

***Shizuoka Seiki***

**GRAIN MOISTURE METER**

**CD-6E**

**COMMUNICATION SOFTWARE**

**OWNER'S MANUAL**

***Shizuoka Seiki***

## **Caution**

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- The specification and contents of this manual are subject to change without notice.
- Although every precaution has been taken to verify the accuracy of the information contained herein, for questions, errors, and misstatement or omission, please contact a dealer you purchased the product or the company's sales store.

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# 1. Introduction

This communication software designed for a grain moisture meter CD-6E.  
It cannot be used for other purposes.

The following can be performed with the communication software

[1] Shifting calibration curve

For each grain, a measurement value of the moisture meter can be fine adjusted its moisture within  $\pm 2.0$  % range.

It is useful for correction of moisture errors and machine differences on the moisture meter.

[2] Copying calibration curve

A calibration curve of each grain range can be copied to a user range and used.

Use when making an arrangement on a standard calibration curve.

[3] Registration to user range

A customer can create and register a desired calibration curve.

Use when matching to your moisture meter or measuring an unregistered grain.

[4] Receipt of measurement results

The moisture meter can be connected to your PC, and import measurement results.

Imported data can be saved in a text file.

[5] Batch receipt of data

Average value data saved in the main body of the moisture meter can be imported to your PC.

## 2. Operation environment

Item	Content
Supported OS	Windows 7, Windows 8, Windows 10 *Note 1
Communication port	USB port *Note 2

**\*Note 1: Operation is not guaranteed on other OS.**

**Windows are registered trademarks of Microsoft Corporation in the United States.**

**\*Note 2: USB cable is not included in this product.**

**When using the communication software, prepare a USB cable available on the market.**

**(Connector shape: USB A connector male - micro USB B connector male)**

## 3. Preparations

### 3-1 Installing a driver

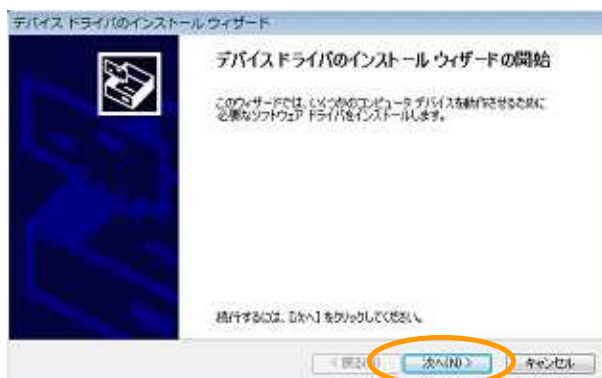
- 1) Double click [CDM21216\_Setup.exe] in the [CD-6E Setting Tool] folder downloaded from our company's home page.

\*It is a driver made by FTDI. Follow the instruction on the screen to start installation.

- 2) When the setup screen is launched, click the [Extract] button.



- 3) When the Install Wizard screen is launched, click the [Next] button.



\*The screen is OS for the Japanese version.

(The screen may look different for OS for other languages)

- 4) When the License Agreement screen is displayed, check [Agree] and click [Next].



5) The driver installation starts.



6) When the installation is completed, click the [Finish] button.



### 3-2 Installing communication software

1) Double click [SetupENG.msi] in the [CD-6E Setting Tool] folder downloaded from our company's home page.

2) The Setup screen is launched.

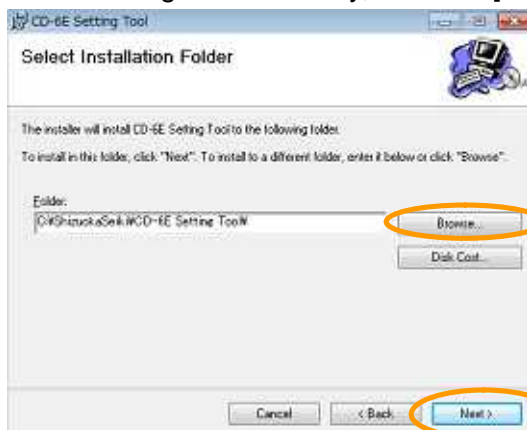


Click the [Next] button.

3) Check the installation destination folder.

The default is [C:\ShizuokaSeiki\CD-6E Setting Tool\].

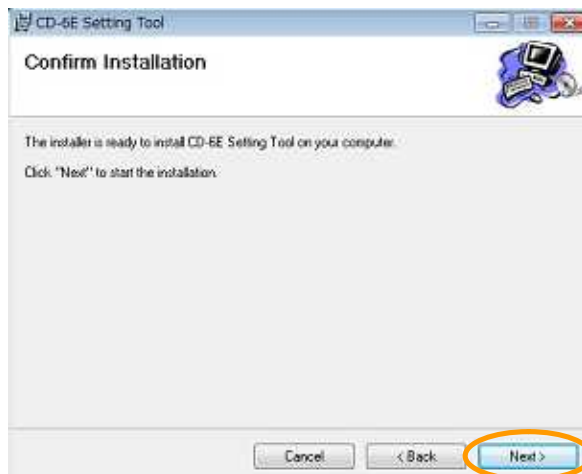
If no change is necessary, click the [Next] button.



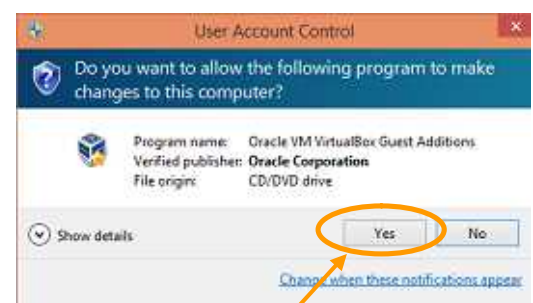
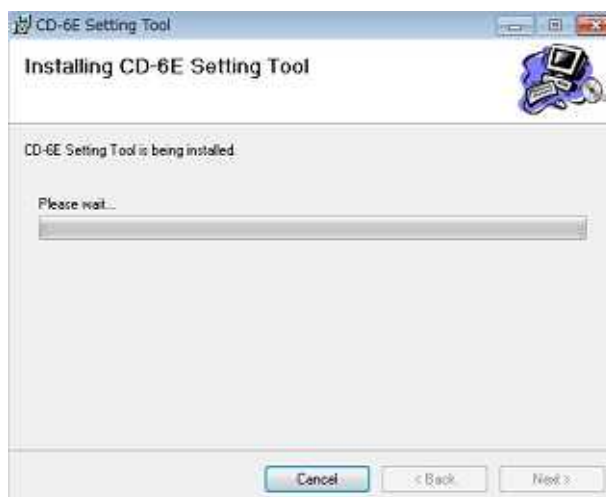
When changing a folder to install, click the [Browse] button, and select an installation destination folder.

