NIR Moisture Analyzer KB-230

Kett

PC Software Operating Manual

Ver 1.0.0.2

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Precautions

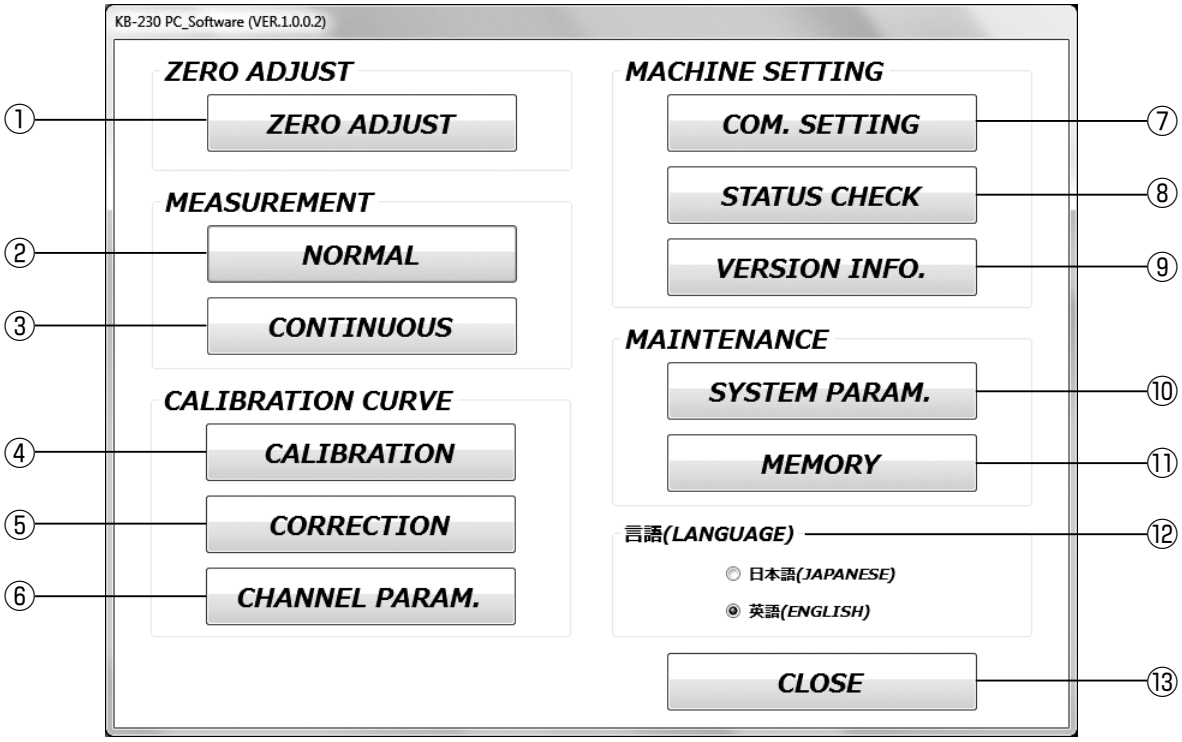
■ Before use

Thank you for purchasing PC Software for NIR Moisture Analyzer KB-230 ("this software" hereafter). Please read this operating manual thoroughly in order to fully use the functions of this PC software.To run this software, an operating system such as ©Microsoft Windows 7/8.1/10 needs to be installed.During operation of this software, the main unit operation of NIR Moisture Analyzer KB-230 is also required. For details of operation, refer to the operating manual of the analyzer.

■ Purpose of use

This software provides functions to display or save moisture measurement data obtained using NIR Moisture Analyzer KB-230 and to make calibration curves. It is comprehensive support software to be used for zero-calibration, or setting up the device.

<Main screen>



	Function	Description	Reference
①	Zero-adjustment	Adjusts absorbance using a zero-adjustment plate.	P. 29
②	Normal measurement	Performs measurement in the normal mode. The measurement log can be saved in a file.	P. 9
③	Continuous measurement	Performs measurement in the continuous measurement mode. Samples the moisture or absorbance in the set interval, and displays the trend graph. The measurement data can be saved in a file.	P. 11
④	Calibration	Obtains (measures) calibration data, and calculates the regression based on the entered data and obtains coefficient. Also, it displays the regression calculation results in values and graphs.	P. 15
⑤	Correction	Corrects the displayed value.	P. 21
⑥	Channel parameter	Enables checking and changing the channel name and the parameters such as the coefficient.	P. 27
⑦	Communication setting	Sets the communication port (COM).	P. 8
⑧	Status check	Enables checking the error and device status.	P. 30
⑨	Version information	Enables checking the main unit program and the PC software version.	P. 30
⑩	System parameter	It is only to be used in the maintenance work by the manufacturer. Customers shall not use this function. Otherwise, data necessary for the normal operation including the unit-specific data may be lost.	P. 31
⑪	Memory maintenance		
⑫	Language	Selects an operation language (Japanese or English).	P. 8
⑬	Exiting	Closes the main screen and exit the program.	–

2. Installation

* **This PC software runs in the OS of Windows7/8.1/10.**
  There are no special constraints other than OS for this PC software to run.
  In order to install this software, log in by the administrator authority.
* **To perform installation, ensure internet-connected environment.**
* **The operation flow with Windows7 is explained as an example.**

2-1. Installing the USB driver

Install the USB driver by either of the following.

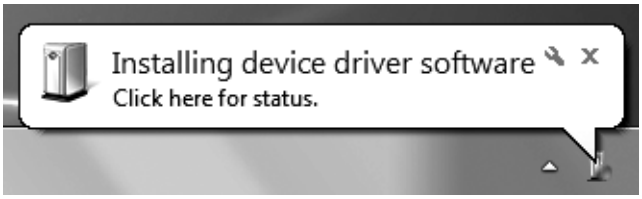
■ To install the USB driver automatically

1 Connect the main unit of KB-230 and the PC.

After turning on the main unit of KB-230, connect with the PC using a USB cable.

2 Start the installation.

When successfully connected, the following message will be displayed and the driver installation is automatically started.



3 Installation is completed.

When the installation is successfully done, a message will be displayed.

■ To install the USB driver manually

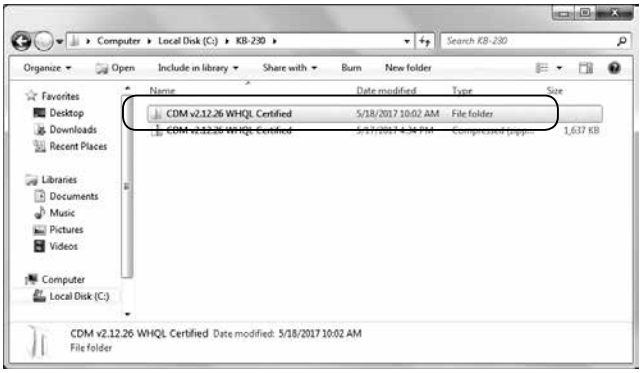
1 Download the FTDI's USB driver (VCP).

Download the driver from the following site and save in a given folder.

http://www.ftdichip.com/Drivers/VCP.htm

2 Extract the driver file.

Extract the driver file in a given folder.

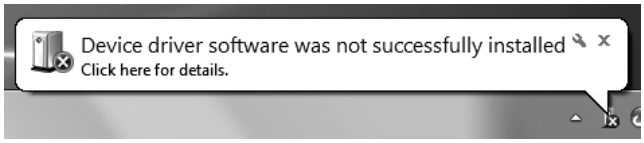


* **Do not use Japanese writing characters (two bytes, one byte).**

3 Connect the main unit of KB-230 and the PC.

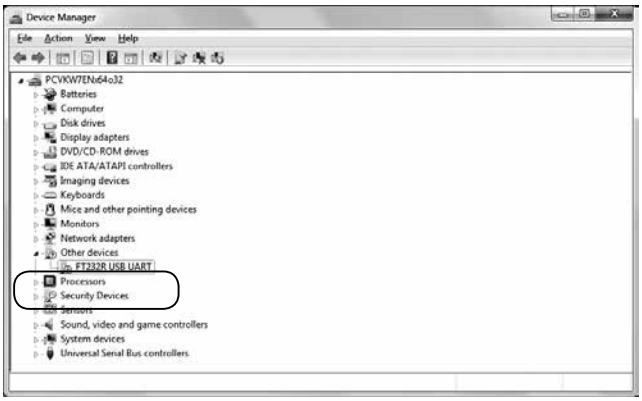
After turning on the main unit of KB-230, connect with the PC using a USB cable.

* **Even when the following message is displayed, continue the procedures.**



4 Refer to the device property.

Right click on [Other devices | FT232R USB UART].

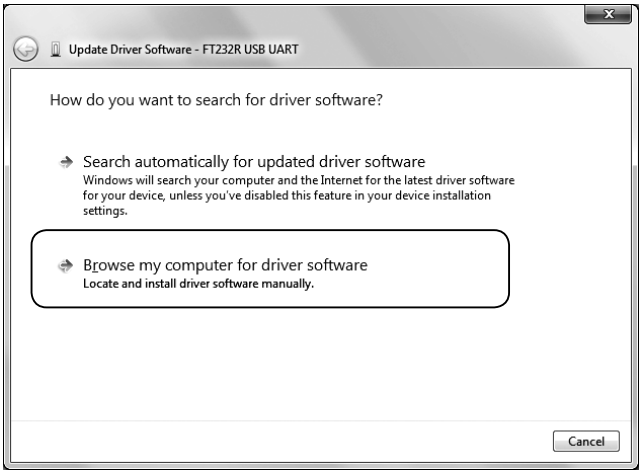


5 Property of the USB Serial Port.

Click the [Update Driver...] button.

6 Search for the driver software.

Click the [Browse my computer for driver software] button.

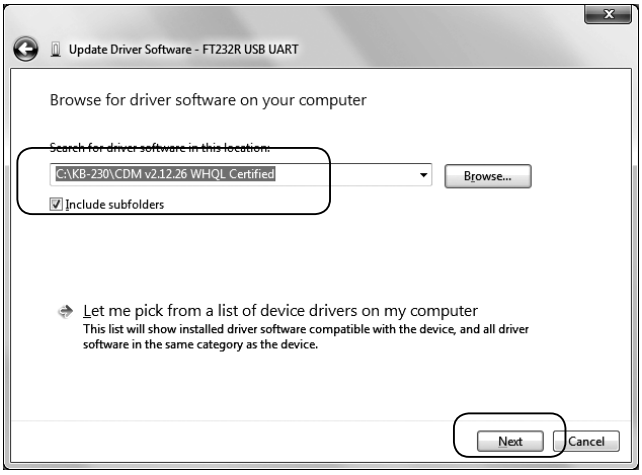


2-1. Installing the USB driver

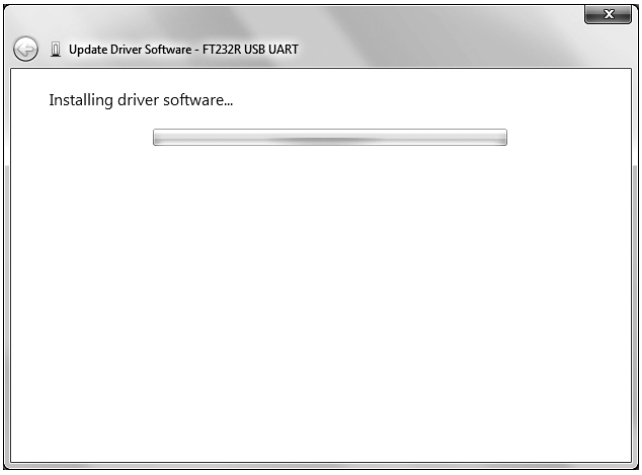
7 **Designate the folder where the FTDI's driver is extracted.**

Designate the folder and click the [Next] button.

* **To perform searching including the sub folders, check mark "Include subfolders".**



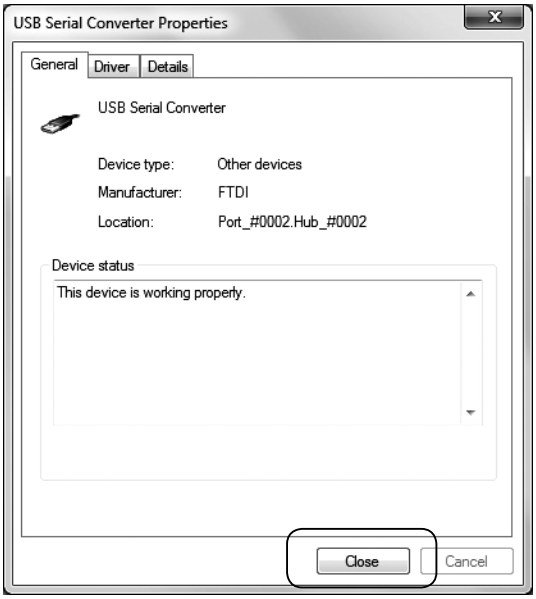
8 **During installation.**



9 **Installation is completed.**

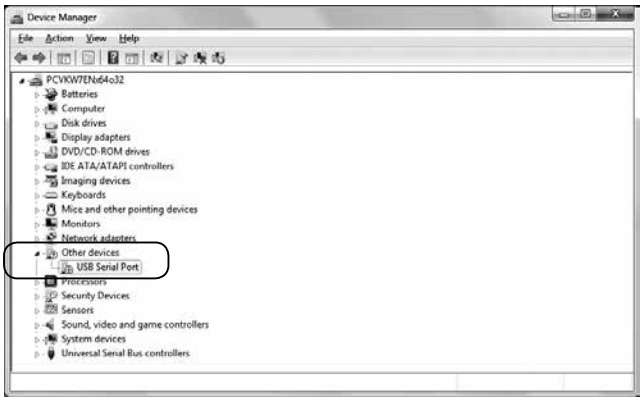
10 **Property of USB Serial Converter.**

Click the [Close] button.



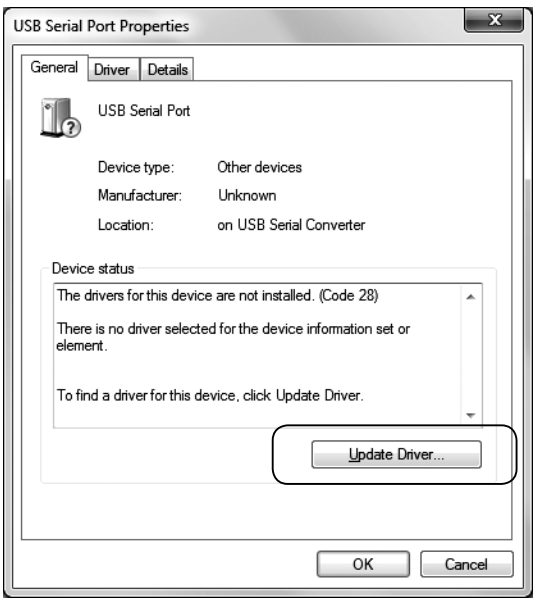
11 **Refer to the device property.**

Right click on [Other devices | USB Serial Port].



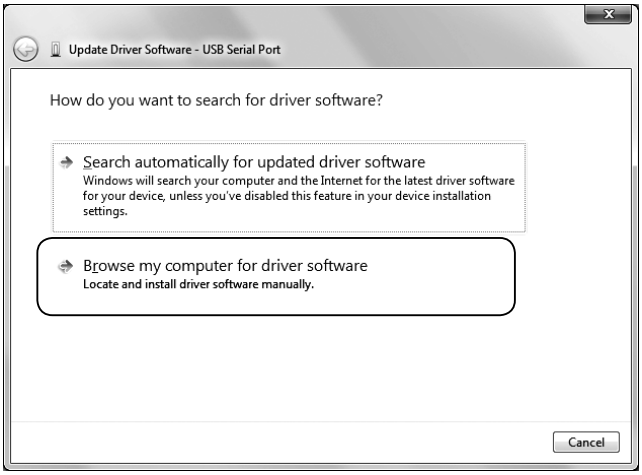
12 **Property of the USB Serial Port.**

When the following window is displayed, click the [Update Driver...].



13 Search for the driver software.

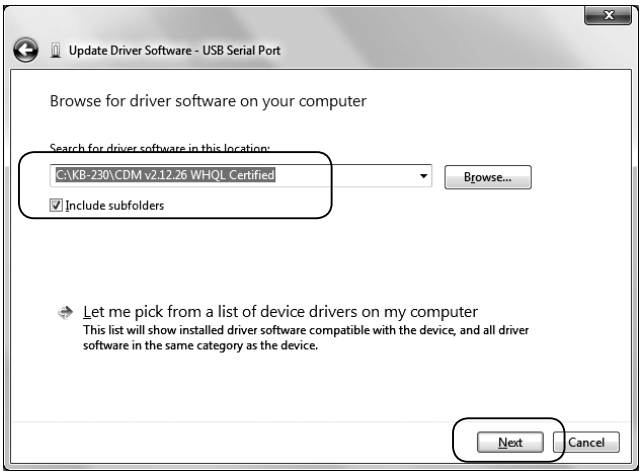
Click the [Browse my computer for driver software] button.



