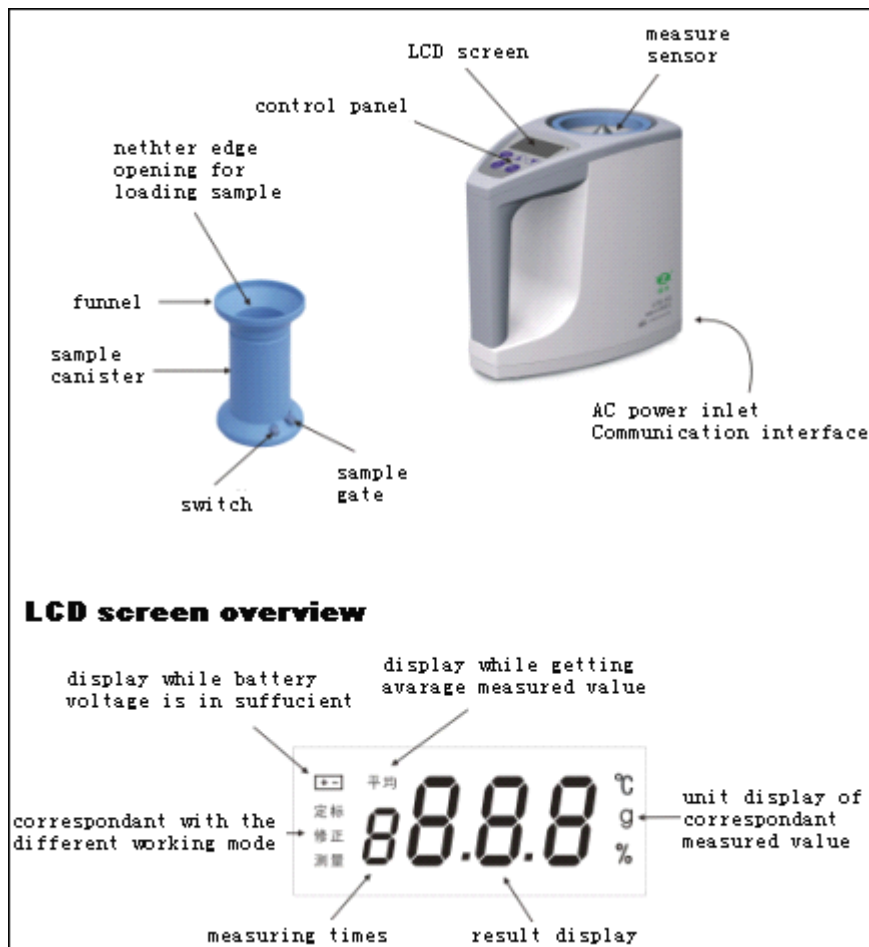# Grain Moisture Meter

LDS-1G

User Manual

Please read this manual carefully before use

1. Instrument structure sketch

2. Preparation

2.1Take out the protective foam pieces around the sensor of the moisture tester (Abbreviated as instrument below), meanwhile, make sure nothing is left in and around the sensor or the instrument won't work normally.

2.2 Open the battery cover at the bottom of the instrument, insert four batteries (5#, 1.5V) follow the right electrode, you can also use AC power supply(220V,50Hz) by insert the AC power adapter(provided with the instrument).

2.3 Place the instrument on a level table without wind, put the funnel in the sample canister.

2.4 Prepare the sample for measure: Treat with the sample primarily, take out the impurity, place the sample together with the instrument as long as possible to get temperature balance.

2.5 Choose the variety number: For your convenience, the instrument had already set the calibration parameter for many representative varieties before leaving factory. The user could refer to the attached "Corresponding table of variety code", you can begin the measurement after choosing the correspondent code.

Note: When the instrument is being used in occasions like trade balance and safe storage which ask for high precision, for the measurement precision and the users' benefit, it's strongly recommended that the instrument should be calibrated and error corrected by correspondent standard sample.

3. Moisture measurement

3.1. Press the power "on/off" button, the instrument's begin its self test, after that the variety code is shown.
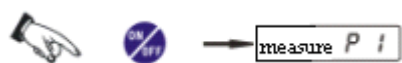

3.2 Press ▲and▼ button for choosing the variety code(see attached table for detail);

3.3 Pour the sample into the sample canister till it reach the under edge of the funnel, for measure. (see Picture A)

3.4 Set the sample canister on the mouth of the sensor. Hold the canister with one hand and press the canister gate switch lightly until all the sample falls evenly into the sensor, the instrument begins the analysis automatically, after several times of shining of the radix point, the moisture value will be displayed.

sample reach the nether opening

Pic A   Pic B
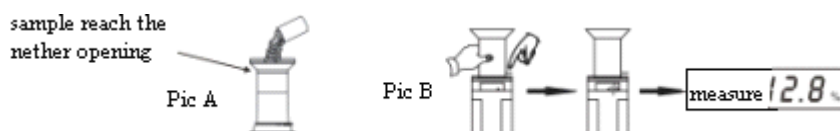
3.5 Close the canister gate, pour out the samples in the sensor and prepare for the next measurement process.