Click the [Next] button.

#### 4) Starting installation

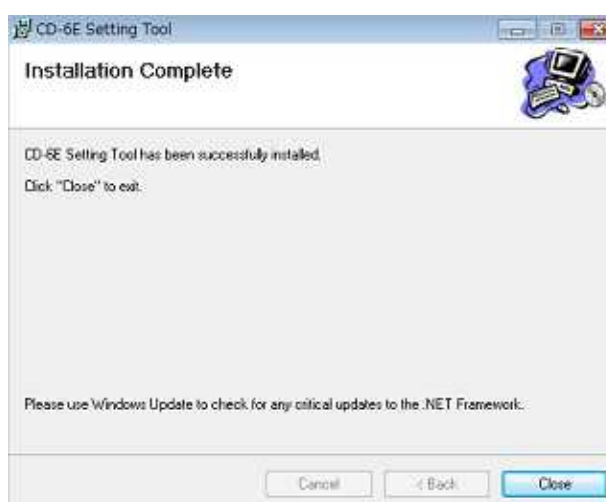


When the [Next] button is clicked, installation starts.



When [User Account Control] is displayed, click [Yes].

\*It may take a while for installation to start. (Approx. one minute)



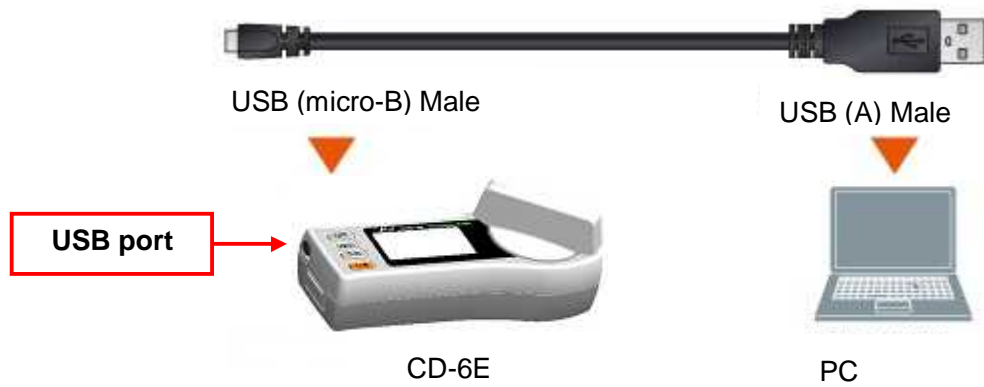
When the installation is completed, click the [Close] button.



### 3-3 Connecting with CD-6E

When using the communication software, use a USB cable to connect the grain moisture meter CD-6E with your PC.

Prepare a USB cable beforehand.

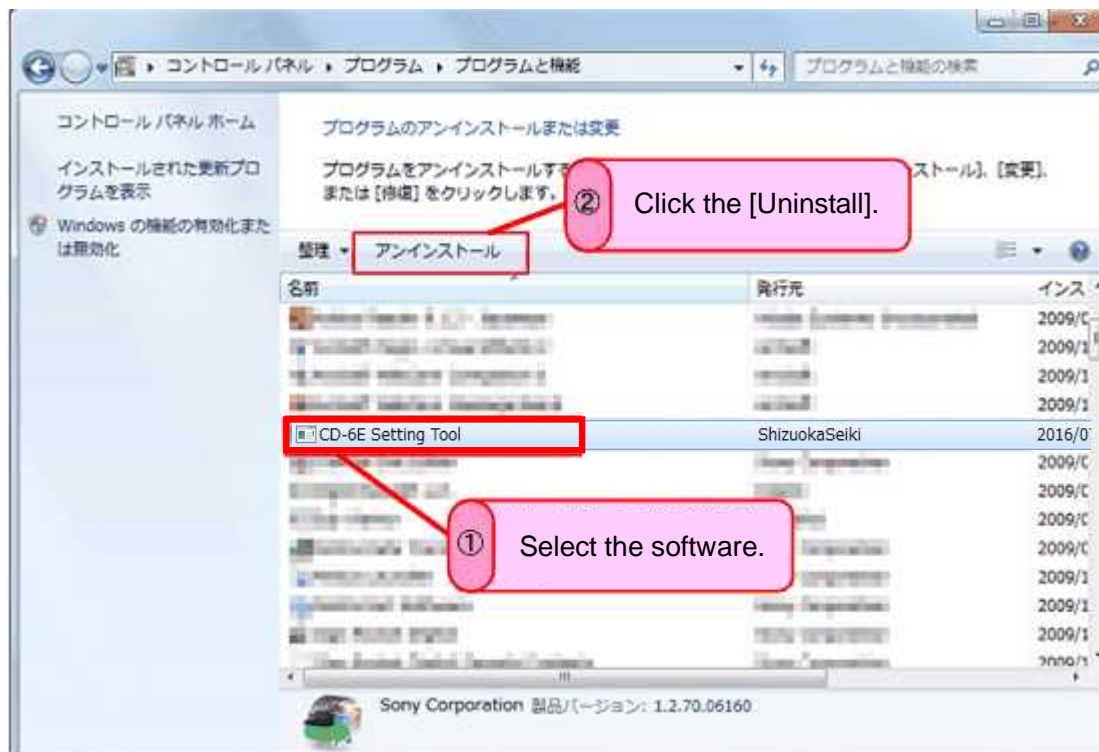


The USB port is micro B on the moisture meter's main body side.  
This completes the preparations.

### 3-4 Uninstalling communication software

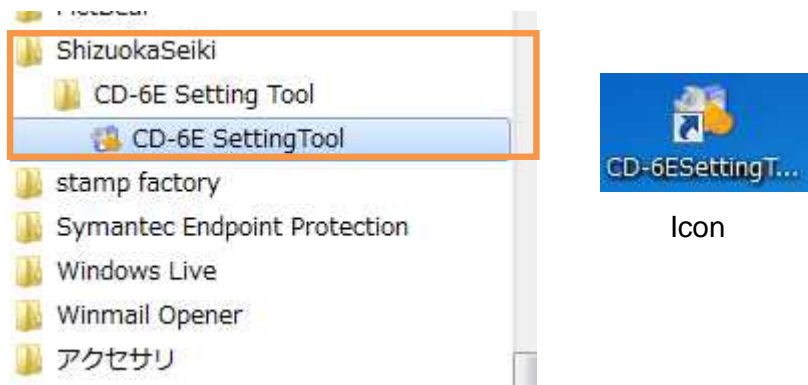
\*When the communication software is no longer necessary, uninstall following the steps next.

