

INSTRUCTION MANUAL

DCS-100A

DYNAMIC DATA RECORDING SOFTWARE

(FOR UCAM-550A OPERATION)

Thank you for purchasing KYOWA's product DCS-100A Dynamic Data Recording Software.

Read this Instruction Manual carefully in order to make full use of the high performance capabilities of the product.

Do not use the product in methods other than described in this Manual.

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CONTENTS

NOTATIONS USED IN THE INSTRUCTION MANUAL	2
ESSENTIAL PRECAUTIONS FOR USING THE UCAM-550A.....	2
1 OUTLINE	3
2 BASIC OPERATON FLOW	4
3 SETTING BOX NO. OF THE UCAM-550A.....	6
4 SETTING ENVIRONMENT.....	7
4-1 SETTING CONNECTION CONFIGURATION	8
4-1-1 Automatic configuration setting.....	10
4-1-2 Manual configuration setting.....	12
4-1-3 Communication check	15
4-2 GENERAL SETTING	16
4-3 SETTING DISPLAY	18
5 SETTING CH CONDITION	21
6 LOADING TEDS SENSOR INFORMATION.....	31
6-1 LOADING TEDS SENSOR INFORMATION.....	32
6-1-1 Automatic configuration setting.....	32
6-1-2 Details of TEDS sensors	33
6-2 APPLYING TEDS INFORMATION TO CHANNEL CONDITIONS	34
6-2-1 “Set” column	34
6-2-2 Setting items	34
6-2-3 To apply TEDS information to the channel conditions	35
7 SETTING MEASURING CONDITIONS	36
7-1 MEASURE MODE CONDITIONS.....	36
7-2 DETAILS CONDITIONS	38
7-3 INTERVAL CONDITIONS.....	40
7-4 ANALOG TRIGGER CONDITIONS.....	41
7-5 DATA FILE CONDITIONS	44
8 MEASUREMENT	46
8-1 INITIAL VALUE MEASUREMENT	48
8-2 MANUAL MEASUREMENT.....	50
8-3 INTERVAL MEASUREMENT.....	52
8-4 ANALOG TRIGGER MEASUREMENT	54
8-5 BURNOUT CHECKING	55
8-6 DISPLAYING EXCEEDING VALUE	56
8-7 STATIC MEASUREMENT	57
8-7-1 Displaying list on numeric window	58
8-7-2 Data file name	60
8-7-3 Manual measurement	61
8-7-4 Interval measurement.....	63
8-8 STROKE CHANGE PROCESSION.....	65
9 SAVING AND LOADING MEAS CONDITION FILE	68
9-1 SAVING MEAS CONDITION FILE WITH A NAME	68
9-2 SAVING MEAS CONDITION FILE.....	69
9-3 OPENING MEAS CONDITION FILE.....	69
10 SETTING AND LOADING THE INTERNET PARAMETERS OF THE UCAM-550A.....	70

10-1 SETTING THE INTERNAL PARAMETERS OF THE UCAM-550A 70
10-2 LOADING DATA FROM THE INTERNAL PARAMETERS OF THE UCAM-550A 71
11 SPECIFICATIONS 72

NOTATIONS USED IN THE INSTRUCTION MANUAL

For your convenience, the following notes and memos are stated in this Instruction Manual to attract customer's attention to informative reference items when using the DCS-100A Dynamic Data Recording Software (hereinafter referred to as the DCS-100A) for operating the UCAM-550A High Speed Data Logger (hereinafter referred to as the UCAM-550A).

Example of Notations

NOTE

Essential precautions required when handling the UCAM-550A.

MEMO

Reference items required when handling the UCAM-550A.

ESSENTIAL PRECAUTIONS FOR USING THE UCAM-550A

- Do not set your PC to the following state. Or, the DCS-100A may not properly operate.
 - Screen saver is set to activate.
 - Power consumption function including System standby is set to activate.
 - Application software such as virus check software, etc. is set to activate on the way.
 - PC is receiving access from the network. Or the PC is accessing to the network.
- The 34568 and 34381 ports are used for TCP-IP communication between the PC and the UCAM-550A.

When conducting communication through router, firewall, etc., check whether or not the above communication port is connected.

Set the router, firewall, etc. after confirming the Network Administrator.
- When LAN communication is unsatisfactory, check the network setting contents. If it is normal, conduct the following operations.

(This unsatisfactory state may generate especially when the IP address is changed.)

 - (1) Turn OFF the UCAM-550A and then, turn ON once again.
 - (2) Restart the PC Windows.

1 OUTLINE

This Instruction Manual describes method for controlling the UCAM-550A using the DCS-100A. For the UCAM-550A, see separate volume of “UCAM-550A HIGH SPEED DATA LOGGER INSTRUCTION MANUAL (For Hardware).”

For common operations of the DCS-100A for controlling dynamic meters, see separate volume of “DCS-100A DYNAMIC DATA RECORDING SOFTWARE INSTRUCTION MANUAL (For Common Operation).”

The DCS-100A is measurement software that is capable of online measurement (such as displaying, recording, and analyzing data) on the PC with the UCAM-550A connected via the LAN interface.

- The standard-issue DCS-100A can control maximum 6 UCAM-550A units (maximum 300 channels). With the optional software DCS-106A, the DCS-100A can control maximum 20 UCAM-550A units (maximum 1000 channels).
- The measured data can be displayed in various formats such as number, Y-Time graph, Bar graph, X-Y graph, Circle meter and Bar meter.
- You can easily operate the UCAM-550A by using buttons on the Meas Operation Panel with a feeling like using a remote controller.
- The recorded measured data is saved in the Kyowa Standard Data File KS2 (extension: KS2) format.
- The UCAM-550A can conduct various real-time processions (recording moving image data, calculating procession, averaging procession, and FFT analysis) as well as recording data with the optional software DCS-101A. Therefore, you can record the moving image data during testing and can check the calculation and analysis results in real-time.
- The UCAM-550A can display the recorded data in numeric value or on graph, edit, cut out, convert, calculate and analysis the recorded data after the measurement with the DAS-200A. You can load the recorded data by using the commercially available software since the UCAM-550A can convert the recorded data into CSV format file.
- Measuring, calculation and analysis conditions are saved in a file. When you want to measure or analyze data with the same conditions later, the same conditions are set by loading the previous saved files.

2 BASIC OPERATON FLOW

This chapter explains the basic operating procedure for controlling the UCAM-550A.

Turn ON the UCAM-550A.

- 1) Set the Box No. and turn ON the UCAM-550A.

Set network conditions between the PC and UCAM-550A

- 2) Set network conditions between the PC and UCAM-550A.

Connect the PC and UCAM-550A.

- 3) Connect the UCAM-550A and the PC using the LAN cable.

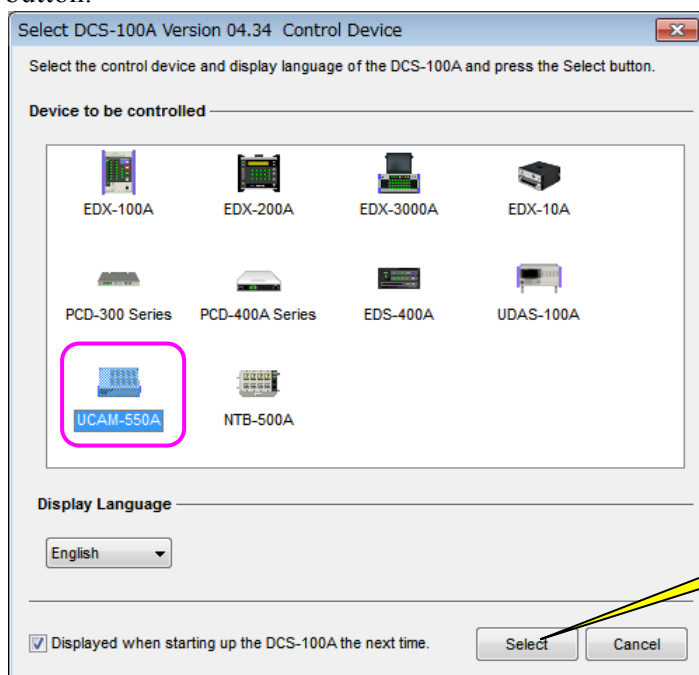
Connect sensors.

- 4) Connect sensors to the measuring units of the UCAM-550A.

Start up the DCS-100A.

- 5) Start up the DCS-100A and the **Device to be controlled** window appears.

Click the UCAM-550A icon on the **Device to be controlled** window and click the **Select** button.



- 6) The main window of the DCS-100A appears.

Set Environment

- 7) Point to **File** on the menu bar and select **Environment** menu or select the **Environment** icon from the toolbar to open the **Environment** window
- 8) Click the **Set Connection Configuration** tab. Set the UCAM-550A hardware configuration.
- 9) Click **Check Communication** on the **Environment** window, and perform a connection test in order to check whether communication is successful between the PC and the UCAM-550A. If the connection test is performed successfully, click the **OK** button and close the **Environment** window.

Set CH Condition.

- 10) Point to **Set** on the menu bar and select **Set CH Condition** menu or select the **Set CH Condition** icon from the toolbar to open the **Set CH Condition** window.
- 11) Set the Mode, CAL coefficient, Offset, Unit, etc. for every CH of the UCAM-550A on the **Set CH Condition** window. Then, close the **Set CH Condition** window.

Set Meas Mode

- 12) Point to **Set** on the menu bar and select **Set Meas Condition** menu or select the **Meas Cond** icon from the toolbar to open the **Set Meas Condition** window.
- 13) Select the **Measure Mode** tab.
Set Meas Mode, sampling frequency, and Record Data on the **Meas Mode** window.
- 14) Select the **Data File** tab.
Set the Set Save Folder, File Name, and File No. on the **Set Save Folder** window.
- 15) Click the **OK** button and close the window.

Display windows

- 16) Click the **Window** and a desired window or click the desired icon from the toolbar to display the target data window.

Measure data

- 17) Click the **MONITOR** button on the Meas Operation Panel. The measurement starts and the UCAM-550A becomes monitoring state. The measured data is displayed on windows.
- 18) If the **REC/PAUSE** button is clicked, the recording of measured data starts according to the Meas mode.
- 19) Click the **STOP** button or after finishing recording the data for the preset number, the UCAM-550A gets back to monitoring state.
- 20) Pressing the **STOP** button once again in monitoring mode stops the monitoring.

Check Data

- 21) Click the **Measurement** – **Latest Recorded Data File** or click the **Check Data** icon from the toolbar to display the data checking dialog box.
- 22) For unnecessary data, click the **Measurement** – **Delete the Latest Recorded Data File** or click the **Del Data** icon from the tool bar for deleting.
For measuring the data again, click the **MONITOR** button.

Reproduce Data (you need to install the optional software DCS-102A)

- 23) To display the recorded data in detail, to cut out, to convert file and to analysis the recorded data, click the **File** – **Reproduce Data** or **Reproduce** icon from the toolbar for reproducing the data.

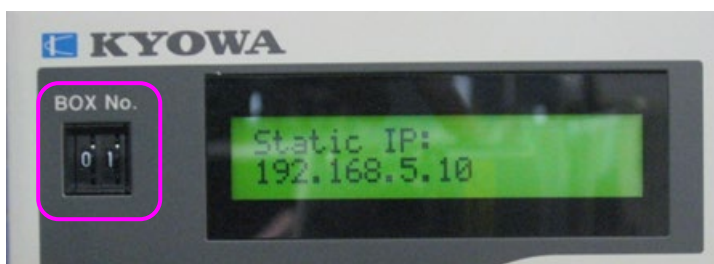
Exit the DCS-100A and UCAM-550A

- 24) Exit the DCS-100A and turn OFF the UCAM-550A.

3 SETTING BOX NO. OF THE UCAM-550A

This section describes how to set the Box No. switch of the UCAM-550A to be connected to the PC. Every UCAM-550A should have a unique Box No.

Number of controllable units	Box No.
1	Box No.01
2	Box No.01 to 02
:	:
6	Box No.01 to 06
:	:
20	Box No.01 to 20



When using the DCS-100A, channels of the UCAM-550A are as follows.

Box No. 01: CH01 to CH50 of the UCAM-550A	CH 01to CH 50 of the DCS-100A
Box No. 02: CH01 to CH50 of the UCAM-550A	CH 51 to CH100 of the DCS-100A
:	:
Box No. 06: CH01 to CH50 of the UCAM-550A	CH251 to CH300 of the DCS-100A
:	:
Box No. 20: CH01 to CH50 of the UCAM-550A	CH951 to CH1000 of the DCS-100A

MEMO

Although the different numbers are printed on the following measuring units, the channels are the same with the UCAM-550A.

- UST-51A
- USS-51A
- USV-51A

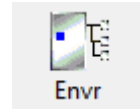
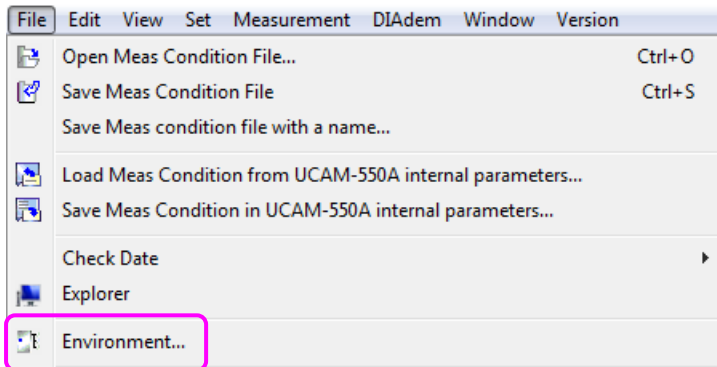
4 SETTING ENVIRONMENT

This section describes how to set the connection configuration of the UCAM-550A to be connected to the PC.

■ How to display

Open the **Environment** window as described below:

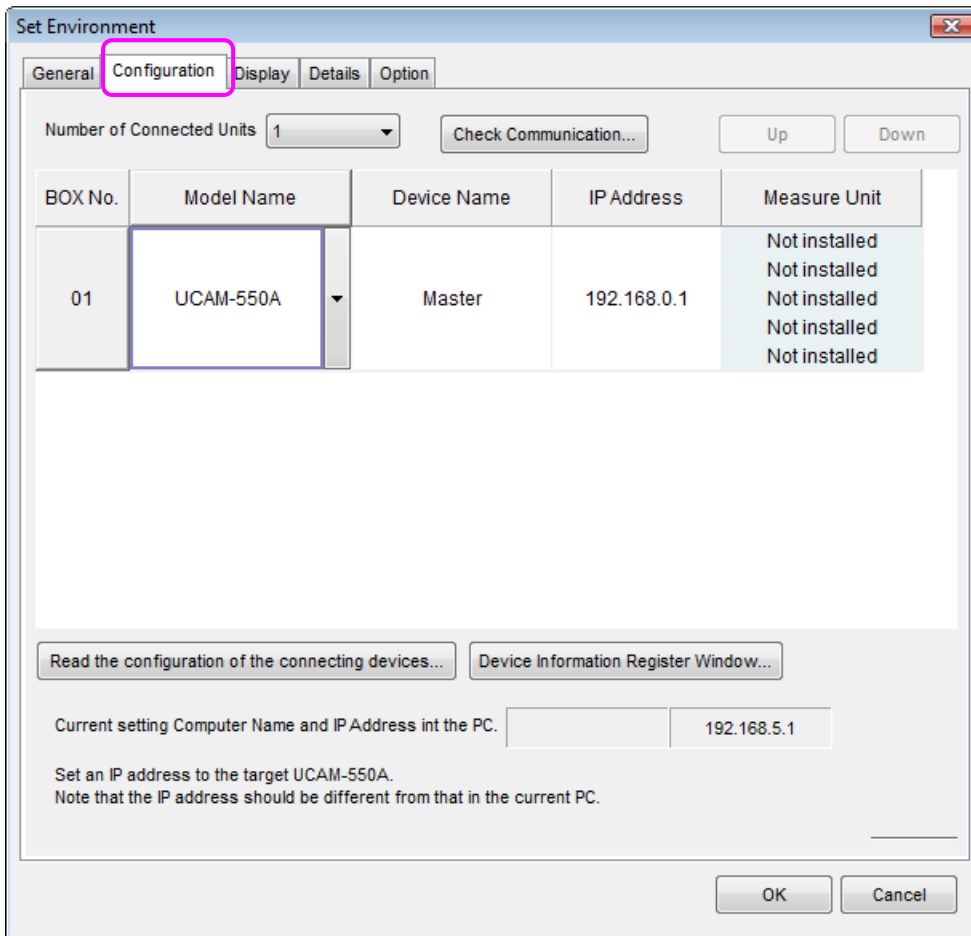
- Point to **File** on the menu bar and select **Environment**.
- Select the **Environment** icon from the toolbar.



4-1 SETTING CONNECTION CONFIGURATION

Set the UCAM-550A hardware configuration.

Click the **Set Connection Configuration** tab.



Check Communication... button:

Perform a connection test in order to check whether communication is succeeded between the PC and the UCAM-550A.

Read the configuration of the connecting devices... button

Automatically sets the configuration of the connecting devices.

Device Information Register Window... button

The **Register Device Information** dialog box appears.

Up/Down button

For moving the target item to up/down.

Choose the item you want to move, and click the **Up** or

Down button.

OK button

Determines the set contents and closes the window.

Cancel button

Cancels the set contents and closes the window.

You can set the configuration of the UCAM-550A to be connected in the following 2 ways.

- **Automatic Configuration Setting**

Searches the PC-connected UCAM-550A and automatically set the Number of Connected Unit, Model Name, IP Address, and Measure Unit to the **Configuration** window.

- **Manual Configuration Setting**

Manually sets the Number of Connected Unit, Model Name, IP Address, and Measure Unit of the UCAM-550A to be controlled to the **Configuration** window.

NOTE

Check that the network conditions between the PC and UCAM-550A are set correctly. Then, set the configuration.

For the UCAM-550A, see separate volume of "UCAM-550A HIGH SPEED DATA LOGGER INSTRUCTION MANUAL (For Hardware)."

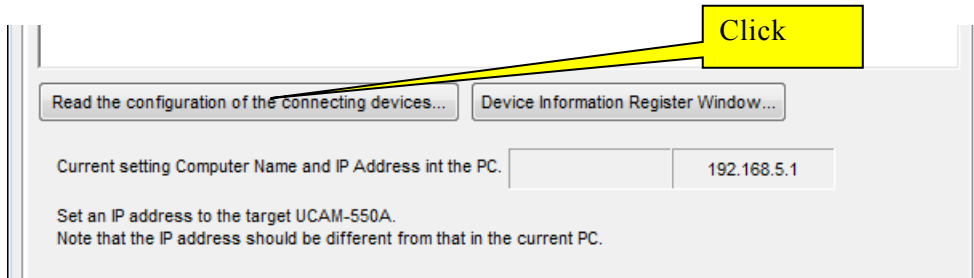
For the Automatic Configuration Setting, you need the network sections of the IP addresses of the both PC and UCAM-550A. When you do not have the network sections of the both PC and UCAM-550A, manually set the configuration.