3.6 To decrease the measure error, please pay attention to consistency of operation technique; Measure the same sample for several times (especially big radius samples like corn) to get the average moisture value; Press the "enter" button, the previous measured data will display.

3.7 After the moisture value displayed, do not pull out the sample, press "▼" button again, screen will display the volume weight value, the unit of it is g/L.

For example:

Note：The volume weight value measured is just for estimation and reference. When the volume weight is measured for trade settle accounts, you'd better measure it by volume-weight apparatus.

4. Error correction

The existence of external difference of region and variety determined the limitation of the calibrated parameters before leave factory, thus there might be measurement errors. You may correct the moisture value by mean of following procedure to guarantee and promote the measurement precision.

4.1 Confirm the error correction value: Normally, regard the moisture value get by the "standard oven method under 105℃" as the standard value, the correction value equals to the standard value minus the measured value. For example, the measured moisture value is 13.6%, while the actual value is 14.0%, then the correction value is +0.4, it means that the measured value should be increased for 0.4, in contrary, if the correction number is negative, the measured value should

be decreased.

4.2 Enter the correction mode: pour out the sample inside the instrument, keep pressing the "variety" key until the buzzer sound, then the "correction" is shining on the screen, it mean the correction mode begin and the initial error correction value(the default value is 0.0) displayed.

4.3 correct the error: press the" △ " button increase the error correction value(e.g. 0.4) , press enter to save, the screen will be shining to confirm, Exit the correction mode by turnoff the instrument or pressing the "variety" button.

The whole correction procedure is shown below:
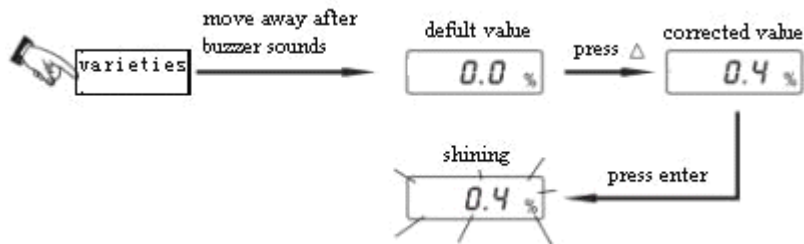
5. Calibration

The concept of calibration is to set new instrument parameters by using standard sample whose moisture value is determined, the purpose is to add new sample variety or to do precise measurement error correction for the existing varieties'.

The calibration could be carried out by mostly 4 samples each time, please follow the procedure:

5.1 Standard sample preparation: Prepare the standard by the "105℃ standard oven method", for the calibration representation and accuracy, the measured moisture should stay between the max and min moisture of the standard sample. If the accurate moisture value of the variety is less than 6 percent, the user might either need 3(big, middle and small moisture value respectively) or 2(big and small value) standards for the calibration.(e.g. four wheat standards preparation: the moisture value are 22%,18%,14%,10% respectively from, sequenced from big, middle 1, middle 2 to small)

5.2 Attention

5.2.1 calibration sequence: first small moisture value standard, then middle and big.

5.2.2 don't turnoff the power in the calibration procedure.

5.2.3: pour out all of the materials in the sensor

5.3 Select the variety code: press "△"and "▽" button to confirm the variety for calibration (the previous calibration parameter will be covered)

5.4 Enter the calibration mode: press the "enter" button(5~6s) until the buzzer sounds, the "calibration" on the left nether side will be shining while the screen is shining calibration 1-- , it reminds you that the instrument enter the calibration state and you should put in the first standard.

5.5 Calibrate the low moisture standard: put in the standard through the sample canister, the instrument will display the measured result, press " △ "and " ▽ " button to correct the displayed value to the standard value(e.g.10%), save the result by pressing "enter", the screen will be shining while displaying calibration 10% , the 1st point calibration is completed. See the following sketch:

measured value —press ▽→ corrected value —press enter→ shining

11.0% → 10.0% → 10.0%
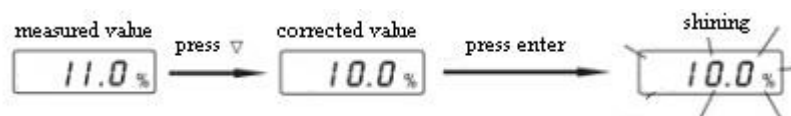
Note: the 1st point calibration could also be used for error correction, turnoff the instrument at the moment equals to complete the error correction.

5.6. Calibrate the 2nd point: pour out the low moisture standard, the screen will show | calibration 2-- |, it reminds you to put in the second standard, do the calibration as described in section 5.5.