- 1) Select [Uninstall a program] under [Program] in the [Control Panel] screen.
- 2) The [Programs and Features] screen is displayed.  
Select [CD-6E Setting Tool], and click [Uninstall].

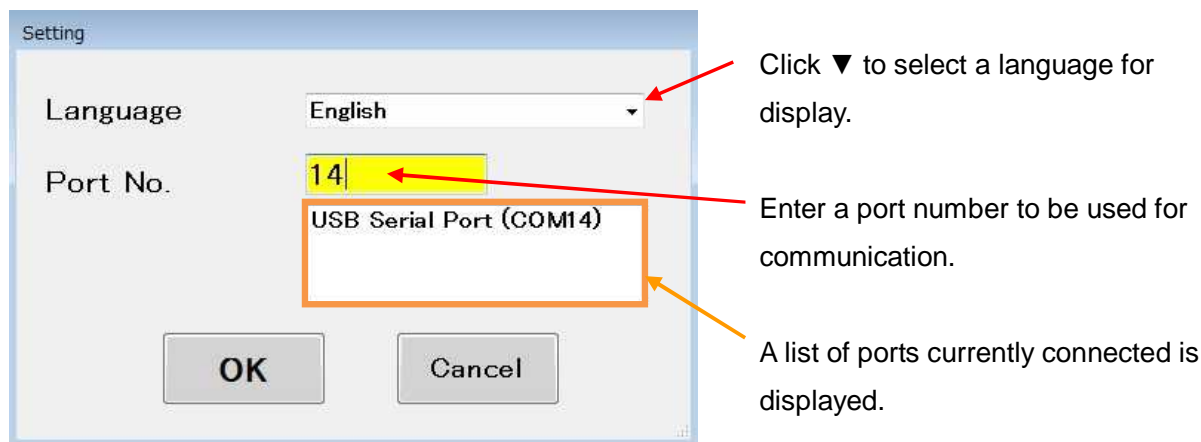


## 4. Starting communication software

- 1) Connect CD-6E and your PC with a USB cable.  
After connected, turn the power of CD-6E ON.
- 2) Select [Program] -> [ShizuokaSeiki] -> [CD-6E Setting Tool] -> [CD-6E Setting Tool] or double click the icon created on the Desktop.



- 3) When the software is started for the first time, the [Setting] screen is displayed.  
Select a port number to use for communication and display language, and click the [OK] button.

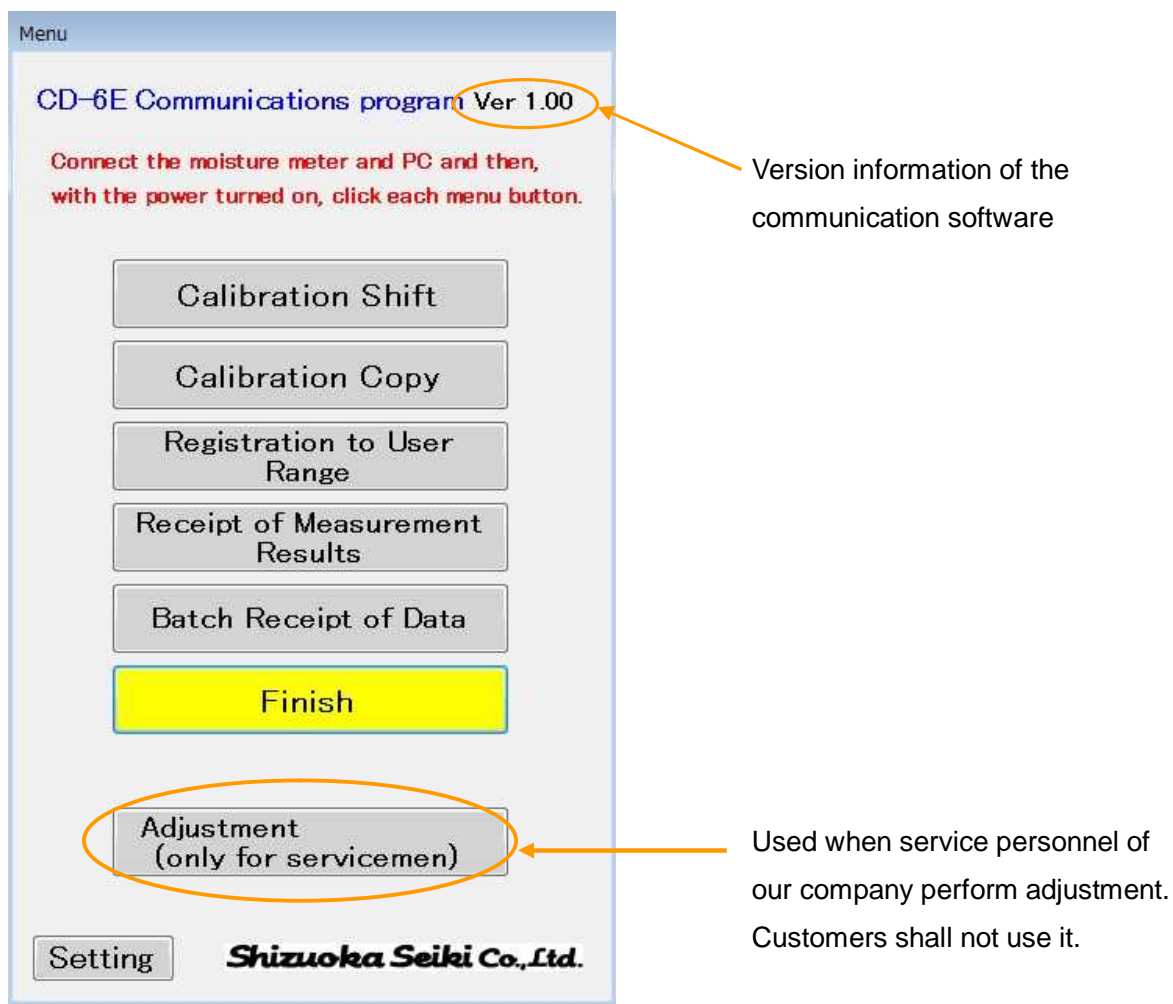


In the screen above, because CD-6E is connected to (COM14), enter "14" in the port number. When a list of connected ports is blank, click the [Cancel] button to end the software once, try reconnecting the USB cable, and perform the Step 1) and on.