Example: When the UCAM-550A (IP address: 192.168.5.50, Subnet mask: 255.255.255.0) is used, you need the IP address 192.168.5 (24 bits) of the PC for satisfying the network section.

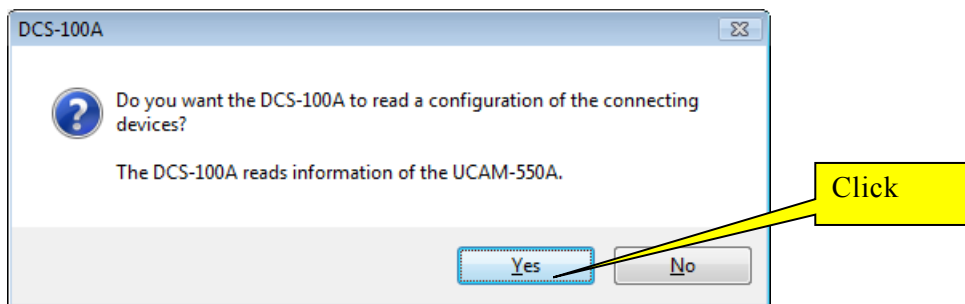
4-1-1 Automatic configuration setting

■ Operation Method

- 1) Check that the network conditions between the PC and UCAM-550A are set correctly. Then, click the **Read the configuration of the connecting devices...** button.

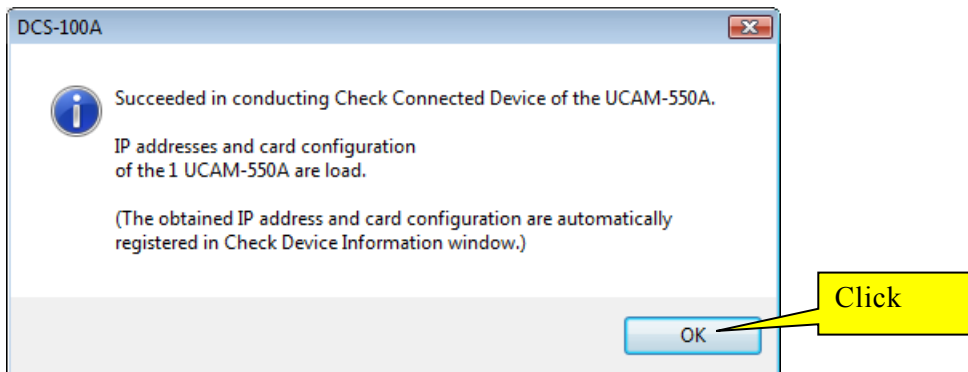


- 2) The following message appears. Click the **Yes** button.

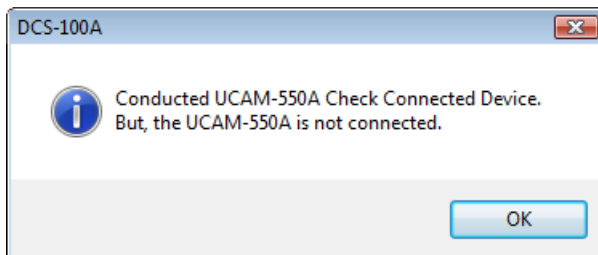


- 3) Searches the PC-connected UCAM-550A and load the Number of Connected Unit, Model Name, IP Address and Measuring unit configuration.

After the loading succeeded, the following message appears. Click the **Yes** button.



When the DCS-100A cannot find any PC-connected UCAM-550A, the following message appears.



NOTE

When the DCS-100A cannot find any PC-connected UCAM-550A, check the followings.

- The network conditions between the PC and UCAM-550A are set correctly and you know the network section of the IP address of the both PC and UCAM-550A.
- The LAN cable between the PC and UCAM-550A is correctly connected.
- The Box number, Model Name, IP Address, and Measuring unit configuration on the **Configuration** window match with that of the UCAM-550A.

4) The Number of Connected Unit, Model Name, IP Address and Measuring unit configuration appears on the **Configuration** window.

Number of Connected Units: 1

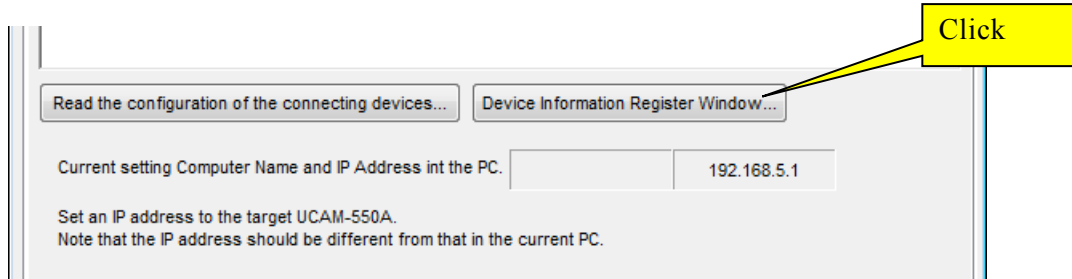
Check Communication... Up Down

BOX No.	Model Name	Device Name	IP Address	Measure Unit
01	UCAM-550A	Master	192.168.5.50	USS-51A/51B USV-51A/51B UST-51A/51B Not installed Not installed

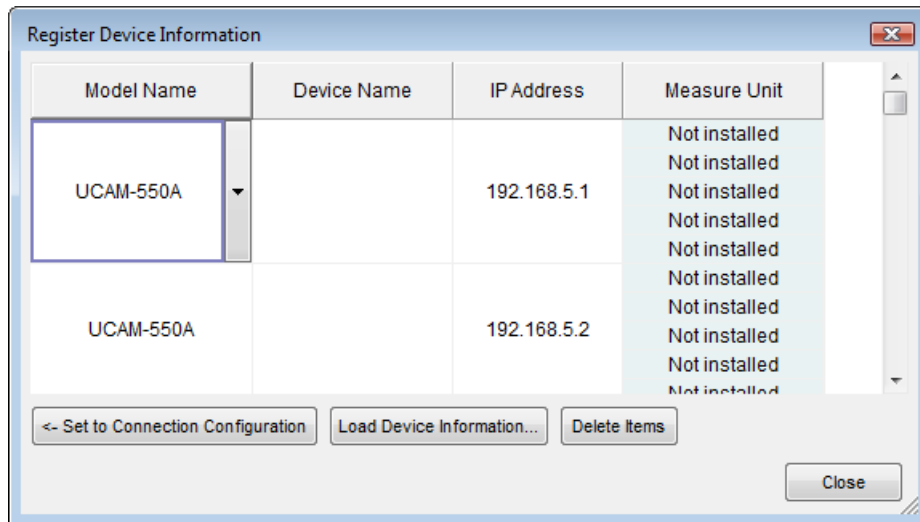
4-1-2 Manual configuration setting

■ Operation Method

1) Click the **Device Information Register Window...** button.

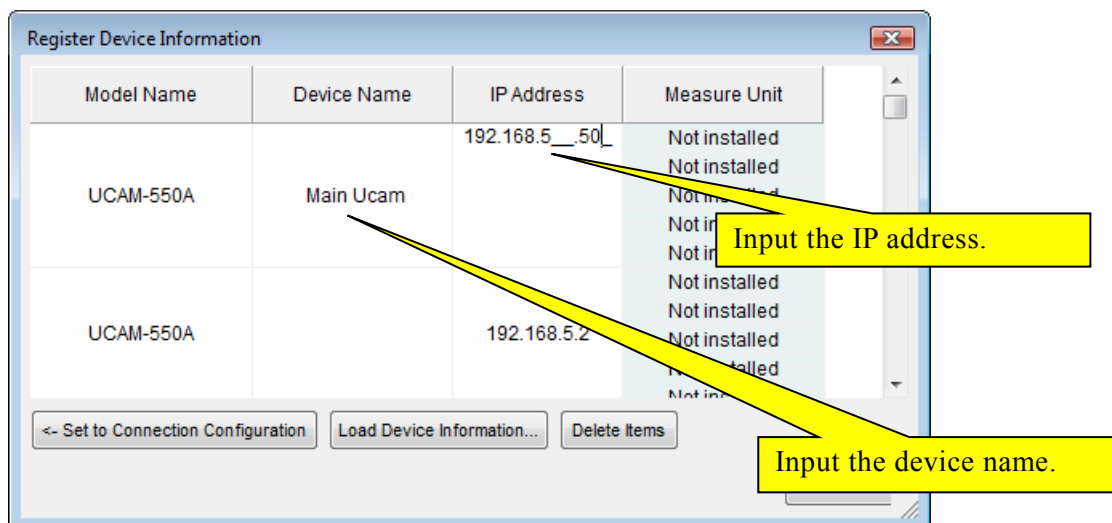


2) The **Register Device Information** dialog box appears.

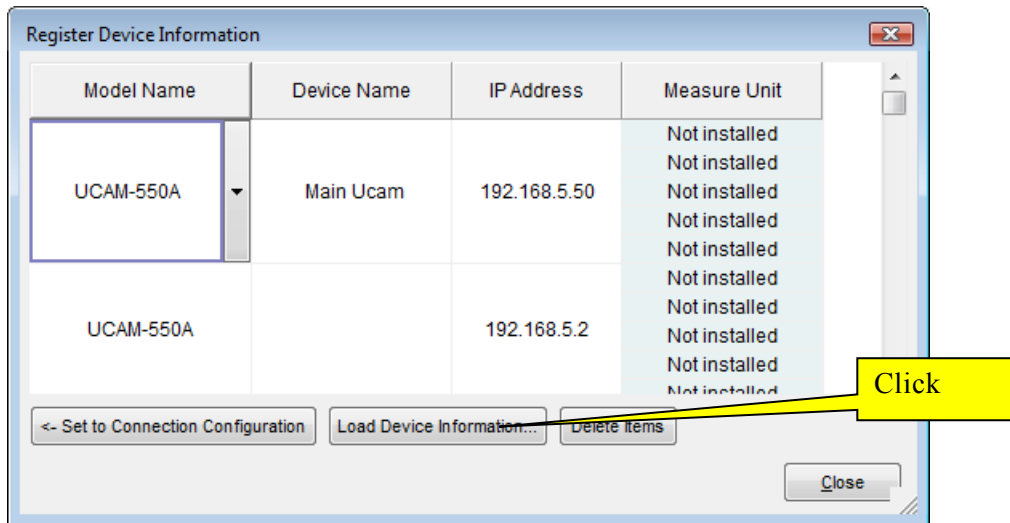


3) Set the device name and IP address of the target UCAM-550A on the Device Name and IP Address columns.

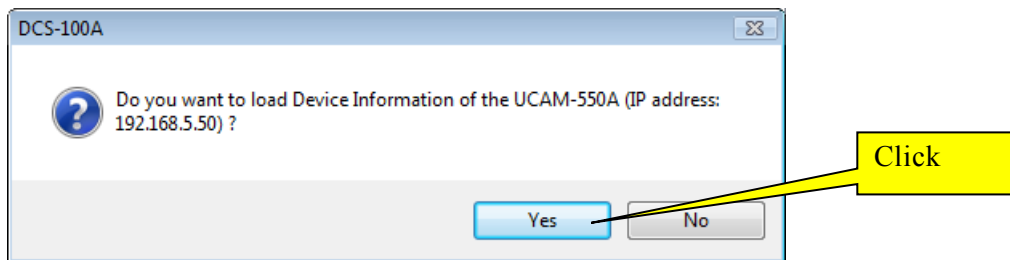
Double-click the desired item or press the **SPACE** key.



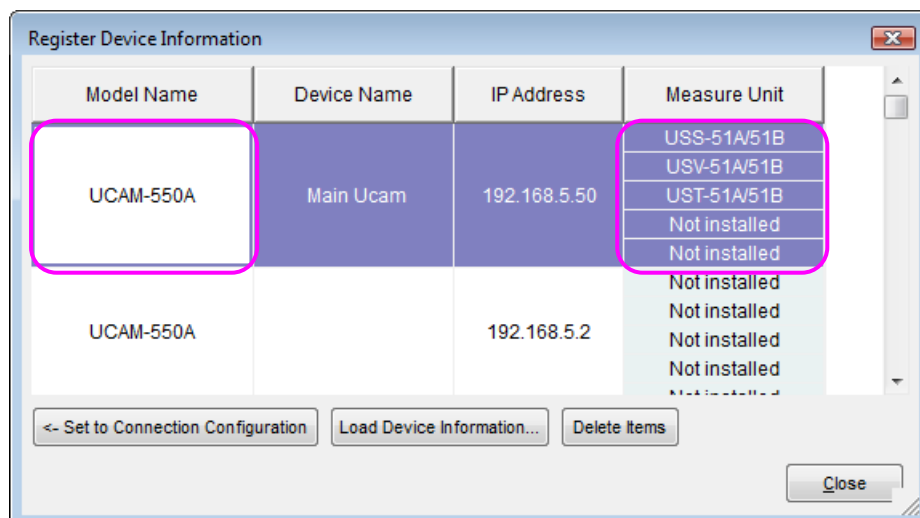
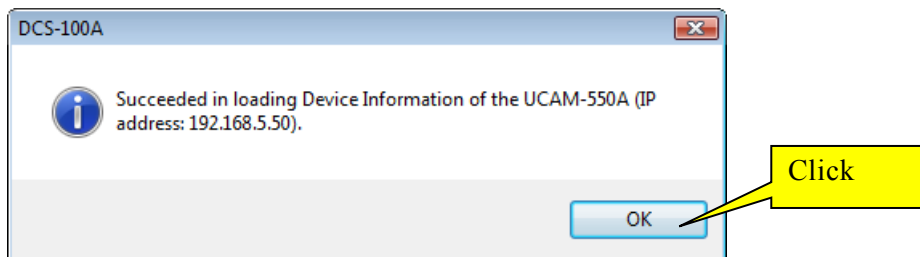
- 4) Check that the network conditions between the PC and UCAM-550A are set correctly.
Point the target cell of the target UCAM-550A and click the **Load Device Information...** button.



- 5) The following message appears. Click the **Yes** button.



- 6) After the loading succeeded, the following message appears. The Model Name and Measuring unit configuration appears on the **Register Device Information** window.



7) Set the Number of Connected Units on the **Set Environment** window.

The screenshot shows the 'Set Environment' window with the 'Configuration' tab selected. The 'Number of Connected Units' dropdown menu is open, showing options 1 through 6. The dropdown is highlighted with a pink box. Below the dropdown is a table with columns: BOX No., Model Name, Device Name, IP Address, and Measure Unit. The table contains one row with BOX No. 01, Model Name UCAM-550A, Device Name Master, IP Address 192.168.0.1, and Measure Unit Not installed.

8) Point the target Box No. to be changed on the **Set Environment** window.

Point the target cells to be transferred on the **Register Device Information** window and click the **Set to Connection Configuration** button.

The first screenshot shows the 'Set Environment' window with the 'Model Name' cell highlighted with a pink box. The second screenshot shows the 'Register Device Information' window with the 'Model Name' and 'Device Name' cells highlighted with a pink box. A yellow arrow points from the 'Set to Connection Configuration' button to the text 'Click'.

9) The information on the Register Device Information appears on the target items on the **Set Environment** window.

The screenshot shows the 'Set Environment' window with the 'Model Name' and 'Device Name' cells highlighted with a pink box. The table now contains two rows: one with BOX No. 01, Model Name UCAM-550A, Device Name Main Ucam, IP Address 192.168.5.50, and Measure Unit USS-51A/51B, USV-51A/51B, UST-51A/51B, Not installed, Not installed; and another with BOX No. 01, Model Name UCAM-550A, Device Name Main Ucam, IP Address 192.168.5.2, and Measure Unit Not installed, Not installed, Not installed, Not installed, Not installed.

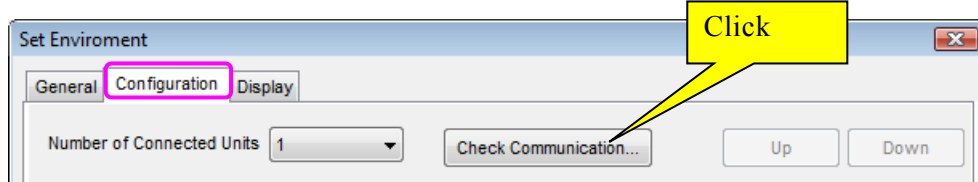
10) For controlling the multiple UCAM-550A units, repeat the item 8) and 9).

4-1-3 Communication check

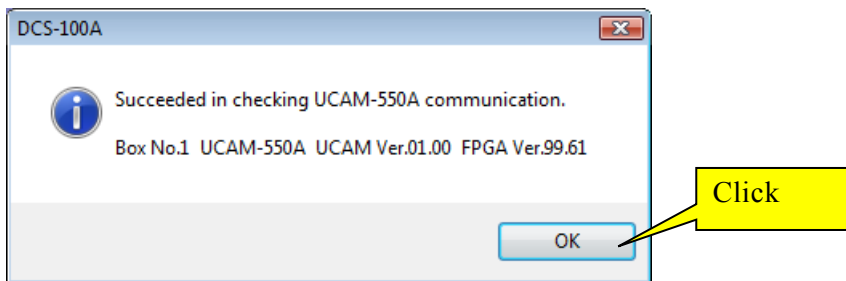
This section describes how to perform a connection test in order to check whether communication is succeeded between the PC and the UCAM-550A after setting the configuration.

■ Operation Method

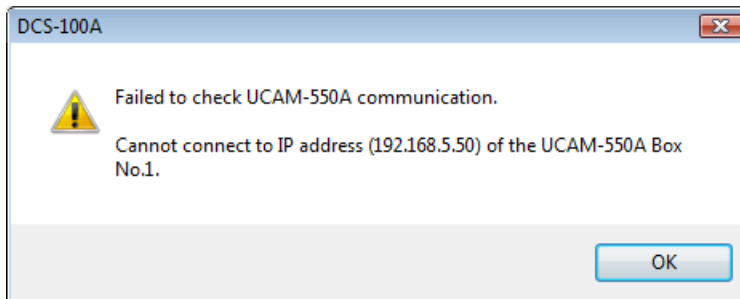
- 1) Click the **Check Communication** button on the **Set Environment** window.



- 2) When the communication test is performed successfully, the following message appears.
Click the **OK** button and close the message.



When the communication test is performed unsuccessfully, the following message appears.