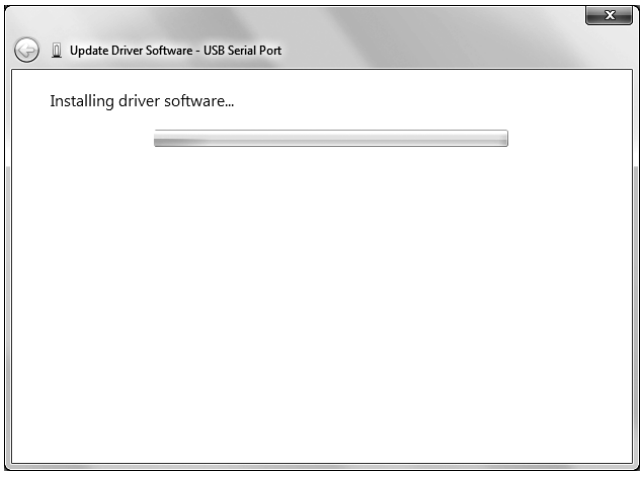
14 Designate the folder where the FTDI's driver is extracted.

Designate the folder and click the [Next] button.

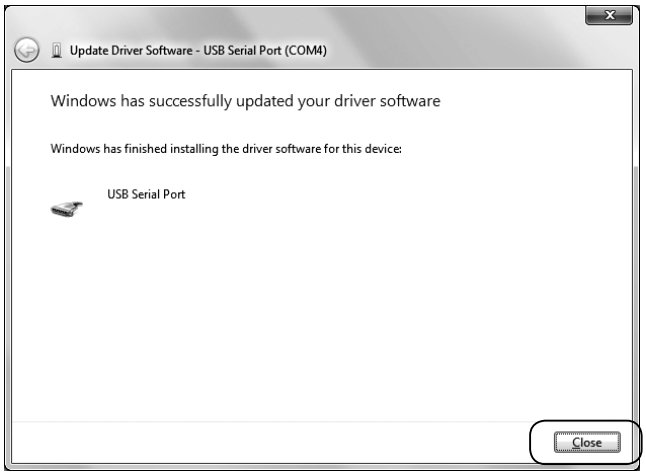
*** To perform searching including the sub folders, check mark "Include subfolders".**



15 During installation.



16 Installation is completed.



17 Property of the USB Serial Port

Click the [Close] button.

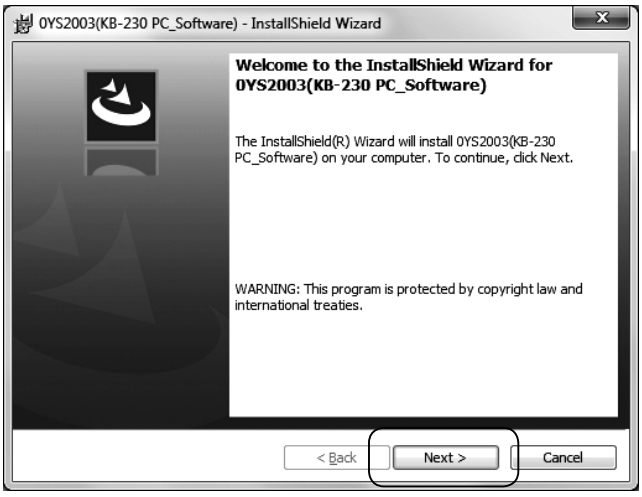
2-2. Installing the PC software

1 **Set the disk to the CD drive.**

Double-click [Start] → [Computer] → [Disk drive]. Copy the setup file in the disk to the desktop, and double-click ( ).

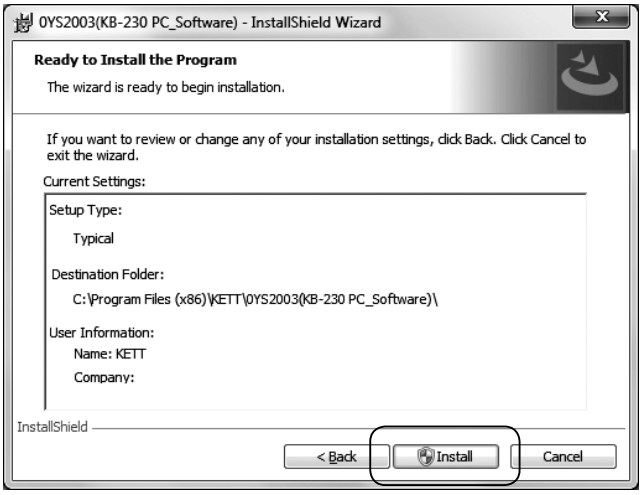
2 **Start the setup.**

Click the [Next] button.



3 **Start the installation.**

Click the [Install] button.



*** Click the [Yes] button when "Do you want to allow the following program from an unknown publisher to make changes to this computer?" is displayed.**

4 **Installation is completed.**

Click the [Finish] button.

5 **Create a short-cut.**

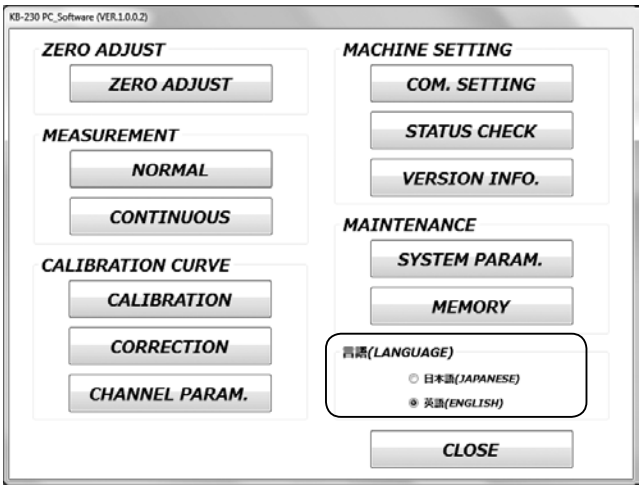
When the installation is successfully done, a short-cut icon will be created on the desk top ( ).

6 **Start up the PC software.**

Double-click the short-cut icon ( ), and start up the PC software.

3-1. Selecting the language

1 **Select the language in the main screen (Japanese/English).**

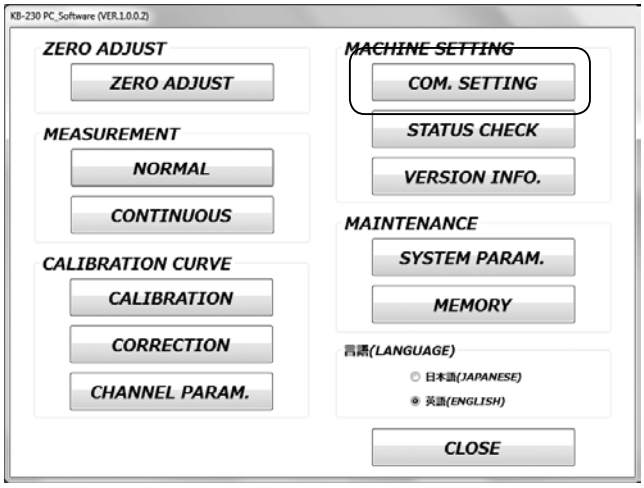


3-2. Setting up communication

The following is describes items to be set to connect between main unit of KB-230 and the PC.

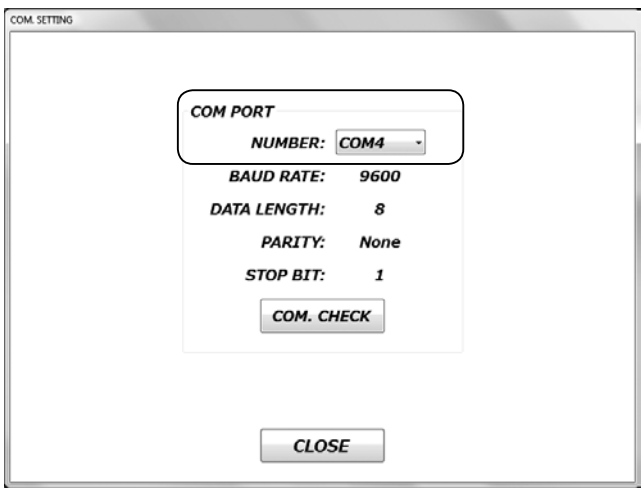
1 **Connect the main unit of KB-230 and the PC.**
Use the designated USB cable (VZC-61).

2 **Click the [COM.SETTING] button in the main screen.**



3 **Set the communication port (COM).**
Set the COM port number.

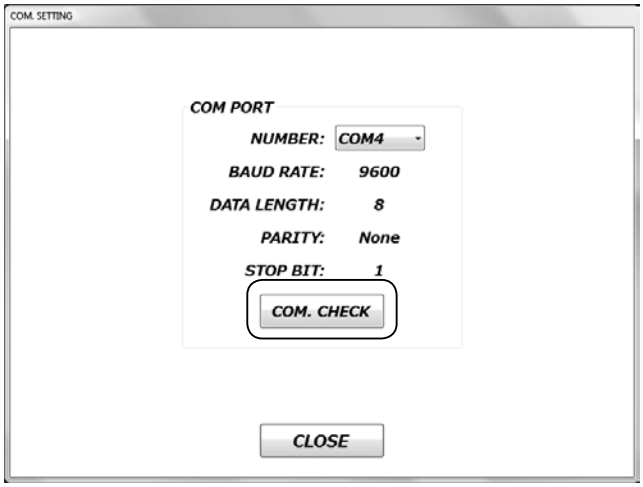
* **The COM port number can be checked with the device manager.**



4 **Check the communication.**
When the [Communication Test] button is clicked, "OK!" will be displayed.

* **If a message "The port 'COM--' does not exist." is displayed, click the [OK] button, and check the COM port after returning to the "COM. SETTING" screen.**

* **The main screen can be restored by clicking the [CLOSE] button in the "COM. SETTING" screen.**



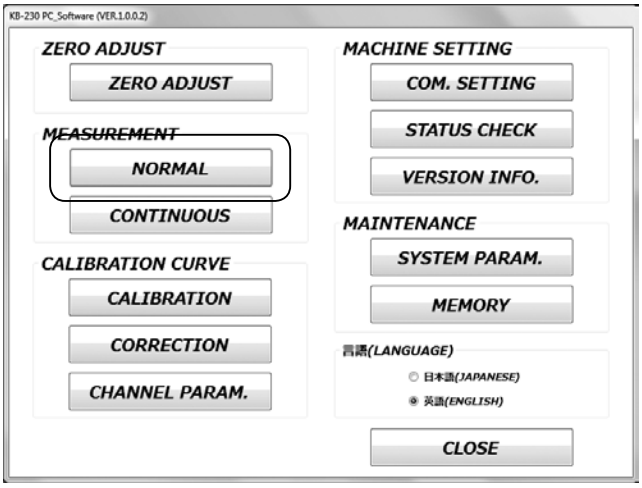
* **When "COMMUNICATION NG" is displayed, check the connection and breaks in the communication cable and the COM port number again.**

4. Measurement

4-1. Normal measurement

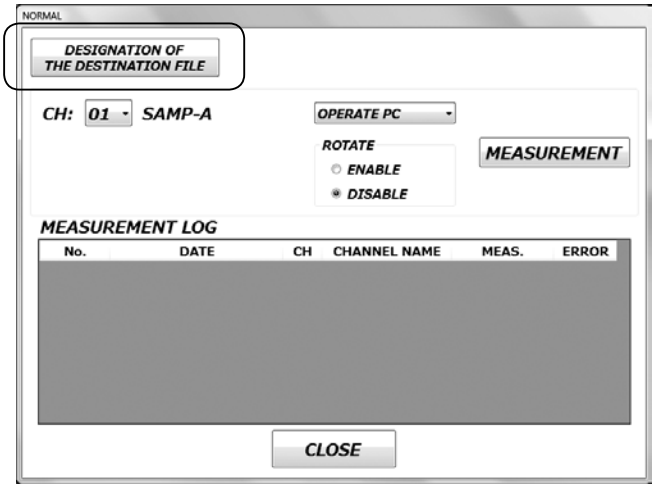
In the normal measurement, measurement can be performed in the normal mode and the measurement log can be saved in a file.

1 Click the [NORMAL] button in the main screen.

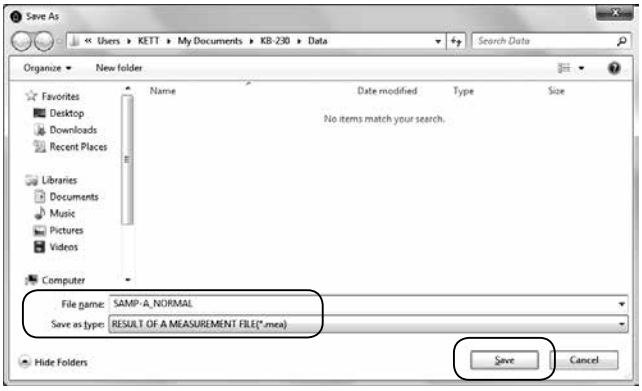


2 Designate the destination file.

Click the [DESIGNATION OF THE DESTINATION FILE] button.



Designate a folder and "File name" in the "Save As" window.

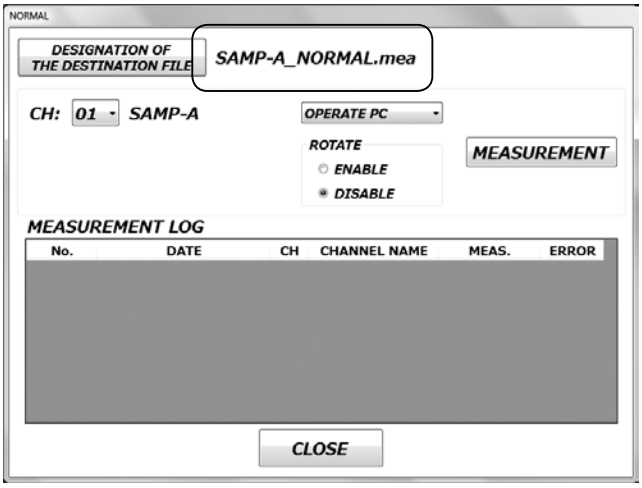


* **The default saving destination is My Document\KB-230\Data.**

* **A new file will be created when the file is named and saved.**

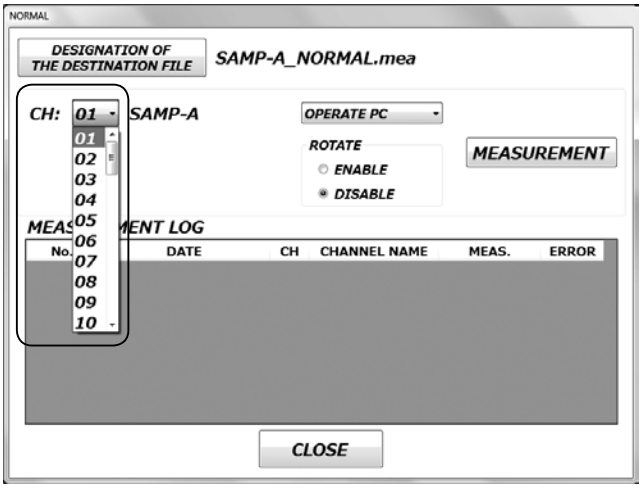
* **When an existing file is selected, the file is opened and the measurement log will be displayed.**

The file name of the saving destination will be displayed.

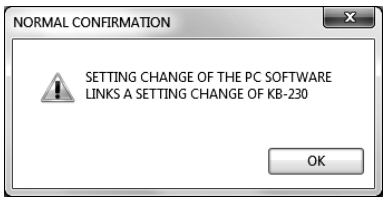


3 Set up the measurement channel.

Select a measurement channel.

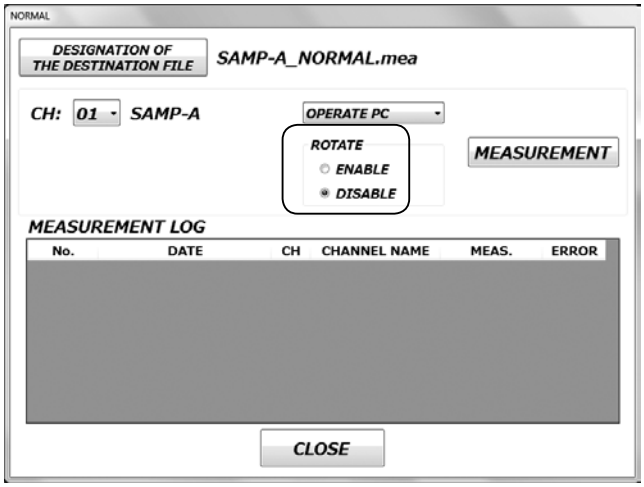


* **Note that when the measurement channel is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.**



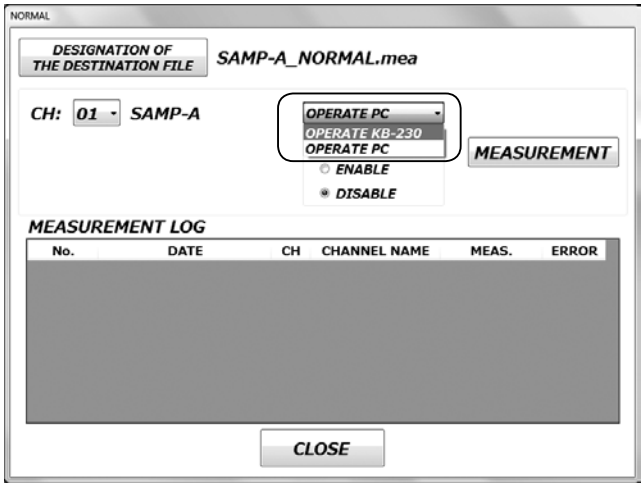
4 Select whether to rotate or stop the rotation table by selecting "ENABLE" or "DISABLE".

* Note that when the rotation setting of the rotation table is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.