**\*This setting can be changed later.**

**For details, refer to "5. Setting the display language and port".**

When the communication software starts, the Menu screen is displayed.



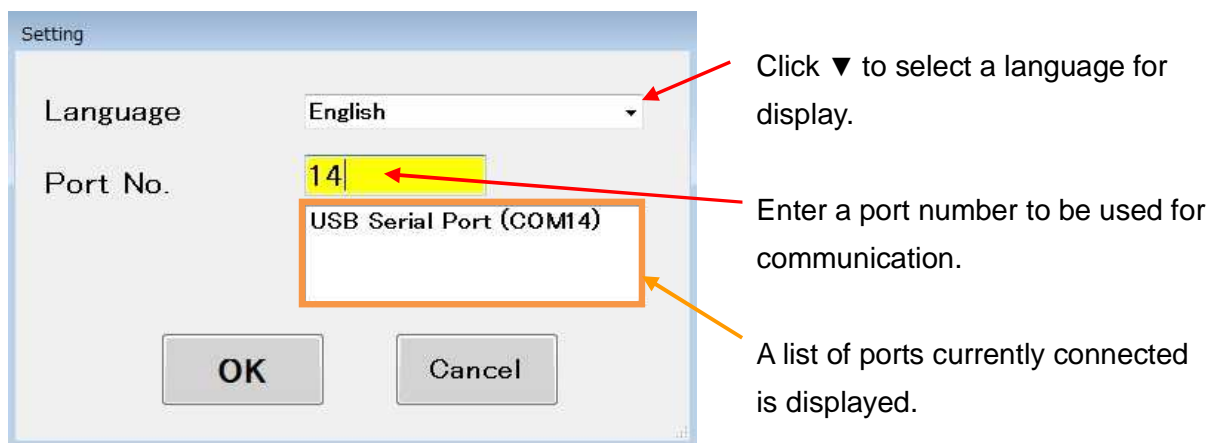
- 4) Click the button of an item to perform, each Setting screen is displayed.  
Each Setting screen is explained later.

## 5. Setting the display language and port

The display language of communication software (Japanese and English), and a port to perform communication can be selected.

Setting method

- 1) Double click the [Setting] button below the Communication Software Menu screen.
- 2) The [Setting] screen is displayed.



- 3) Click the [OK] button to enable the setting.

When canceling the task, click the [Cancel] button.

## 6. Shifting calibration curves

For each grain, a measurement value of the moisture meter can be fine adjusted its moisture within  $\pm 2.0$  % range. Use this menu when matching your moisture meter and moisture values.

Setting method

- 1) Connect CD-6E and your PC with a USB cable.  
Set the handle to the No Measure position, and turn the power of CD-6E ON.
- 2) Click the [Calibration Shift] button in the Menu screen.
- 3) When normal communication is established with CD-6E, the [Calibration Shift] screen is displayed.  
On the screen, the shift amount of each grain currently set (moisture fine adjusted value) is displayed.

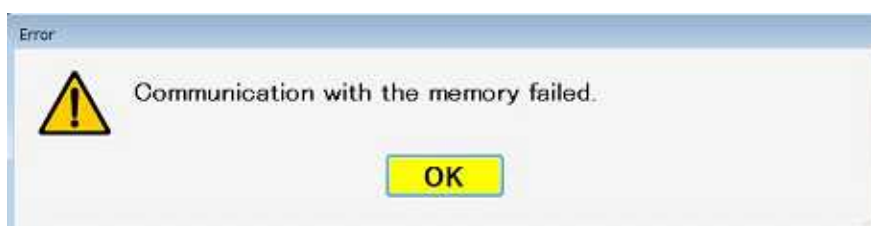
Calibration Shift

Input the value for the grain to be shifted and then, click the Change button.


1. Brown rice	+ - 0.0 %	16. Rapeseed	+ - 0.0 %
2. White rice	+ - 0.0 %	17. Standard	+ - 0.0 %
3. Paddy	+ - 0.0 %	18. Wheat2	+ - 0.0 %
4. In drying paddy	+ - 0.0 %	19.	+ - 0.0 %
5. Wheat	+ - 0.0 %	20.	+ - 0.0 %
6. Barley	+ - 0.0 %	21. USER 1	+ - 0.0 %
7. Beer barley	+ - 0.0 %	22. USER 2	+ - 0.0 %
8. Rye	+ - 0.0 %	23. USER 3	+ - 0.0 %
9. Soybean	+ - 0.0 %	24. USER 4	+ - 0.0 %
10. Buckwheat	+ - 0.0 %	25. USER 5	+ - 0.0 %
11. Long brown rice	+ - 0.0 %	26. USER 6	+ - 0.0 %
12. Long white rice	+ - 0.0 %	27. USER 7	+ - 0.0 %
13. Long paddy	+ - 0.0 %	28. USER 8	+ - 0.0 %
14. Red beans	+ - 0.0 %	29. USER 9	+ - 0.0 %
15. Corn	+ - 0.0 %		

Change Cancel

\*If the Error screen is displayed, refer to “11. Error display”.



- 4) A moisture value to shift on a grain to perform fine adjustment on moisture is set.  
Example: Lower the moisture display of brown rice by 0.5 %.



Input the value for the grain to be shifted and then, click the Change button.