NOTE

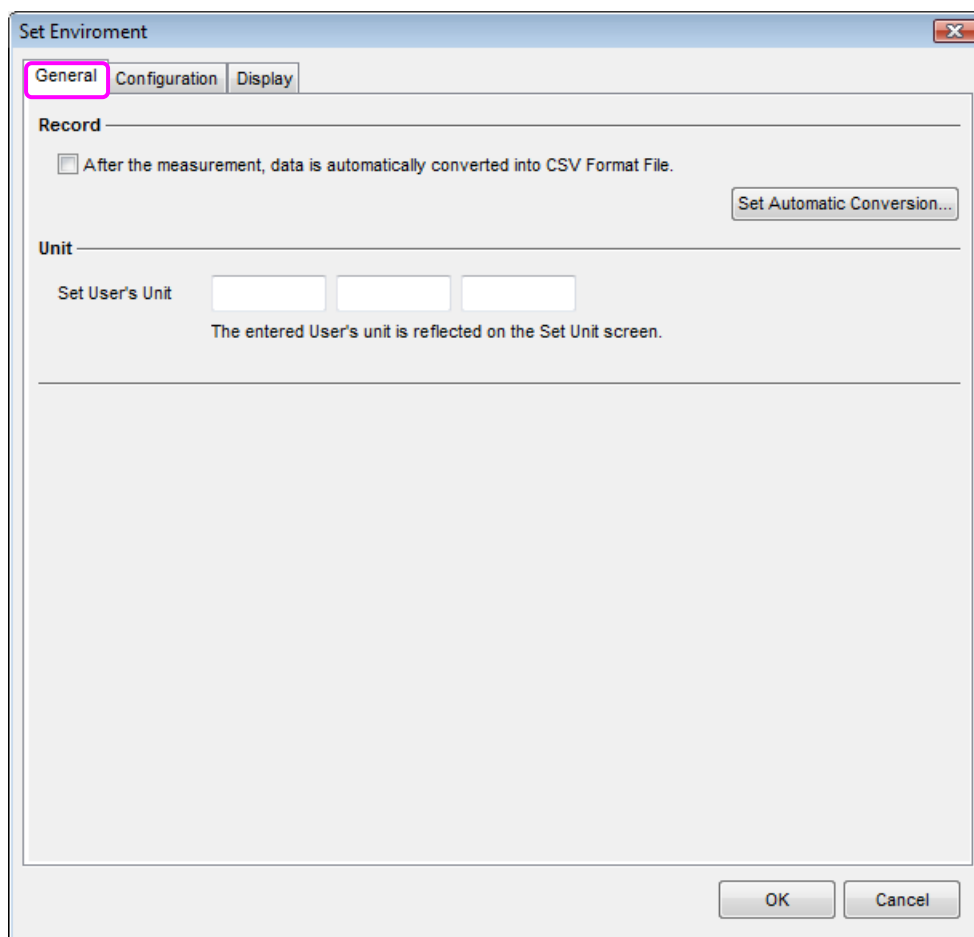
When the communication test is performed unsuccessfully, check the followings.

- The network conditions between the PC and UCAM-550A are set correctly.
- The LAN cable between the PC and UCAM-550A is correctly connected.
- The Box Number, Model Name, IP Address, and Measuring unit configuration on the **Configuration** window match with that of the UCAM-550A.

4-2 GENERAL SETTING

This section describes how to set the data file conversion after the measurement and user arbitrary units.

Click the **General** tab.



The screenshot shows a window titled "Set Environment" with three tabs: "General", "Configuration", and "Display". The "General" tab is selected and highlighted with a pink border. Inside the "General" tab, there are two main sections: "Record" and "Unit".

Record

☐ After the measurement, data is automatically converted into CSV Format File.

Set Automatic Conversion...

Unit

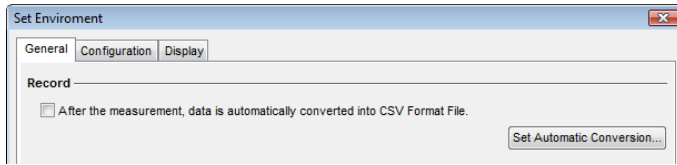
Set User's Unit

The entered User's unit is reflected on the Set Unit screen.

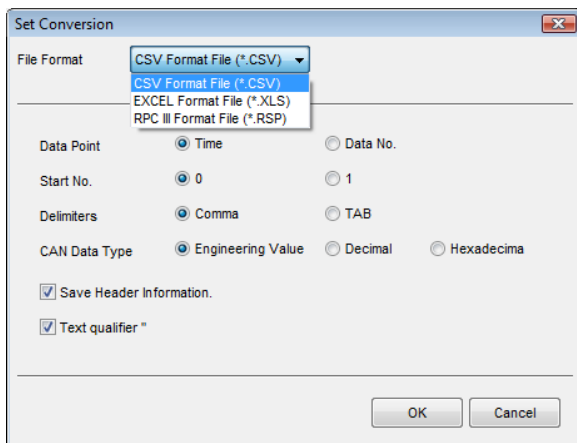
At the bottom right of the dialog, there are "OK" and "Cancel" buttons.

■ Converting the data file after the measurement

After the measurement, when it is required to automatically convert the KS2 file format to another, put a check mark to the check box next to the “After the measurement, the data file is converted to the auto file.”



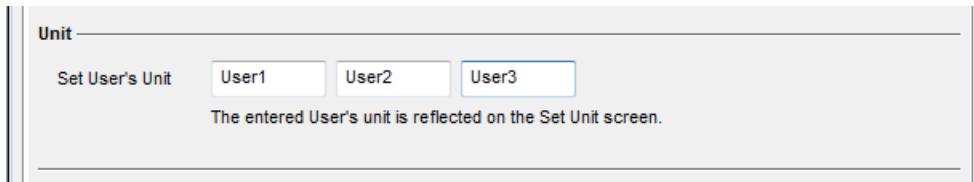
Click the **Auto file conversion...** button and the following **Set Conversion** dialog box appears. Set conditions on the **Set Conversion** dialog box.



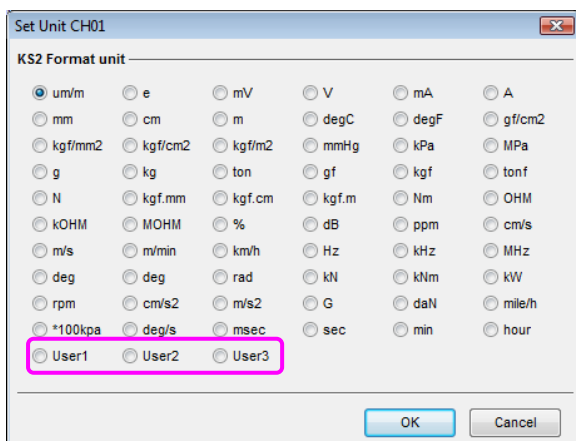
■ User arbitrary unit

Up to 3 user arbitrary units can be registered.

Input the user arbitrary unit within 7 characters.



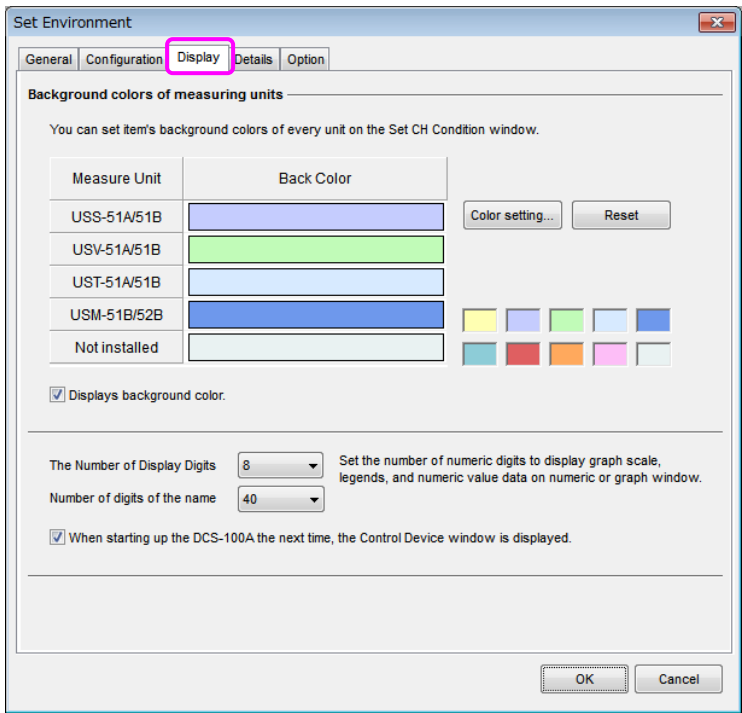
The units determined at this time can be selected by selecting Unit on the **Set CH Condition** dialog box.



4-3 SETTING DISPLAY

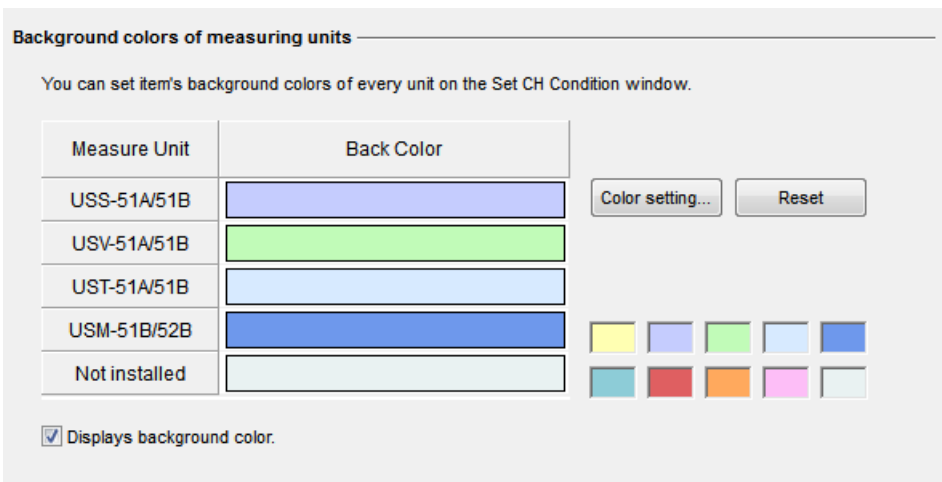
This section describes how to set display conditions.

Click the **Display** tab.



■ Background colors of measuring units

Sets item's background colors of every unit on the **Set CH Condition** window.



Color setting... button

Click the desired color on the **Color** dialog box to set the background color of the target conditioner card.

Reset button

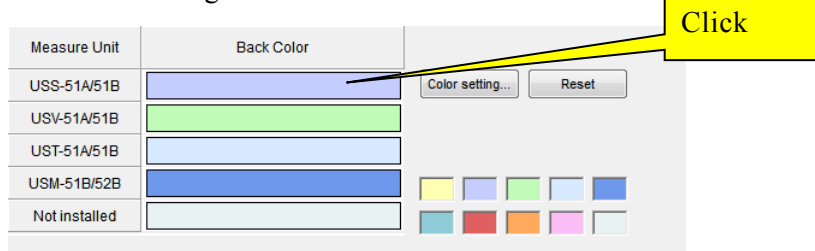
Resets the item to the default state.

To valid the settings of the background color on the **Set CH Condition** dialog box, put a check mark in a box next to the “Displays background color.”

Operation example 1:

This section describes how to change the background color of the USS-51A/51B by using the **Back Color** list.

- 1) Click the current background color of the USS-51A/51B.



- 2) Click the target color from background color list.



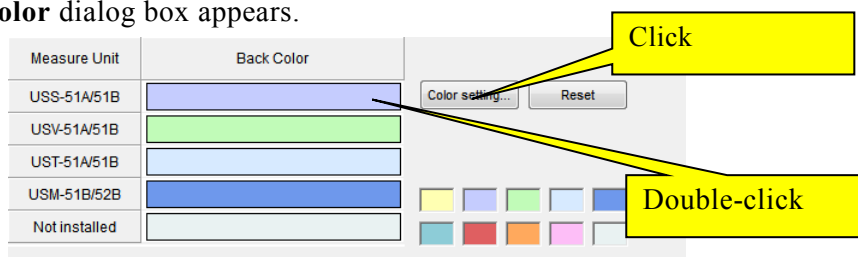
- 3) The background color of the USS-51A/51B is changed.



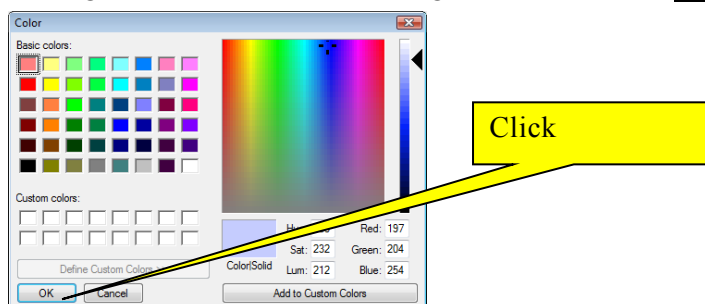
Operation example 2:

This section describes how to change the background color of the USS-51A/51B by using the **Color** dialog box.

- 1) Click the current background color of the USS-51A/51B.
- 2) Click the **Color setting...** button or double-click the background color of the USS-51A/51B and the **Color** dialog box appears.



- 3) Click the target color on the **Color** dialog box and click the **OK** button.



- 4) The background color of the USS-51A/51B is changed.

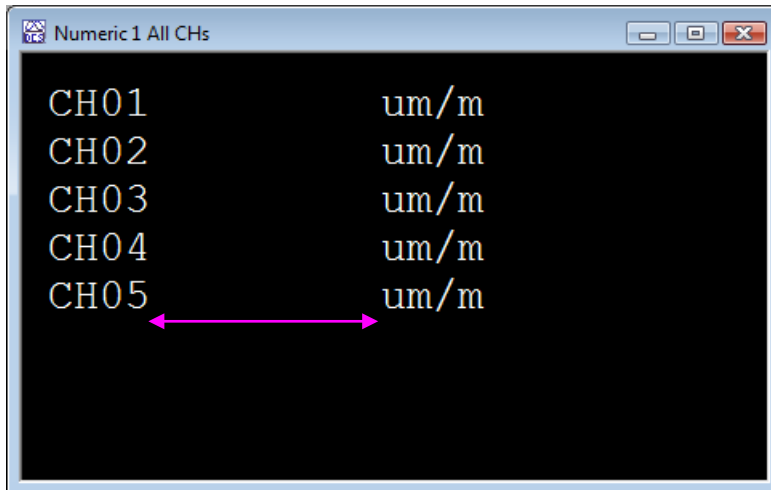
■ The number of numeric digits to be displayed

Sets the number of numeric digits to be displayed on numeric window, graph scale of the graph, window, legends, and numeric value display.

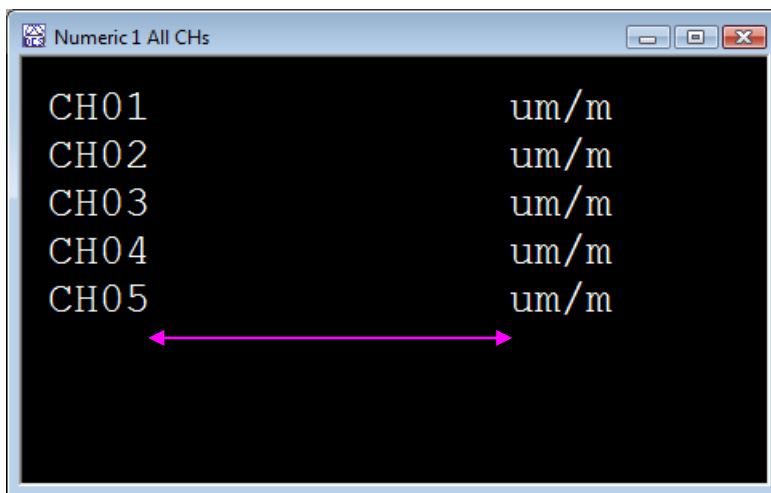
(Range: 6 to 11 digits)

If the number of numeric values exceeds the specified numeric display range, it shall be expressed in exponential notation.

- When the number of display range digit is 6.



- When the number of display range digit is 11.



Show or hide the device to be controlled window.

For displaying the **Device to be controlled** window when starting up the DCS-100A the next time, put a check mark in a box next to the "Displayed when starting up the DCS-100A the next time."

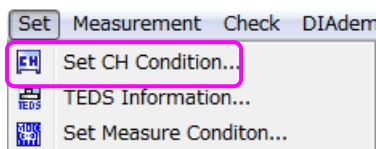
5 SETTING CH CONDITION

This chapter describes methods for setting mode, CAL coefficient, offset, unit, etc. for every channel of the UCAM-550A.

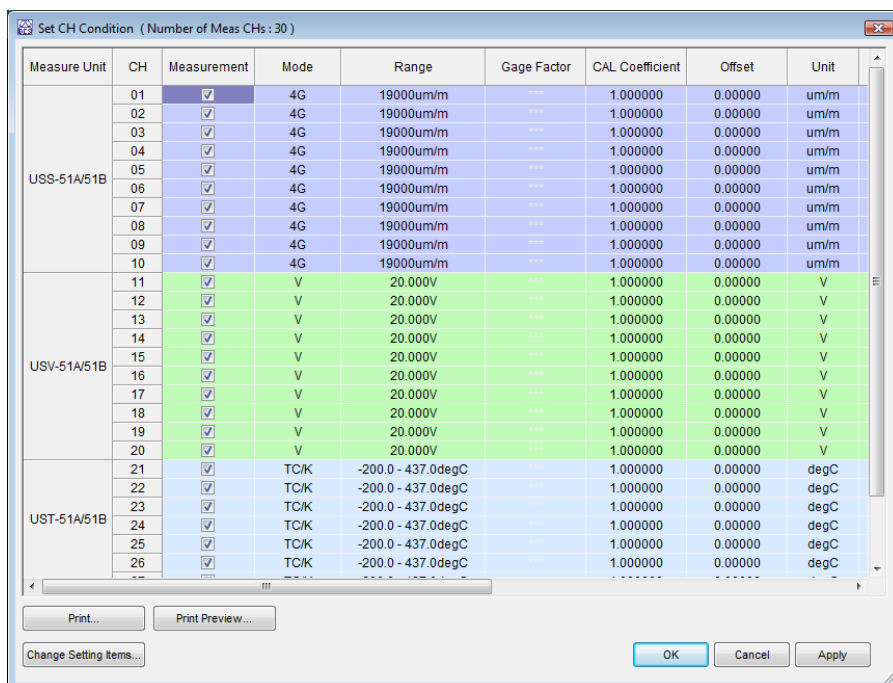
■ How to display

Open the **Set CH Condition** window as described below:

- Point to **Set** on the menu bar and select **Set CH Condition**.
- Select the **CH Condition** icon from the toolbar.



■ CH Condition window



Print... button

Prints out **Set CH condition** window.

Change Setting Items... button

Setting items on the window are added, removed, or sorted.

OK button

Determines the set contents and closes the window.

