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## 1.0 GENERAL INFORMATION

In the device different calibration curves are stored. If the material to be measured does not conform to any of the stored curves, a new calibration curve can be created by the customer himself. In the following pages you will find instructions for creating your own calibration curve.

Depending on the material that you want to test it is up to you to select the appropriate drying method and moisture determination.




In principle it the setting of your own curve is done assigning a moisture percentage to a reference voltage that is measured by the gauge.



## 2.0 UNLOCK THE HUMIMETER

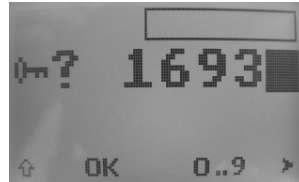
In this menu, the hidden functions (grey letters) of the device can temporarily be unlocked until the next turn-off of the device. You just have to enter the super-user password.



To use this protected features, you have to enter the four digit password. Provided by the factory, this password is the serial number. The four digit serial number is shown in the menu item "status" or when the device is booting.

### How to enter the menu point „unlock“:

Press the "Rolling menu" button  as long as you enter the main menu. Navigate to the menu item „options“ and press the  button. Navigate to the menu item „unlock“ and press the  button again.

Press the button **0.9** as long as you have reached the right number and affirm this by pressing the  button. The character will be affirmed and the cursor jumps to the next position. Enter the four numbers of your password and confirm it by pressing the  button.



Press the button  and  successively to abort the password check. The button **0.9** also contains a fast forward function, starting when you press the button **0.9** for a few seconds. The character is affirmed after a few seconds automatically.

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## 9.0 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.

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

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## 6.0 MEASURING RANGE

In the menu item „Valid“ the measuring range of the calibration curve is defined. A valid measuring value is shown in black in the measuring window. An invalid measuring value is shown in grey and is blinking when the water content is out of range.

This feature can be explained best by an example. Wanted is a valid range from 16.0% up to 45.0% water content. Enter the following values in the shown order:

Idx(1)	Idx(2)	Idx(3)	Idx(4)	Idx(5)	Idx(6)
90.0%	45.1%	45.0%	16.0%	15.9%	0.0%
3	3	0	0	1	1

The measuring range should be defined within the area of the measured samples!

### Explanation:

- between 0.0% und 15.9% the value is shown in grey → invalid
- between 16.0% und 45.0% the value is shown in black → valid
- between 45.1% und 90.0% the value is grey and blinks → invalid

## 7.0 COMPLETION

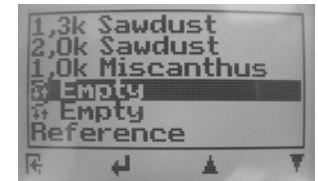
If all values of the created calibration curve are stored in the humimeter device, you can use the new calibration curve for measuring!

## 8.0 TECHNICAL SUPPORT

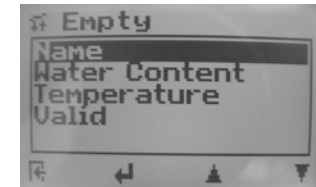
Checkline Europe BV  
 Dennenweg 225B  
 7545 WE Enschede  
 Tel: +31-53-4356060  
 Fax: +31-53-4333570

## 3.0 CHANGE THE CALIBRATION CURVE NAME

If the device is unlocked, the menu point „Materialcalib.“ is available. A list with all calibration curves is shown on the display! Choose an “empty” calibration curve, or a curve you do not need.



Choose the menu item “Name” by pressing the buttons  $\nabla$  or  $\blacktriangledown$  and confirm by pressing the  $\leftarrow$  button. Your calibration curve name can contain up to ten characters. Enter the name using the buttons 0..9 or A..Z. The name should consist of the filling quantity and the variety (e.g. 2,50k material). If you press the button for a few seconds, the fast forward modus will be activated. If the cursor is in the right position and shows the right letter or character, press the  $\leftarrow$  button. Confirm the whole name by pressing the  $\leftarrow$  button.



