it a few more centimetres into the stack every 10 seconds. Let your RH6 adequately adjust to the material (at least 5 minutes) before you start to measure, particularly when the material pile was stored at a different temperature than the device. When removing the sword-shaped sensor please ensure that there is no up or down movement, because this could deform the sensor. For heavy stacks and rolls please use the optionally available sword sensor holder and the tool for removing the sword sensor holder.

1.1 Measurement

To switch on the instrument, press the ⏻ key for 3 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.

2.0 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)
aH Kraftliner %	absolute moisture Kraftliner paper	%	5 to 15%
aH Testliner %	absolute moisture Testliner paper	%	3 to 12,2%

NOTES

NOTES

3.0 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 ℉).

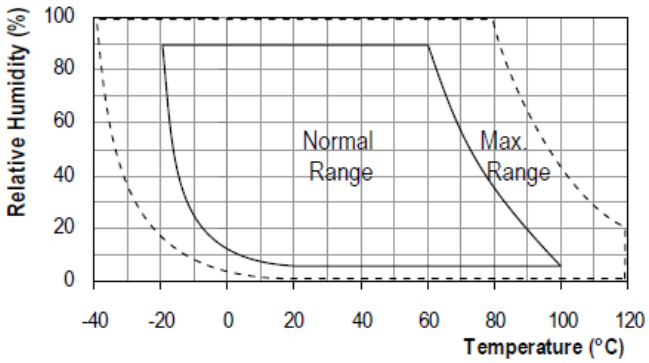
aH kraftliner: shows the equilibrium moisture content of kraftiner paper (for paper stored under these conditions) in % moisture content and the temperature in the selected unit (℃ or ℉).

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

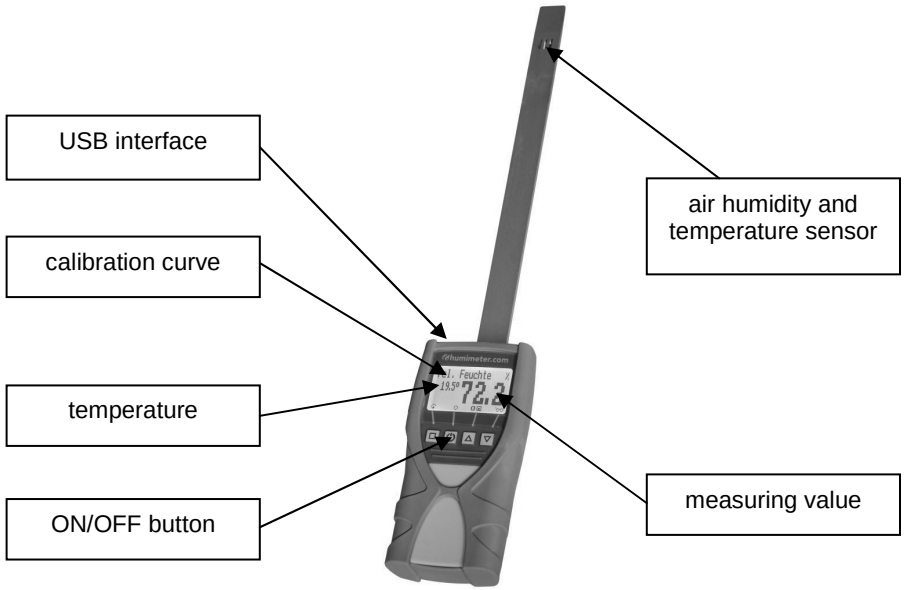
empty curves: can be used to calibrate some special products

4.0 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.



5.0 DESIGN OF THE DEVICE



20.0 WARRANTY

Electromatic Equipment Co., Inc. (Electromatic) warrants to the original purchaser that this product is of merchantable quality and confirms in kind and quality with the descriptions and specifications thereof. Product failure or malfunction arising out of any defect in workmanship or material in the product existing at the time of delivery thereof which manifests itself within one year from the sale of such product, shall be remedied by repair or replacement of such product, at Electromatic's option, except where unauthorized repair, disassembly, tampering, abuse or misapplication has taken place, as determined by Electromatic. All returns for warranty or non-warranty repairs and/or replacement must be authorized by Electromatic, in advance, with all repacking and shipping expenses to the address below to be borne by the purchaser.