Cancel button

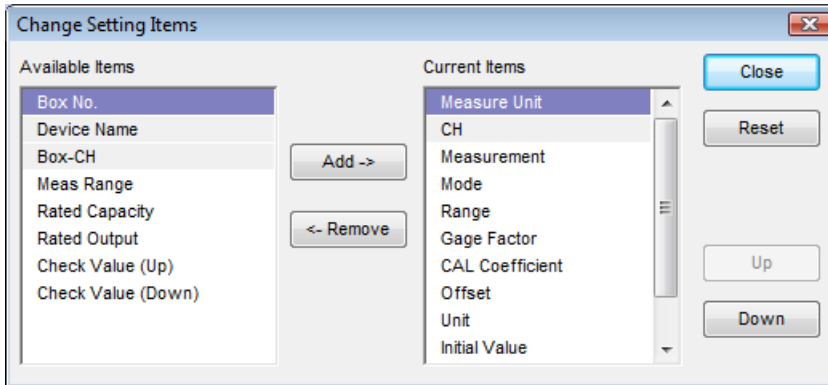
Cancels the set contents and closes the window.

Apply button

Determines the current set contents.

■ Change Setting Items window

Click the **Change Setting Items** button to display the following window
Setting items displayed on the window are added, removed, or sorted.



Add button	Item currently not on the window is added to the window.
Remove button	Item currently not on the window is removed from the window.
Close button	Determines the set contents and closes the window.
Reset button	Resets the item to the default state.
Up/Down button	Sorts the current setting items. Choose the setting item you want to move, and click Up or Down button.

■ Setting Items

1) Box No.

Displays the Box No. of the UCAM-550A.

2) Device Name

Displays the device name that is set under Environment.

3) Measure Unit

Displays a model of the current installed measuring unit.

4) CH

Display the CH No.

The CH No. is assigned in serial numbers starting from CH1.

5) Box-CH

Displays the Box No. and channel numbers of the UCAM-550A. The CH No. is assigned in serial numbers starting from 01 for every Box No.

Example: Box No.1-01 indicates the CH01 of the Box No.1.

MEMO

When using the USS-51A, USV-51A, and UST-51A, the CH00 of a measuring unit correspond with the CH01 of the DCS-100A and CH09 of a measuring unit correspond with the CH10 of the DCS-100A.

6) Measurement

Put a check mark on the measurement target CH box.

7) Mode

Set the mode.

The Mode changes with the current mounting measuring units.

Measuring Unit	Mode	Applicable sensor and circuit
USS-51A/51B	1G120 3W	Strain gage (Quarter bridge system, 120 ohm, 3-wire system)
	1G350 3W	Strain gage (Quarter bridge system, 350 ohm, 3-wire system)
	2GA-D	Strain gage (Half bridge system, active-dummy)
	2GA-A	Strain gage (Half bridge method, active-active)
	4GA-A	Strain gage (Full bridge system, opposite side active)
	4G	Strain gage transducer, strain gage (Full bridge method)
	POT.	Potentiometer sensor
USV-51A/51B	V	Voltage-output sensor
UST-51A/51B	TC/K	Thermocouple unit K (CA) type
	TC/T	Thermocouple unit T (CC) type
	TC/E	Thermocouple unit E (CRC) type
	TC/J	Thermocouple unit J (IC) type
	TC/R	Thermocouple unit R type
	TC/N	Thermocouple unit N type
USM-51B/52B *	1G120 3W	Strain gage (Quarter bridge system, 120 ohm, 3-wire system)
	1G350 3W	Strain gage (Quarter bridge system, 350 ohm, 3-wire system)
	1G120 2W	Strain gage (Quarter bridge system, 120 ohm, 2-wire system)
	1G350 2W	Strain gage (Quarter bridge system, 350 ohm, 2-wire system)
	2GA-D	Strain gage (Half bridge system, active-dummy)
	2GA-A	Strain gage (Half bridge method, active-active)
	4GA-A	Strain gage (Full bridge system, opposite side active)
	4G	Strain gage transducer, strain gage (Full bridge method)
	POT.	Potentiometer sensor
	V	Voltage-output sensor
	TC/K	Thermocouple unit K (CA) type
	TC/T	Thermocouple unit T (CC) type
	TC/E	Thermocouple unit E (CRC) type
	TC/J	Thermocouple unit J (IC) type
	TC/R	Thermocouple unit R type
	TC/N	Thermocouple unit N type

* The UCAM-550A firmware version should be 03.00 or later.

8) Range

Set measuring range. The Range changes with the current Mode.

Since the Range is coupled with Meas Range item, when changing the Range, the Meas Range is automatically changed.

Measuring Unit	Mode	Range
USS-51A/51B	1G120 3W 1G350 3W 2GA-D 2GA-A 4GA-A 4G	$\pm 19000 \mu\text{m/m}$ $\pm 200000 \mu\text{m/m}$
	POT.	$\pm 50.0 \mu\text{m/m}$ (fixed)
USV-51A/51B	V	$\pm 20.000 \text{ V}$ (fixed)
UST-51A/51B	TC/K	-200.0 to 437.0°C -200.0 to 1200.0°C
	TC/T	-200.0 to 350.0°C (fixed)
	TC/E	-200.0 to 260.0°C -200.0 to 800.0°C
	TC/J	0.0 to 330.0°C 0.0 to 750.0°C
	TC/R	0.0 to 1600.0°C(fixed)
	TC/N	-200.0 to 530.0°C -200.0 to 1250.0°C
USM-51B/52B *	1G120 3W 1G350 3W 1G120 2W 1G350 2W 2GA-D 2GA-A 4GA-A 4G	$\pm 19000 \mu\text{m/m}$ $\pm 300000 \mu\text{m/m}$
	POT.	$\pm 50.0 \%$ (fixed)
	V	$\pm 20.000 \text{ V}$ (fixed)
	TC/K	-200.0 to 1200.0°C (fixed)
	TC/T	-200.0 to 350.0°C (fixed)
	TC/E	-200.0 to 800.0°C (fixed)
	TC/J	-200.0 to 750.0°C (fixed)
	TC/R	0.0 to 1600.0°C (fixed)
	TC/N	-200.0 to 1250.0°C (fixed)

* The UCAM-550A firmware version should be 03.00 or later.

9) Meas Range

Set measuring range.

Numeric value of the Meas Range is obtained by multiplying the Range and the CAL coefficient value.

Since the Range is coupled with Meas Range item, when changing the Meas Range, the Range is automatically changed.

10) Gage Factor

Input gage factors.

For the “1G120 3W”, “1G350 3W”, “1G120 2W” and “1G350 2W” only.

Double-click the desired CH item or press the **SPACE** key to be in numeric input available state.

Input the desired numeric value.

When inputting the item 10) “Gage Factor”, you are not required to input the compensation coefficients for gage factors (2.0/target gage factor) in the item 13) “CAL Coefficient.”

11) Rated Capacity

Set the Rated Capacity of sensors. Set the Rated Capacity of sensors together with the Rated Output.

When changing the Rated Capacity, the CAL Coefficient is automatically changed.

Double-click the desired CH item or press the **SPACE** key to be in numeric input available state.

Input the desired numeric value.

12) Rated Output

Set the Rated Output of sensors. Set the Rated Output of sensors together with the Rated Capacity.

When changing the Rated Output, the CAL Coefficient is automatically changed.

Double-click the desired CH item or press the **SPACE** key to be in numeric input available state.

Input the desired numeric value.

13) CAL Coefficient

Set CAL Coefficient to be multiplied to the measured data. (Setting range: -1×10^{-8} to -1×10^{-8} , 1×10^{-8} to 1×10^{-8})

For CAL coefficient, set coefficient that converts data into engineering value (physical value) corresponding to input sensors of CHs and compensation coefficient (lead wire compensation coefficient) to be used for gage compensation for gage factor compensation coefficient or extension cable in strain measurement.

When changing the CAL Coefficient, the Rated Capacity is automatically changed.

Double-click the desired CH item or press the **SPACE** key to be in numeric input available state.

Input the desired numeric value.

14) Offset

Set Offset value in engineering value (A value multiplied by the CAL coefficient).

(Setting range: -1×10^{-8} to -1×10^{-8} , 1×10^{-8} to 1×10^{-8})

Set the offset value when it requires to parallel move the measured value at a certain amount.

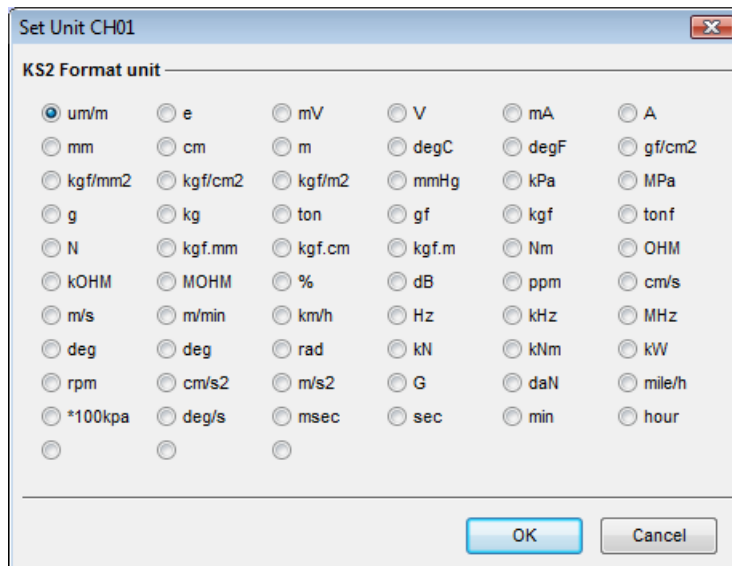
Double-click the desired CH item or press the **SPACE** key to be in numeric input available state.

Input the desired numeric value.

15) Unit

Set engineering value unit according to input sensors.

Double click the target CH or press the **SPACE** key to display the **Set Unit** window. Select the relevant unit from the unit list.



MEMO

If the relevant unit is not on the unit list, users can register up to 3 original units (User's unit).

At this time, set the user's unit on the **Environment** window in advance.

16) Initial Value

To input the measured initial value easily, perform the Initial Value Measurement.

You can input and edit the value as well as the other items.

(Setting range: Within the current setting values of the Range.)

Double-click the desired CH item or press the **SPACE** key to be in numeric input available state.

Input the desired numeric value.

The number of digits below decimal point and the unit of the Initial Value are fixed as follows based on the current Mode.

Mode	The number of digits below decimal point	Unit
1G120 3W 1G350 3W 1G120 2W 1G350 2W 2GA-D 2GA-A 4GA-A 4G	0	μm/m
POT.	2	%
V	3	V
TC/K TC/T TC/E TC/J TC/R TC/N	1	°C

MEMO

Basically, the DCS-100A uses the measured data obtained from the Initial Value Measurement. However, you need to input initial values when no load state is not available or when initial values are deleted due to troubles.

NOTE

Measurement Functions: MEASURE only

Required for the initial value subtraction of the voltage measurement and temperature measurement.

Select details on the **Set Meas Condition** window for setting the Measurement Functions. (See 7-2.)

Select details on the **Set Meas Condition** window for setting the Initial Value Subtraction. (See 7-2.)

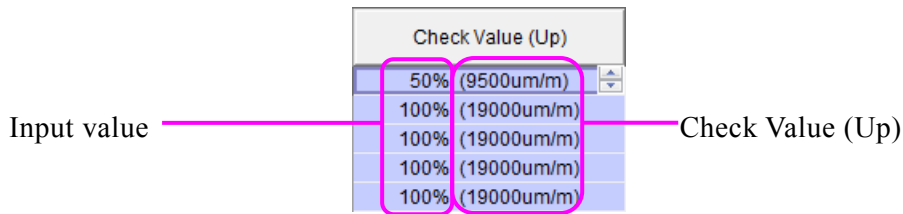
17) Check Value (Up)

Set the Check Value (Up) of the Range in percent figures. (Setting range: -100 to 100%)

Double-click the desired CH item or press the **SPACE** key to be in numeric input available state.

Input the desired numeric value.

In addition, use the spin button to change the value.



18) Check Value (Down)

Set the Check Value (down). (Setting range: -100 to 100%)

MEMO

By setting the Check Value (Up) and Check Value (Down), you can immediately detect erroneous status (the measured data of a CH exceeds the Check Values).

Check Value (Up) and Check Value (Down) are obtained as follows.

Check Value (Up) and Check Value (Down) = $\text{Range} \times \text{Input value} / 100$

19) Deci Digits

Set the number of digits below decimal point of numeric value display.

For details, see separate volume of the "DCS-100A DYNAMIC DATA RECORDING SOFTWARE INSTRUCTION MANUAL (For Common Operation.)"

20) CH Name

Input CH Name comment strings within 40 characters.

Double-click the desired CH item or press the **SPACE** key to be in input available state. Input the desired comment character string.

NOTE

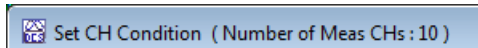
Set the following items to perform the Coefficient Operation.

"Gage Factor", "Rated Capacity", "Rated Output", "CAL Coefficient", "Offset", "Unit", and "Deci Digits"

Select Details on the **Set Meas Condition** window for setting the Coefficient Operation.

■ Title Bar

The number of current measuring channels is displayed on the title bar.



■ Copy and Paste

1) Drag the setting item of the copy source CH and right-click.

Select the **Copy** from the menu.

Measure Unit	CH	Measurement	Mode	Range	Gage Factor	CAL Coefficient	Offset	Unit
USS-51A/51B	01	☒	1G120	19000um/m	2.100000	1.000000	0.00000	um/m
	02	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	03	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	04	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	05	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	06	☒	4G	19000um/m	***	1.000000	0.00000	um/m
	07	☒	4G	19000um/m	***	1.000000	0.00000	um/m

2) Drag the channels of the paste destination and right-click.

Select the **Paste** from the menu.

Measure Unit	CH	Measurement	Mode	Range	Gage Factor	CAL Coefficient	Offset	Unit
USS-51A/51B	01	☒	1G120	19000um/m	2.100000	1.000000	0.00000	um/m
	02	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	03	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	04	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	05	☐	4G	200000um/m	***	1.000000	0.00000	um/m
	06	☒	4G	19000um/m	***	1.000000	0.00000	um/m
	07	☒	4G	19000um/m	***	1.000000	0.00000	um/m
	08	☒	4G	19000um/m	***	1.000000	0.00000	um/m
	09	☒	4G	19000um/m	***	1.000000	0.00000	um/m
	10	☒	4G	19000um/m	***	1.000000	0.00000	um/m

3) The setting items of the copy source are pasted to the setting items of the destination.

Measure Unit	CH	Measurement	Mode	Range	Gage Factor	CAL Coefficient	Offset	Unit
USS-51A/51B	01	☒	1G120	19000um/m	2.100000	1.000000	0.00000	um/m
	02	☒	1G120	19000um/m	2.100000	1.000000	0.00000	um/m
	03	☒	1G120	19000um/m	2.100000	1.000000	0.00000	um/m
	04	☒	1G120	19000um/m	2.100000	1.000000	0.00000	um/m
	05	☒	1G120	19000um/m	2.100000	1.000000	0.00000	um/m
	06	☒	4G	19000um/m	***	1.000000	0.00000	um/m
	07	☒	4G	19000um/m	***	1.000000	0.00000	um/m

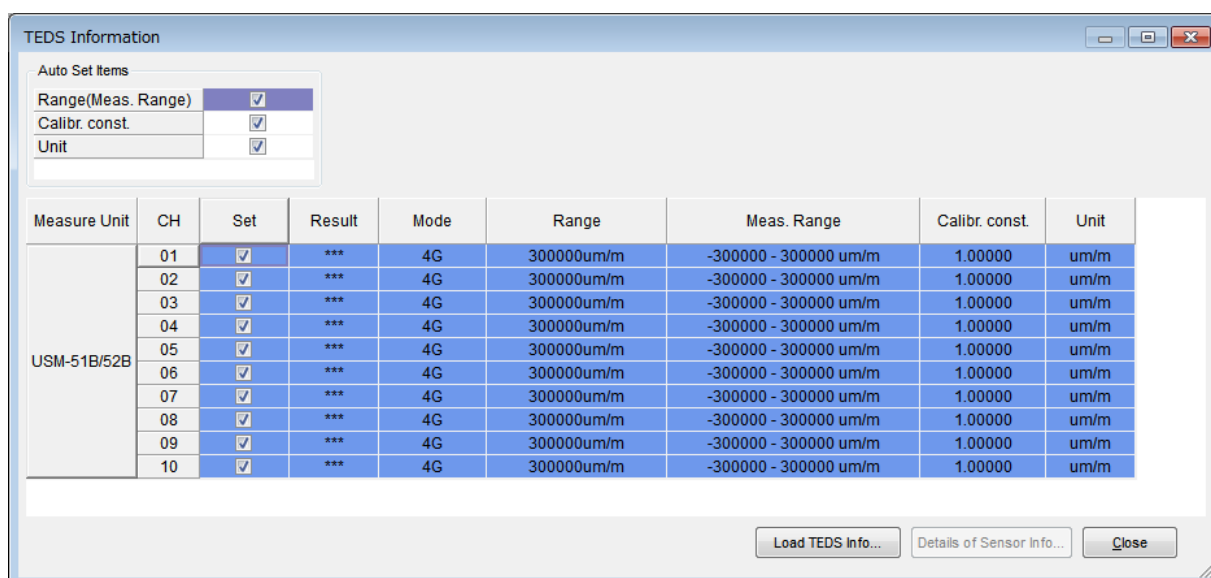
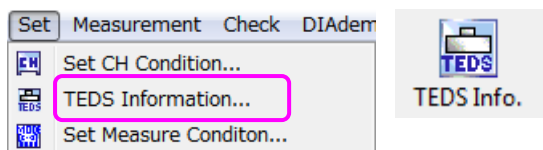
6 LOADING TEDS SENSOR INFORMATION

The USM-51B/52B is capable of loading Transducer Electronic Data Sheet (TEDS) sensor information and capable of setting the most appropriate range, Calibr. const., unit, etc automatically. (Note that the USM-51B/52B is not able to load all the TEDS sensor information.)

■How to display

Open the **TEDS Information** window by any of the following.

- Click the Set - TEDS information....
- Click the **TEDS Info.** icon from the toolbar.



NOTE

The USM-51B/52B loads sensor information of strain gage TEDS sensors (template ID: 33) only.

6-1 LOADING TEDS SENSOR INFORMATION

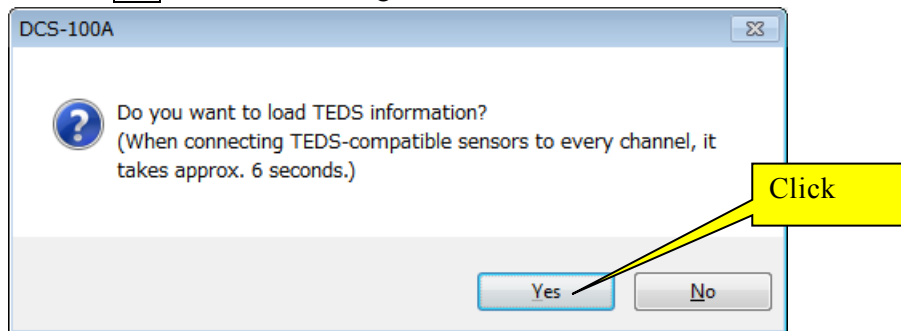
After executing the loading of the TEDS sensor information, the DCS-100A loads the TEDS information of all the sensor-mounted channels.