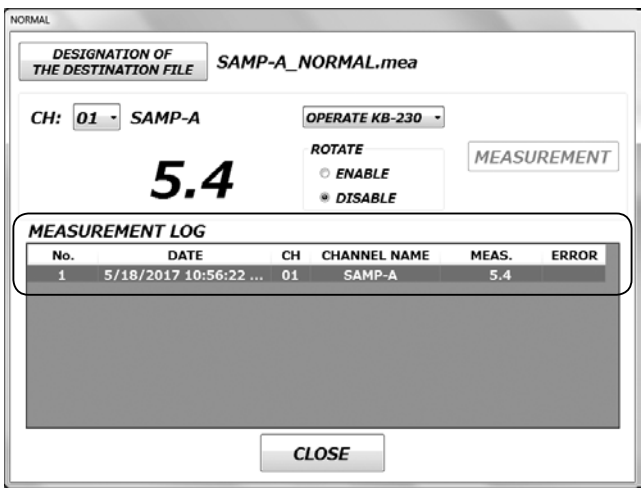
5 Select the measurement operation.

Select either "OPERATE KB-230" or "OPERATE PC".



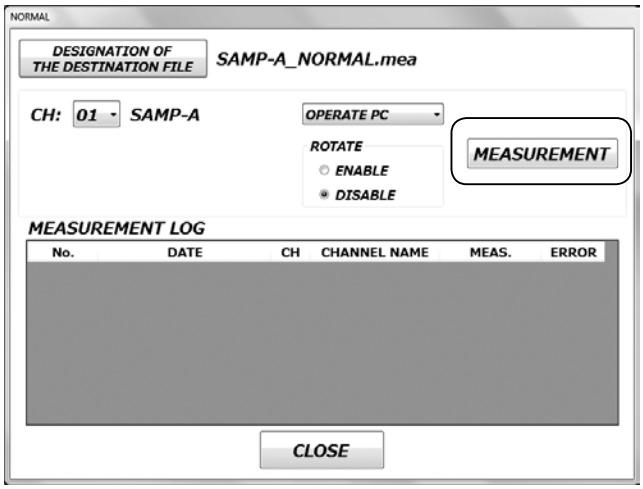
■ **When "OPERATE KB-230" is selected**

The measurement can be started by clicking the [MEA.] button of the KB-230. The result will be displayed when the measurement is done.

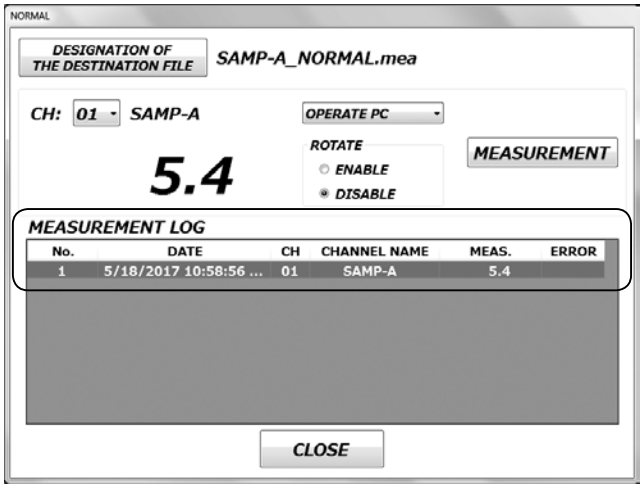


■ **When "OPERATE PC" is selected**

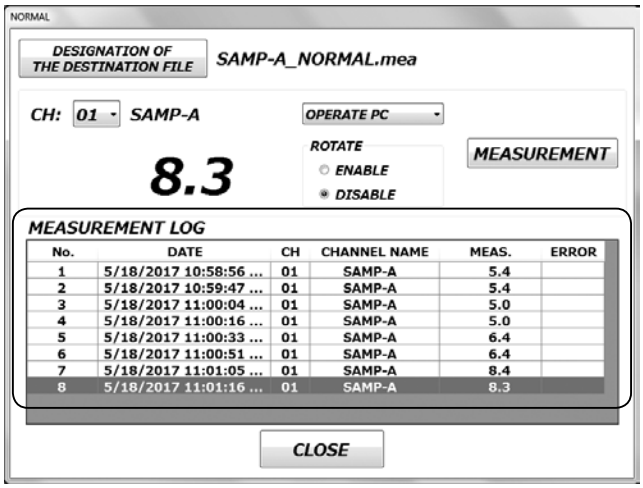
The measurement can be started by clicking the [MEASUREMENT] button of the PC software.



The result will be displayed when the measurement is done.



* The log will be displayed/saved in the order of measurement.

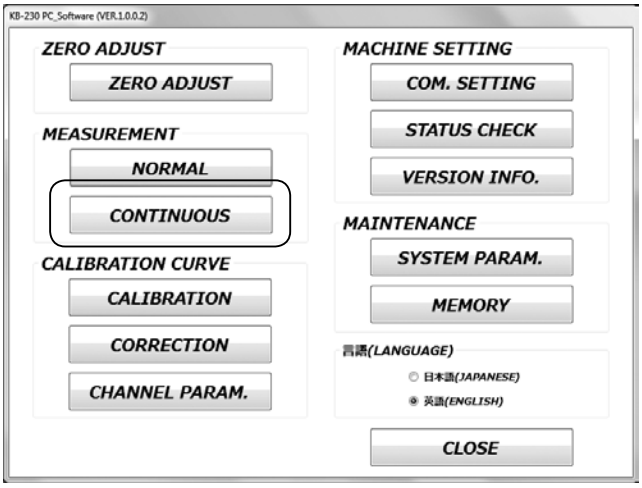


4-2. Continuous measurement

● Starting the measurement

After measuring in the continuous measurement mode, sample the moisture or absorbance in the set interval and displays the trend graph. The measurement data can be saved in a file. Refer to P.14 for the items to be displayed in the graph.

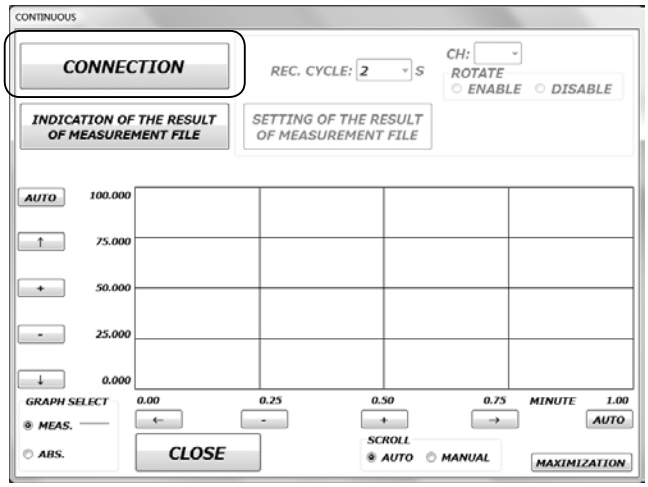
1 **Click the [CONTINUOUS] button in the main screen.**



2 **Connect the main unit of KB-230.**

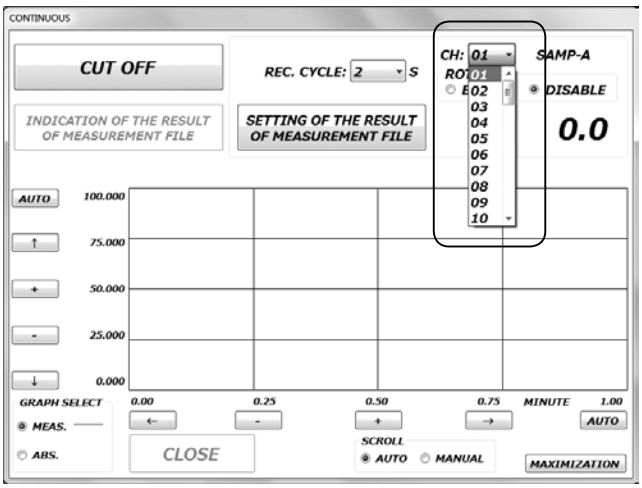
Click the [CONNECTION] button to connect the main unit of KB-230.

*** During connection, the [CLOSE] button is disabled. To close the screen, click the [CUT OFF] button.**

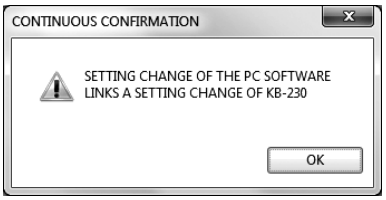


3 **Select a measurement channel.**

Select a measurement channel.

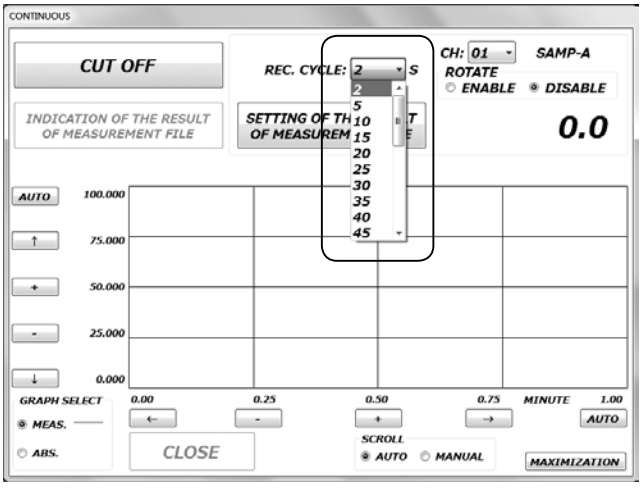


*** Note that when the measurement channel is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.**



4 **Select the recording cycle.**

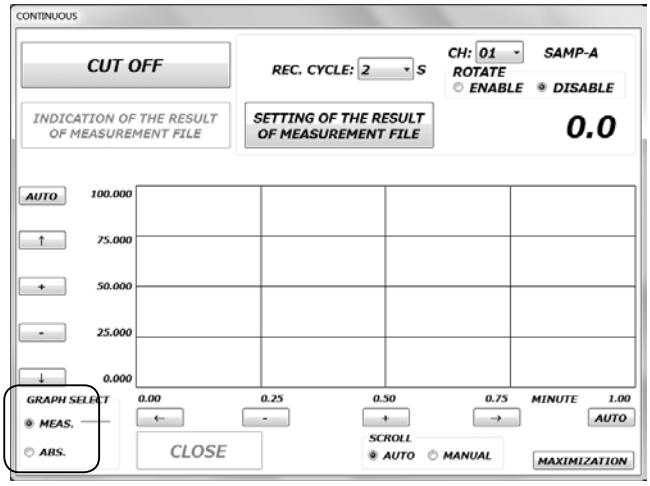
Select the seconds for the "REC.CYCLE".



5 Select the type of the graph.

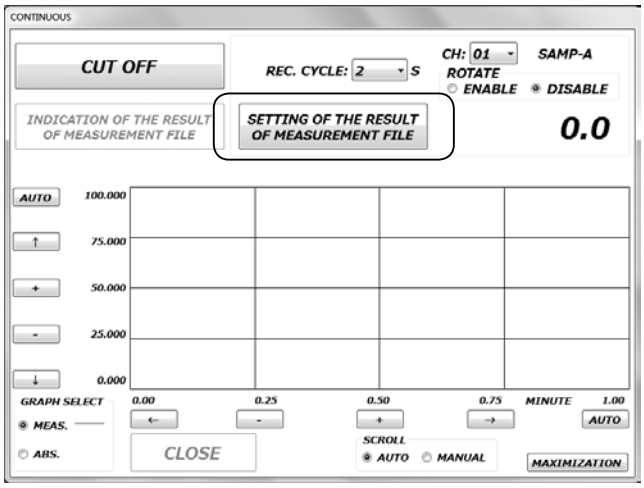
Select either "MEAS." or "ABS." as the item to be displayed in the graph.

* **The item to be displayed is only the measurement data or the absorbance. However, both data will be saved in the file. It is possible to switch the display item during the measurement.**

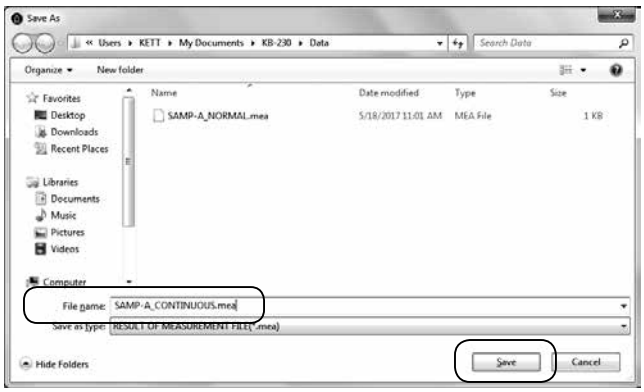


6 Set up the measurement result file.

Click the [SETTING OF THE RESULT OF MEASUREMENT FILE] button.

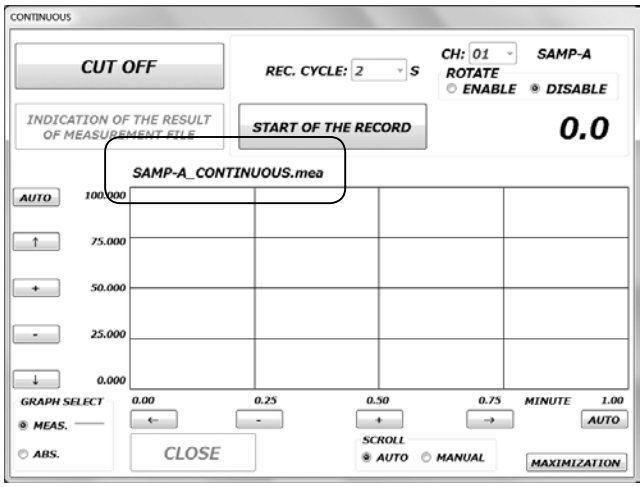


Designate a folder and "File name" in the "Save As" window.



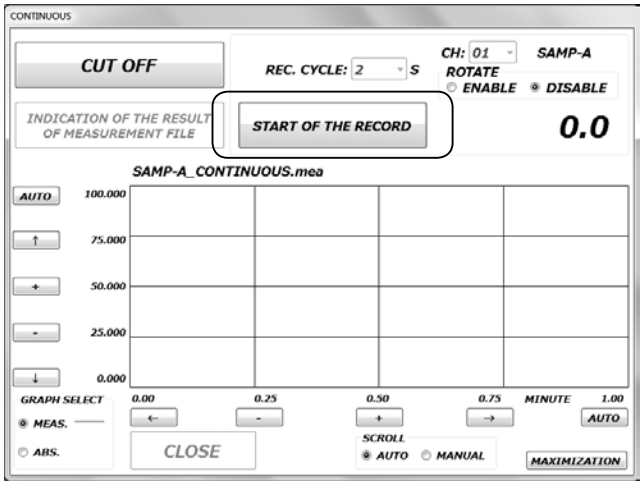
* **The default saving destination is My Document\KB-230\Data.**

The file name of the saving destination will be displayed.



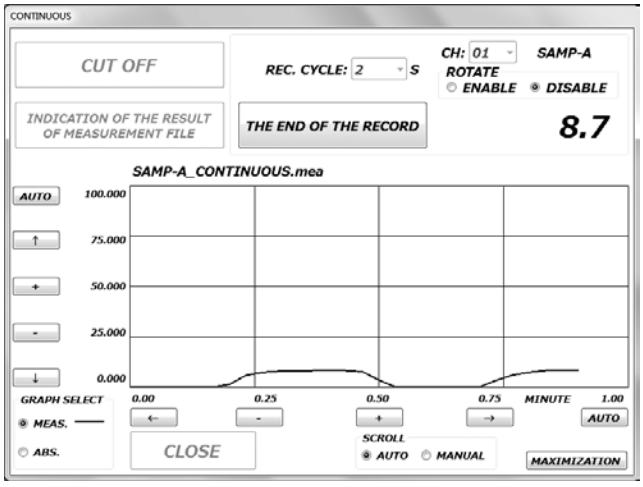
7 Start recording.

Click the [START OF THE RECORD] button.



Recording to the measurement data file and displaying in a graph is started.

* **Refer to P.14 for scaling the graph and items to be displayed in the graph.**



8 Terminate recording.

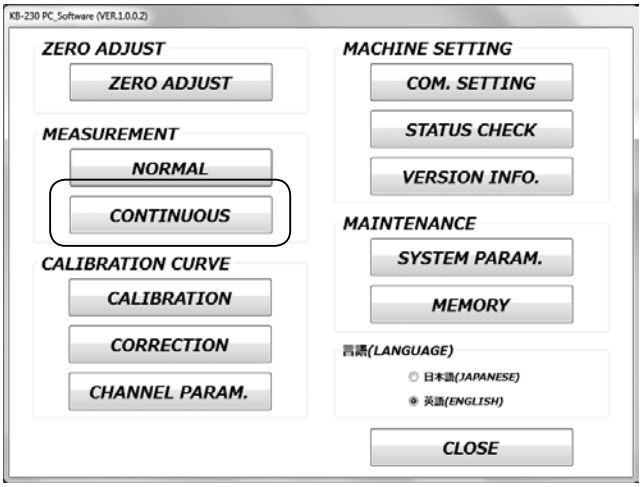
Click the [THE END OF THE RECORD] button. The recording to the measurement data file will be terminated.

