-STD

MOISTURE STANDARD FOR PROCESS SENSORS

USER'S MANUAL

Model STD

Unit information:

Model & Rev: - **Rev:**
Serial number:

PCB's:

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Visilab Signal Technologies Oy
Address:
Keskustie 15
FI-07560 PUKKILA
FINLAND

Tel.:
+358-45-635 4885
Y 0631208-0 ALV Rek.
VAT FI06312080

e-mail:
info@visilab.fi
AAA-rated
Mäntsälä Reg. 365.258

www.visilab.fi

CONDITIONS OF GUARANTEE, COPYRIGHT NOTICE AND LIABILITIES OF THE MANUFACTURER

The manufacturer (Visilab Signal Technologies Oy) grants a guarantee of two years for the buyer of the moisture standard -STD meter from the date of purchase. The guarantee covers all faults and misalignments which are in the equipment at the moment of purchase including those which appear during the guarantee period. The manufacturer is liable of repairing the instrument without cost to the buyer. The manufacturer can ship a new instrument of equivalent value and status if considered as a better solution than repairing. The buyer is liable of paying the freight costs to the factory of the faulty unit. The unit must not be sent to the manufacturer without a permission from the manufacturer. Units sent without a permission will be repaired at the cost of the buyer.

The guarantee does not cover wearing parts, like batteries, lamps or motors. The guarantee does not cover faults caused by errors or neglects of the user nor those faults which are caused by deliberate damaging. The guarantee does not cover faults caused by incorrectly installed cables or conductors. The guarantee does not cover any damages to the user or to any third party independently of the way how the instrument has been used. The guarantee does not cover faults caused by natural phenomena like lightnings or floods, nor user errors like dropping or hitting the unit. The guarantee is void if the unit is sold to any third party. All faults which are not covered will be repaired at the cost of the buyer.

If opening of the instrument has been attempted at those parts which are not intended for the user, the manufacturer can refuse to repair or service the instrument. Then the instrument will be shipped back to the buyer at the cost of the buyer. Such parts are the light source, the optical head and parts on the electronics boards. The instrument can be opened only strictly according to the instructions in this manual and should not be disassembled unnecessarily. Also, if some parts can not be opened with a reasonable force, they should be left to avoid any damage.

Visilab Oy reserves all rights to changes and modifications in the looks, specifications, optical and electronic design, electronic and software interfaces and computer programs, and also the right to change the retail prices of the instrument or its parts without any notice to present or potential customers. All copyrights and design rights belong to Visilab Oy. The PC programs, which have been sold to the buyer, can be used and copied freely for his own use but can not be sold to any third party.

The manufacturer is not responsible for any casualties, damages or accidents which the user has caused directly or indirectly with this instrument, either to himself or to any third party, independent on the instrument being used correctly or not.

Important warnings are highlighted in this manual with red color.
Recommendations are in blue and important instructions are in brown.

Note:
The guarantee covers only the tightness of the seam and the moisture reading persistence of the paper sample.

Contents

1. Introduction and Taking into Use

The **STD** moisture standard is designed for use with your moisture logger, any model. It provides your meter with stable reference for a moisture reading. If you suspect that your meter's readings have shifted for some reason, you can always check it with the STD. In the following we instruct you on how to use it. For any details of use of the meter itself, refer to the User's Guide.

STD is taken out of its package carefully and it should be inspected for any damage during shipping. If any damage is visible, contact the manufacturer or the representative from which the standard was bought. The following items should be available:

1. **STD**
2. User's guide (this)
3. a data sheet with reading for this particular standard and the particular meter serial number for which it has been calibrated. If bought separately, no data sheet.
4. Other optional items ordered

If something is missing, inform your dealer and he will ship any missing parts. The instrument is ready for use after connecting the cables and power.

STD is a moisture standard keeping its moisture level for several years, most likely for more than 30 years. The paper used in this is very persistent in all respects and guaranteed for at least 100 years by its manufacturer. Since the moisture level inside the paper is low (3 to 5%), the water content will not harm the paper. The glass envelope protects the paper as long as it is kept undamaged and clean. The glass seam is made with high quality epoxy and it will not let water into or from the paper. Keep the standard in a safe place and protect it from dirt and stains. Stains can be removed with soft tissue and warm soap water. Spirits can be used for cleaning harder stains. Do not let the solvents damage the epoxy seam. The glasses are sometimes very thin (about 1 mm) and are very easily breakable. Thick glasses with total thickness near 8 mm have been delivered too. Avoid sharp shocks to the glass and never bend the glasses. **Guarantee does not cover any mechanical damage to the glasses.** The guarantee covers only tightness of the seam and the moisture reading persistence of the paper sample. Keep the standard preferably in a wooden box protecting it from shocks and thermal stresses, covered with a soft cloth.

