GRAIN MOISTURE METER

MC-7828G

1. FEATURES

* Be a powerful and versatile instrument for measuring and diagnosing dampness in grains. Widely used for fast and accurate measurement of moisture and temperature in the process of allotment, acquisition, storage, machining of packed grains.
* Digital display gives exact reading with no guessing or errors while a colour coded light (LED) indicates the moisture condition of the material. This combined presentation of moisture measurement helps the user to map the extent of problems and monitor changes in condition precisely and reliably.
* Used the exclusive Micro-computer LSI circuit and crystal time base to offer high accuracy measurement. It can obtain automatically the temperature corrected moisture value.
* Wide measuring range and high resolution.
* Automatic power off to conserve power.
* Can communicate with PC computer for statistics and printing by the optional cable and software for USB interface.
* Can store 240 groups of measurements.

2. SPECIFICATIONS

Display 4 digits, 10 mm LCD
With colour coded LEDs indication

Green LED represents a safe, air-dry state.
Yellow LED represents a borderline State.
Red LED represents a damp state.
Range: 7-30%
Accuracy: ± (0.5%n+1)
Whichever is the greater
PC interface: USB interface
(Cable and software is not included)
The statistics available are:
Last value / Mean value / Max. value /
Min. value / Number of Readings
Memory: 240 groups
Power supply: 4x1.5 AAA size (UM-4)battery
Operating conditions:
Temperature : 0-50 °C
Humidity : below 90% RH
Dimensions:
Unit 150x65x30mm
Sensor cup 115x66x66mm
Weight: 520g (not including batteries but including the cup)
Standard accessories included :
Carrying case .....1 pc.
Operation manual .....1 pc.
Sensor cup .....1pc.
Optional accessory
Cable and software for USB

3. FRONT PANEL DESCRIPTIONS

Fig.1 Overall Structure Descriptions

3-1 Sensor cup
3-2 Display
3-3 Data cable interface
3-4 Color coded LED
3-5 Select key
3-6 Read key
3-7 Power key
3-8 Battery compartment/ Cover
3-9 Zero/Minus key
3-10 Plus key
3-11 Delete key
3-12 External power supply socket

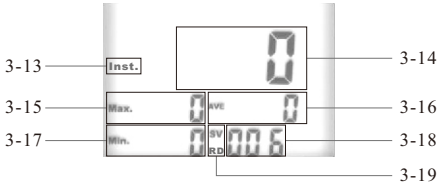

Fig.2 Display Descriptions

3-13 Data storage indicator
3-14 Measurement readings
3-15 The maximum value of statistical data
3-16 The mean value of statistical data
3-17 The minimum value of statistical data
3-18 The amount of data stored in the measurement mode
The ordinal number of current data in the reading mode
3-19 Mode indicator
('SV' represents the measurement mode, 'RD' represents the reading mode)

4. ZERO CALIBRATION

4.1 Correct zero calibration is an important step to ensure accurate measurement. It can eliminate the additional error caused by the changes in the parameters such as the temperature and humidity of the

environment.
When the inner cylinder of the measuring cup is not pressed down, the readings on the display should be 0, otherwise the moisture meter need to be calibrated. The method of zero calibration is as follows:
Ensure the inner cylinder of the measuring cup is not pressed down, press the Zero/Minus key in the measurement mode, 0 is shown on the display, the zero calibration is complete.
Every time the moisture meter is powered on, it will be automatically zero calibrated. Please ensure that the inner cylinder of the measuring cup is not pressed down when it is powered on.

5. MEASUREMENT PROCEDURES

5.1 Press the Power key to power on the meter.
5.2 Selection of material code
Before measuring, check the material code first.
Press the Select key, and a code will appear on the display: 'cdxx'.

Press the Plus key or the Zero/Minus key to change the code.
For the material code and its corresponding material name, see the attached table on page 9. For other fiber materials not listed, it is recommended to apply the standard code 'cd00' or use the drying method to confirm the code.
It should be emphasized that even the same material, such as wood, cement, soil and so on, will be different in proportion and material composition due to the environment such as the origin and so on. Therefore, the selected codes will also be different. To achieve accurate measurement of the moisture content of the material, the correct method is to determine the code according to the oven drying method. The method is as follows:
(1) Sampling. Select a number of representative materials to be measured and divide into two groups. One of the groups first used the oven drying method to measure

the moisture content.
(2) Use this instrument to measure another group of samples that are not dried (for the detailed measuring method please refer to **8. CONSIDERATIONS**). By selecting the code, the moisture value measured by the instrument is basically the same as that measured by the oven drying method. At this time, the code of the material is correct, and remember that the code for later use.
(3) When measuring the moisture of the same material in the future, the accurate measurement can be achieved by choosing the last code.

5.3 Measurement mode
In the measurement mode, there is a 'SV' and a 'Inst.' indicator on the display of instrument. In this mode, the maximum value, minimum value, average value, and statistical number of multiple measured data can be calculated and displayed. Also, data storage can be done, and the measurement reading can be saved to the instrument. It can be used for immediate

viewing (see 5.5 Data reading mode for detail), and is also used for analyzing and processing with software. See the 5.7 Computer connection for detail.

5.4 The statistics and storage of data

In the statistical measurement mode, pour the grain slowly into the measuring cup, keep shaking it when pouring till the cylinder is filled with the grain. Put the outer cover on it, pressed down the inner cylinder slowly, there is a buzzer ring. Each time the inner cylinder of the measuring cup is pressed down, the moisture content of the tested material and the amount of saved data will be displayed. The amount of saved data increases by 1. After multiple measurements, statistical data such as the maximum value, minimum value, mean value, the amount of statistic data of current measurement mode will be displayed.