■Operation method

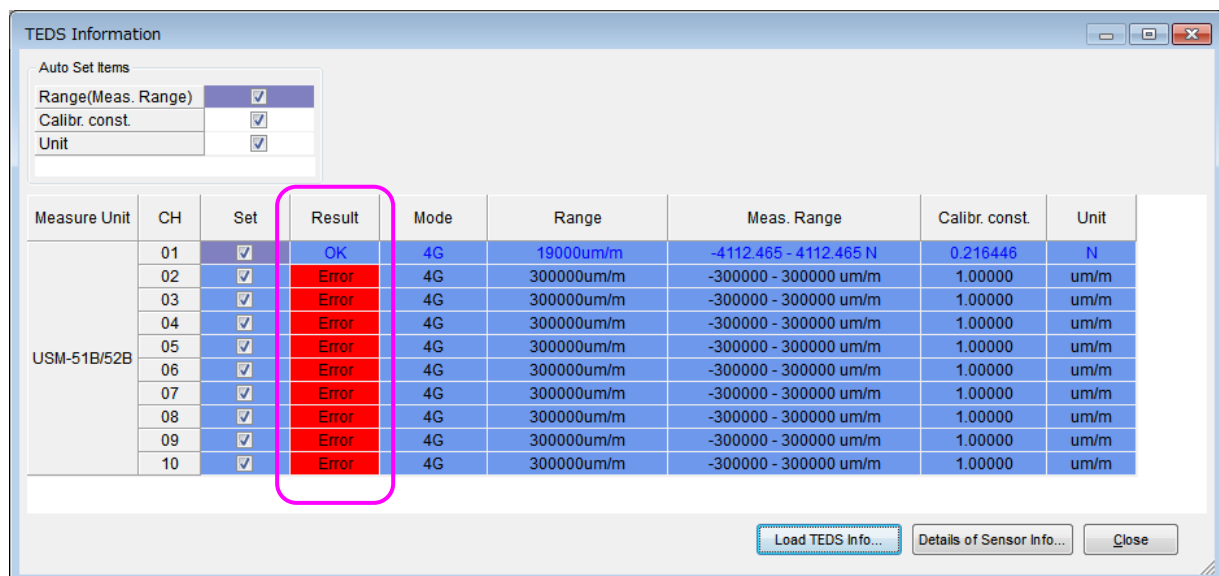
(1)Click the **Load TEDS info...** button.

(2)The following dialog appears.

Click the **Yes** button for loading.



(3)After completing the loading, the following window, indicating "Passed" or "Error" appears.



6-1-1 Automatic configuration setting

This section describes how to change the pre-set Range and Meas Range after loading the TEDS information.

Range	Meas. Range
300000um/m	-64933.66 - 64933.66 N
19000um/m	-300000 - 300000 um/m
300000um/m	-300000 - 300000 um/m
300000um/m	-300000 - 300000 um/m
300000um/m	-300000 - 300000 um/m
300000um/m	-300000 - 300000 um/m
300000um/m	-300000 - 300000 um/m

MEMO

When the Range (Meas Range) is changed, the background color becomes yellow.
You are not able to change the Mode, Unit, Calibr. const., etc. on this window.
To change the above items, open the **Set CH Condition** window.

6-1-2 Details of TEDS sensors

This section describes how to set detailed TEDS information of the target sensor.

MEMO

- You are able to click the **Details of Sensor Info...** button only when the TEDS information is correctly loaded.
- For details of items displayed on the **Details of Sensor Information** window, contact the TEDS sensor manufacturer.

■Operation method

Click the **Details of Sensor Info...** button.

The **Details of Sensor Information** window appears.

TEDS Properties	Values
CH No.	01
Unique Registration Number	0x0000000000000000
Manufacture ID	58
Model Number	0
Version Letter	A
Version Number	5
Serial Number	11000045
Template ID	33
Physical Measurand	N
Minimum physical value	-500.000
Maximum physical value	500.000
Transducer Electrical Signal Type	Bridge Sensor
Minimum electrical output [V/V]	-0.00115502
Maximum electrical output [V/V]	0.00115502
Mapping Method	Linear
Bridge Type	FULL
Bridge element impedance [Ohm]	374.600
Response Time [sec]	1.00000E-6
Excitation level, nominal [V]	10.0000
Excitation level, min [V]	1.00000
Excitation level, max [V]	15.0000
Calibration Date	2005/12/15
Calibration Initials	GTO
Calibration Period [days]	365
Measurement location ID	0

Prev CH button Displays the detailed information of the previous CH.

Next CH button Displays the detailed information of the next CH.

Close button Closes the window.

6-2 APPLYING TEDS INFORMATION TO CHANNEL CONDITIONS

As you close the **TEDS information** window after loading the TEDS information, based on the pre-set conditions, the DCS-100A sets the loaded TEDS information to the channel conditions.

6-2-1 “Set” column

After loading the TEDS information, put a check mark to the target channel.

Measure Unit	CH	Set
USM-51B/52B	01	☒
	02	☒
	03	☒
	04	☒
	05	☒
	06	☒
	07	☒
	08	☒
	09	☒
	10	☒

MEMO

Irrespective of a check mark, the DCS-100A loads the TEDS information of all channels.

6-2-2 Setting items

After loading the TEDS information, put a check mark to the target item.

You are able to put a check mark or release a check mark before loading TEDS information and after loading TEDS information.

Auto Set Items	
Range(Meas. Range)	☒
Calibr. const.	☒
Unit	☒

NOTE

The **Auto Set Items** window is for all channels. You are not able to set items of every channel.

■Range (Meas Range)

To set the Range to the channel conditions, put a check mark to the target item.

MEMO

- The Mode and Range are automatically calculated from the sensor type and rated capacity.
- The Meas Range is the maximum measuring range based on the Range and Calibr. const.. Check the Meas Range as a reference for selecting the Range.

■Calibr. const.

To set the Calibr. const. to the channel conditions, put a check mark to the target item.

NOTE

The DCS-100A loads the Calibr. const. from the TEDS information.
The DCS-100A does not load the Offset.

■Unit

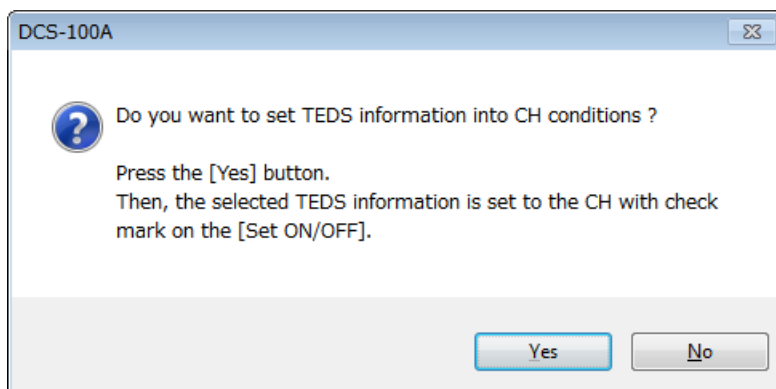
To set the Unit to the channel conditions, put a check mark to the target item.

6-2-3 To apply TEDS information to the channel conditions

Click the **Close** button.

The following message appears.

Click the **Yes** button to set the channel conditions.



NOTE

To set the channel conditions, put a check mark on the “Set” column of the target CH as well as put a check mark next to the target item on the **Auto Set Items** window.
Make sure the target channel conditions have check marks on the “Set” column and on the **Auto Set Items** window.

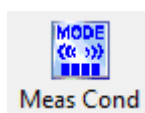
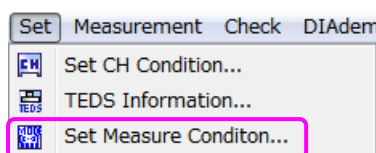
7 SETTING MEASURING CONDITIONS

This section describes how to set the Meas Mode (Meas Mode, Sampling Frequency, and Record Data, etc.) and Data File.

■ How to display

Open the **Set Meas Mode Condition** window as described below:

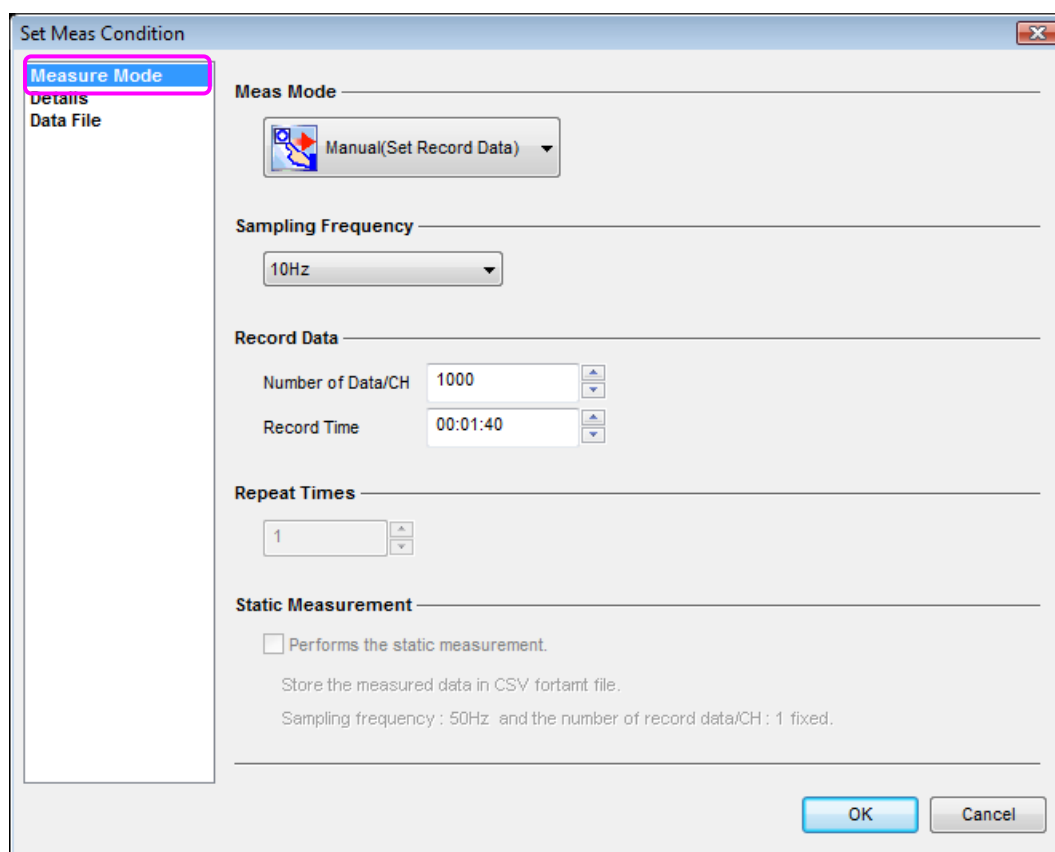
- Point to **Set** on the menu bar and select **Set Meas Condition...**
- Select the **Meas Cond** icon from the toolbar.



7-1 MEASURE MODE CONDITIONS

This section describes how to set Meas Mode, Sampling Frequency, and Record Data on the **Measure Mode** window.

Select the **Measure Mode** tab.



OK button

Determines the set contents and closes the window.

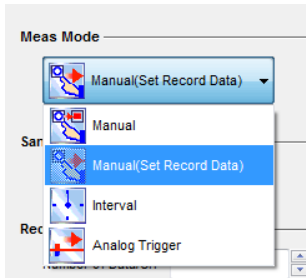
Cancel button

Cancel the set contents and closes the window.

■ Meas Mode

Select the desired item from the following.

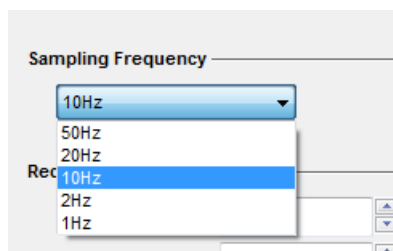
- | | |
|----------------------------|--|
| “Manual” | Manually starts and stops the data recording. |
| “Manual (Set Record Data)” | Manually starts the data recording and records data for the preset number of recorded data. |
| “Interval” | Automatically records data at the preset time interval. |
| “Analog Trigger” | Automatically starts recording data when measured value of the specified analog CH satisfies the trigger conditions. |



■ Sampling Frequency

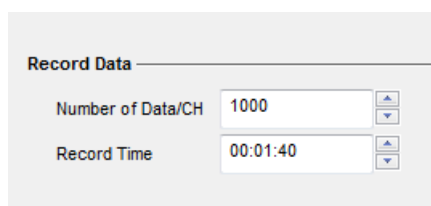
Select the desired item from the following.

“1 Hz”, “2 Hz”, “10 Hz”, “20 Hz”, “50 Hz”



■ Record Data

If you click other than Manual in the Meas Mode, input the Number of Data/CH or Record Time. Since the Number of Data/CH is coupled with Record Time item, when changing the Number of Data/CH, the Record Time automatically changed.



■ Repeat Times

If you click the "Interval" and "Analog Trigger" in the Meas Mode, input the Repeat Times. (Setting range: 1 to 9999, if you set "0," the actual number of repeat times becomes 65535.)



7-2 DETAILS CONDITIONS

This section describes how to set Measurement Functions on the **Details** window.
Select the **Details** tab.

The screenshot shows the 'Set Meas Condition' dialog box. On the left, under 'Measure Mode', the 'Details' tab is selected. The main area contains several sections: 'Measurement Functions' with 'MEASURE' selected; 'Coefficient Operation' with a checked box for 'Multiply the measured data by the CAL coefficient.'; 'Reference junction compensation of temperature measurement' with 'Internal' selected; and 'Initial Value Subtraction' with two unchecked checkboxes. At the bottom right are 'OK' and 'Cancel' buttons.

■ Measurement Functions

Select the desired item from the following.

- | | |
|------------|---|
| "MEASURE" | The measured value is obtained by subtracting the initial value from the sensor output value. |
| "ORIGINAL" | The measured value is the sensor output value. |

■ Coefficient Operation

To perform the CAL coefficient operation, put a check mark in a box next to the "Multiply the measured data by the CAL coefficient."

The measured data of every CH is performed the CAL coefficient operation and you will obtain physical values instead of the measured data.

MEMO

The CAL coefficient operation is as follows.

- Mode: 1G120 3W, 1G350 3W, 1G120 2W, 1G350 2W
Physical value = The measured data × CAL Coefficient × 2/Gage Factor + Offset
- Mode: Other than the above
Physical value = The measured data × CAL Coefficient + Offset

When no CAL coefficient operation is performed, the number of digits below decimal point and the unit of the Initial Value are fixed as follows based on the current Mode.

Mode	The number of digits below decimal point	Unit
1G120 3W 1G350 3W 1G120 2W 1G350 2W 2GA-D 2GA-A 4GA-A 4G	0	μm/m
POT.	2	%
V	3	V
TC/K TC/T TC/E TC/J TC/R TC/N	1	°C

■ Reference junction compensation of temperature measurement

Select the desired item from the following.

- "Internal" Use the reference junction compensation of the thermocouple located internal the UCAM.
- "External" Not using the reference junction compensation of the thermocouple located internal the UCAM and select the reference junction compensation located external.

■ Initial Value Subtraction

- Measurement Functions: MEASURE Put a check mark to the box next to the "Initial value is subtracted from the voltage measurement value."
- Measurement Functions: ORIGINAL Put a check mark to the box next to the "Initial value is subtracted from the temperature measurement value."

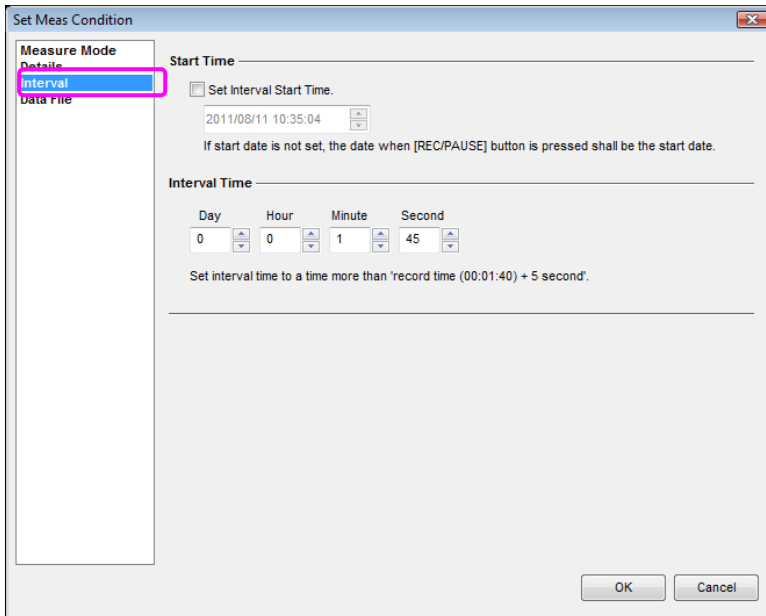
7-3 INTERVAL CONDITIONS

This section describes how to set the interval conditions.

■ How to display

Select the **Interval** on the **Set Meas Condition** dialog box to display the **Interval** tab in the left.

Select the **Interval** tab in the list to display the window.



■ How to operate

- 1) To set the interval start date and time, put a check mark to the box next to the “Set Interval Start Time” and set the date.

The start time will be several seconds after the **REC/PAUSE** button is clicked if putting no check mark.

- 2) Set the interval time

MEMO

If the **REC/PAUSE** button is clicked after the interval start time, the interval time and repeat times are automatically calculated from the current time and if the repeat time is left, the interval measurement is continued.

When the interval measurement is already finished for the preset repeat times, a message appears and the interval measurement finishes.

NOTE

“Recording time + 5 sec or more per hour” should be set as the interval time.

