Adjusting a Calibration in a Moisture Meter

Introduction

Visilab's moisture meters **AK30, AK40, MK30R and AK50** and derivatives of them plus all old meter models too, may sometimes need a quick recalibration when a new paper grade or other material is under measurement. We may already know that we have a similar calibration already in the library and want just to make a fine tuning to match the moisture offset error. If a completely new calibration is required, we recommend using the Composer Expert System for generating a new calibration table. Thereafter this fine tuning feature available in the Advanced software can be used. At this time we expect an existing calibration to be available. If not, refer to Composer guides in the manuals.

The working principle is to calibrate the meter with a sample whose moisture is known and the meter is slightly offset but the calibration is otherwise correct. The Automatic Fine Tuning will correct the difference. You need to know the moisture in percent. If there is a very noisy web under the meter having large signal variations, this may require more care. Static paper samples work best, of course.

The Way to do it

In the following we list simple steps to do it correctly. Refer to Figure 1. on the following page.

1. Start the **Advanced** software as usual. Go to the Library page and **Download** the current library in from the meter to the PC and save it to a file. Then, rename the library in the meter: **Check**, rename and **SET**. This is to protect you in case of errors. Do **NOT** upload anything at this time.

2. Go to Meter Status page and press **CHECK**. The meter should not indicate being in **LowPower** state. If it is, turn the meter running in **Normal** mode by switching the indicating button and pressing **UPDATE**. Check also the filter if this is model D/DE, in the **Filter** box. The filter should be **SLOW** or **SPECIAL**, modify and update if needed. In model A meters, the filter setting is not essential. Turn OFF also the **Run-time filter** at the rightmost top corner.

3. Go to Memory Banks page. Press **Check**. If this is model D or DE, the meter should **not** be in BURST mode. Also the Autotimer should be set to **off**. Modify and **Update** if necessary. If the memory banks contain any important data, **Download** the data for archiving.

4. Select the candidate calibration table by pressing the buttons **UP/DOWN/FAST** in the **CALIBRATION IN USE** index tool at the bottom bar.

5. Go to Calibration page and press **Get material** (=calibration). You should see a proper calibration curve with a few points and a name for the table. The **Cal. mode** should be **MULTI**. If it is not, then the table is not suitable for this and it is only a signal scaling: Locate another calibration table and repeat this step. Press the **Check** button of the **Manual adjust** box a few times. The the small display under it will show the resulting moisture level. Do not press the other keys at this time.

6. You know the correct moisture of the sample **Mcorr** and the meter's moisture is the reading you just saw. If there is a difference, you need an Automatic Fine Tuning. The Mcorr value is set into the **Target value** display of the **Automatic Fine Tuning** box.

7. **Target tolerance** field in the same box controls the accuracy with which the tuning approaches the target value. A value of 0.10% will get inside +/-0.1% of the target moisture in percent and stop the process. The result will be within Mcorr +/-0.1% in that case. If you select a very small tolerance, the process will take a longer time to complete. A fairly good starting point is to use a value of 0.04% and repeat this task if the result is not satisfying, with a tighter tolerance. Select the tolerance.

8. There is an option performing the task **FAST** or **SLOW** depending on your need. Select.

9. Press **Enable** to start. A LED indicator **Adjusting** is on for a while and a sound alerts when it is complete. There is also a vertical bar indicating the closeness of a temporary adjusted calibration to the target. When the tolerance is met the operation stops. If the task takes several minutes and it seems not to arrive in an acceptable result you can terminate it without creating a new calibration by pressing the **Abort** button sending a short message of **FAILED**. That situation is very rare. It is normal that very strange numbers are shown in various displays as the search algorithm will do its work.

10. Press the **Check** button in the **Manual adjust** box to make sure you are close to the target. If you are not happy with it, repeat the **Automatic Fine Tune** with a tighter tolerance. The resulting calibration is already back in the meter and it is not necessary to Update it. You can print the contents of the new calibration by pressing the **Print** button, sending a report to your default printer. It can also be printed to an HTML report.