4-2. Continuous measurement

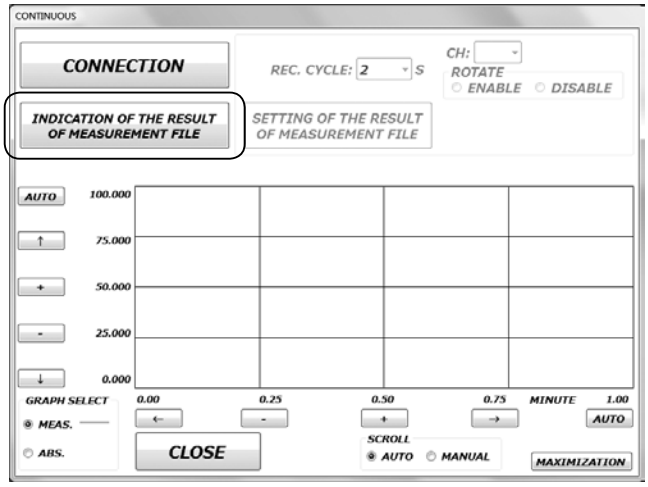
● Opening the stored data

Open a saved measurement data and display a graph.

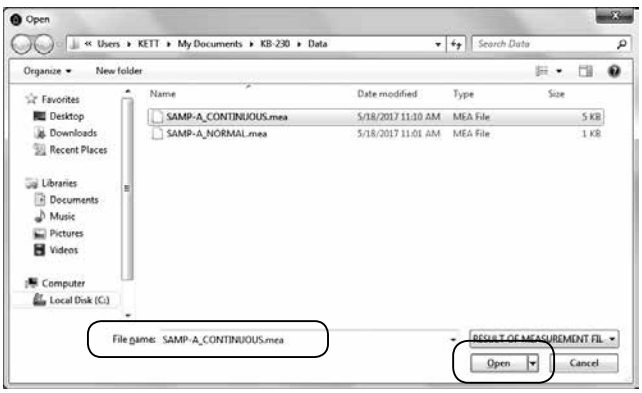
1 **Click the [CONTINUOUS] button in the main screen.**



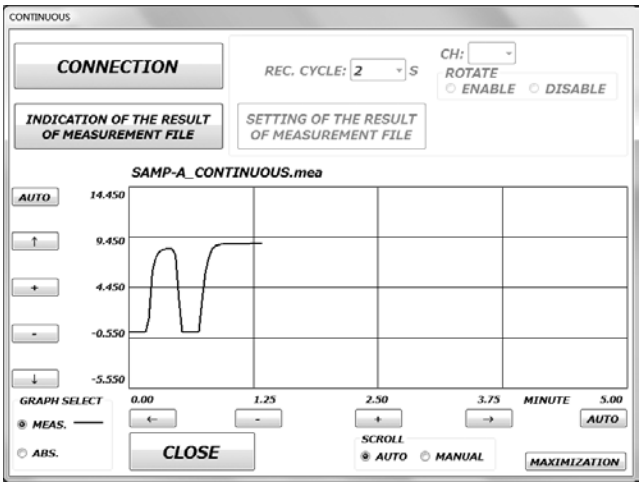
Click the [INDICATION OF THE RESULT OF MEASUREMENT FILE] button.



Designate a folder and "File name" in the "Open" dialog window, and click the [Open] button.

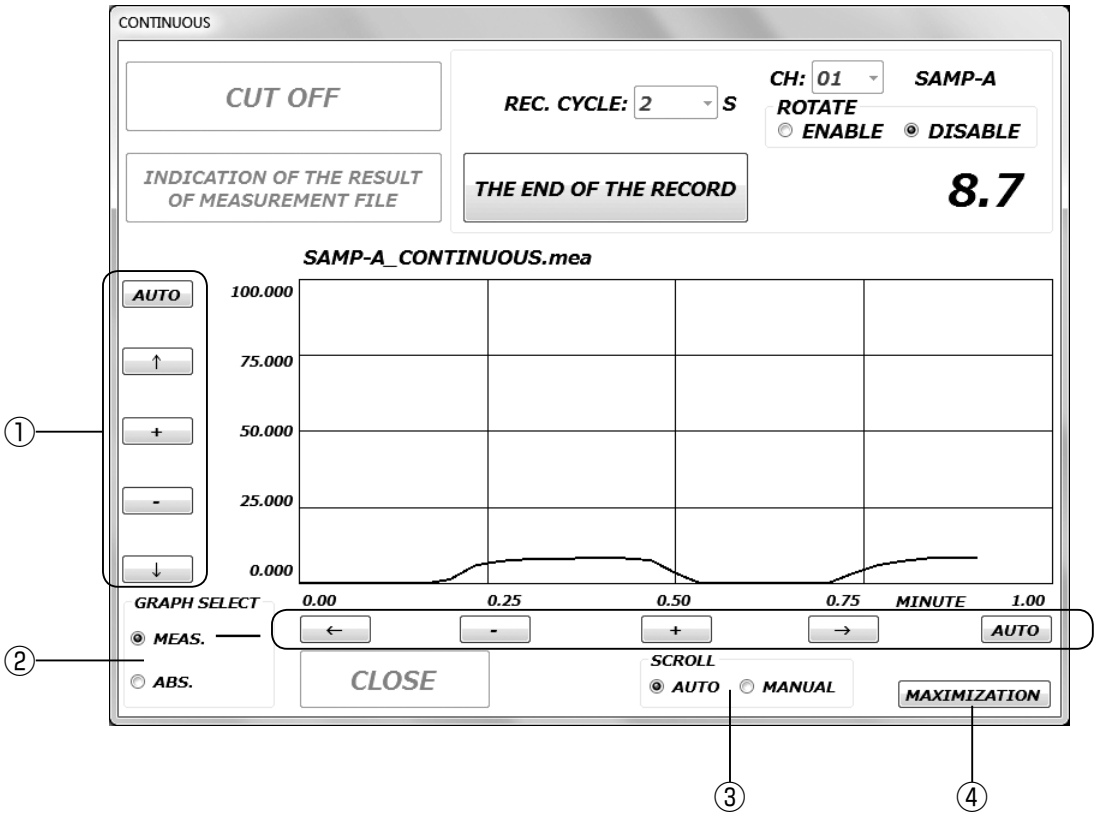


A graph will be displayed.



* **Refer to P.14 for scaling the graph and items to be displayed in the graph.**

<Graph window>



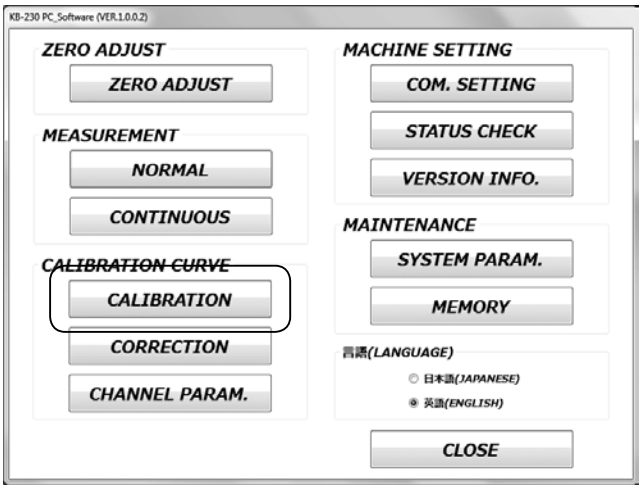
	Function	Description
①	Graph scaling	Scale up or down the displayed graph. [+][−] : Scales up/down. [↑][↓][←][→] : Moves the cursor. [AUTO] : Scales automatically.
②	Switching the graph	Select either "MEAS." or "ABS." as the item to be displayed in the graph.
③	Scroll	Either "AUTO" or "MANUAL" can be selected.
④	Maximize	Maximizes the screen.

5. Setting the Calibration Curve

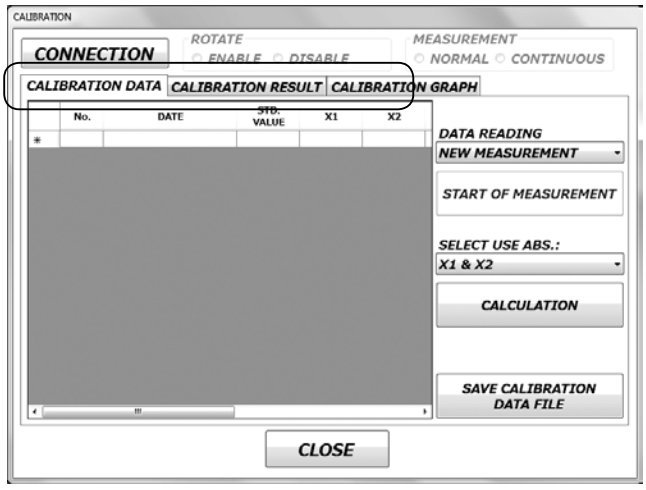
5-1. Making a calibration curve

Obtain the optical measurement data of the samples to be used for making calibration curves, enter the sampling amount, perform calibration, and make calibration curves.

1 Click the [CALIBRATION] button in the main screen.



The "CALIBRATION" will be displayed.

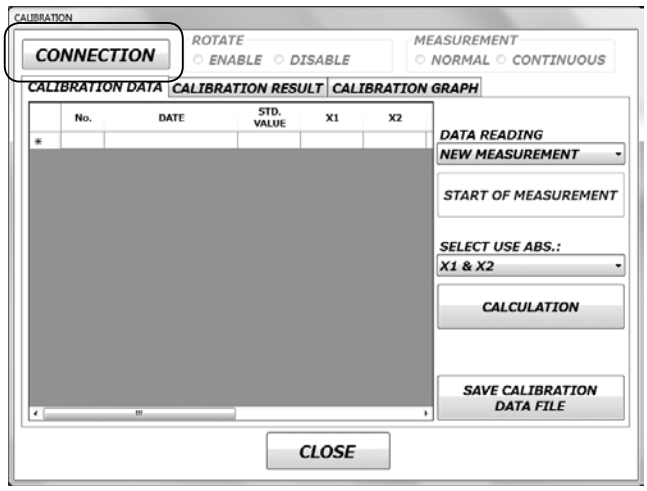


<About tabs>

- **Calibration data**
  Enables obtaining absorbance data from the sample measurement, entering standard moisture, and executing calculation.
- **Result of calibration**
  Displays the result of regression calculation.
- **Calibration graph**
  Displays the calibration curve in a graph, enables writing the channel parameters to KB-230 and printing out.

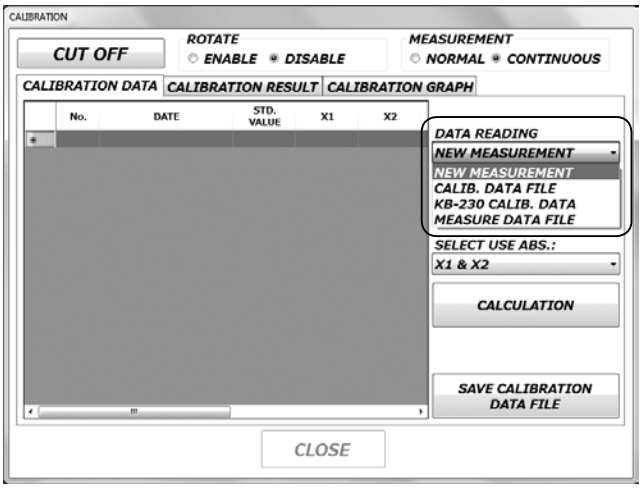
2 Connect the main unit of KB-230.

Click the [CONNECTION] button to connect the main unit of KB-230.



3 Select data to load.

Select the data to load. The following four data are available.

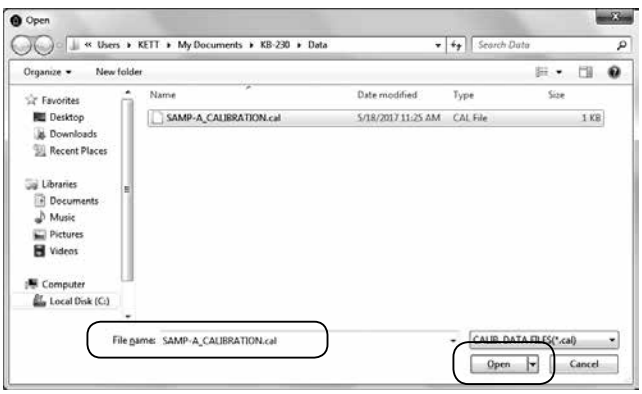


- **New measurement**
  When creating a calibration curve by performing new measurement

→ **Proceed to step 4.**

- **Calibration data file**
  When making a calibration curve by using existing calibration data files (addition, deletion, re-calculation etc.)

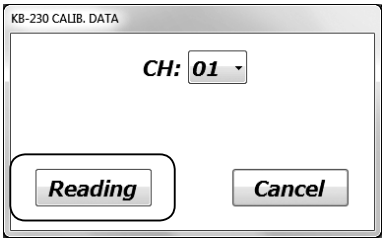
→ **Designate a folder and "File name" in the "Open" dialog window, and click the [Open] button. (File extension: .cal)**



■ **Main unit calibration data**

When creating calibration curves using calibration data saved by KB-230

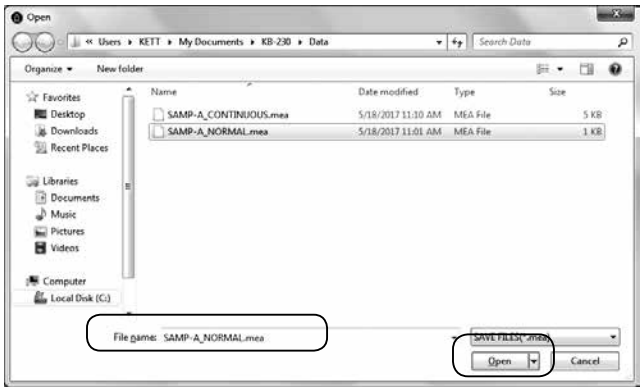
→ **Select a number for CH, and click the [READING] button.**



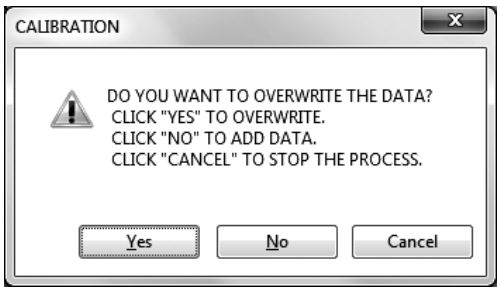
■ **Measurement data file**

When creating calibration curves using the normal measurement data or the continuous measurement data.

→ **Designate a folder and "File name" in the "Open" dialog window, and click the [Open] button. (File extension: .mea)**

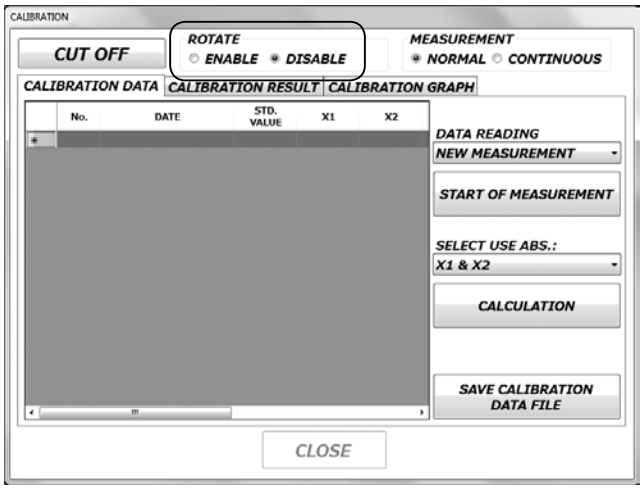


* **The following message will be displayed when performing step 3 "Select data to load" while data has been already leaded.**



4 Select whether to rotate or stop the rotation table by selecting "ENABLE" or "DISABLE".

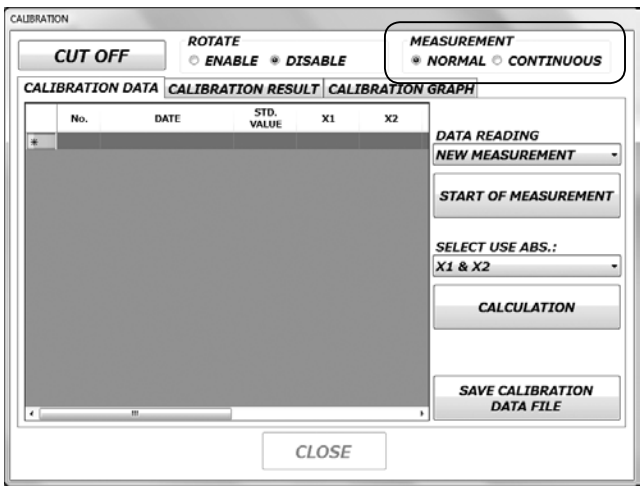
* **Note that when the rotation setting of the rotation table is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.**



5 Select a measurement mode.

Select either "NORMAL" or "CONTINUOUS" as a measurement mode.