THE FOREGOING WARRANTY'S IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE OR APPLICATION. ELECTROMATIC SHALL NOT BE RESPONSIBLE NOR LIABLE FOR ANY CONSEQUENTIAL DAMAGE, OF ANY KIND OR NATURE, RESULTING FROM THE USE OF SUPPLIED EQUIPMENT, WHETHER SUCH DAMAGE OCCURS OR IS DISCOVERED BEFORE, UPON OR AFTER REPLACEMENT OR REPAIR, AND WHETHER OR NOT SUCH DAMAGE IS CAUSED BY MANUFACTURER'S OR SUPPLIER'S NEGLIGENCE WITHIN ONE YEAR FROM INVOICE DATE.

Some State jurisdictions or States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. The duration of any implied warranty, including, without limitation, fitness for any particular purpose and merchantability with respect to this product, is limited to the duration of the foregoing warranty. Some states do not allow limitations on how long an implied warranty lasts but, not withstanding, this warranty, in the absence of such limitations, shall extend for one year from the date of invoice.

Electromatic Equipment Co., Inc.
600 Oakland Ave. Cedarhurst, NY 11516 - USA
Tel: 1-800-645-7330 / Tel: 516-295-4300 / Fax: 516-295-4399

19.0 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

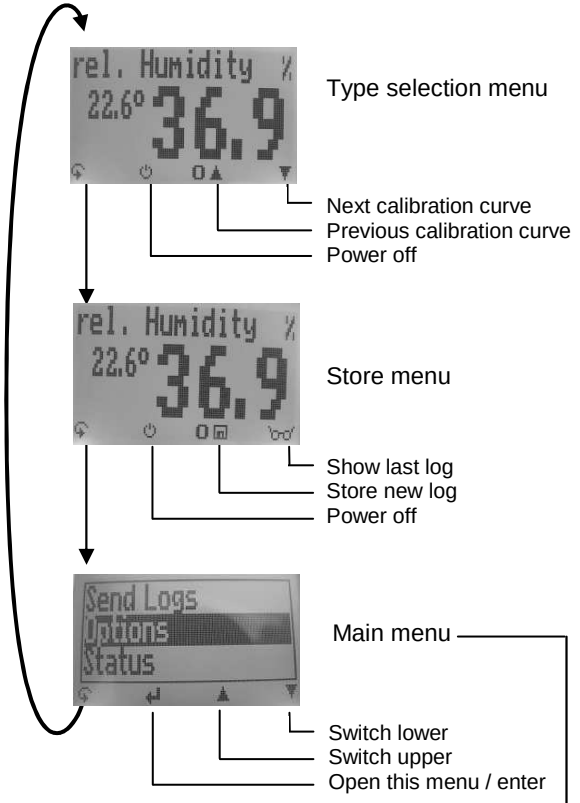
To demonstrate the importance of temperature adjustment, the table below shows measuring errors due to a temperature difference of only 1℃ / 1.8℉ between the measuring instrument and the substance to be measured at different ambient temperatures.

	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 assumed paper moisture value of 50% r.h. a deviation of 1℃ / 1.8℉ between the measuring sens or 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.

6.0 MENU LEVEL OVERVIEW



Keypad symbols

Measuring window:
- Rolling Menu
- Power ON / OFF
- Switch upper
- Switch lower
- Save
- Hold
- Autolog
- Watch saved data
- Enter suppliers data

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

Edit Logs
- Manual Logs
- Auto Logs
- Clear Logs

Print Logs
- Last Logs
- All Logs
- Clear Logs

Send Logs
- Manual Logs
- Auto Logs
- Clear Logs

Options
- Date / Time
- Datalog Time
- Language
- Unlock
- ℃ / ℉
- User level
- BL On Time
- Auto Off Time
- Materialcalib.
- Adjust
- Password
- Reset

Status

7.0 OPERATING THE INSTRUMENT

Switching on: Press ⏻ for 3 seconds.

Changing the calibration curve: ▲ or ▼.

Setting the time: 2 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 four minutes (The display lighting time can be modified in menu level *Options – BL On Time)*.