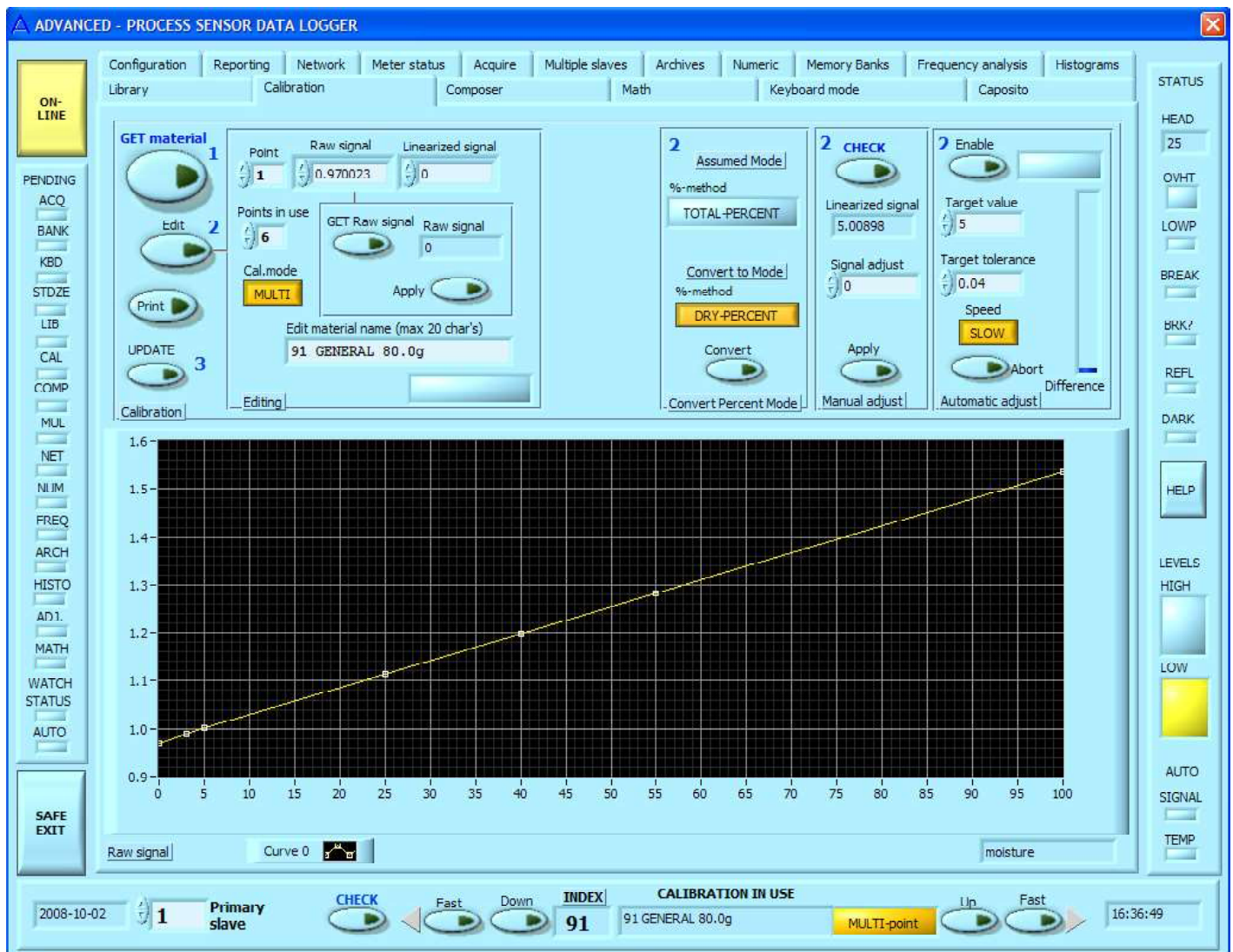11. It is recommended to save the new slightly modified calibration library to back it up. Yo are now ready to operate the meter with the new calibration.

Figure 1. Calibration page