* **Note that when the measurement mode is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.**

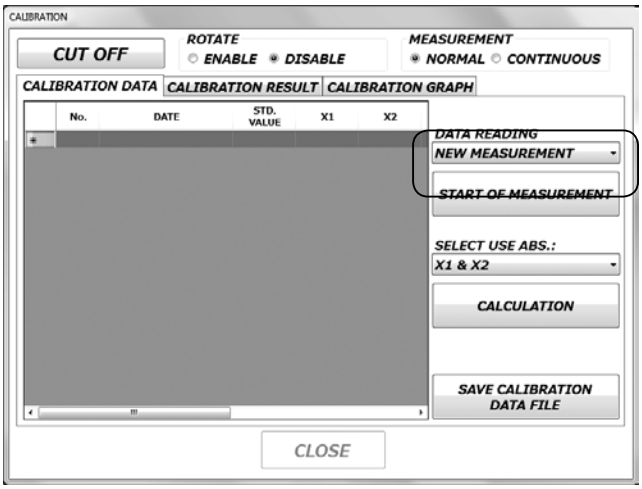


5-1. Making a calibration curve

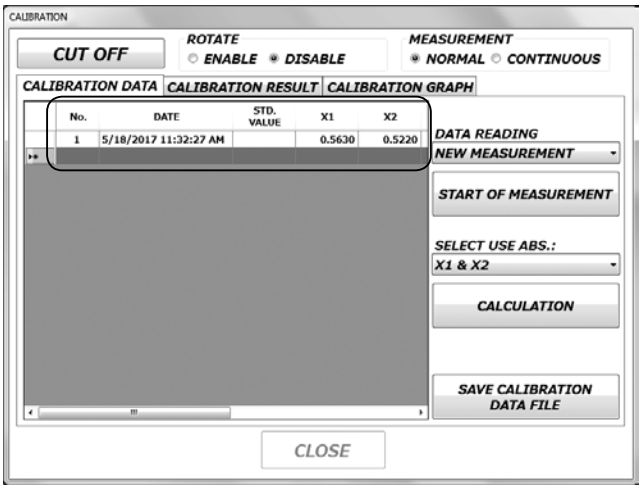
6 Start a measurement.

■ **In the case of normal measurement**

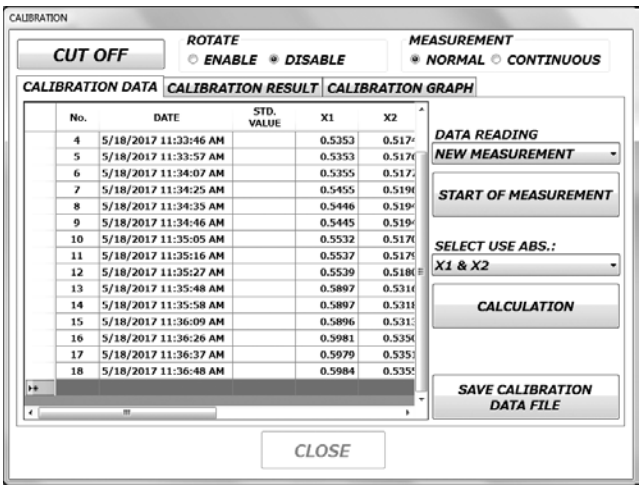
Click the [START OF MEASUREMENT] button to start a measurement.



When the measurement is complete, the absorbance is obtained and the result is displayed.

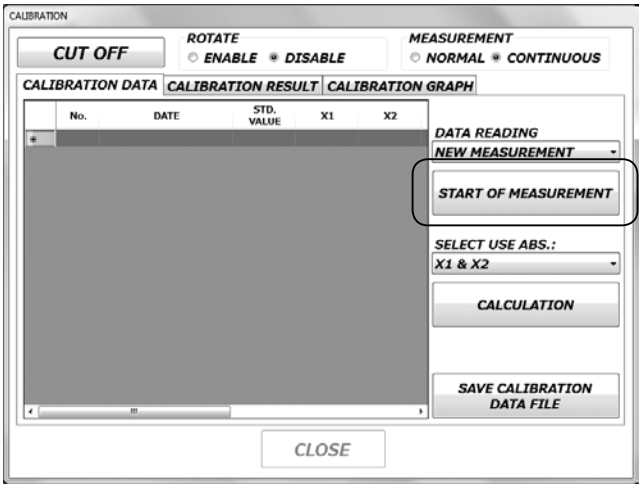


Continue measurements to obtain absorbance data.

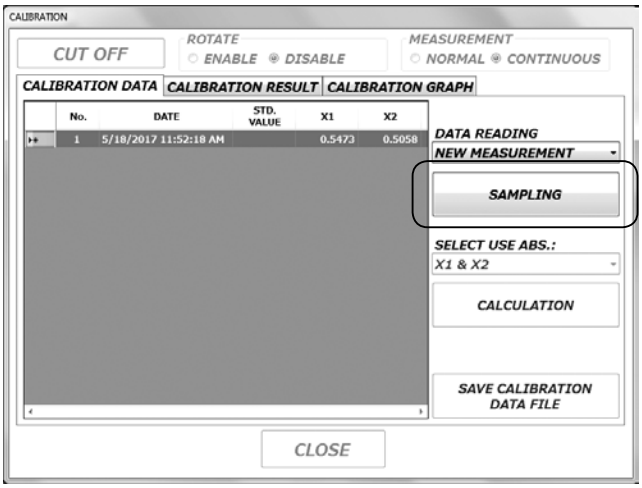


■ **In the case of continuous measurement**

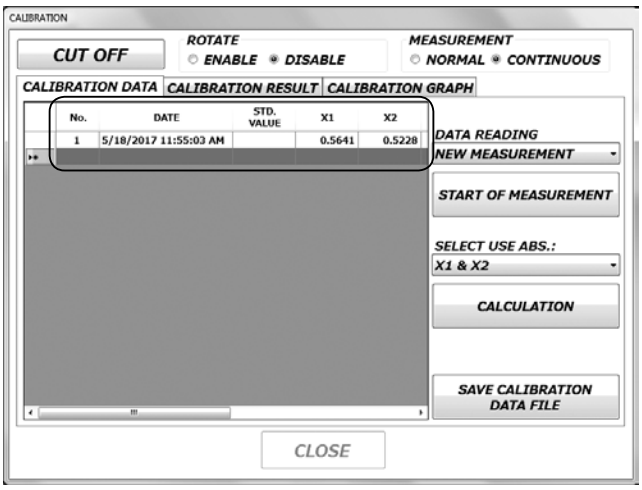
Click the [START OF MEASUREMENT] button.



The continuous measurement is started and obtained absorbance data will be displayed or updated. At this point, data is not fixed. The data will be fixed by clicking the [SAMPLING] button.

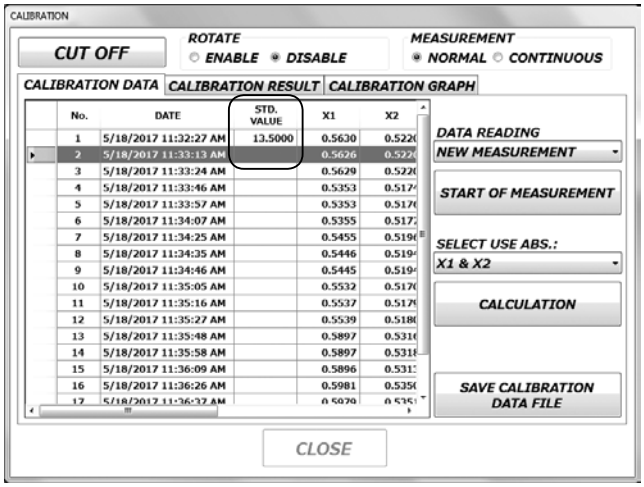


Continue measurements to obtain absorbance data.



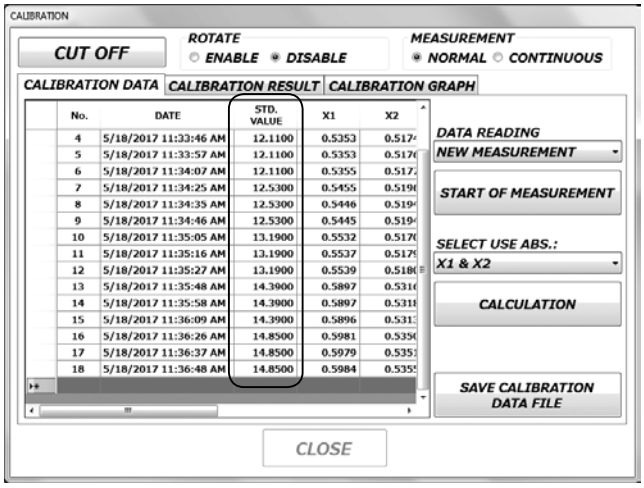
7 Enter the standard moisture.

Enter the standard moisture content of the sample.



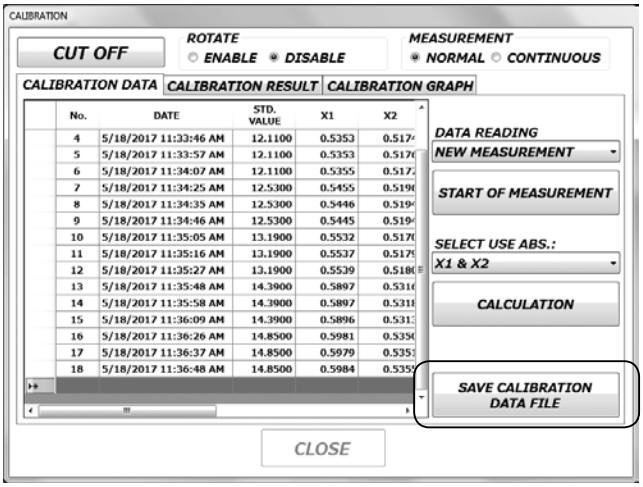
Enter the standard moisture content of all the samples to be used in the calculation.

* **The data whose "STD. VALUE" is blank cannot be used in the calculation.**

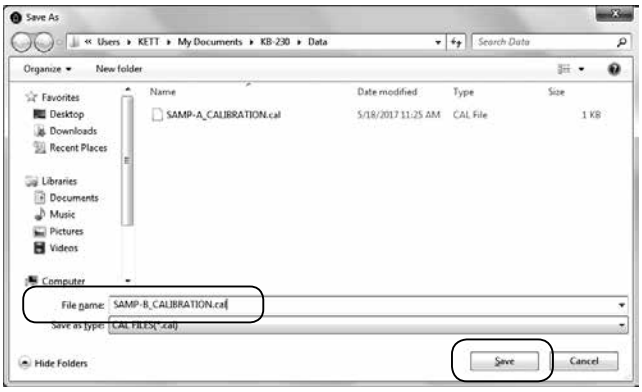


8 Save the calibration data.

Click the [SAVE CALIBRATION DATA FILE] button.



Designate a folder and "File name" in the "Save As" window.

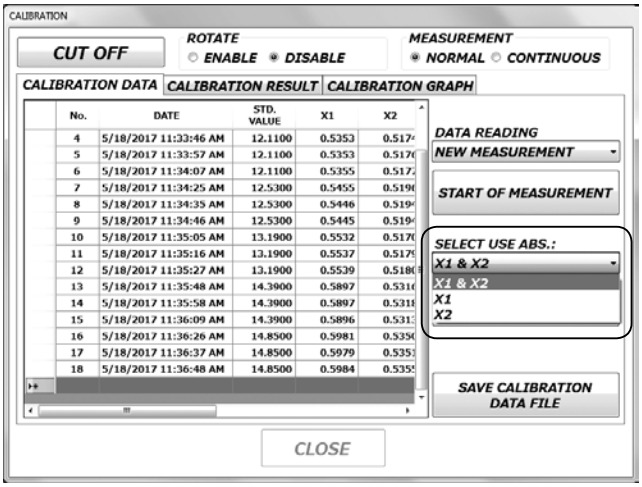


* **The default saving destination is My Document\KB-230\Data.**

9 Select an absorbance.

Select an absorbance to be used for calculation. The absorbance can be selected from three types:
X1 & X2 / X1 / X2

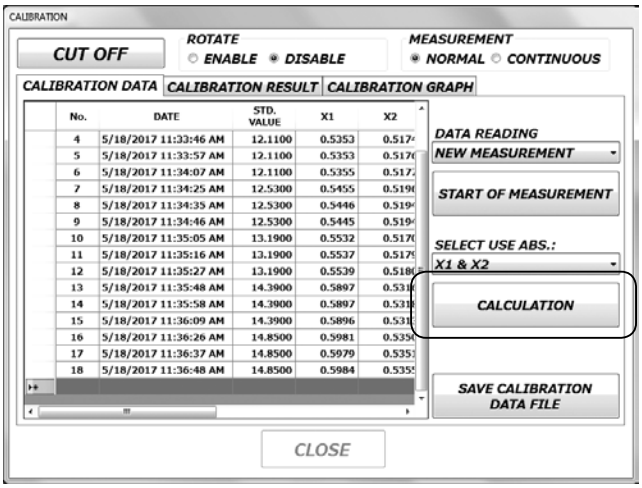
* **In the normal cases, select X1 or X2.**



5-1. Making a calibration curve

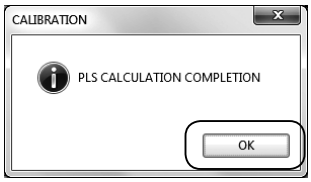
10 Execute calculation.

Click the [CALCULATION] button.



When the calibration is complete, the following message will be displayed.

The "CALIBRATION RESULT" tab will be displayed when the [OK] button is clicked.

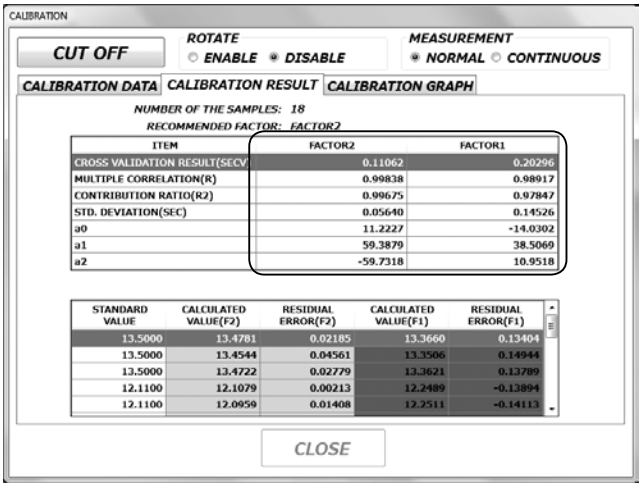


11 Display the calibration result.

The result of calibration will be displayed in the "CALIBRATION RESULT" tab.

When "X1 & X2" is selected for "SELECT USE ABS.", two types of calibration curves will be created.

The recommended calibration curve will be displayed at the left side. (FACTOR 1 / FACTOR 2).



■ **Items of the calibration result**

STD. DEVIATION (SEC)

With the regression calculation result obtained from the calibration curves created using KB-230, the standard error of multiple regression will be output as "Se: Standard error of regression". With the PC software, "STD. DEVIATION (SEC)" will be output as the standard deviation between the predicted value and the standard value.

RESIDUAL ERROR

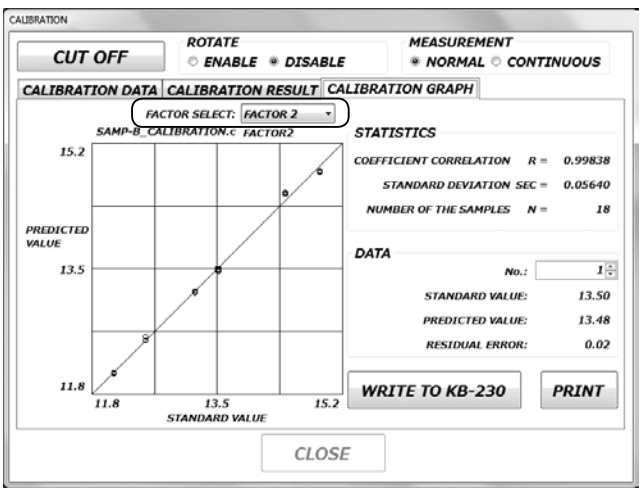
The error between the predicted value and the standard value that exceeds twice of "STD. DEVIATION (SEC)" will be displayed with the red background color.

RECOMMENDED FACTOR

With a small number of samples, the credibility of the recommended factor decreases. If the result is not appropriate, it may be improved by increasing the number of samples.

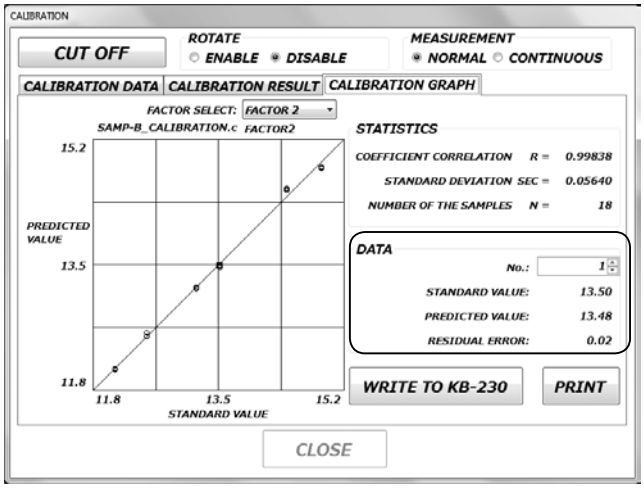
12 Display the calibration graph.

Click the "CALIBRATION" tab. The calibration result will be displayed. The graph can be switched with "FACTOR SELECT".



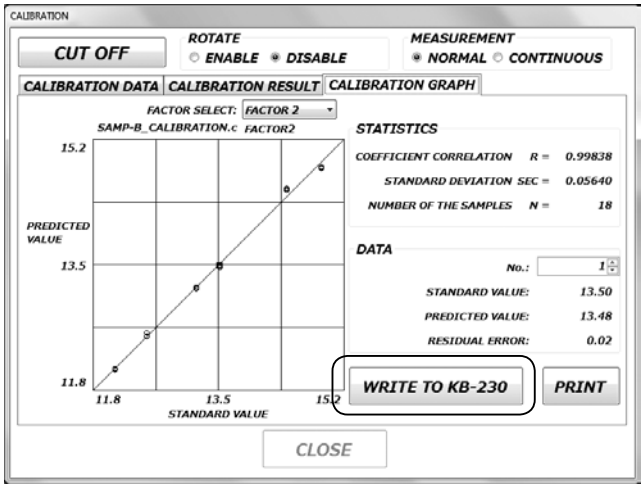
13 Select data.