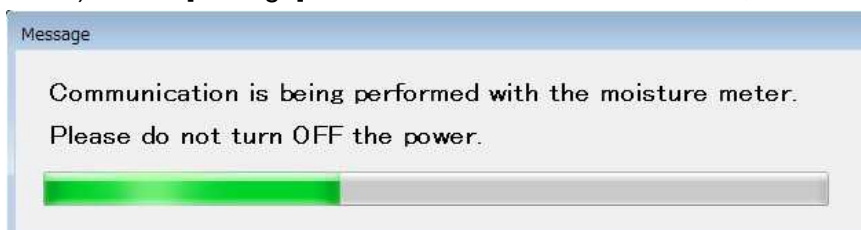
1. Brown rice	+ ▼ 0.0 ▼ %	16. Rapeseed	+ ▼ 0.0 ▼ %
2. White rice	+ ▼ 0.1 ▼ %	17. Standard	+ ▼ 0.0 ▼ %
3. Paddy	+ ▼ 0.2 ▼ %	18. Wheat2	+ ▼ 0.0 ▼ %
4. In drying paddy	+ ▼ 0.3 ▼ %	19.	+ ▼ 0.0 ▼ %
5. Wheat	+ ▼ 0.4 ▼ %	20.	+ ▼ 0.0 ▼ %
6. Barley	+ ▼ 0.5 ▼ %	21. USER 1	+ ▼ 0.0 ▼ %
7. Beer barley	+ ▼ 0.6 ▼ %	22. USER 2	+ ▼ 0.0 ▼ %
8. Rye	+ ▼ 0.7 ▼ %	23. USER 3	+ ▼ 0.0 ▼ %
9. Soybean	+ ▼ 0.8 ▼ %	24. USER 4	+ ▼ 0.0 ▼ %
10. Buckwheat	+ ▼ 0.9 ▼ %	25. USER 5	+ ▼ 0.0 ▼ %
11. Long brown rice	+ ▼ 1.0 ▼ %	26. USER 6	+ ▼ 0.0 ▼ %
12. Long white rice	+ ▼ 1.1 ▼ %	27. USER 7	+ ▼ 0.0 ▼ %
13. Long paddy	+ ▼ 1.2 ▼ %	28. USER 8	+ ▼ 0.0 ▼ %
14. Red beans	+ ▼ 1.3 ▼ %	29. USER 9	+ ▼ 0.0 ▼ %
15. Corn	+ ▼ 1.4 ▼ %		

Click the ▼ button, and select a sign (+ and -).  
For the "Example", select -.

Click the ▼ button, and select the amount to shift.  
For the "Example", select 0.5.

Change Cancel

- 5) When also changing other grains, set the amount to shift likewise.  
6) Click [Change] to start communication with CD-6E, and a calibration curve is shifted.



**While communication is being performed, please do not turn OFF the power.**

When canceling a changing task, click the [Cancel] button without clicking the [Change] button.  
Shift changes are not performed and the Menu screen is displayed.

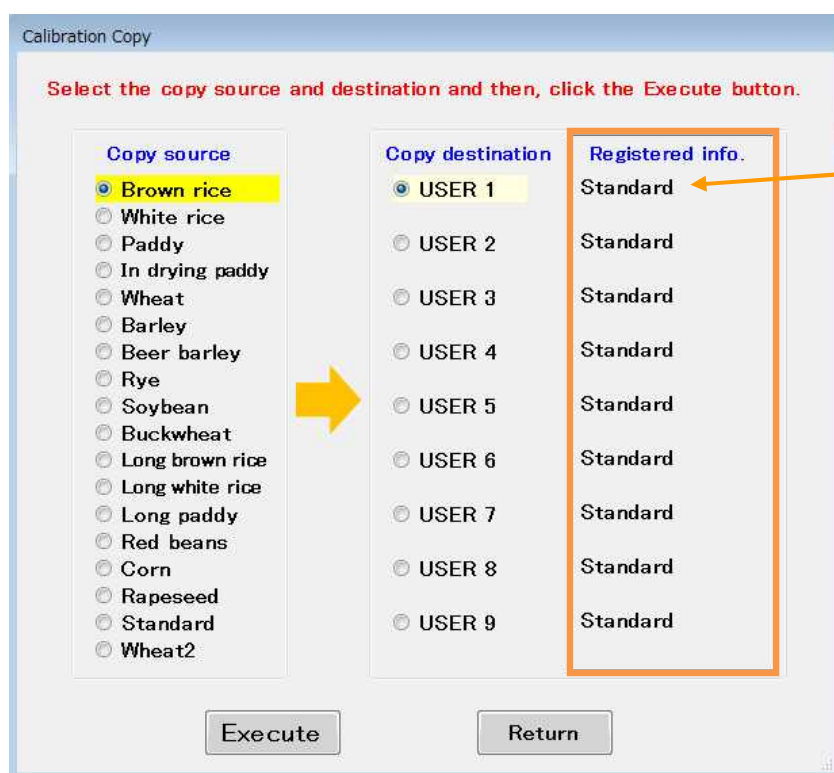
**\*For a grain which calibration curve is shifted, [·] is displayed at the end of its grain display name.**

## 7. Copying calibration curves

A calibration curve of each grain range can be copied in User 1 to User 9 range.

Setting method

- 1) Connect CD-6E and your PC with a USB cable, and turn the power of CD-6E ON.
- 2) Click the [Calibration Copy] button in the Menu screen.
- 3) The [Calibration Copy] screen is displayed.



A user can verify what calibration curve is copied.  
The default is [Standard].

- 4) Select a grain to copy from the copy source.
- 5) Select a range (User 1 to 9) to copy, and click the [Execute] button.  
Communication starts with CD-6E, and copying is performed.

In the screen above, the brown rice range is copied to User 9, and when measured by selecting User 9, the same moisture value with brown rice is displayed.

When canceling a copy task, click the [Return] button without clicking the [Execute] button.

- 6) Refer to "Selection Function of Displayed Grain" (Page 23 to 24) in CD-6E Owner's Manual, and display the user range on the copy destination.



## 8. Registration to user range

A calibration curve you created can be registered in User 1 to User 9 range.

For the creating method of a calibration curve, use “5) calibration curve creation function” described later, or refers to “Creating User Calibration Curve” (Page 30) in CD-6E Owner's Manual.

Setting method

- 1) Connect CD-6E and your PC with a USB cable, and turn the power of CD-6E ON.
- 2) The [Registration to User Range] screen is displayed.



- 3) Select a user range to register, and click the [OK] button.  
When canceling the task, click the [Return] button.
- 4) The current set value is displayed. Click [Next].  
When canceling the task, click the [Return] button.



- 5) The screen for calibration curve creation is displayed. (**Calibration curve creation function**)

- 6) Input a target value and CD-6E measurement value. (Standard on number of data: 15 or more for the target)

Target value: for a grain a moisture value is known, input its moisture value, and when matching to your moisture meter, input the measurement value of the moisture meter.

CD-6E measurement value: For each sample, input an average value from five measurements in the "**Standard**" range on each sample.