5.7 Continue calibration: Do the calibration as the above procedures, after finish calibrating the fourth standard, the instrument will quit from the calibration mode automatically; if there weren't the third or fourth standard, press the "variety" key to exit the calibration mode.

5.8 Reanalyze the standard: Measure the standard again, if the error in less than 0.5%, the calibration is successfully completed, or you need to do recalibrate.

   Note: If you make a mistake in the calibration process, keep pressing the "variety" button until the buzzer sounds, then the instrument return to the calibration mode for you to recalibrate.

6. Resume the leave factory calibration data

If the user wants to resume the default calibration data before leave factory, follow the procedure below:

   Select the variety which need to resume, press "enter button" once at first, then keep pressing the "enter" button until the buzzer sounds, hereinafter, press "variety" button until the buzzer sounds, the screen will be shining and displaying | calibration 1-- | ,then the default parameter is successfully resumed, turnoff the power to exit.

7. Status indication

   The instrument do automatic self test after turn on and display correspondent indication symbol in different working status, see the instructions below:

   ✧ Symbol | E-1 | means that there are sample left inside of the sensor or instrument trouble, pour out the sample or check the machine.

   ✧ Symbol | Er1 | Er2 | Er3 | means the moisture measuring circuit, temperature measuring circuit and the weighing circuit are in trouble respectively.

   ✧ Symbol | dr1 | means moisture value difference among standards is less than 1% in the calibration process.

   ✧ Symbol | dr2 | means standard moisture value sequence error in the calibration process.

   ✧ When the top left screen is shining with | + - | symbol, it means the batteries need to be replaced.

   ✧ When the top left screen is displaying | + - | symbol stably while the | U L | symbol is displaying, the battery is exhausted and instrument will shut down automatically in 30s.

8. The instrument's additional function. (for reference)

8.1 After measure a variety of sample for more than 2 times, press the "enter" button and the average value of the previous results, e.g. | measure$^{ave}_3$11.0% |

8.2 Sample weight display: After the instrument is display the first or average moisture value, press "enter" button the weighting value of the sample will be display, press "enter" again, moisture

value displayed again.

8.3 Sample temperature display: when the screen is displaying weighting of the sample, press "variety" button, the temperature value will be displayed, the unit is ℃, press "enter", moisture value displayed again.

8.4 Capacity conversion: When the attached sample canister is not set with funnel, the capacity equals to 232 cubic centimeters(ml), firstly, flat the sample from the material canister opening with the funnel when collecting sample, secondly, put the sample into the sensor and press the "enter" button after the moisture value is displayed, the weight value will be displayed, the automatic conversion begin when the "enter" button was pressed again, after a moment, the capacity of the sample will be display as measure L 780 g , the data is for your reference limitedly.

8.5 Communication interface

Communication interface is set for special use, contact us for the technical parameter and operation instructions.

9. Accessories

An intact instrument includes the following accessories:

AC power adaptor, Cleaning brush, user manual, sample canister, funnel and calibration poise, each with 1 piece.

10. Main technical index

Measured object: grain and other nonmetal particle samples such as paddy, wheat, corn, bean, rapeseed and so on.

Measure error: ≤±0.5% (main moisture range)   Repetitive error: ≤0.2%

Measure range: 3%~35%   Measure time: ≤10s

Ambient temperature range: 0~40℃   Net weight: 830g

Power: four alkaline battery (5# 1.5V) or external 9V DC manostat

Display manner: highly bright poor light LCD

11. Corresponding table of variety code

Variety Name	Variety Code	Variety Name	Variety Code
Japonica Paddy	P1	Rapeseed Residue	P11
Bean	P2	Granule Feedstuff	P12
Wheat	P3	Sunflower Seed	P13
Rapeseed	P4	Watermelon Seed (big)	P14
Corn	P5	Watermelon Seed (small)	P15

Barley	P6	Radish Seed	P16
Long-grained Nonglutinous Paddy	P7	Black Sesame	P17
Rice	P8	Yellow Sesame	P18
Bean Residue	P9	Cottonseed	P19
Peanut	P10	Cotton Residue	P20

12. Maintenance

The instrument is a precise electronic product, please lift and handle gently, the instrument should be level placed and cleaned frequently.

Take out the battery if the instrument is transported or not used for long.

Electronic balance calibration: Some accidental factor may cause error of the inner balance, if it happened, calibrate it with the following process:

A. Level shut down instrument, take out all that inside of the sensor, firstly, keep pressing the "variety" button, secondly, press the "on/off" button to turn on the power, the buzzer will be sounded, move away from the "variety" button, the screen will display digits and enter the balance calibration mode.

B. Press "enter" button once. The radix point will be shining for several times and displaying the shining "200g".

C. Place the instrument attached poise (or standard 200g poise) gently in the central black tip inside the sensor, press "enter" again and the screen will display 200 g , turn off the power to exit and unload the poise.