When a marker on the graph is clicked, data such as data number, standard value, predicted value, and residual error will be displayed in the data field on the right.

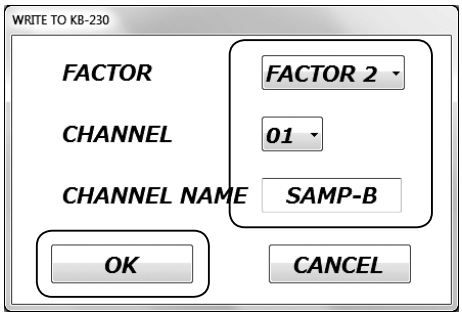


14 Write calibration curve coefficient on the main unit of KB-230.

Click the [WRITE TO KB-230] button.



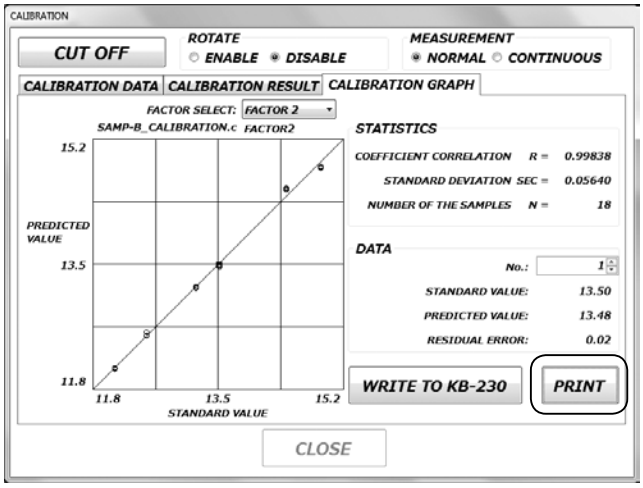
Select the calibration factor and channel number, and enter the channel name. The calibration curve coefficient will be written in the main unit by clicking the [OK] button.



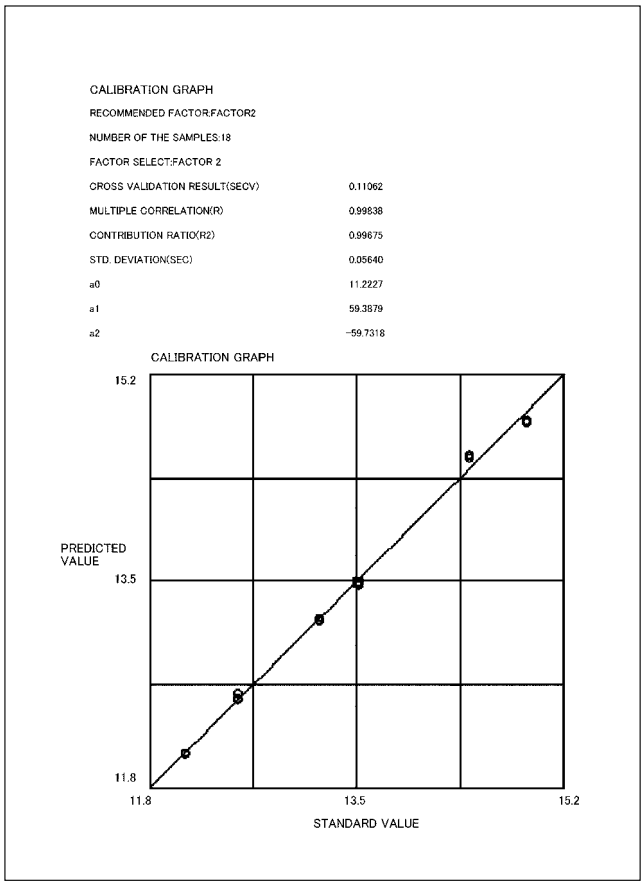
*** The data to be written is only the channel parameters of the main unit (channel name, coefficient a0, a1, a2). The absorbance will not be written.**

15 Print out the calibration result and graph.

Click the [PRINT] button.



<Printout example>

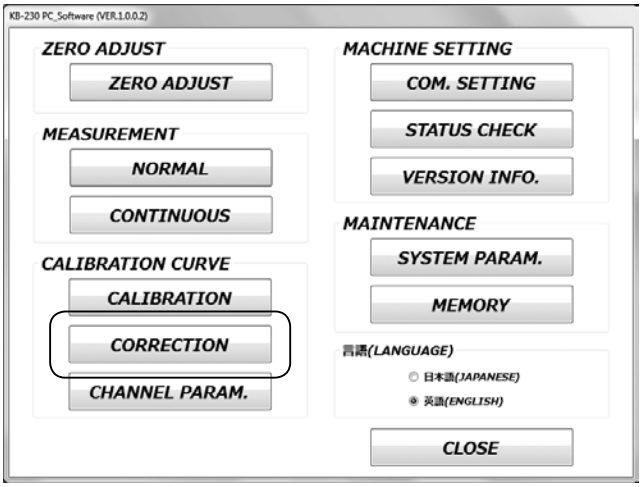


5-2. Correction

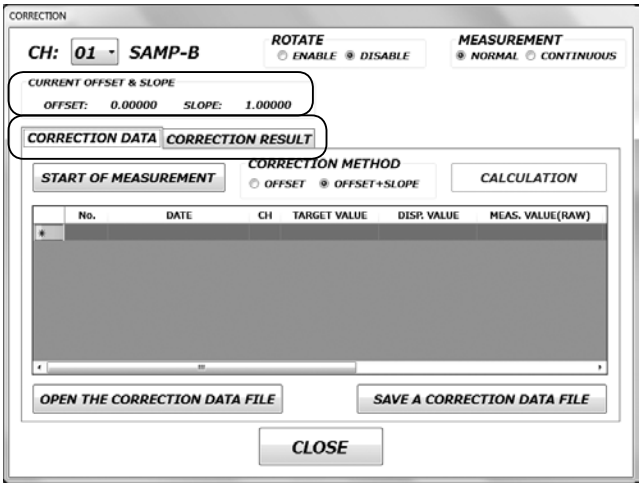
Setting offset value and slope correction value will enable correction of the displayed value.

Moisture value (displayed moisture) after correction =
Moisture value before correction x Slope correction value + Offset value

1 Click the [CORRECTION] button in the main screen.



The "CORRECTION" screen will be displayed.
The current correction coefficient loaded from the main unit will be displayed.



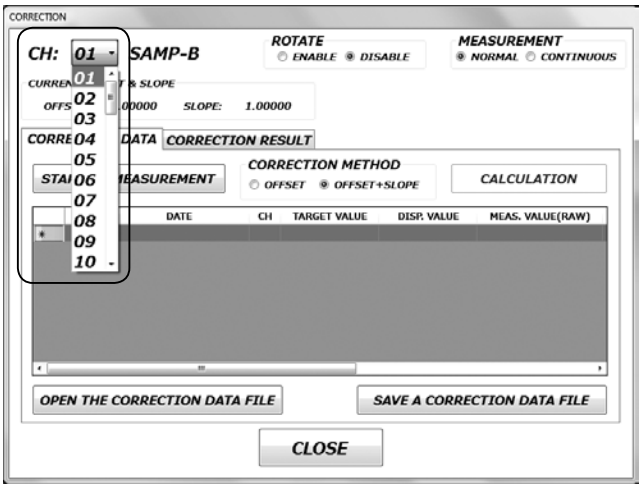
<About tabs>

- **CORRECTION DATA**
  Enables obtaining absorbance data from the sample measurement, entering correction target value, and executing calculation.
- **CORRECTION RESULT**
  Displays correction results and a graph.

2 Select a measurement channel.

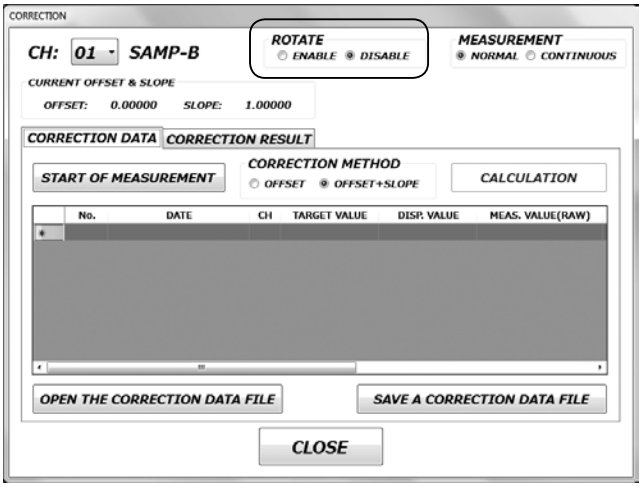
Select a measurement channel.

* **Note that when the measurement channel is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.**



3 Select whether to rotate or stop the rotation table by selecting "ENABLE" or "DISABLE".

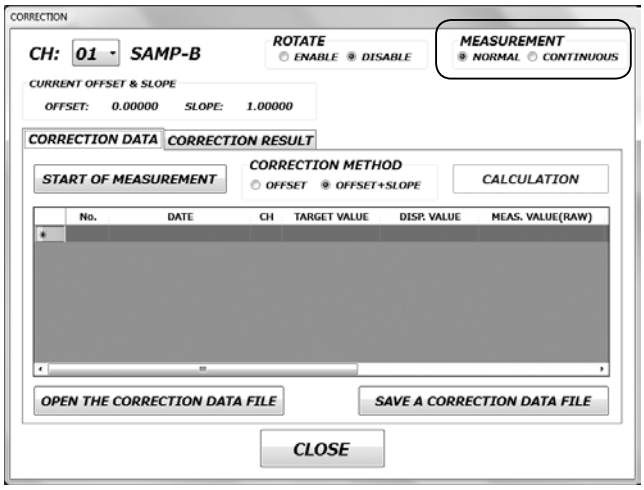
* **Note that when the rotation setting of the rotation table is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.**



4 Select a measurement mode.

Select either "NORMAL" or "CONTINUOUS" as a measurement mode.

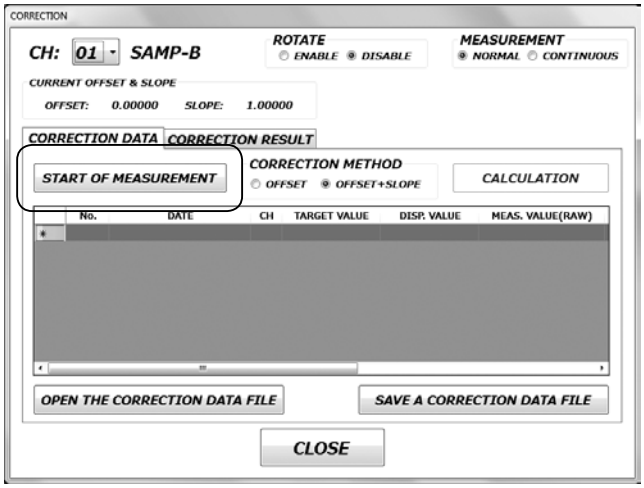
* **Note that when the measurement mode is changed via the PC software, the setting in the main unit of KB-230 will be changed as well.**



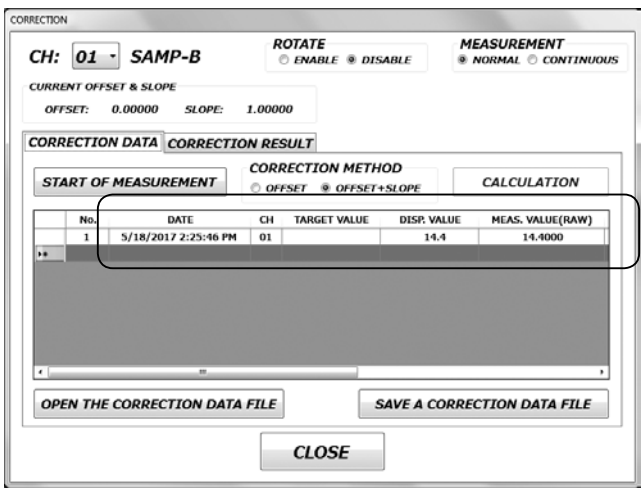
5 Start a measurement.

■ **In the case of normal measurement**

Click the [START OF MEASUREMENT] button to start a measurement.

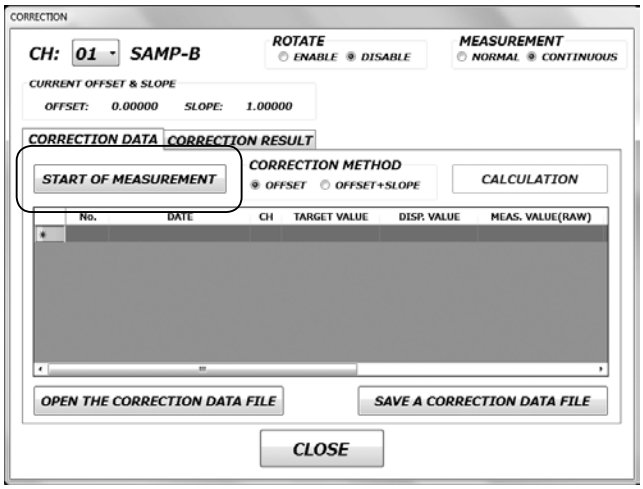


The result will be displayed when the measurement is done.
The measurements will be continued to obtain measurement data.

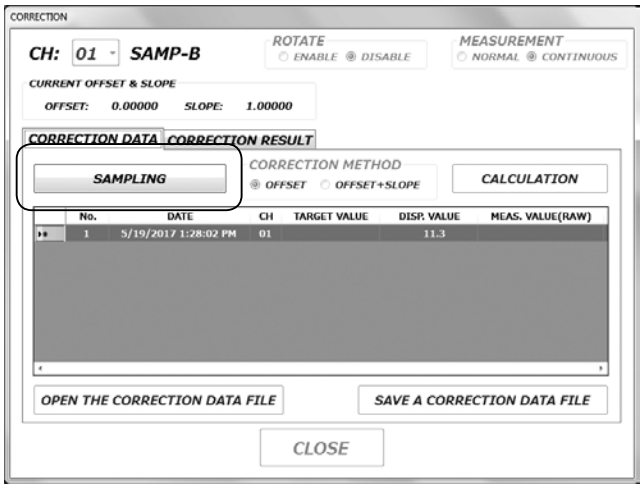


■ **In the case of continuous measurement**

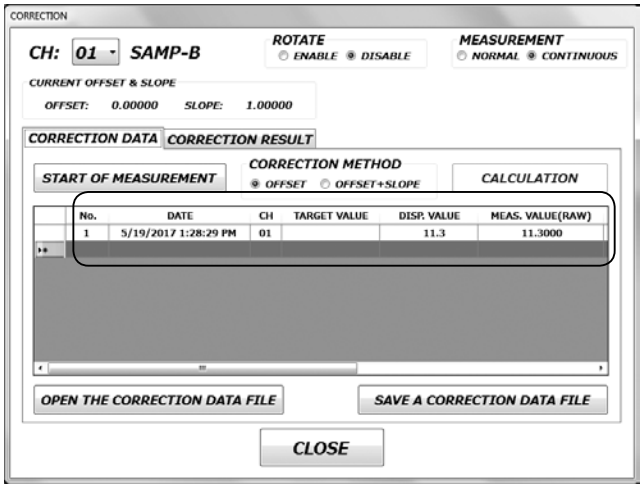
Click the [START OF MEASUREMENT] button.
The continuous measurement is started, and obtained measurement data will be displayed or updated. At this point, data is not fixed.



The measurement data will be fixed by clicking the [SAMPLING] button.



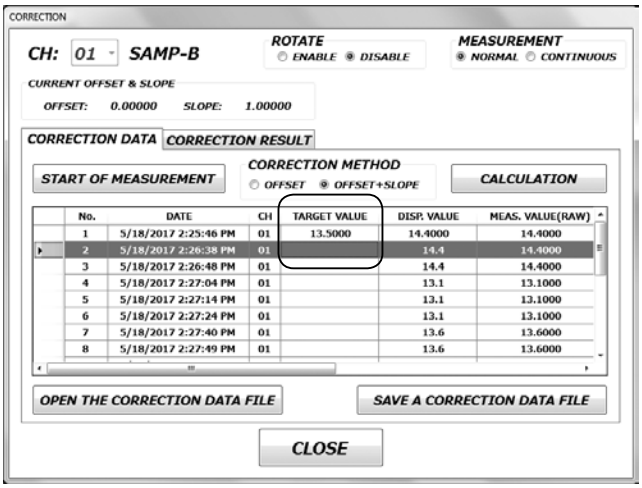
The measurements will be continued to obtain measurement data.



5-2. Correction

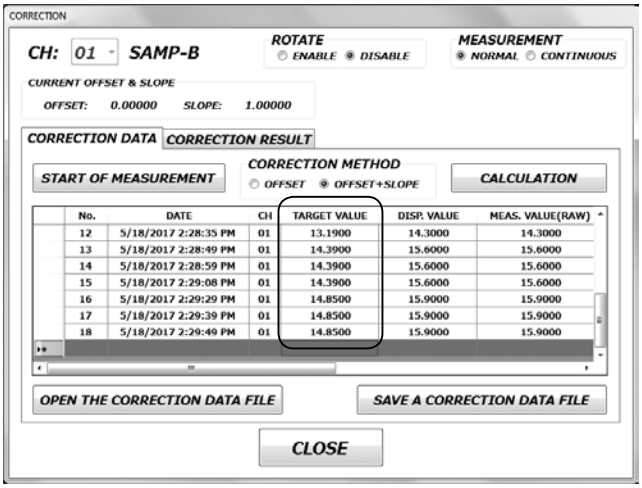
6 Enter the correction target value.