Example:

Record time 1 hour	: Interval time 1 hour 5 seconds
Record time 12 hours	: Interval time 12 hours 1 minute
Record time 11 hours 59 minutes	: Interval time 12 hours

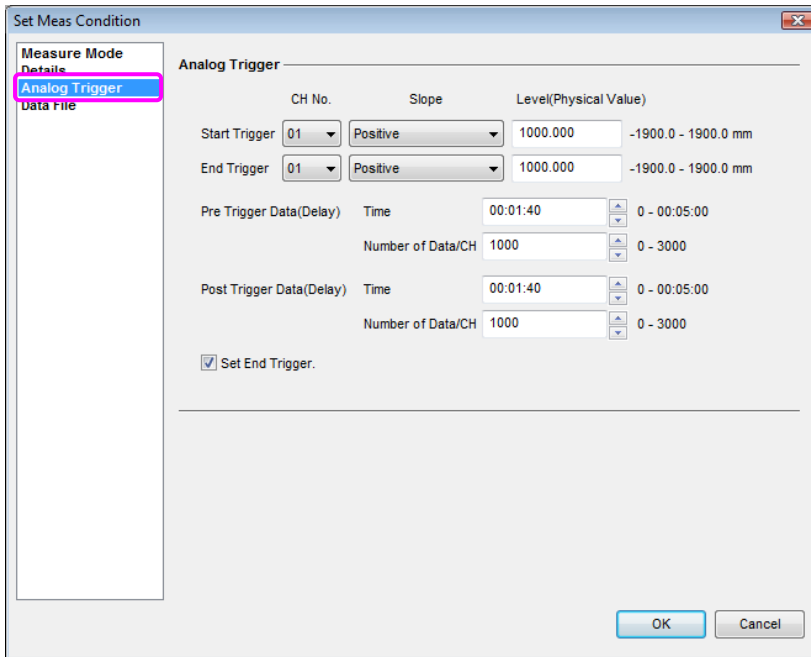
7-4 ANALOG TRIGGER CONDITIONS

This section describes how to set the analog trigger conditions.

■ How to display

Select the **Analog Trigger** on the **Set Meas Condition** dialog box to display the **Analog Trigger** tab in the left.

Select the **Analog Trigger** tab in the list to display the window.



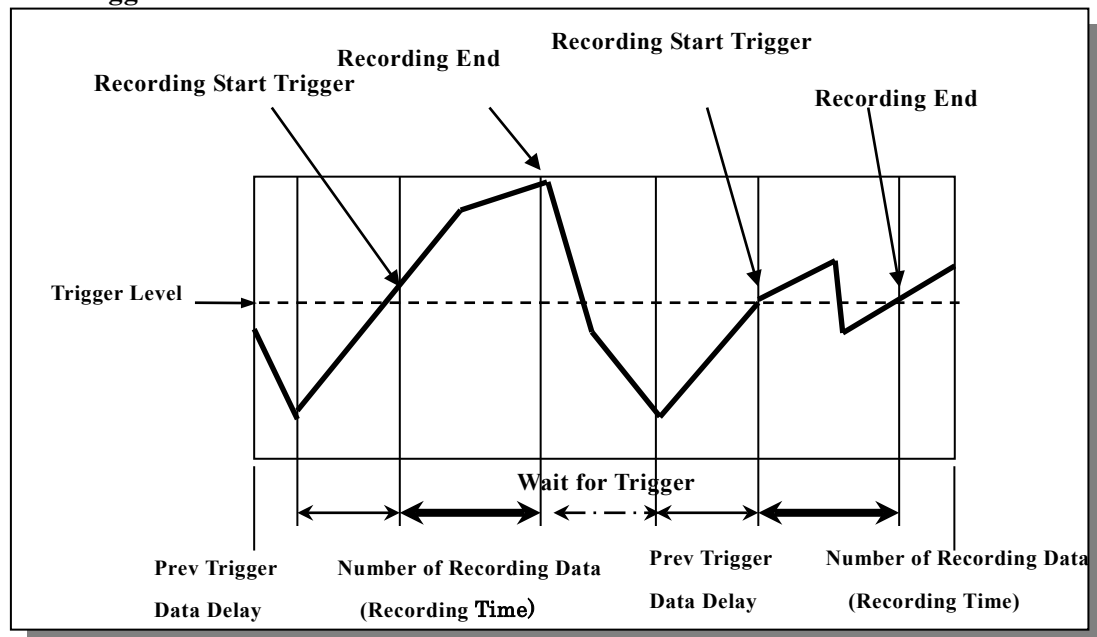
■ How to operate

- 1) Select trigger CH No. that starts recording data.
- 2) Select the desired item from the following.
Positive: Triggered when the measured value of the trigger CH crosses the trigger level upward.
Negative: Triggered when the measured value of the trigger CH crosses the trigger level downward.
- 3) Input the trigger level value (value to be triggered) in physical value.
Input available range is displayed on the right.
- 4) For recording data before starting the recording, set the Pre Trigger Data (Time or Number of Data/CH).
Input available range is displayed on the right.
- 5) To set the end trigger, put a check mark to the box next to the "Set End Trigger."
Set the conditions of the End Trigger in a same manner to the Start Trigger.

■ Example of trigger slope with start trigger

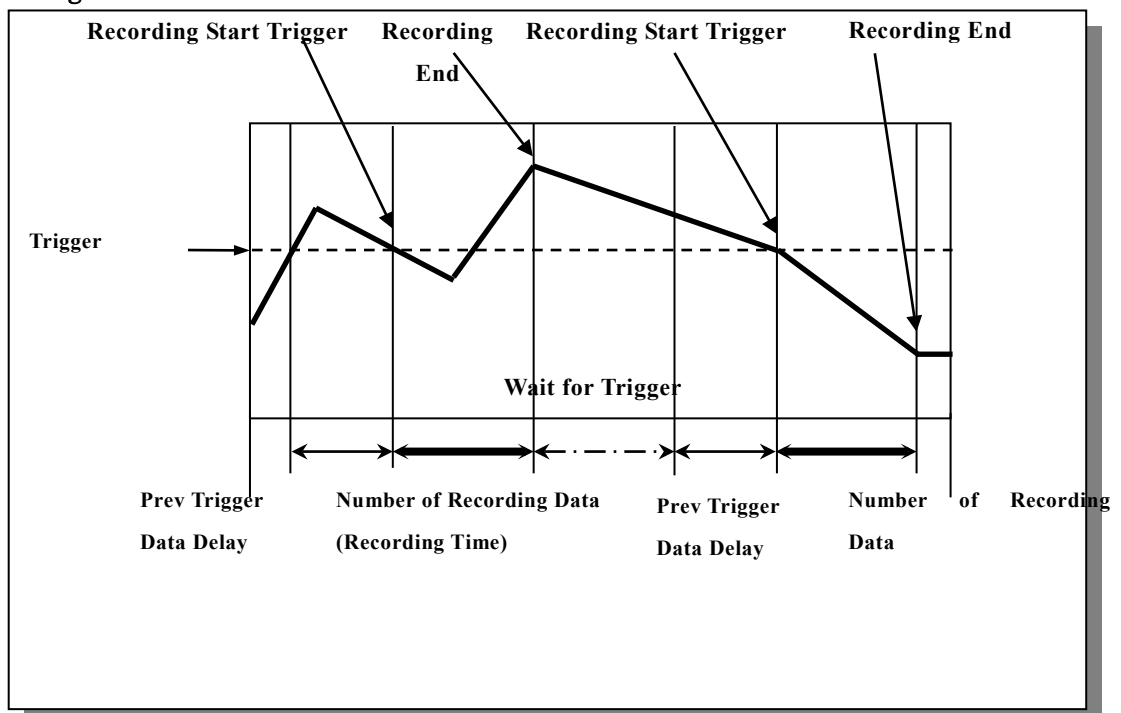
After satisfying the start trigger conditions, the DCS-100A starts recording and records the preset number of data/channels.

Start Trigger: Positive



Start Trigger: Positive

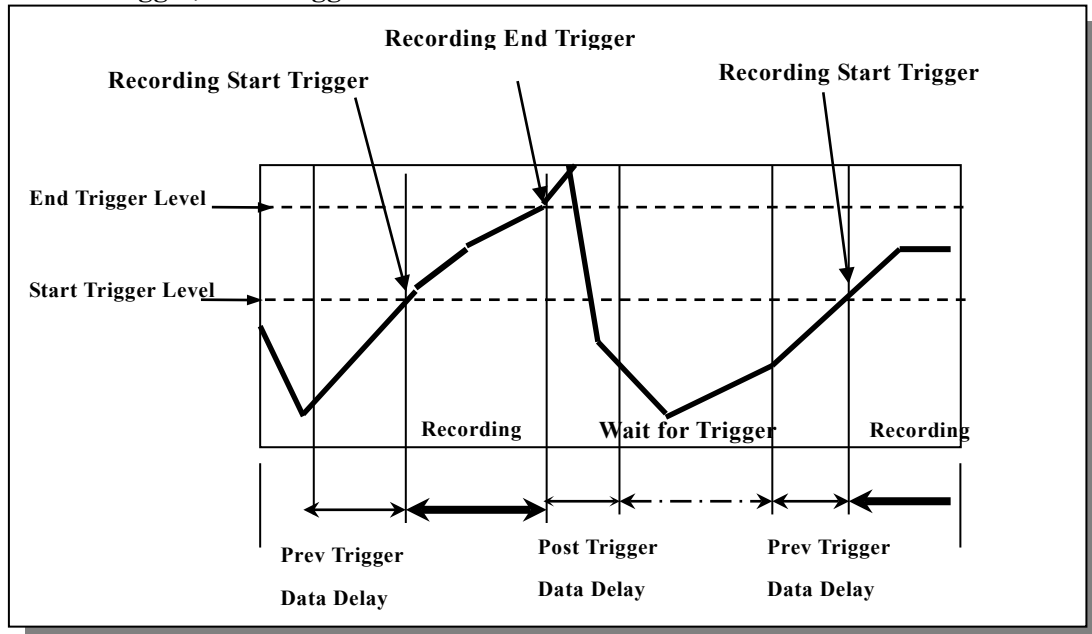
Negative



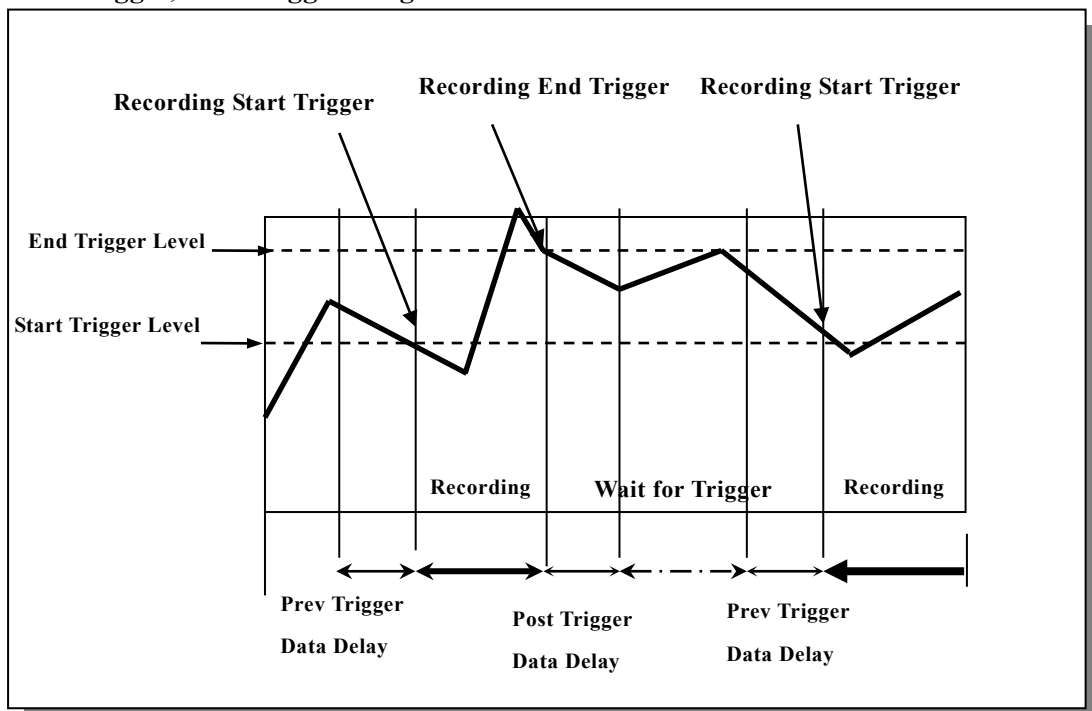
■ Example of trigger slope with end trigger

After satisfying the start trigger conditions, the DCS-100A starts recording and records data until satisfying the end trigger conditions.

Start Trigger, End Trigger: Positive



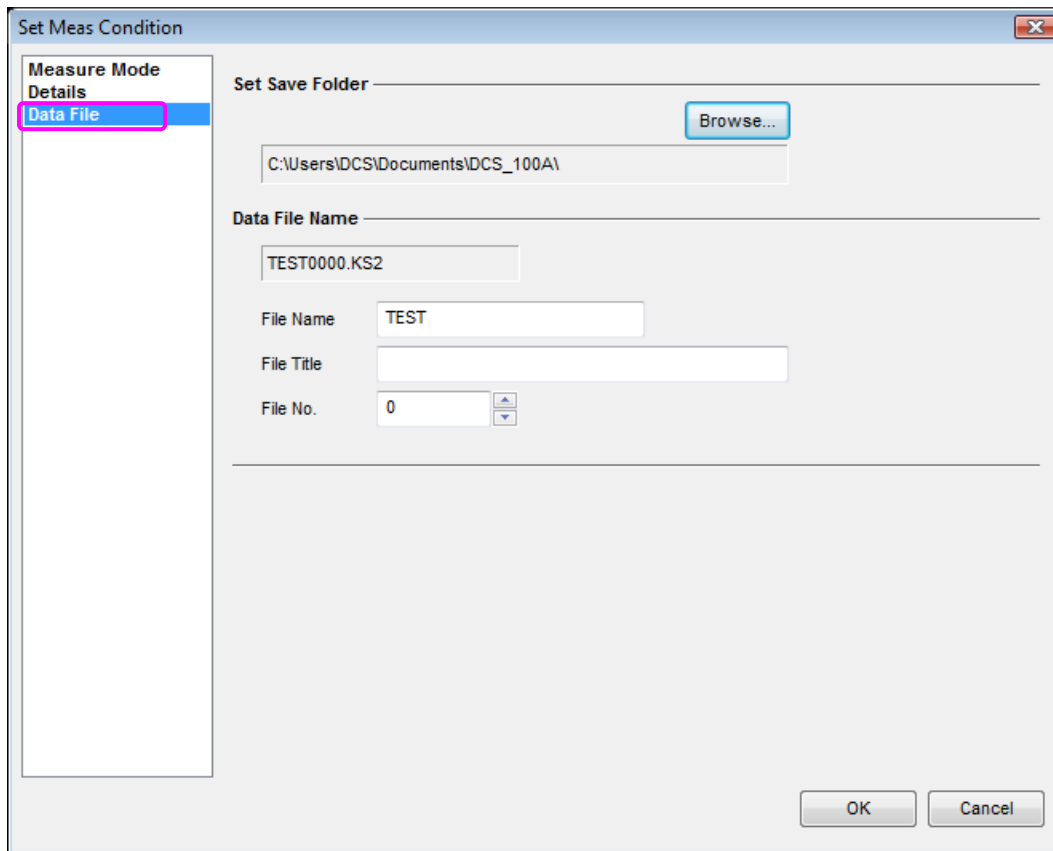
Start Trigger, End Trigger: Negative



7-5 DATA FILE CONDITIONS

This section describes how to set the Data File.

Select the **Data File** tab.

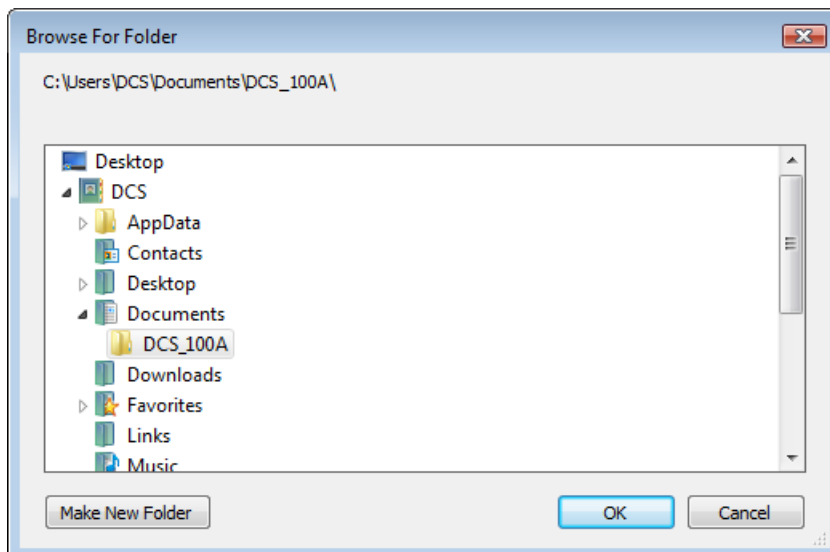


The 'Set Meas Condition' dialog box is shown with the 'Data File' tab selected. The 'Set Save Folder' section has a text field containing 'C:\Users\DCS\Documents\DCS_100A\' and a 'Browse...' button. The 'Data File Name' section has a text field containing 'TEST0000.KS2'. Below this, there are three fields: 'File Name' with 'TEST', 'File Title' (empty), and 'File No.' with '0' and up/down arrows. At the bottom right are 'OK' and 'Cancel' buttons.

■ Set Save Folder

Set the destination folder for saving the collected data file.

Click the **Browse...** button to display **Windows Choose file** dialog and select the target folder.



■ File Name

Set a file name within 20 characters.

■ File Title

Set a file title within 40 characters.

■ File No.

Set a file No. (Setting range: 0 to 9999)

You can record data up to File No. 9999.

■ Data File Name

Data file names are specified as shown below.

Meas Mode	Data File Name
Manual Manual (Set Record Data)	TEST 0000 . KS2 (1) (2)
Interval	TEST 0000 _△ 0000 . KS2 (1) (2) (3)
Analog Trigger	

(1) File Name

(2) File No.

(3) Repeat Times

The file number is incremented by one after every recording.

The repeat times is automatically incremented by one after every recording.

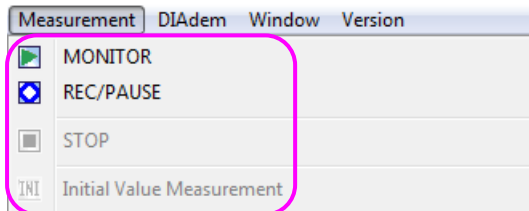
According to the Meas mode, alphabet △ is added before the 4-dig repeat times.

I: "Interval", A: "Analog trigger measurement"

8 MEASUREMENT

Conduct measurement related operations by any of the following.

- Select desired menu from the **Measurement** menu.
- Select desired icon from the toolbar.
- Operate the DCS-100A from the Meas Operation Panel.