The standards delivered thus far have been slightly different according to the meter model or customer requirements. They are usually of about 100 x120 mm of size. Varying sizes have been delivered.

2. Using the Moisture Standard Unit

Basics

The following procedure is instructed by using the IRMA7Basic or Advanced programs for the IRMA-7 model A and AK50 meters. The same tasks can be performed for model D meters by using an ANSI terminal instead and by using the Keyboard mode and the menu system. The Keyboard mode operation is best described in the model meter's manuals complementing this guide. Model A meters have their own keyboard and display and the tasks are done with them. The AK30 meter's checking and adjustment with the standard is a bit different. It can be done entirely with the meter's own keyboard and display.

Refer to user's guides for the Windows programs for any details of their specific use.

NOTE:

Before performing any of these checks or adjustments, let the moisture meter run for at least five minutes to stabilize for full accuracy. If the meter has been in cold or warm conditions recently, let it also adjust itself for the environment too. Water condensation over surfaces is not acceptable.

Model AK30

Regular Check

This check can be performed about once per year or anytime you feel there might be some reason for it. Especially, if the meter has met with a shock, overheating or other kind of damage, it might be a good idea to do this check.

1. Place the moisture standard on a flat table with a black background, like a sheet of velvet or black paper. A sheet of copy paper having a completely black colour is sufficient. The purpose is to eliminate any effects from the table itself. Place the meter over the standard at the center. Make sure the meter lies on the same plane as the standard and is not tilted.

2. Select the material **#70 factory calibration** and use the MEDIUM or SLOW filtering. Use always the same table for standardization and do not modify it in any way.

3. Check the reading displayed by the meter. Compare the value to the one in the data sheet or marking sent with the standard. To gain more reliability, you can start the Autotimer and have it collect a small batch of samples, like 32 points for averaging. If the reading is close to the standard value, the meter is all right and you can continue with normal measurements after reselecting the usual calibration table. An acceptable tolerance would be +/-0.3% or better.

4. If the reading is differing by more than +/-0.3% from the standard value, it might be good to make a correction. Press **Menu** key and "**2**" to enter Calibrations. Then press "**9**" for Extra features. There is the option "**6**" **Stdze** for standard checking and adjustment. You can watch the current reading at the center display while you enter and edit some value after pressing "**1**" for the offset. The actual reading changes right away when you finish editing. Adding one percent in this editor will increase the moisture by about one percent and using a negative value will do the reverse. When you are done press Save key and reply with "**1**" to accept saving the latest offset value. Else the new value is valid only during this session. This difference is correcting the meter and thus affecting **ALL** entries in the meter's calibration library. The units are in percent for this particular table. If you use any other

table than #70, the scaling may be a little different. The reading is a cumulative one. It means that it tells you the drift from the beginning of the history of this meter. It should be zero at the time of purchase of the meter and is not expected change at all during the years unless there is some dirt accumulation in the optical window or some damage to the optical head. The reading is marked in the menu as

```
Drift
1=Offset
   0.0%
```

Make note of the moisture reading as measured with the table #70 and also of the date you checked it to keep a simple record of things.

Model A

Regular Check

This check can be performed about once per year or anytime you feel there might be some reason for it. Especially, if the meter has met with a shock, overheating or other kind of damage, it might be a good idea to do this check.

1. Place the moisture standard on a table flat with a black background, like a sheet of velvet or black paper. A sheet of copy paper having a completely black colour is sufficient. The purpose is to eliminate any effects from the table itself. Place the meter's optical head over the sample. If you have a bearing foot delivered with the meter, attach it to the meter first. Make sure the meter lies on the same plane as the standard. The meter should not be too much inclined. The bearing foot can touch the surface. Point the meter approximately at the center of the standard.
2. Select the material **#70 factory calibration** and use the MEDIUM or SLOW filtering. Use always the same table for standardization and do not modify it in any way.
3. Check the reading displayed by the meter. Compare the value to the one in the data sheet sent with the standard. To gain more reliability, you can start the Autotimer and have it collect a small batch of samples, like 32 points for averaging. If the reading is close to the standard value, the meter is all right and you can continue with normal measurements after reselecting the usual calibration table.
4. If the reading is differing by more than +/-0.3% from the standard value, it might be good to make a correction. Go to Menu and to Standardization (Menu - Calibration - Standardize). In this menu you can set the difference correcting the meter and thus affecting ALL entries in the meter's calibration library. The units are in percent for this particular table. If you use any other table than #70, the scaling may be a little different. The reading is a cumulative one. It means that it tells you the drift from the beginning of the history of this meter. It should be zero at the time of purchase of the meter and is not expected change at all during the years unless there is some dirt accumulation in the optical head or some damage to the optical head. The reading is marked in the menu as **Drift: Offset**.
5. Press "1" and edit the number fields to reflect the need for correction. If you need 0.5% more into the reading, edit this field to be 0.5% bigger and vice versa. Go back to step 3. and check the reading. If the reading is now correct, you are done. Else, repeat to fix the small remaining error until you get it right.