Switching off: Press the ⏻ key for 5 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).*

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 at 50% humidity standard
- Selection of menu language (DE, EN, FR, IT, ES, RU)
- Display of temperature in Celsius or Fahrenheit

18.0 TECHNICAL DATA

Measurement	Meas. Range	/ Resolution	/ Accuracy
rel. humidity	0 to 100% rh	/ 0,1%	
calibration	10 to 90%		/ ±1,5% rh (at 25℃)
temperature ℃	-10 to +60℃	/ 0,1℃	/ ±0,3℃ (at 25℃)
temperature ℉	14 to 140℉	/ 0,3℉	/ ±0,5℉ (at 77℉)
dew point ℃	-55 to +60℃	/ 0,1℃	
dew point ℉	-67 to 140℉	/ 0,3℉	

Operating temp. range	-10℃ to 60℃ / 14 to 140℉
Storage temp	-20℃ to 60℃ / -4 to 140℉
Temperature compensation	Automatic
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 29mm
Dimensions sword sensor	295 x 20 x 4mm
Weight	approx. 260g (incl. batteries)
Protection class	IP 40
Scope of supply	wooden case, rubber protection cover, 4 pcs. 1.5 Volt AA Alkaline batteries, user manual

16.0 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 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 Checkline Europe.

17.0 OPTIONAL ACCESSORIES:

- **PC interface** for printing saved data on mobile printer and/or for transfer of data to a PC incl. **LogMemorizer**
- **LogMemorizer measuring data recording and analysing software for Windows® PCs:** databank based recording of data, direct analysis of measuring data in the programme, various export functions
- **Mobile printer** – thermo printer, runs by battery
- **Sword sensor holder** for protection of sword sensor in heavy paper piles
- **Tool for removing sword sensor holder** from heavy paper piles
- **Calibration equipment and calibration ampoules** for checking instruments of the RHx series by the customer itself

8.0 TRANSFER SAVED DATA TO THE PC

To send your saved logs to the PC, connect the RH6 device to your PC using the USB cable that was delivered with your device. Carefully loose the protection cap on your RH6 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 RH6.

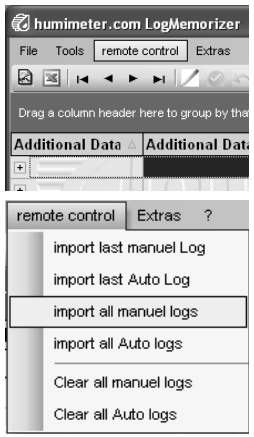
The data transfer can be started on your RH6 or on the software:

<u>Starting the data transfer on the RH6:</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 the PC:</u>

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



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.

9.0 PRINT SAVED DATA

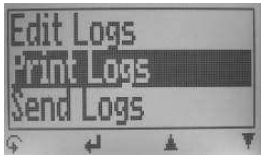
To print your saved data, connect the device to the printer using the printer cable that was delivered with your device. Carefully loose the protection cap on the RH6. At first plug in the side of the connector with the close plastic casing at the RH6. Then switch on the device.

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 RH6 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.

14.0 CARE INSTRUCTIONS

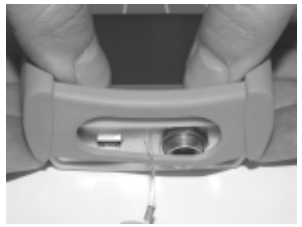
Do not drop the instrument or expose it to excessive temperatures. The instrument is not waterproof. Do not immerse the sensor in liquid.

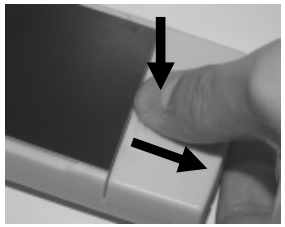
The intervals for checking the instrument depend on your operational demands and the required level of accuracy. In general the drift of the sensor according to the degree of use (constant humidity or use within the whole moisture measuring range) is beneath 0.5 % per year. You can check RH6 instrument by yourself using the calibration equipment (see optional accessories). For a fee, Checkline Europe can also carry out a calibration at their factory. On demand you will also receive a calibration certificate.

15.0 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 RH6 is provided with an 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.





12.0 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.