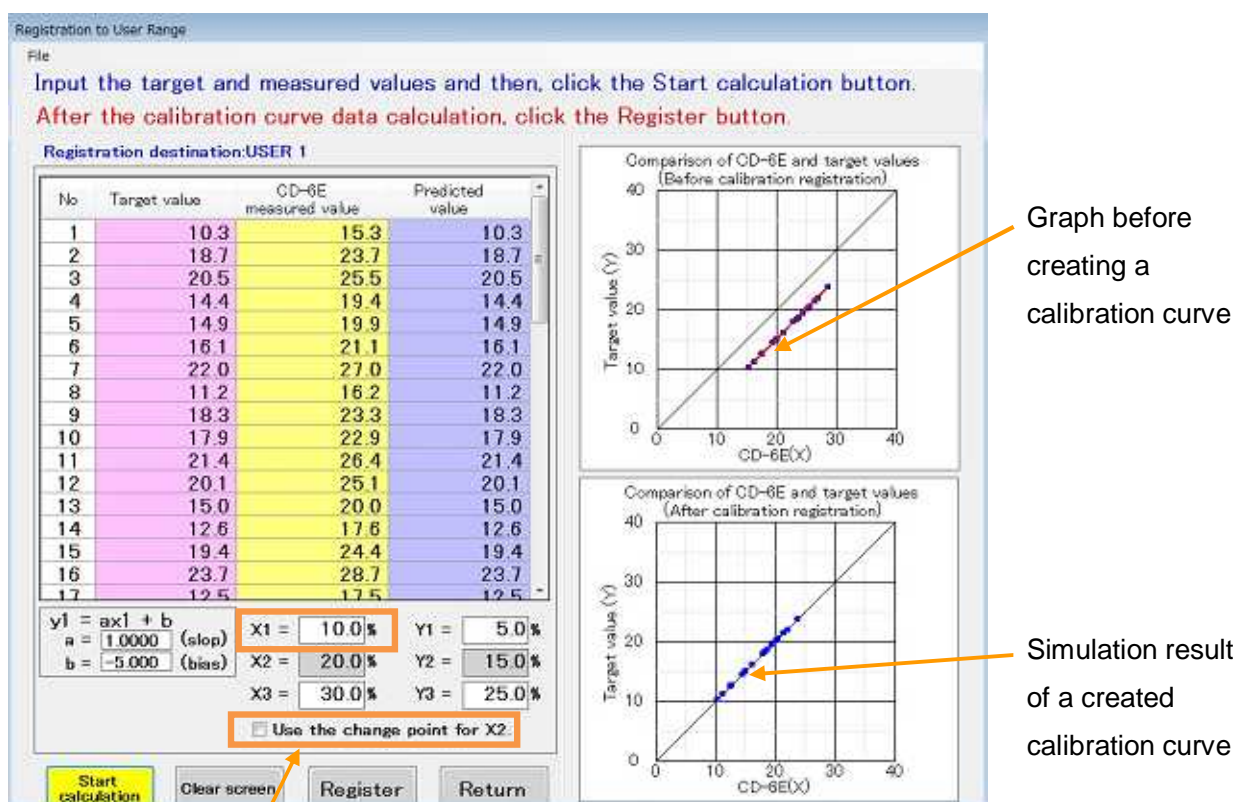
Clear entered values.

Return to the previous screen.

7) Click the [Start calculation] button.

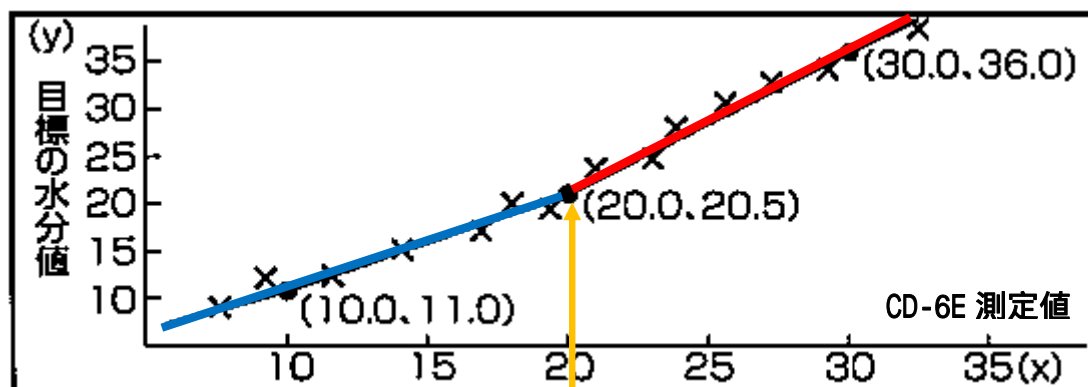
A calibration curve is created, and an estimate value of CD-6E measurement results is displayed.

In the example below, by using a created calibration curve, the simulation result that a value of the CD-6E measurement value showed approx. 5 % higher moisture value is near the target value.



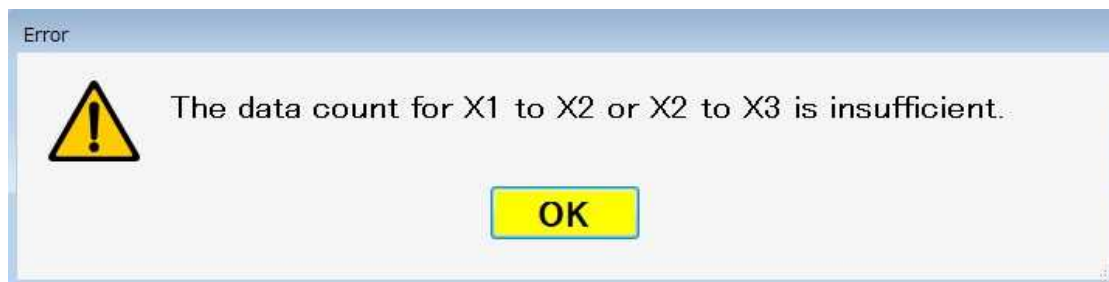
<'Use the change point for X2.' checkbox>

As shown in the graph below, when the graph with plotted target values and CD-6E measurement values is not a straight line, but its inclination changes like the "<" sign, place a check on the checkbox.



By entering an X2 value while the checkbox is checked, more accurate calibration curve can be created. In the graph above, the graph is inclined at the 20.0 % position; therefore, enter 20.0 in X2, and click the [Start calculation] button.

When the next error is displayed, data for creating a calibration curve are not sufficient. Calculation is not possible because data between X1 and X2 or X2 and X3 do not exist. Add data, and perform calculation again.



- 8) When registering a created calibration curve to the main body of CD-6E, make sure the power of CD-6E is ON, and click the [Register] button.  
(If the power of CD-6E is OFF, turn the power ON)  
Communication starts with CD-6E, and the calibration curve is registered.  
When canceling registration, click the [Return] button.
- 9) Refer to "Selection Function of Displayed Grain" (Page 23 to 24) in CD-6E Owner's Manual, and display the user range of the registered calibration curve.