First Time Operation

If you haven't done this before and there is no data sheet, you need to do these steps in the first place to make use of this standard in the future. It is of no use if this has not been done.

1. Place the moisture standard on a table flat with a black background, like a sheet of velvet or black paper. A sheet of copy paper having a completely black colour is sufficient. The purpose is to eliminate any effects from the table itself. Place the meter's optical head over the sample. If you have a bearing foot delivered with the meter, attach it to the meter first. Make sure the meter lies on the same plane as the standard. The meter should not be too much inclined. The bearing foot can touch the surface. Point the meter approximately at the center of the standard.
2. Select the material **#70 factory calibration** and use the MEDIUM or SLOW filtering. Use always the same table for standardization and do not modify it in any way.
3. Check the reading displayed by the meter. To gain more reliability, you should start the Autotimer and have it collect a small batch of samples, like 32 points for averaging. Make note of the resulting moisture reading to your own data sheet for this standard. Keep the data sheet with the standard for future checks. If you lose the data sheet, the standard is worthless. You need then to repeat this operation, assuming the meter is having full accuracy. If this is also suspected, you had better contact the manufacturer for a full checkup of the meter. Otherwise, the standard will serve you for the coming years to make sure that you get reliable results.

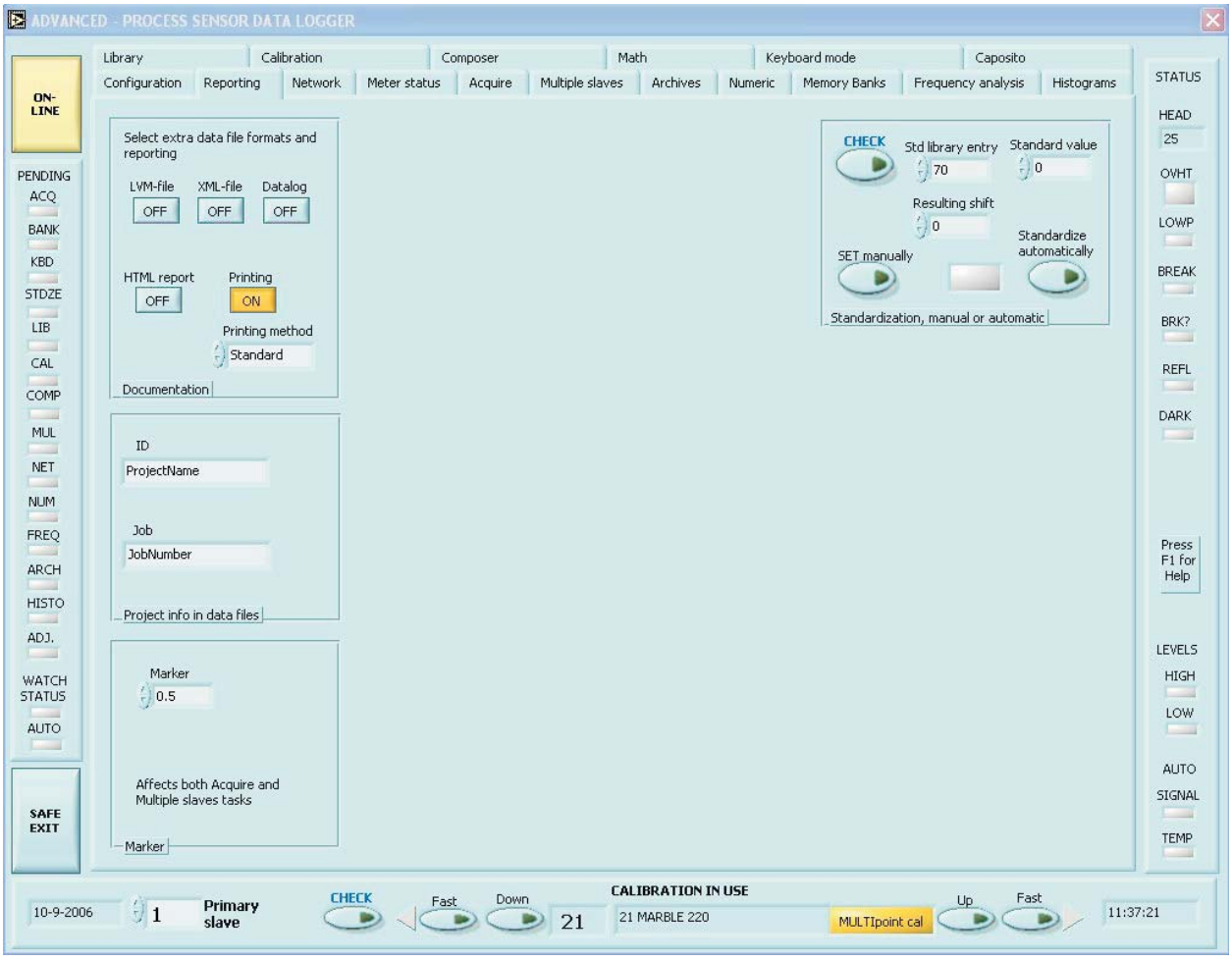

Figure 1. The standardization task on the Reporting page in the Advanced program

Model AK50

Regular Check

This check can be performed about once per year or anytime you feel there might be some reason for it. Especially, if the meter has met with a shock, overheating or other kind of damage, it might be a good idea to do this check. The standard value or the moisture reading of that particular standard is kept inside the meter and is called the **Standard value**. If you change the standard STD to some other one, this has to be taken into account and you need to perform the First Time Operation first.

1. Place the moisture standard in front of the meter mechanically positioned in the way originally decided by you or instructed specifically by the manufacturer. Typical situations are having the standard in the scanner home base or in a laboratory stand. In both cases, you or your subcontractor or system integrator have delivered the hardware and there should be some instructions of proper standard placement, manual or programmatic. The standard is most often in an angle to the light beam to avoid direct mirror reflection back to the meter, typically some 20 degrees. This angle should always be kept the same with mechanical fixtures as well as the working distance.
2. Start the meter and the corresponding PC program (**IRMA7Basic** or **Advanced**) having the proper communication working between them. Make sure that the program has found the meter and is working.
3. The Standardization is on its own page in the programs or with other tasks, refer to Figure 1. Press the button **Check** to retrieve the current parameters. The table number should be 70 unless you have changed it for a good reason. The standard value is shown too if this has been done before. The cumulative difference (Resulting shift) or correction value is shown too.