13.0 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. In order to fasten the conditioning, the following proceedings are possible:

Spaced insertion of the sword sensor

- o Insert the sword-sensor into the stack for only approx. 10 cm, and push it a few more centimetres into the stack every 10 seconds.
- ▪ In case of a high temperature difference repeat this action – if necessary several times!
- o If you use the sword sensor holder, please ensure that both the sword sensor and the sword sensor holder are adjusted to the surrounding temperature of the material.
- ▪ In this case insert the sword sensor holder at frequent intervals and leave the sword sensor in the sword sensor holder for an appropriate period.

10.0 SINGLE-POINT ADJUSTMENT WITH 50% HUMIDITY STANDARD

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

10.1 Proceedings

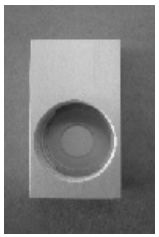
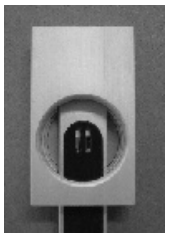
Preparation
To ensure as good as possible inspection results it is essential that the measuring device, the calibration equipment and the calibration ampoules have approximately the same temperature. **This temperature has to be between 20°C and 26°C.**

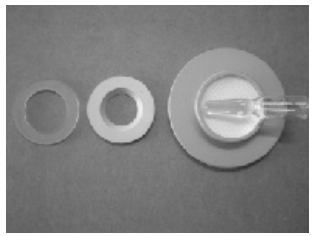
The best way to ensure the same temperature of the different components is to store all components together in a room with only small temperature fluctuations minimum over night – better for 24 hours.

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

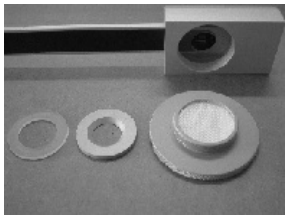
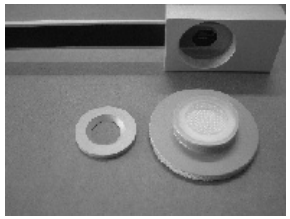
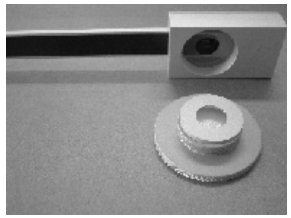
10.2 Assembly of calibration equipment

1. Put in the first gasket ring in the upper part of the calibration device.
2. Push in the sword sensor in the upper part as shown in the picture.
3. Now put the second gasket ring into the upper part.
4. Lay in the textile pad in the bottom part of the calibration device, and pour the humidity standard carefully at the textile pad.

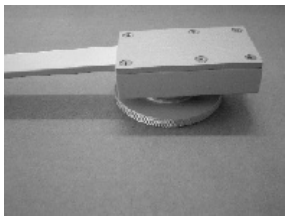
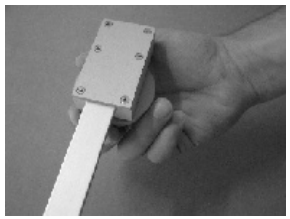





5. Now put the third gasket ring into the bottom part.
6. Fit the metal ring on the third gasket.
7. Take the upper part with the RH6 and attach these carefully at the bottom part of the calibration device.

8. Pick up the RH6 together with the calibration device STRAIGHT and DON´T TURN IT AROUND. Screw it up like shown in the picture.

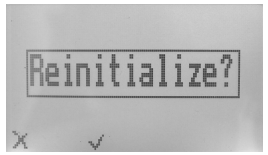

Then put the RH6 with the calibration device down on a table carefully and proceed as follows:

Conditioning the sensor
To achieve best results, let the sensor adjust for two hours. **The temperature has to be between 20℃ and 26℃.**

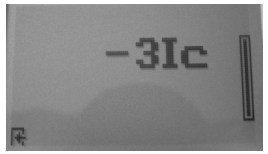
If the shown measuring value differs more than the factory tolerance (1.5% r.h.), we recommend to carry out a recalibration as follows.

11.0 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 humidity around 50% now.



If you made a mistake during the setting, you can reset to the factory calibration as follows:

CHECK·LINE®
BY ELECTROMATIC

RH6

PAPER MOISTURE METER

CHECK·LINE®
INSTRUMENTS

ELECTROMATIC
EQUIPMENT CO., INC.
600 Oakland Ave., Cedarhurst, NY 11516–U.S.A.
TEL: 516-295-4300 • FAX: 516-295-4399

OPERATING INSTRUCTIONS