<Not using the calibration curve creation function>

Registration to User Range			
For Calibration Data Change, click the "NEXT" button.			
Registration destination: USER 1			
X1	10.0 %	Y1	10.0 %
X2	20.0 %	Y2	20.0 %
X3	30.0 %	Y3	30.0 %
Next		Return	

Values on X1 to X3 and Y1 to Y3 you determined can be registered without using the calibration curve creation function.

X: Measured values with CD-6E (enter with the condition of  $X1 < X2 < X3$ )

Y: Target values (enter with the condition of  $Y1 < Y2 < Y3$ )

In the case, click the [Next] button after entering values in the frames shown in the figure above, and click the [Register] button on the next screen.

- Supplement 1 on user calibration curve

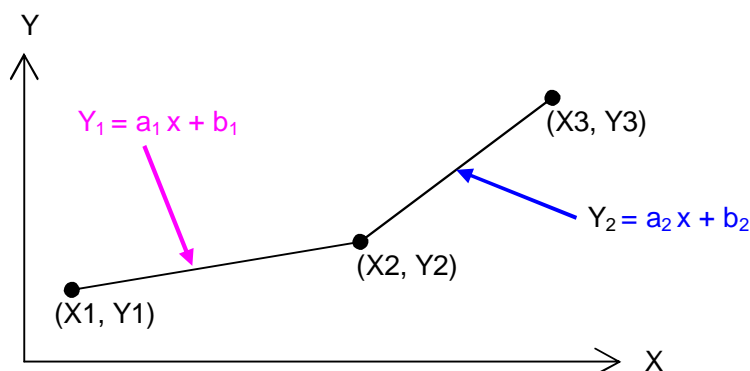
Y values indicate target values how to display X values (measurement values of CD-6E).

A moisture display is converted with the following formula.

For example, when entering

X1: 10.0, X2: 20.0, X3: 25.0

Y1: 12.0, Y2: 22.0, Y3: 30.0



Each inclination and intercept value can be obtained in the formula next.

$$a_1 = (Y_2 - Y_1) / (X_2 - X_1), b_1 = Y_2 - a_1 * X_2$$

$$a_2 = (Y_3 - Y_2) / (X_3 - X_2), b_2 = Y_3 - a_2 * X_3$$

For the example,  $a_1 = 1.0$ ,  $b_1 = 2$  and  $Y_1 = X + 2$

$$a_2 = 1.6, b_2 = -10 \text{ and } Y_2 = 1.6 X - 10$$

When the value of X is X2 or less, a value calculated with the  $Y_1$  formula is displayed.

When the value of X is X2 or more, a value calculated with the  $Y_2$  formula is displayed.

In the example, displayed as 10.0 % is:  $Y_1 = 10.0 + 2 = 12.0$ . Therefore, displayed as 12.0 %, and displayed as 25.0 % is  $Y_2 = 1.6 * 25.0 - 10 = 30.0$ , therefore, displayed as 30.0 %.

- Supplement 2 on user calibration curve

When calibration curves are already copied to user ranges through copying of calibration curves, after a moisture value is calculated with a copied grain, calculation is performed with a created calibration curve.

**Please use created calibration curves with your responsibility.**

## 9. Receipt of measurement results

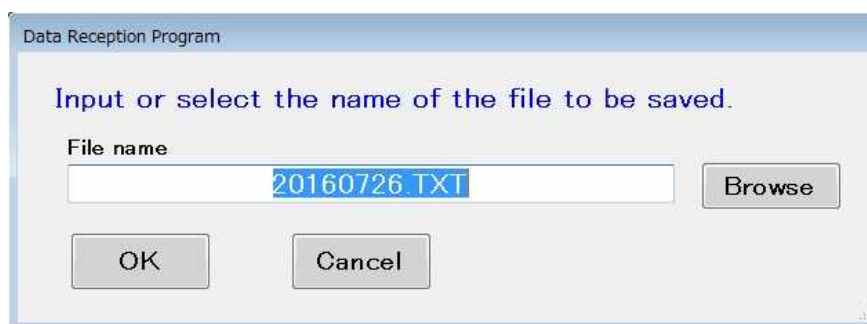
Measurement results of CD-6E can be received by your PC.

Received data can be saved in the text format.

1) Connect CD-6E and your PC with a USB cable, and turn the power of CD-6E ON.

2) Click the [Receipt of Measurement Results] button in the [Menu] screen.

The screen to enter a filename to save the measurement results is displayed.

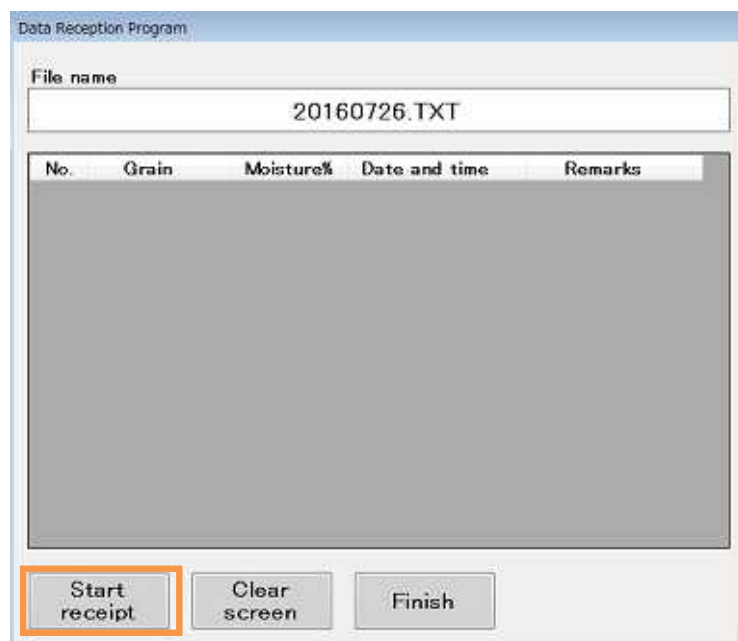


Enter a filename, and click the [OK] button.

(The filename is "yyyymmdd.TXT" by default)

3) The screen to receive measurement data is displayed.

Click the [Start receipt] button to set a receivable condition.



No.	Grain	Moisture%	Date and time	Remarks
-----	-------	-----------	---------------	---------

- 4) When a measurement is performed with CD-6E, measurement data are displayed on the screen.

To finish receiving data, click the [Stop receipt] button.