Enter the correction target value of the sample.



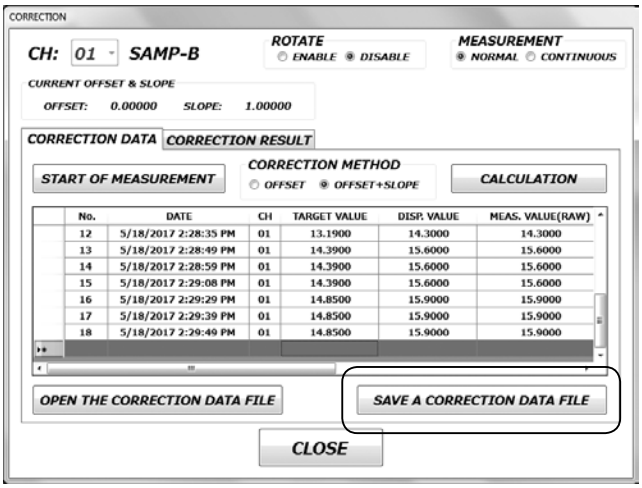
Enter the correction target value of all the samples to be used in the calculation.

* **The data whose "TARGET VALUE" is blank cannot be used in the calculation.**

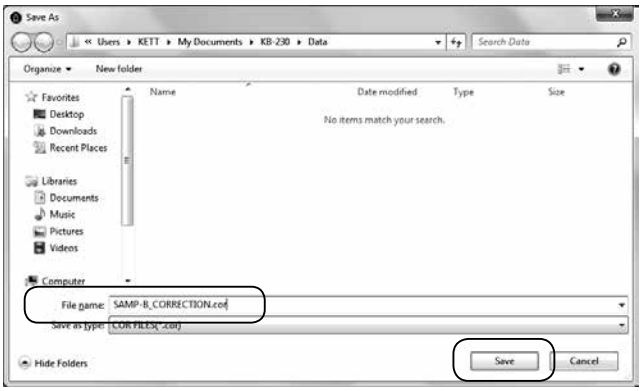


7 Save the correction data file.

Click the [SAVE CORRECTION DATA FILE] button.

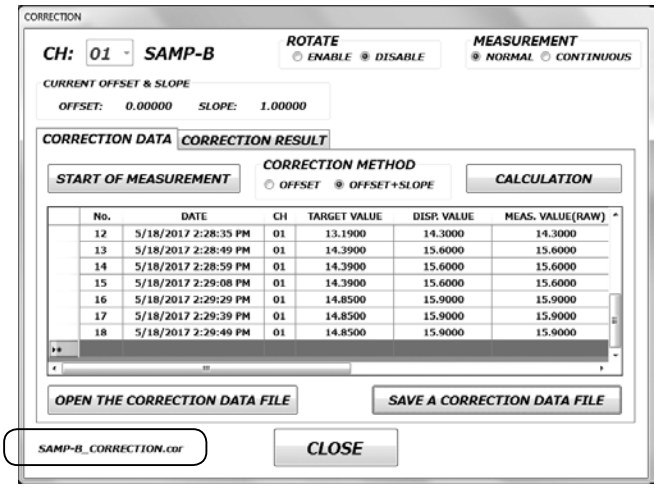


Designate a folder and "File name" in the "Save As" window.



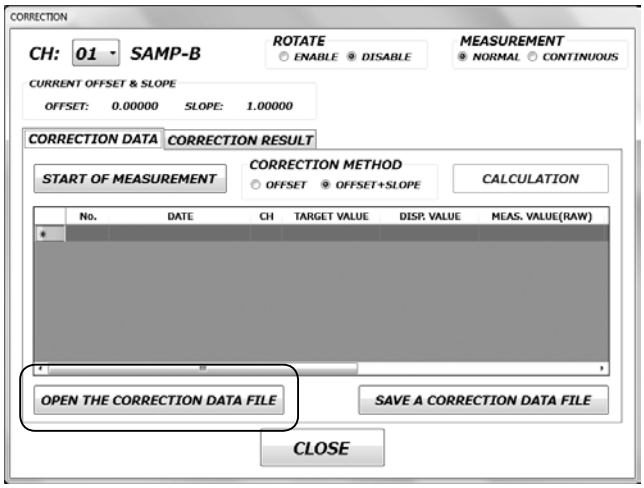
* **The default saving destination is My Document\KB-230\Data.**

The file name of the saving destination will be displayed.

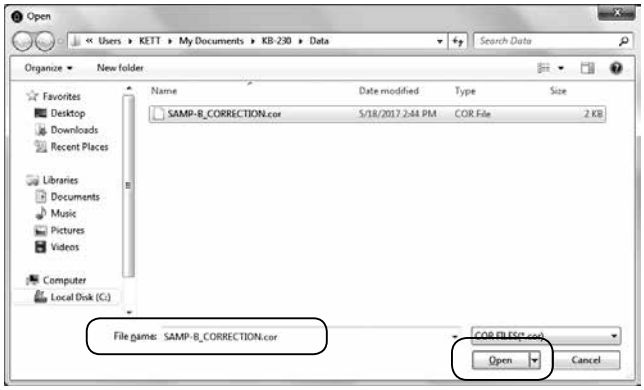


■ **To open an existing correction data file**

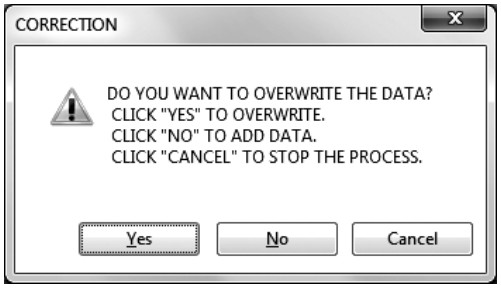
Click the [OPEN THE CORRECTION DATA FILE] button.



Designate a folder and "File name" in the "Open" dialog window, and click the [Open] button. (File extension: .cor)

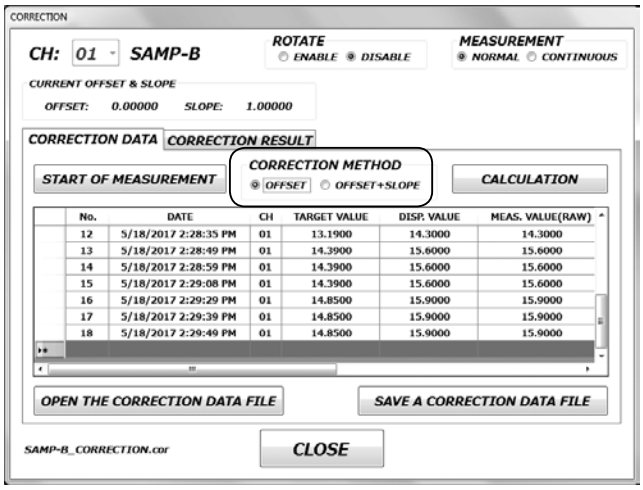


* **The following message will be displayed when the [OPEN THE CORRECTION DATA FILE] button is clicked while data has been already leaded.**



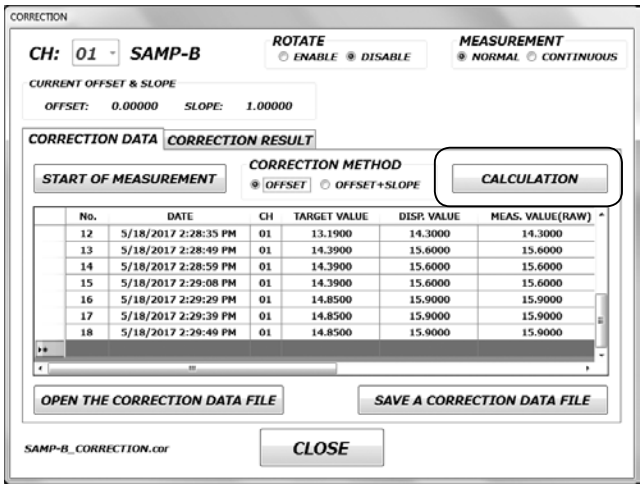
8 Select a correction method.

Select a correction method to be used for calculation.
Select either "OFFSET" or "OFFSET + SLOPE".



9 Execute calculation.

Click the [CALCULATION] button.

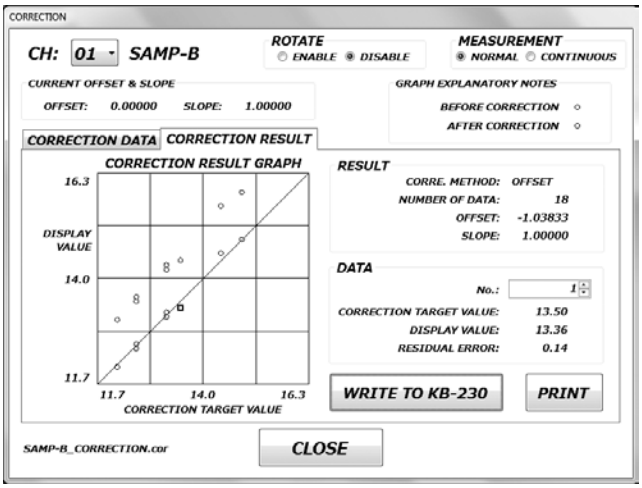


5-2. Correction

10 Display the correction result.

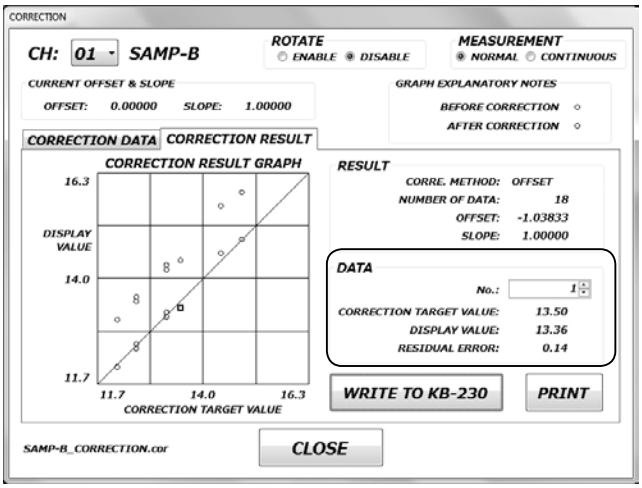
The correction result will be displayed in the [CORRECTION RESULT] tab.

* **The graph before the correction will be displayed with the green markers, and after the correction will be displayed with red markers.**



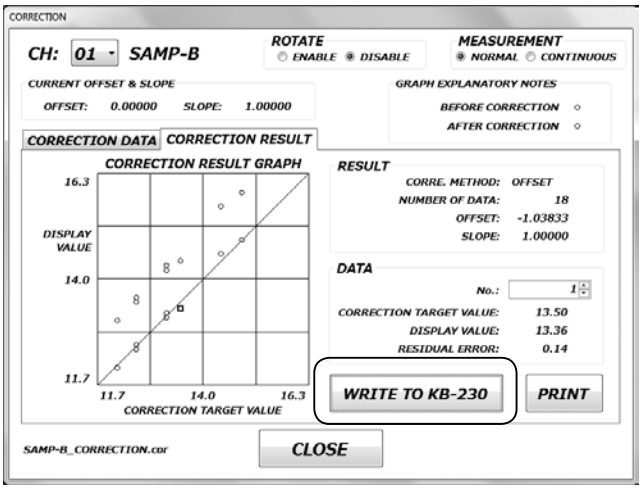
11 Select data.

When a marker (red) on the graph is clicked, data such as data number, standard value, predicted value, and residual error will be displayed in the data field on the right.

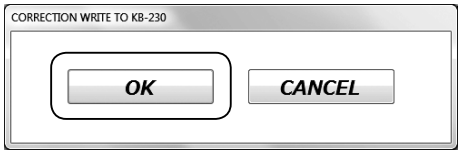


12 Write the correction coefficient on the main unit of KB-230.

Click the [WRITE TO KB-230] button.

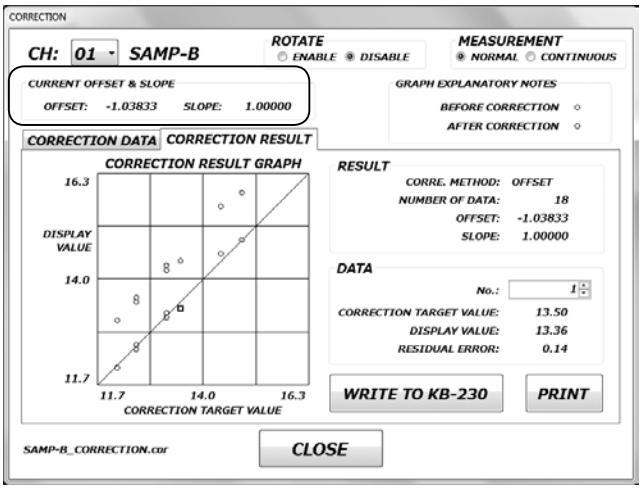


When the [OK] button is clicked, the calculated correction coefficient will be written on the main unit.



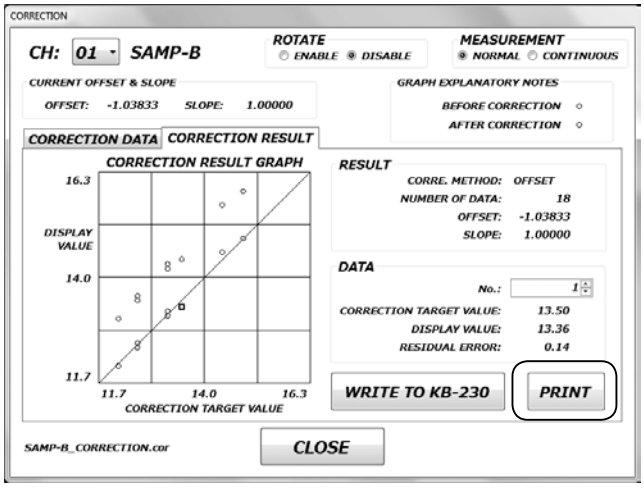
* **The data to be written is only the correction coefficient. The measurement data will not be written.**

* **When writing is complete, the current correction coefficient will be displayed after being updated.**

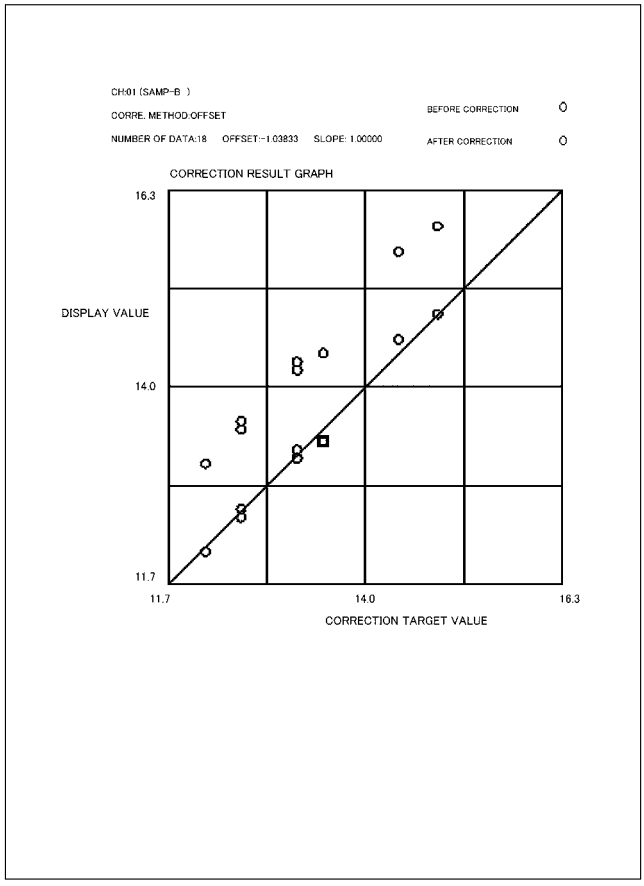


13 Print the correction result and the graph.

Click the [PRINT] button.



<Printout example>



5-3. Channel parameter

The channel parameters can be set or checked.

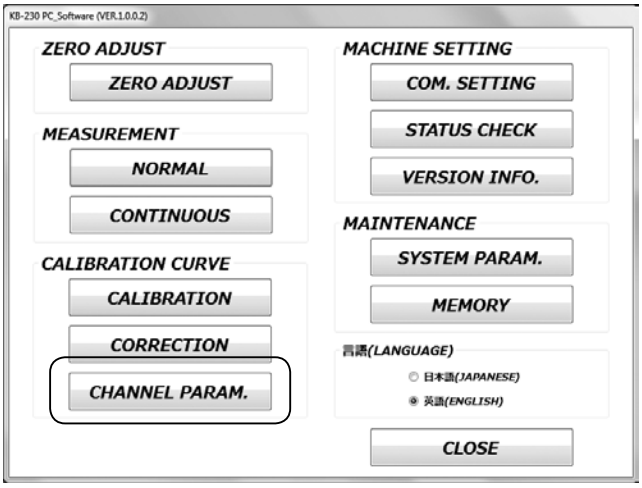
The following items can be set.