4. Go to Acquire page and collect some moisture data to see if there is any difference to the standard value. If there is, you can perform the next few steps. Else, it is not needed and you can restore the earlier calibration table and continue with data acquisition.
5. You can use the Automatic standardization by pressing the button **Standardize Automatically**. The operation takes less than one minute and it will show you the resulting difference too. You are done. The meter is automatically restored back to its normal working condition after this. You can continue with data acquisition immediately.
6. You can use manual standardization by estimating the required amount of correction in percent and adding that to the cumulative correction (**Resulting shift**). Press the button **SET manually** to force the change into effect. You may have to repeat this a few times after checking the reading on the Acquire page while it is running. Now you can restore the earlier calibration table and continue with data acquisition.

First Time Operation

This check must be performed before you have any use for the standard. The resulting standard value is saved into the meter but it doesn't hurt if you make a note of it and keep the reading with the standard or with the workstation at which you work with the meter.

1. Place the moisture standard in front of the meter mechanically positioned in the way originally decided by you or instructed specifically by the manufacturer. Typical situations are having the standard in the scanner home base or in a laboratory stand. In both cases, you or your subcontractor or system integrator have delivered the hardware and there should be some instructions of proper standard placement, manual or programmatic. The standard is most often in an angle to the light beam to avoid direct mirror reflection back to the meter, typically some 20 degrees. This angle should always be kept the same with mechanical fixtures as well as the working distance.
2. Start the meter and the corresponding PC program (**IRMA7Basic** or **Advanced**) having the proper communication working between them. Make sure that the program has found the meter and is working.

3. The Standardization is on its own page in the programs or with other tasks, refer to Figure 1. Press the button **Check** to retrieve the current parameters. The table number should be 70 unless you have changed it for a good reason. The standard value is shown too if this has been done before. The cumulative difference (Resulting shift) or correction value is shown too. This value should be zero at this time. If not, edit it and press the button **SET manually**. Select the table number **70 factory calibration**.
4. Go to Acquire page and collect some moisture data to the standard value. The average value can be read on the Archives page by moving the two cursors properly (activate the corresponding channel first as instructed in the program's manuals). Make note of the moisture value, this is the **standard value**.
5. Back in the standardization task, edit the number field for the standard value according to the result and press the button **SET manually**.
6. Press **CHECK** to see that all fields are what you expect. The Resulting shift should be zero at this time. Now you can restore the earlier calibration table and continue with data acquisition.

Index