\*After operation of [Stop receipt], data are saved in a file.

The screenshot shows a software window titled "Data Reception Program". Inside, there is a text field for "File name" containing "20160726.TXT". Below this is a table with the following data:

No.	Grain	Moisture%	Date and time	Remarks
001	Paddy	13.2	2016/07/26 16:04	
002	Wheat	12.9	2016/07/26 16:04	
003	Soybean	10.3	2016/07/26 16:05	

Below the table are three buttons: "Stop receipt" (highlighted with an orange border), "Clear screen" (highlighted with a blue border), and "Finish" (highlighted with a red border). Arrows point from these buttons to the explanatory text below.

Finish the receiving program.

Clear the screen, and return to the blank display state.

Data receiving is done, and data are saved in a file.



## 10. Batch receipt of data

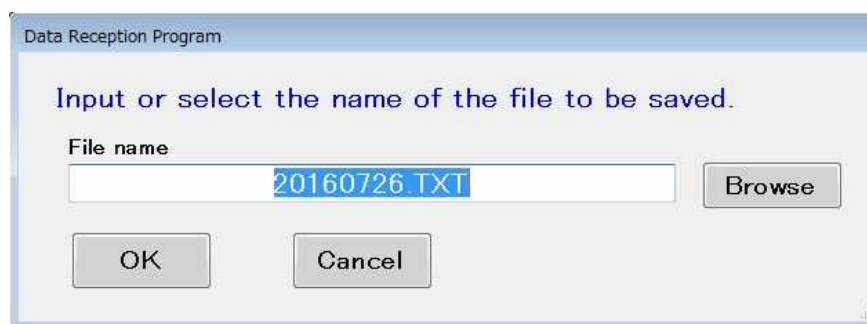
Average value data saved in the main body of CD-6E can be received as bulk data by your PC.  
(In the main body of CD-6E, the latest 100 average values can be automatically saved.)

Received data can be saved in the text format.

1) Connect CD-6E and your PC with a USB cable, and turn the power of CD-6E ON.

2) Click the [Batch Receipt of Data] button in the [Menu] screen.

The screen to enter a filename to save the measurement results is displayed.



Data Reception Program

Input or select the name of the file to be saved.

File name

20160726.TXT

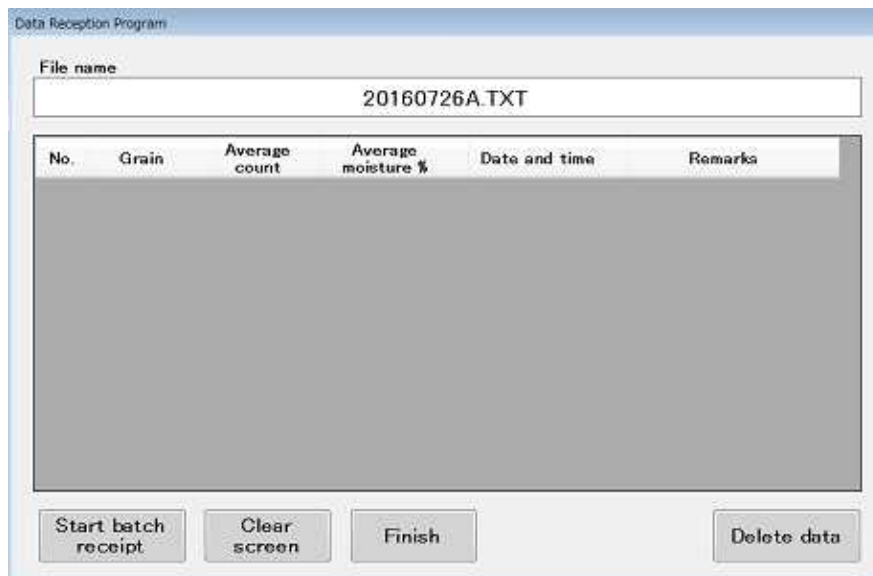
Browse

OK Cancel

Enter a filename, and click the [OK] button.

(The filename is "yyyymmdd.TXT" by default)

3) The screen to receive measurement data is displayed.



Data Reception Program

File name

20160726A.TXT

No.	Grain	Average count	Average moisture %	Date and time	Remarks
-----	-------	---------------	--------------------	---------------	---------

Start batch receipt Clear screen Finish Delete data

- 4) Click the [Start batch receipt] button to start communication with the moisture meter, and received data are displayed on the screen.

Data Reception Program

File name: 20160726A.TXT

No.	Grain	Average count	Average moisture %	Date and time	Remarks
001	Corn	1	13.8	2016/07/26 16:12	
002	Corn	2	14.0	2016/07/26 16:12	
003	Corn	3	14.0	2016/07/26 16:12	
004	Corn	4	14.1	2016/07/26 16:12	
005	Soybean	1	10.3	2016/07/26 16:12	
006	Soybean	2	10.3	2016/07/26 16:12	

Start batch receipt Clear screen Finish Delete data

Measured grain range

Average moisture value

No. of measurements

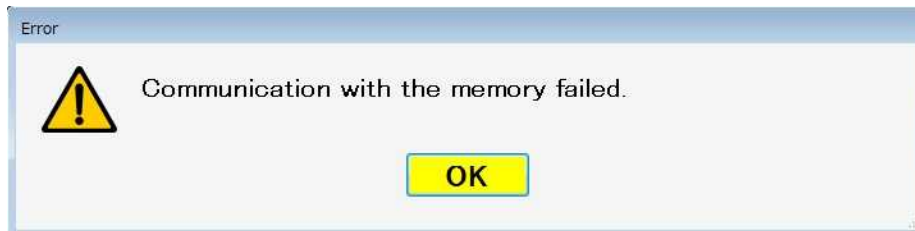
Date and time a bulk receiving is done

\*Not a measured date and time.

- 5) Click the [Clear screen] button to clear the display.
- 6) Click the [Finish] button to return to the Menu screen.

\*To delete the data saved in the main body of the moisture meter, click the [Delete data] button and follow the instructions on the screen.

## 11. Error display



### <Cause>

Communication cannot be performed properly between the moisture meter and PC.  
Communication failed with IC on the substrate.

### <Check and handling method>

- Check the cable is connected correctly.
  - Check the power of the moisture meter is ON.
  - Check the port setting on PC is correct.
- Refer to "5. Setting the display language and port".

Turn the power of the moisture meter OFF and ON. Take the USB cable out once and connect again.

If the actions above do not solve the problem, request for repairs at the dealer you purchased the product or our company headquarters and sales.