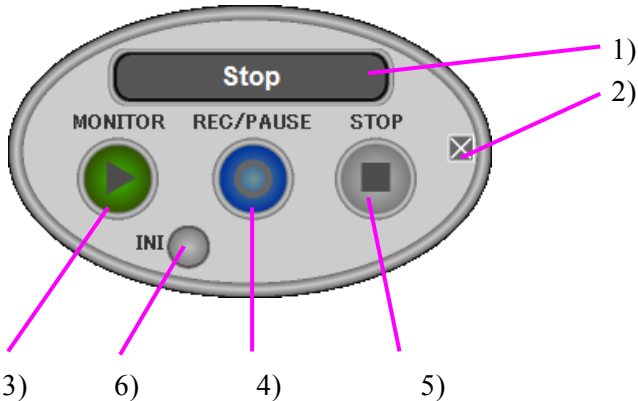
MEMO

On the default state, icons related to the measurements are not displayed on the toolbar. For displaying the buttons, select the **View** - **Control Bar** - **Tool Bar** - **Customize...** to display the **Customize Toolbar** dialog box.

NOTE

When measuring the USM-51B/52B channels, start monitoring data and wait approx. 1 second to display the measured data.

■ Meas Operation Panel



- | | |
|------------------|---------------------------------|
| 1) Display state | Displays the measurement state. |
|------------------|---------------------------------|

Stop	Stopping the measurement.
Monitoring	In the process of monitor measurement.
Recording	Recording data.
Stopping record	Pausing recording with the REC/PAUSE button clicked.
Wait for Intvl	Interval measurement condition is not satisfied
Wait for Trg	A state that required conditions of each trigger measurement are not satisfied.

- | | |
|---|--|
| 2)  button | Closes the Meas Operation Panel. |
| 3)  button | Starts monitor measurement. |
| 4)  button | Manual measurement: Starts recording.
Interval measurement and trigger measurement:
Becomes a state for waiting. |
| 5)  button | Stops recording/monitoring data. |
| 6)  button | Performs the Initial value measurement. |

8-1 INITIAL VALUE MEASUREMENT

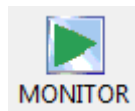
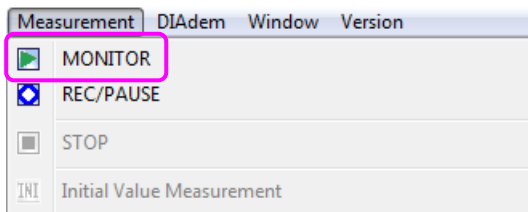
This section describes how to measure the initial unbalance of strain gages and strain gage transducers.

The measured data obtained from the initial value measurement is called the "initial value." Using the initial values, you can obtain a measured data by subtracting the initial values from the sensor outputs.

■ Operation Method

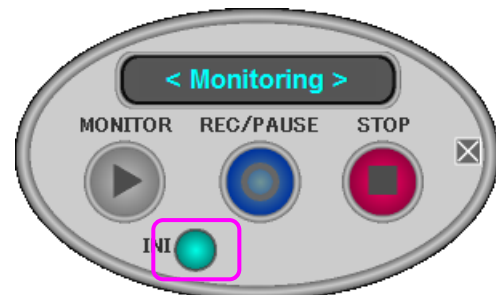
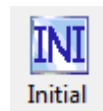
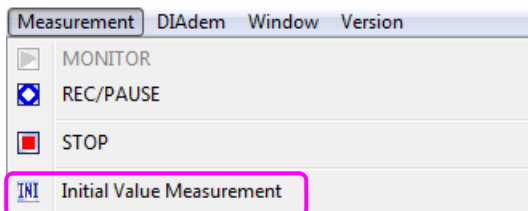
1) Starts monitoring data by any of the following.

- Click the **Measurement** – **MONITOR**.
- Click the **Monitor** icon from the toolbar.
- Click the **MONITOR** button from the Meas Operation Panel.

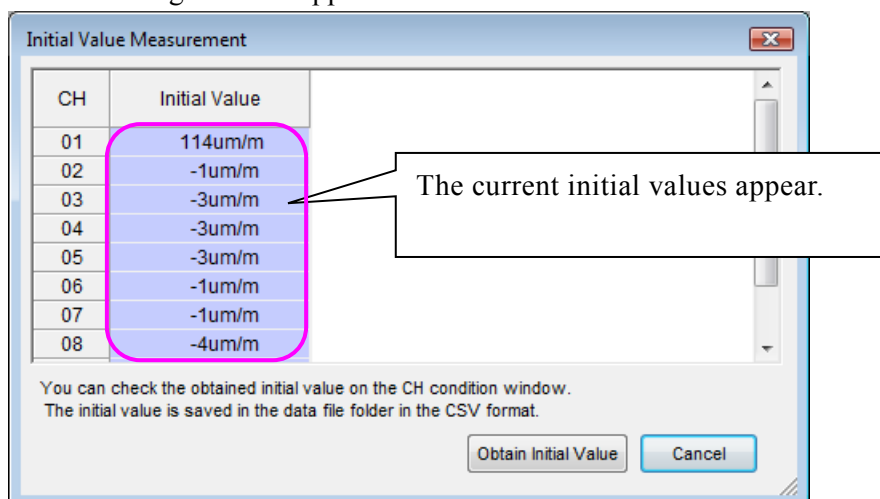


2) Starts the initial value measurement by any of the following.

- Click the **Measurement** – **Initial Value Measurement**.
- Click the **Monitor** icon from the toolbar.
- Click the **INI** button from the Meas Operation Panel.



3) The following window appears.



Obtain Initial Value button

Obtains initial values and close the window.

Cancel button

Without obtaining initial values and close the window.

4) Click the **Obtain Initial Value** button to obtain initial values.

5) The window closes and the DCS-100A automatically starts monitoring data.

MEMO

- For checking the obtained initial values, click the **Set** - **Set CH Condition...** for displaying the **Set CH Condition** window.
- For obtaining the initial value by performing the voltage measurement or temperature measurement, click the **Set** - **Set Meas Condition...** - **Details** and put a check mark in the Initial Value Subtraction.

NOTE

Measurement Functions: MEASURE only

■ Initial Value File

The obtained initial values are saved in the initial value file (extension: CSV).

Names of the initial value files are specified as shown below.

Data File Name _INI_ Date. CSV

Example: Data file name:

TEST0000.KS2

Date:

2011/01/01 08:30:00

The name of the initial value file :

TEST0000_INI_20110101083000.CSV

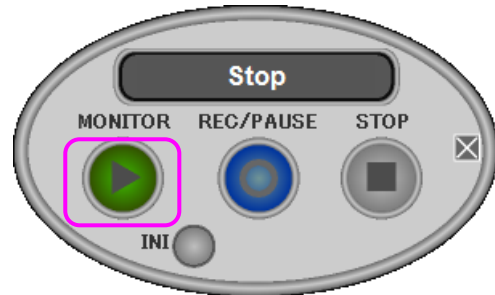
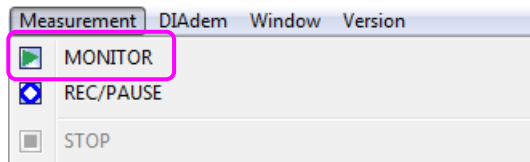
8-2 MANUAL MEASUREMENT

This section describes measurement flow when the Meas mode is set to Manual or Manual (Set the number of recorded data) mode.

■ Operation Method

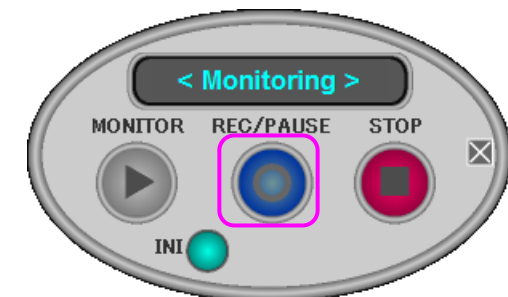
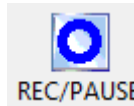
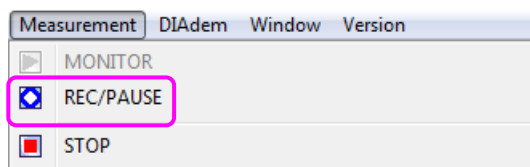
1) Starts monitoring data by any of the following.

- Click the **Measurement** – **MONITOR**.
- Click the **Monitor** icon from the toolbar.
- Click the **MONITOR** button from the Meas Operation Panel.



2) Starts recording data by any of the following.

- Click the **Measurement** – **REC/PAUSE**.
- Click the **REC/PAUSE** icon from the toolbar.
- Click the **REC/PAUSE** button from the Meas Operation Panel.



3) Recording starts and the recording status appears on the status bar.

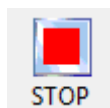
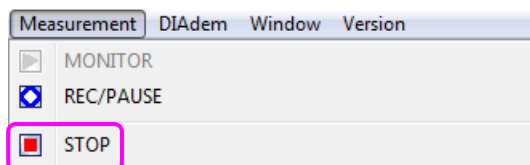


4) To pause the data recording, conduct any of the operation in the item 2) during recording data.

To restart the data recording, conduct any of the operation in the item 2) during pausing.

5) The UCAM-550A ends recording data and becomes in monitoring state by any of the following.

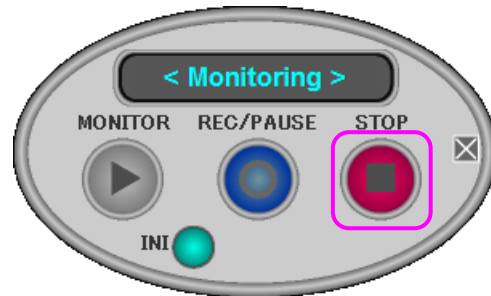
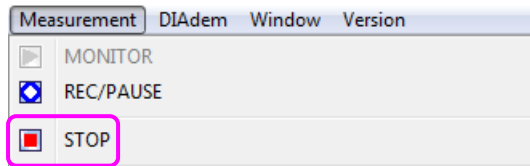
- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button from the Meas Operation Panel.



When Meas mode is set to Manual (Set the number of recorded data) mode, the DCS-100A records data until satisfying the Record Data on the **Measure Mode** window.

6) Ends monitoring data by any of the following.

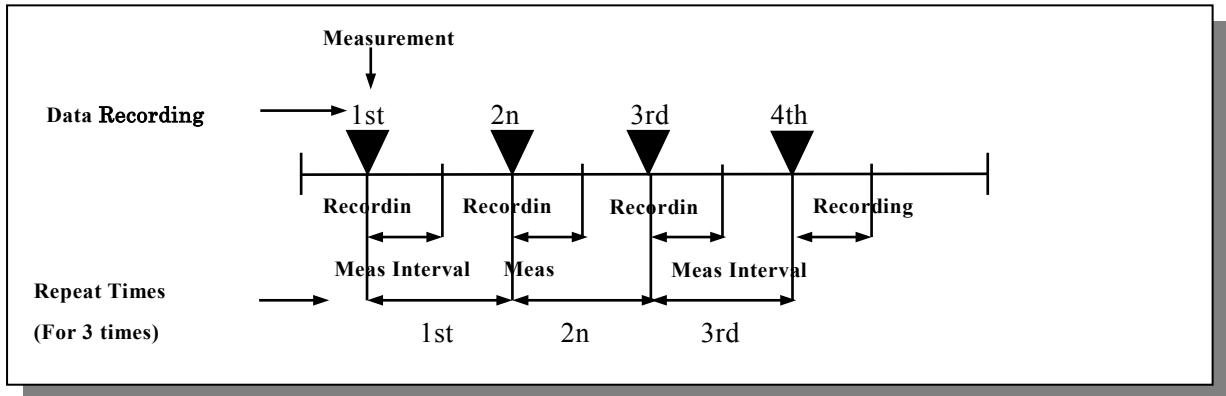
- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button from the Meas Operation Panel.



8-3 INTERVAL MEASUREMENT

This section describes measurement flow when the Meas mode is set to Interval mode.

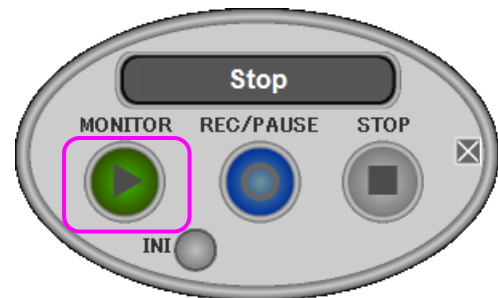
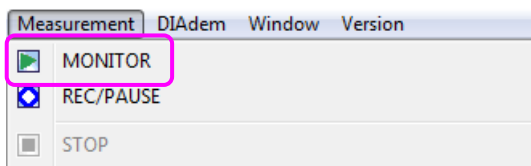
The Interval mode measurement automatically records data until satisfying the Record Data on the **Measure Mode** window.



■ Operation Method

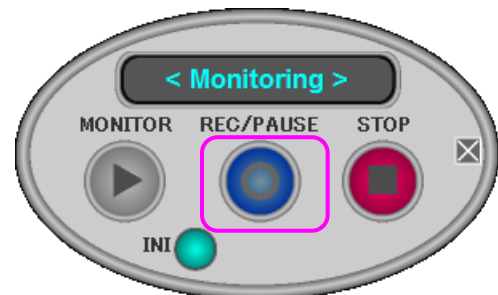
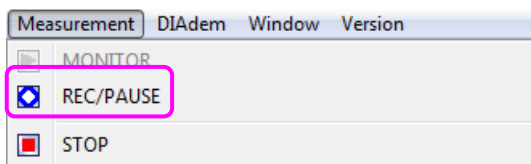
1) Starts monitoring data by any of the following.

- Click the **Measurement** – **MONITOR**.
- Click the **Monitor** icon from the toolbar.
- Click the **MONITOR** button from the Meas Operation Panel.



2) Obtain a state for waiting by any of the following.

- Click the **Measurement** – **REC/PAUSE**.
- Click the **REC/PAUSE** icon from the toolbar.
- Click the **REC/PAUSE** button from the Meas Operation Panel.



On the status bar, interval measurement start date, measurement repeat times, and measurement state are displayed

2011/08/11 12:00:00 1 / 2 << Wait for Intvl >>

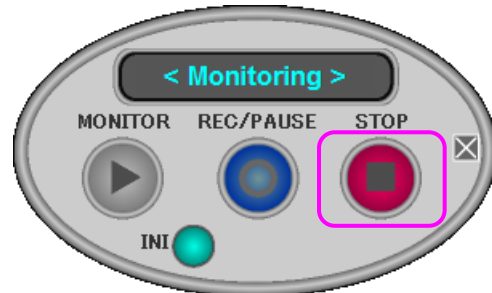
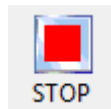
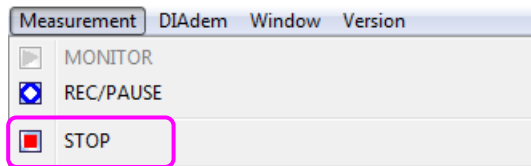
3) Recording starts and the recording status appears on the status bar.



4) After conducting the measurement for the preset repeat times, the EDX-3000A becomes monitoring state.

5) Ends monitoring data by any of the following.

- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button from the Meas Operation Panel.



8-4 ANALOG TRIGGER MEASUREMENT

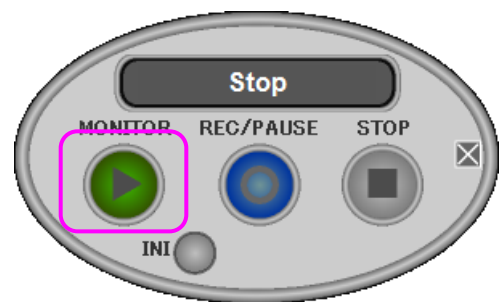
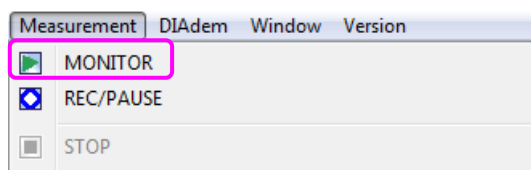
This section describes measurement flow when the Meas mode is set to Analog Trigger.

The Analog trigger mode measurement automatically starts recording data when measured value of the specified analog CH satisfies the start trigger conditions and records data until satisfying the Record Data on the **Measure Mode** window or until satisfying the end trigger conditions.

■Operation Method

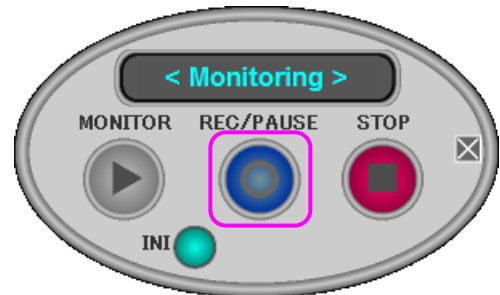
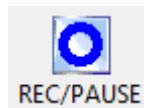
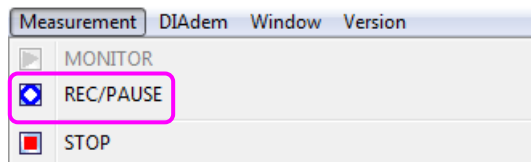
1) Starts monitoring data by any of the following.

- Click the **Measurement** – **MONITOR**.
- Click the **Monitor** icon from the toolbar.
- Click the **MONITOR** button from the Meas Operation Panel.



2) The DCS-100A becomes a state for waiting by any of the following.

- Click the **Measurement** – **REC/PAUSE**.
- Click the **REC/PAUSE** icon from the toolbar.
- Click the **REC/PAUSE** button from the Meas Operation Panel.



On the status bar, trigger CH, trigger level, measurement repeat times, and measurement state are displayed.



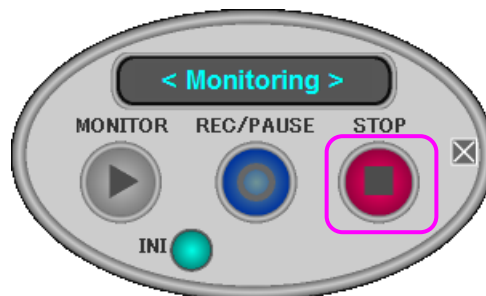
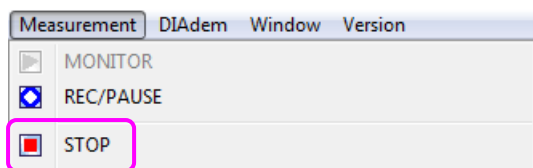
3) Recording starts and the recording status appears on the status bar.



4) After conducting the measurement for the preset repeat times, the EDX-3000A becomes monitoring state.

5) Ends monitoring data by any of the following.

- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button from the Meas Operation Panel.