- ■ Channel name
- ■ Smoothing value of continuous measurement[*1]
- ■ Number of normal measurements
- ■ Digits
- ■ Coefficient (a0)
- ■ Coefficient (a1)
- ■ Coefficient (a2)
- ■ Offset (offset value)
- ■ Slope (correction value)

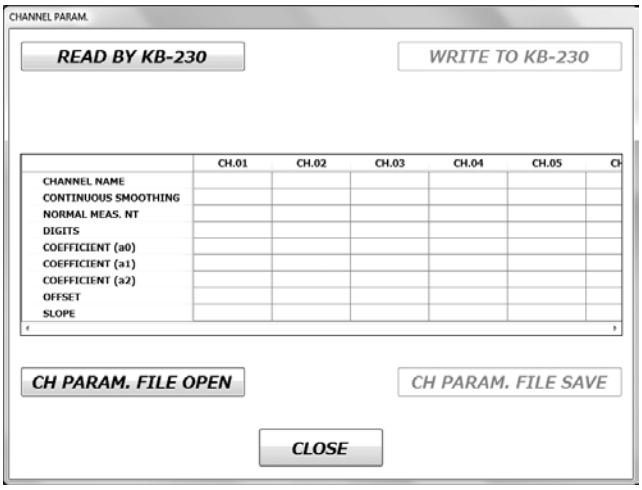
[*1] The time constant of each smoothing value is as follows:

Smoothing value	Time constant
0	0 sec.
1	1 sec.
2	2 sec.
3	4 sec.
4	8 sec.
5	16 sec.

1 Click the [CHANNEL PARAM.] button in the main screen.



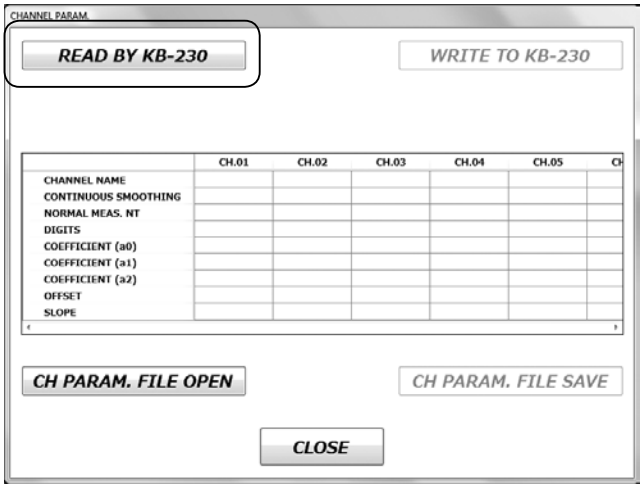
2 The channel parameter screen will be displayed.



<Button description>

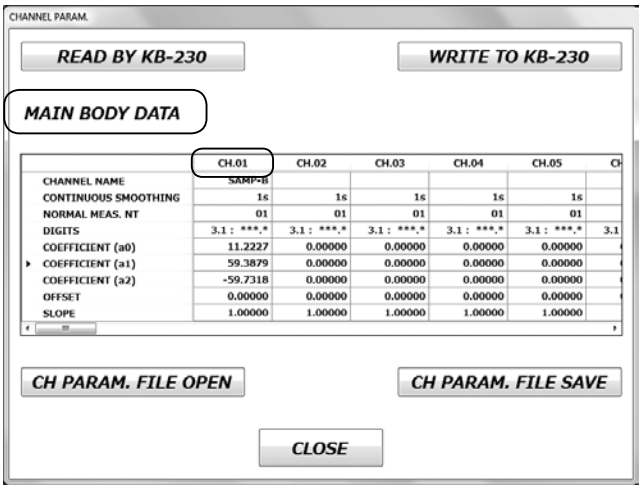
■ **Load data from the main unit.**

Load the channel parameter (50CH) of the main unit of KB-230.



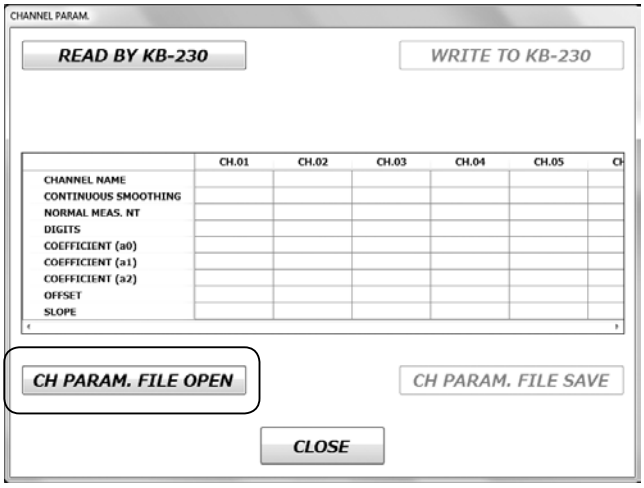
[MAIN BODY DATA] will be displayed.

All the parameters of the CH are selected by clicking the CH number. The CH parameters can be copied by right-clicking copy and paste.

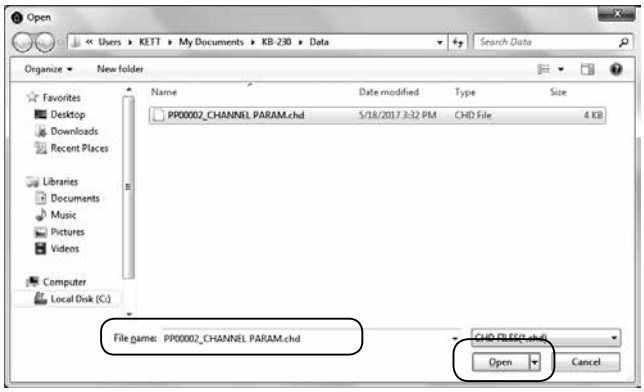


■ **Open the CH parameter file.**

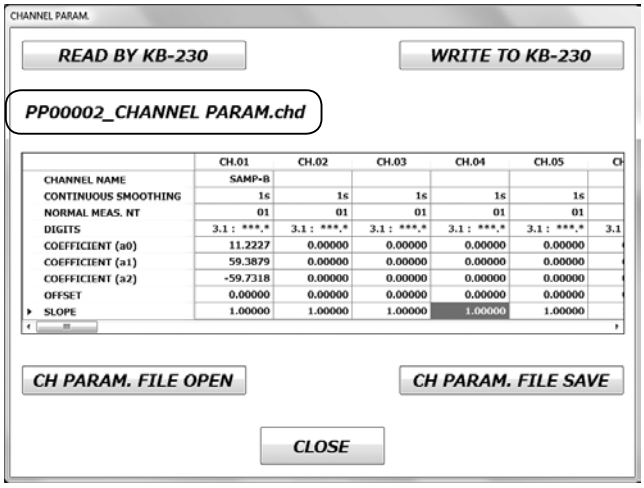
Open an existing parameter file.



Designate a folder and "File name" in the "Open" dialog window, and click the [Open] button. (File extension: .chd)

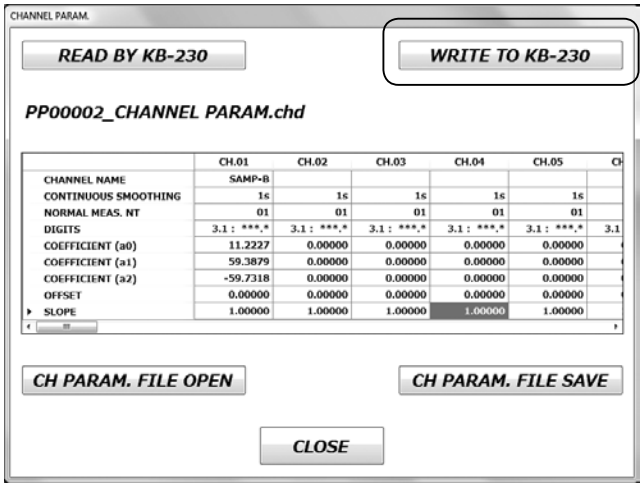


The file name of the opened file will be displayed.

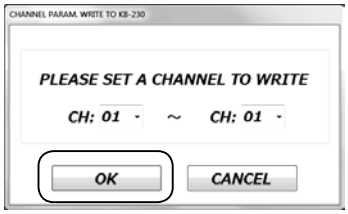


■ **Write to the main unit.**

Write the channel parameter to the main unit of KB-230.

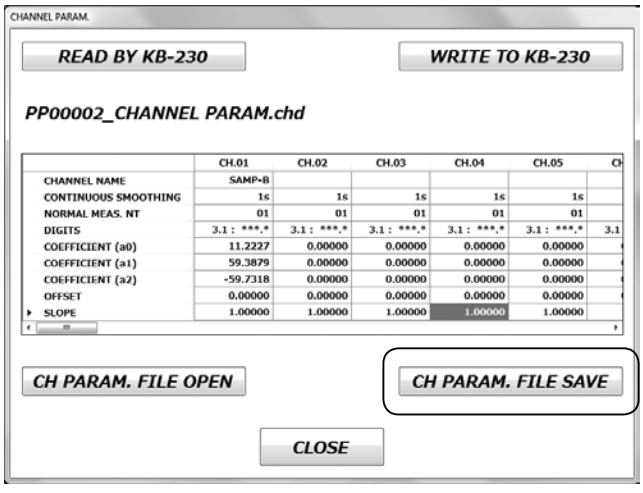


Set the channel to be written and click the [OK] button. The channel parameter will be written to the main unit.



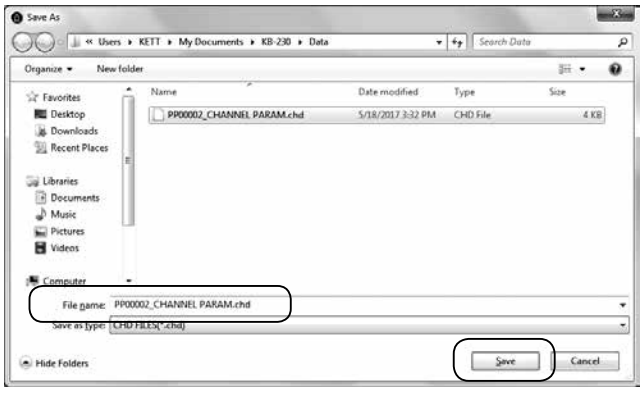
■ **Save the CH parameter file.**

Save the channel parameters in the file.



Designate a folder and "File name" in the "Save As" window.

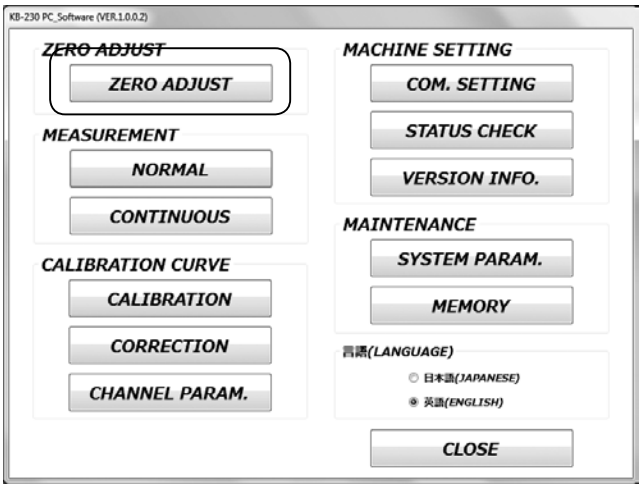
* **The default saving destination is My Document\KB-230\Data.**



6. Zero-adjustment

Calibrates absorbance using a zero-adjustment plate.

1 Click the [ZERO ADJUST] button in the main screen.

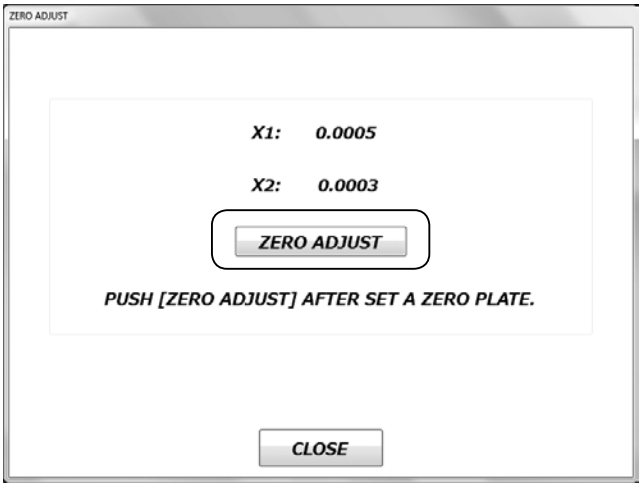


2 Set the zero-adjustment plate to the main unit of KB-230.

Open the light shielding cover of the main unit of KB-230, and set the zero-adjustment plate onto the rotation table. Then, close the cover.

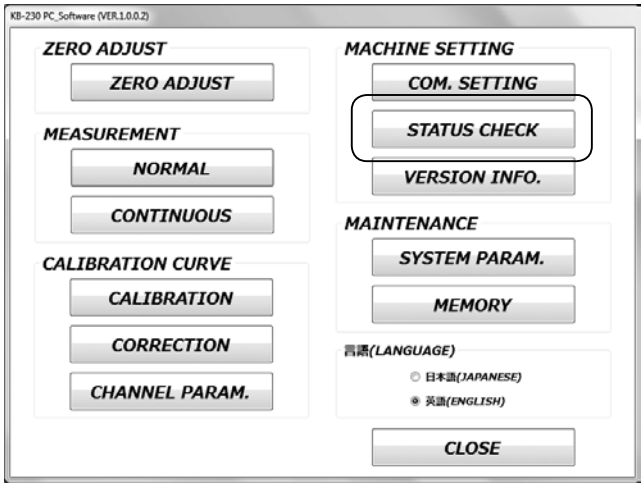
3 Start the zero-adjustment.

Click the [ZERO ADJUST] button.



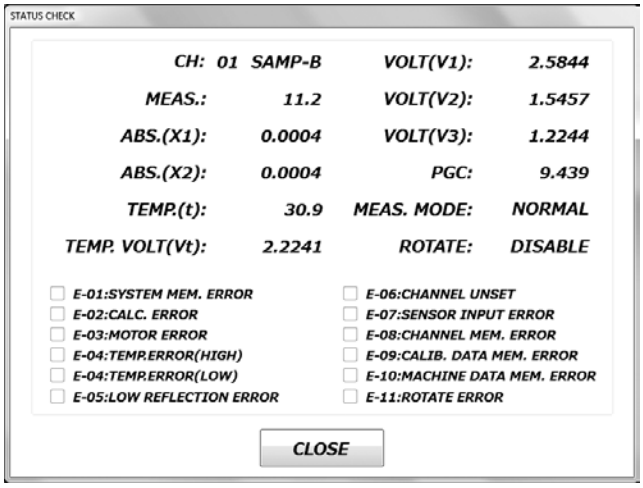
7-1. Status check

1 **Click the [STATUS CHECK] in the main screen.**



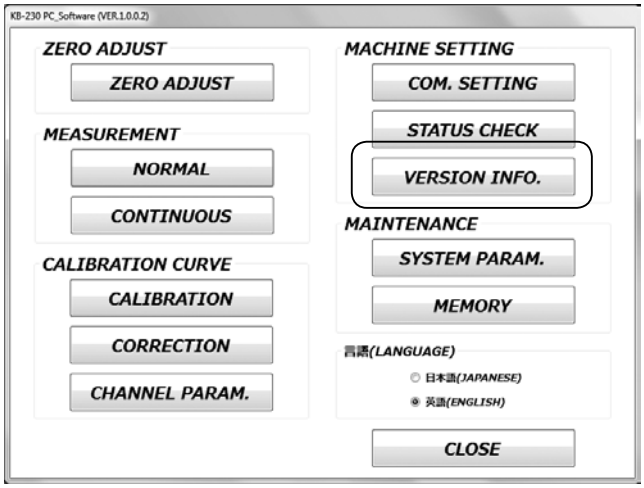
2 **Check the status.**

The error and device status can be checked.



7-2. Version information

1 **Click the [VERSION INFO.] button in the main screen.**

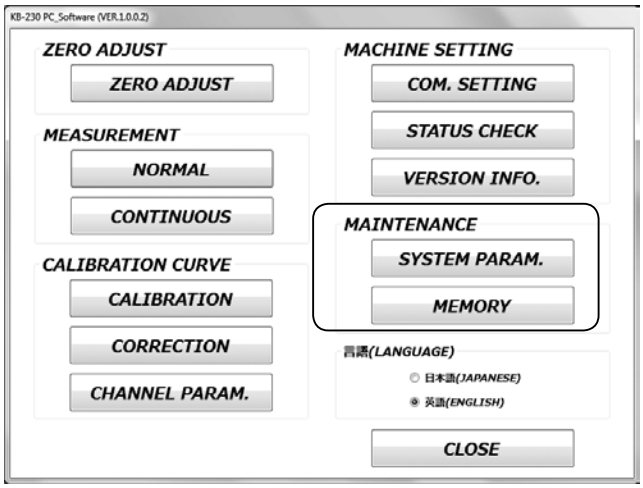


2 **Check the version information.**

Enables checking the main unit program and the PC software version.

8. Maintenance

The items of "SYSTEM PARAM." and "MEMORY" should be used only in the maintenance work conducted by the maker. Do not use them yourself. Otherwise, data necessary for the normal operation including the unit-specific data may be lost.



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