## 4.0 TAKE VALUES

Select the menu item “water content” by pressing the buttons  $\blacktriangle$  or  $\blacktriangledown$  and confirm by pressing  $\leftarrow$ .

There are 8 index points that make up the curve. **It is IMPORTANT that you do not change the first (1) and last index point (8)!**

These values set the measuring range of the gauge within a reasonable limit. Another important point is that the index points start at the highest moisture value and run down to the lowest moisture content value.

For example:

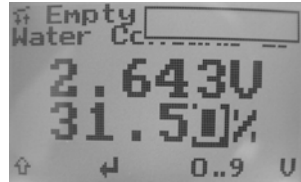
Index point [Idx]	Voltage Value [V]	Moisture Value [%]
1	7.990	99.0
2	4.810	99.0
3	4.800	70.0
4	3.500	47.0
5	2.050	22.0
6	0.452	0.0
7	0.450	0.0
8	0.000	0.0

In order for you to create a curve you need to take several measurements of material with different moisture contents.

You need to log the voltage and assign a moisture value to this voltage.

It is possible to do this live while taking a measurement by placing the gauge on the material.

Then you have to press the right button (V). By pressing this button you transfer the voltage value of the sample. If this was successful, you will jump automatically to the next line. The actual calculated water content has to be typed in by hand.



To save the values you have to leave the menu item by pressing the shift button (⇧) first, and afterwards the symbol with the opened door (⌂).

In case you have no moisture content value at the point you take this measurement, it is best you create a list and enter the curve at a later point in time.

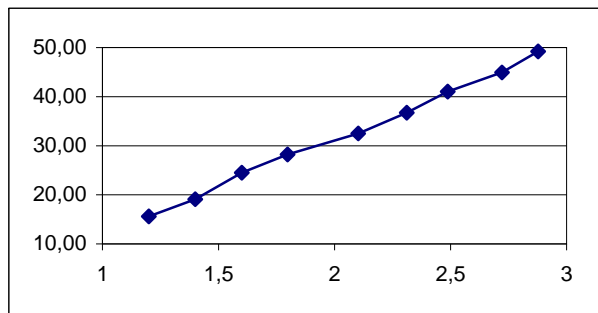
Both values can be set manually.

There is a maximum of 16 index points available. However, as many calibration points as possible should be affiliated.

With the final calibration curve you can measure up to the driest calibration point you determinate. For example: lowest measured point: 22.0% => material over 22.0% water content can be measured!

We recommend that the captured voltage and water contents are inscribed in a graphic. Not linear points can be corrected. The values should be (as shown in the example below) almost on a straight line.

V	%
2,878	49,20
2,722	44,90
2,488	41,00
2,311	36,70
2,102	32,50
1,798	28,20
1,600	24,50
1,400	19,10
1,200	15,60



To save the values you have to leave the menu item by pressing the shift button (⇧) first, and afterwards the symbol with the opened door (⌂).

To be sure that all values are correct and in the right order, please double check the whole values in the calibration curve!

## 5.0 TEMPERATURE COMPENSATION

For the temperature compensation a factor is specified by the manufacturer.

*In almost all products the entered values will be correct. You do not have to change this value in general!*

If you however still need to determine some new values, please advance as follows: To achieve a very precise factor take several probes of your sample with exactly the same water content and pack them into air proof plastic bags (or something else). Now you have to align the samples to different temperatures. One sample at 20°C (68°F), a further at 5°C (41°F) and a third at 40°C (104°F). After the aligning you have to measure the three samples again. **IMPORTANT:** Let your humimeter also align to the different temperatures.

Using the following calculation you can determinate the temperature compensation coefficient. e.g.: You measure the sample with the humimeter at 20°C and get a value of 30% water content, and the sample at 5°C you measure just 28%.

So you can calculate:

$$TK = \frac{30}{28} = 1.07$$

So the factor is: 1.07 at 5°C

# PM3/PM4 Calibration Manual