Note: After the mode transformation, the statistical data in the previous measurement mode will be emptied, and the statistics will be recounted.

5.5 Data reading mode

In the reading mode, we can see the data

that has been saved to the instrument. Press the Read key, the 'RD' symbol, the reading and ordinal number of the current browsing data are displayed, the instrument enters the reading mode. Then press Plus key or Zero/Minus key to browse the data stored in the instrument.

To quit reading mode and return to the measurement mode, press the Measure key.

5.6 Deleting data

The instrument can store up to 240 groups of measured data.

When more than 240 groups of data are stored, the earliest measured values will be automatically deleted, then the last measured values are stored automatically, and so on.

There are two ways to delete data: single deletion and all deletion.

In the data read mode, press the Delete key, and the current reading will be deleted.

In the measurement mode, press and hold the Delete key for about 5 seconds, all the measurement data stored in the instrument will be deleted.

Note: In the measurement mode, press the

Delete key, the statistical function will be stopped.

5.7 Computer connection

Using optional USB data cable or Bluetooth adapter, the gauge can communicate with PC to realize data collection, processing, analysis and printing. The detailed method is shown in the demo file in the software disc.

6. AUTOMATIC POWER OFF

This instrument has two ways to power off, that is, manual power off and automatic power off.

6.1 At any time, press the power key for about 1 seconds. Release the key when the 'OFF' appears on the display, the gauge is powered off.

6.2 On the other hand, in storage measurement mode, if the keys are not pressed in 2 minutes, the gauge will be turned off automatically to save electricity.

7. ALARM LIMITS

7.1 There is a coded coloured LED indicating the status of moisture. It is controlled by 2 alarm limits. The factory settings are as follow.

Al1 =13 and AL2 =18

If the reading<AL1, the green LED is on.

If the reading>AL2, the red LED is on.

If the reading lies between AL1 and AL2, the yellow LED is on.

Users can change the alarm limits when as per their intention.

7.2 How to set the alarm limits

7.2.1 Press and hold the Power key till 'Al1' or 'Al2' appears on the Display. It is about 5 or 7 seconds from starting depressing Power key.

7.2.2 Such value can be changed to your intended value by pressing the Plus key or Zero/Minus key. Press the Select key to return to the state of measurement.

7.2.3 If the second limit AL2 is less than the first limit AL1, the setting is invalid and the factory settings for AL1 and AL2 are restored to AL1=13 and AL2=18.

8. CONSIDERATIONS

8.1 When measuring, pour the grain slowly into the measuring cup, keep shaking it when pouring till the cylinder is filled with the grain. Put the outer cover on it, pressed down the inner cylinder slowly, there is a buzzer ring. A measurement is done.

8.2 This instrument is of very high input resistance. Every parts have good

insulation. Please keep it in a dry, dustproof place.

9. BATTERY REPLACEMENT

9.1 When it is necessary to replace the battery, the battery symbol '▭' will appear on the Display.

9.2 Slide the Battery Cover away from the instrument and remove the batteries.

9.3 Install the batteries (4x1.5vAAA/UM-4) correctly into the case.

9.4 If the instrument is not to be used for any extended period, remove batteries.

Appendix: Code table for Grains

(The Code selection is decided by experiment)

code	grain	Range(%)
Cd01	Wheat/Rye (Whole)	7-31
Cd02	Wheat/Rye (Ground)	7-29
Cd03	Paddy (Whole)	7-29
Cd04	Paddy (Ground)	7-26
Cd05	Rice (Hulled)	7-29
Cd06	Semolina	7-25
Cd07	Maize/Corn (Whole)	7-27
Cd08	Maize/Corn (Ground)	7-26
Cd09	Soya Beans (Whole)	6-28
Cd10	Soya Beans (Ground)	5-22
Cd11	Barley/Oats (Whole)	7-34
Cd12	Barley/Oats (Ground)	7-29
Cd13	Coffee (Whole)	7-31
Cd14	Coffee (Ground)	7-26
Cd15	Coffee Green (Ground)	7-27
Cd16	Coaoa Beans (Whole)	4-13
Cd17	Linseed (Whole)	6-21
Cd18	Lentils (Ground/Whole)	7-21
Cd19	Oilseed Rape (Ground)	5-26
Cd20	Mustard Seed (Whole)	7-21

code	grain	Range(%)
Cd21	Sorghum/Milo (Whole)	7-28
Cd22	Sorghum/Milo (Ground)	7-26
Cd23	Sunflower Seed (Whole)	5-25
Cd24	Sugarbeet Seed (Whole)	6-20
Cd25	Flax (Whole)	5-21
Cd26	Peas (Prepeta Ground)	7-27
Cd27	Peas Ground	7-30
Cd28	Ground nuts Hulled (Whole)	5-13
Cd29	Grass Seed/Rye Grass (Whole)	7-28
Cd30	Grass Seed/ Cocksfoot (Whole)	6-23
Cd31	Flour/Soft Wheat	7-29
Cd32	Clover/White Seed (Whole)	6-24
Cd33	Clover/Red Lucerne Seed (Whole)	6-22
Cd34	Buckwheat (Ground)	7-29
Cd35	Brassicas/Brussels Sprout (Whole/Ground)	5-15
Cd36	Beans/Tic/Winter (Ground)	7-25
Cd00	Fibre Material for example Tea	