8-5 BURNOUT CHECKING

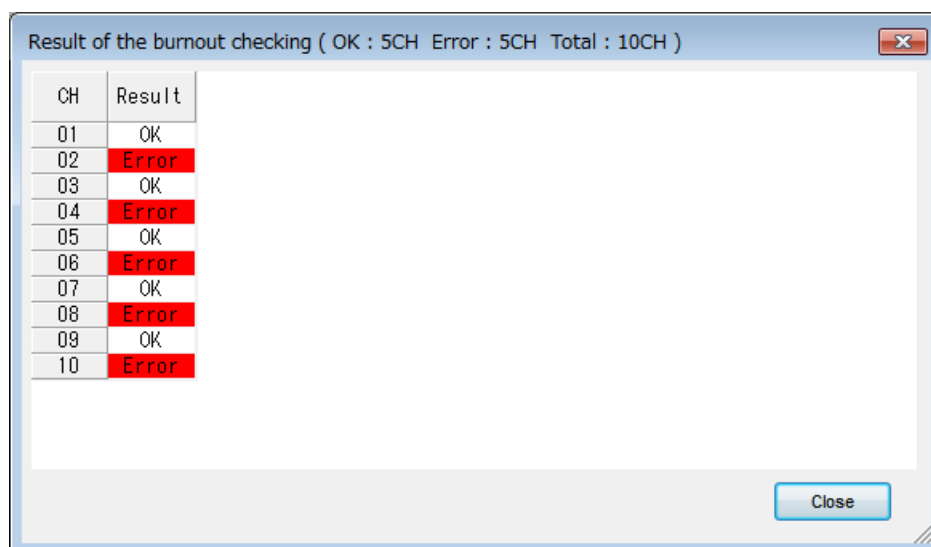
The USM-51B/52B has a Burnout checking function which detects whether the thermocouple is broken. Before measurements, perform the Burnout checking to check if the thermocouple is broken.

Passed: The thermocouple is not broken

Error: The thermocouple is broken.

Replace the thermocouple with a new one.

- 1) Click the Check – Burnout check.
- 2) The following window appears.



NOTE

To perform the Burnout checking, make sure modes of the USM-51B/52B are thermocouples ("TC/K", "TC/T", "TC/E", "TC/J", "TC/R", "TC/N").

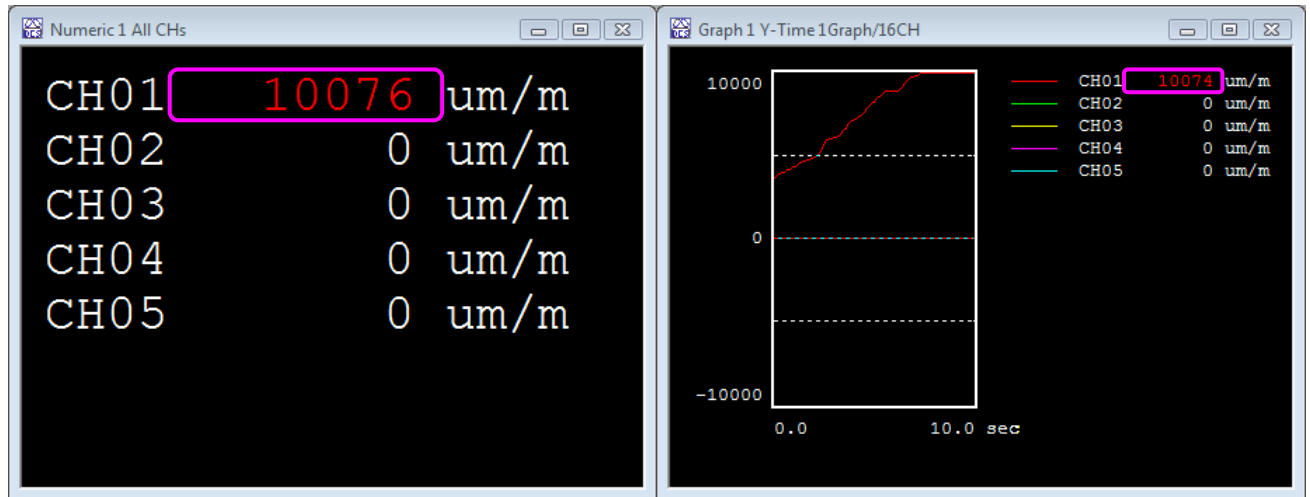
8-6 DISPLAYING EXCEEDING VALUE

When the measured data exceeds the Check Value (Up) or Check Value (Down) once during monitoring and recording data, since then, the measured value on numeric and graph windows are displayed in red.

With this function, you can check that the input value of every CH is exceeding or not.

The numerical value will return to the normal color when you start monitoring or recording.

Example: The measured data of CH01 exceeded the Check Value (Up) value.



MEMO

For setting the Check Value (Up) and Check Value (Down), click the **Set** – **Set CH Condition...** for displaying the **Set CH Condition** window.

8-7 STATIC MEASUREMENT

The Meas mode is "Manual" and "Interval" modes only.

Every time you start a recording, the static measurement applies a moving-average function to measured data (averaging value data) and saves it to one CSV format file.

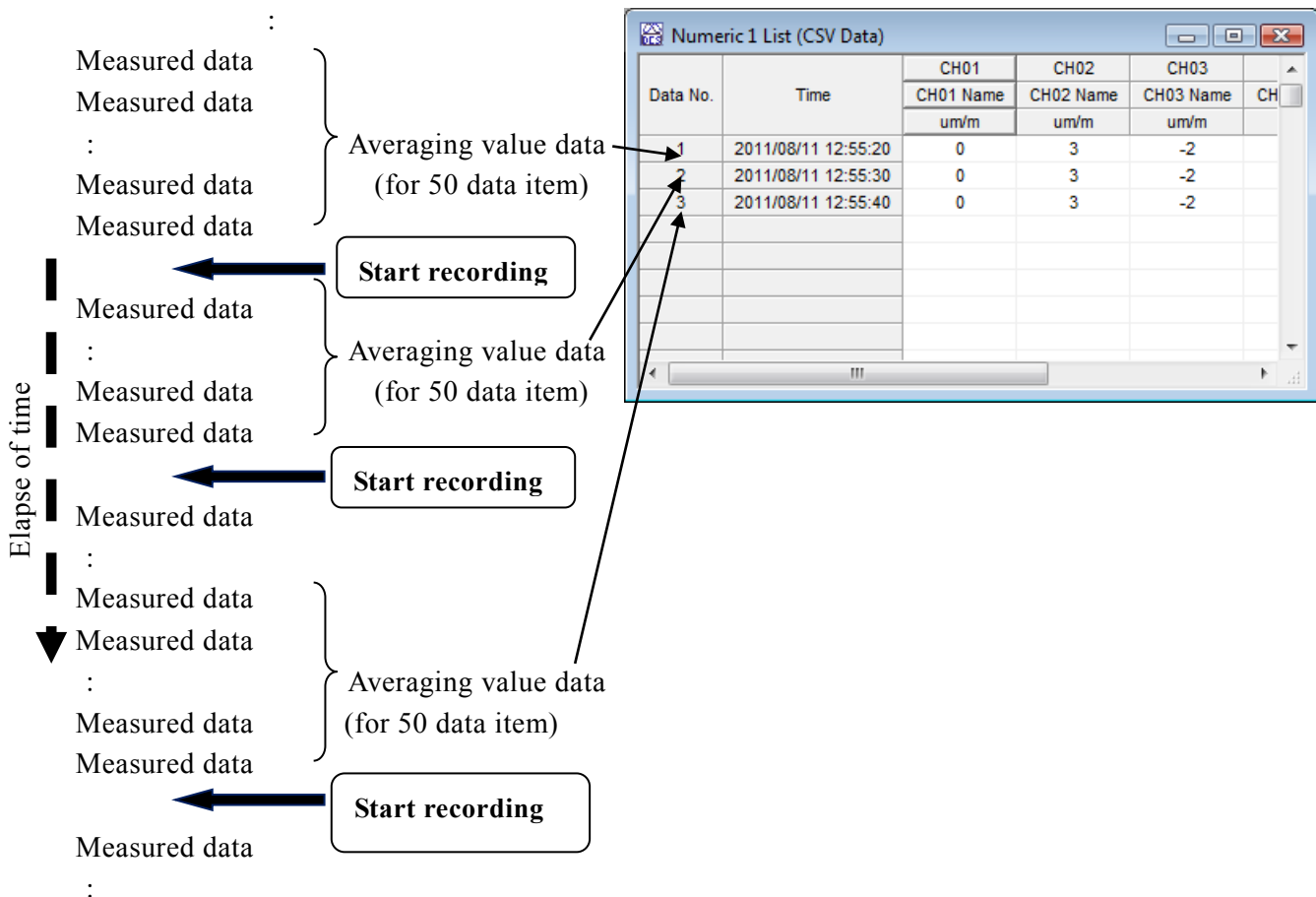
The averaging value data appears on the Numeric Lists of numeric windows and Y-Cycle graphs on graph windows.

■ Measuring conditions

- Meas mode: "Manual" and "Interval" modes only.
- Sampling frequency: 50 Hz fixed, Record data: 1 fixed
- Put a check mark to a box next to the "Store the measured data in CSV format file."

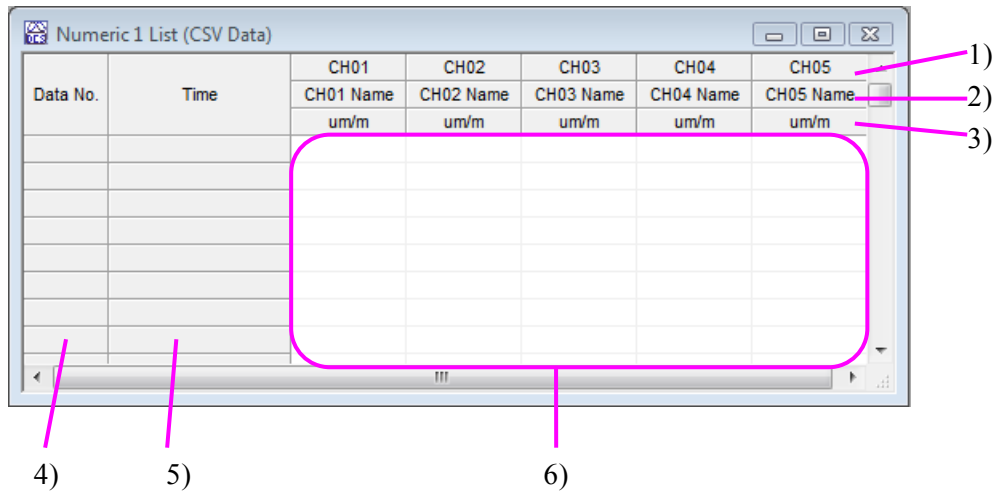
■ Operation flow

The averaging value data is the average value for the past one second when recording starts.



8-7-1 Displaying list on numeric window

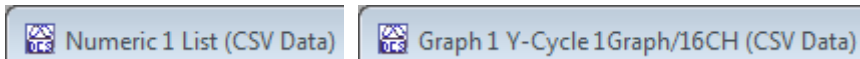
For the static measurement, the Numeric Lists on numeric windows are available.
You can display the latest 1000 items of the averaging value data on the list.



- 1) CH No.
- 2) The comment of the CH
- 3) The unit of the CH
- 4) Data No.
- 5) Measurement start time of every interval
- 6) The averaging value data of the CH

MEMO

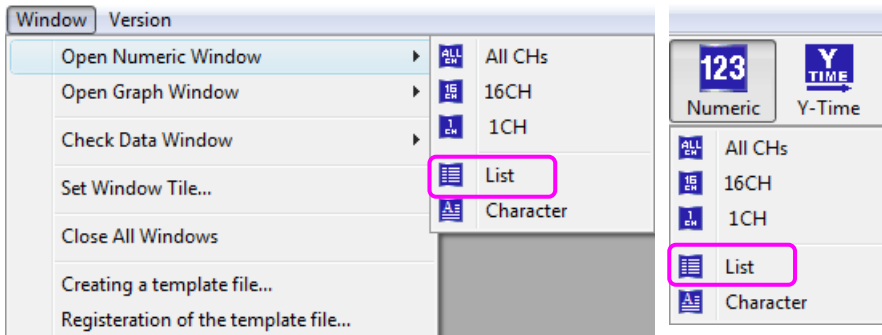
The averaging value data appears on the Numeric Lists of numeric windows and on the Y-Cycle of graphs of graph windows and the "(CSV Data)" is displayed on the window title.



•How to display

Open the **Numeric List** window as described below:

- Point to **Window** on the menu bar and select **Open Numeric Window** and **List**.
- Point to **Numeric** icon from the toolbar and select **List**.



■ Operation Method

- Press the **Delete** key to hide the target CH column.

Numeric 1 List (CSV Data)

Data No.	Time	CH01	CH02	CH03	CH04	CH05
		CH01 Name	CH02 Name	CH03 Name	CH04 Name	CH05 Name
		um/m	um/m	um/m	um/m	um/m



Click the **Delete** key.

Numeric 1 List (CSV Data)

Data No.	Time	CH01	CH04	CH05	CH06	CH07
		CH01 Name	CH04 Name	CH05 Name	CH06 Name	CH07 Name
		um/m	um/m	um/m	um/m	um/m

- Drag the fixed cells to change the order of channels.

Drag

Numeric 1 List (CSV Data)

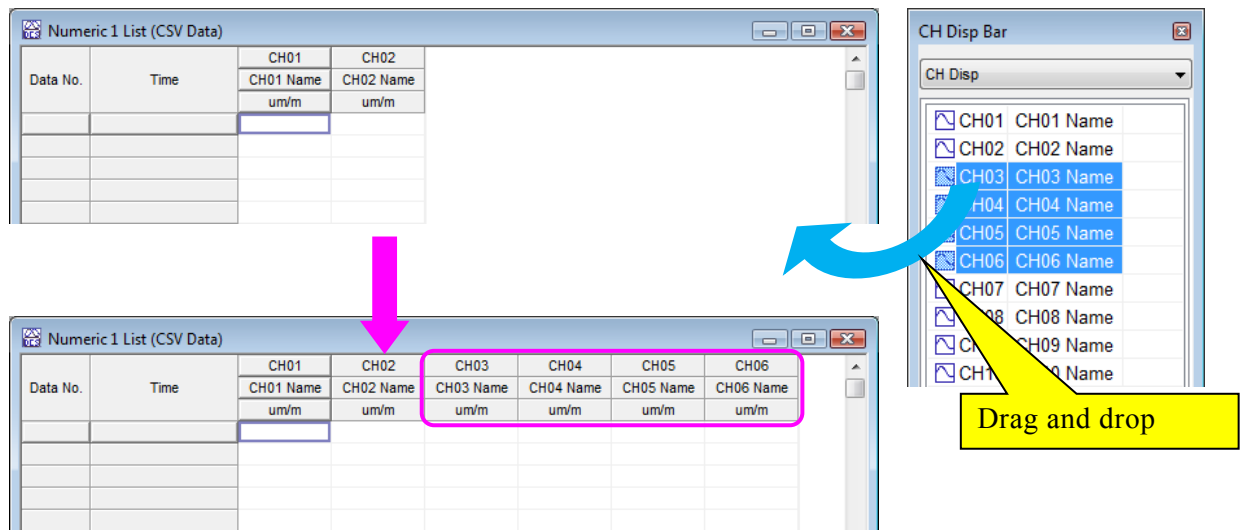
Data No.	Time	CH01	CH02	CH03	CH04	CH05
		CH01 Name	CH02 Name	CH03 Name	CH04 Name	CH05 Name
		um/m	um/m	um/m	um/m	um/m



Numeric 1 List (CSV Data)

Data No.	Time	CH01	CH03	CH02	CH04	CH05
		CH01 Name	CH03 Name	CH02 Name	CH04 Name	CH05 Name
		um/m	um/m	um/m	um/m	um/m

Left-click the mouse on the CH Disp Bar to select the target channels. Drag and drop them to the **Numeric List** window to set the target channels.



8-7-2 Data file name

Based on the Data File items of the **Set Meas Condition** window, names of the CSV format files for saving the averaging value data of the static measurements are specified as shown below.

Names of the CSV format file: Data file name File No. .CSV

The screenshot shows the 'Set Meas Condition' window. The 'Data File Name' section is highlighted. It contains a 'File Name' field with the text 'TEST' and a 'File No.' field with the value '0'. Both fields are highlighted with pink boxes.

MEMO

If the CSV format file having the same name exists in the destination folder, the averaging value data is additionally written to the existing format file.

NOTE

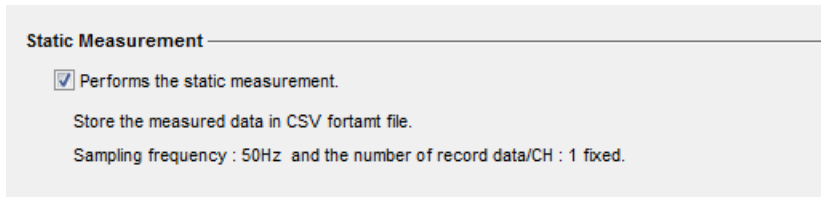
You cannot reproduce the CSV format files with the DCS-100A.
Use the commercially available software.

8-7-3 Manual measurement

This section describes measurement flow when Meas mode is set to Manual.

■ Operation Method

- 1) Open the **Set Meas Mode Condition** window as described below.
 - Point to **Set** on the menu bar and select **Set Meas Condition...**.
 - Select the **Meas Cond** icon from the toolbar.
- 2) Click the **Measure Mode** on the left and select **Manual**.
- 3) Put a check mark to a box next to the "Store the measured data in CSV format file."



- 4) Starts monitoring data by any of the following.
 - Click the **Measurement** – **MONITOR**.
 - Click the **Monitor** icon from the toolbar.
 - Click the **MONITOR** button from the Meas Operation Panel.

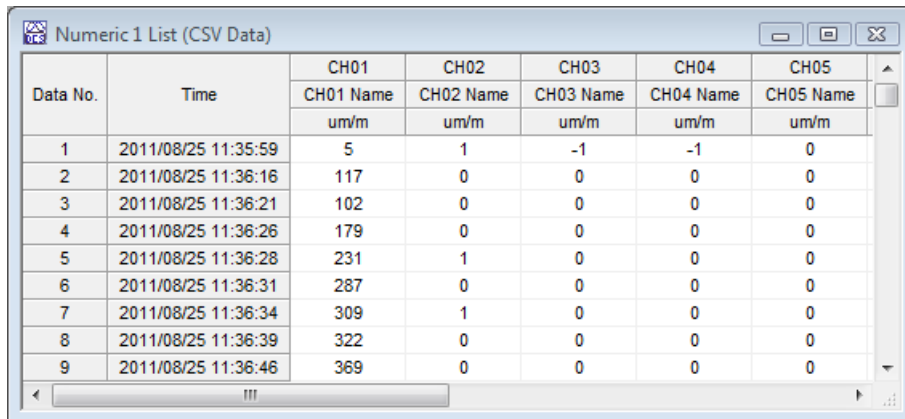
The DCS-100A becomes the monitoring state. The measured data appears on windows other than the Numeric Lists of numeric windows and Y-Cycle graphs of graph windows.

5) Starts recording data by any of the following.

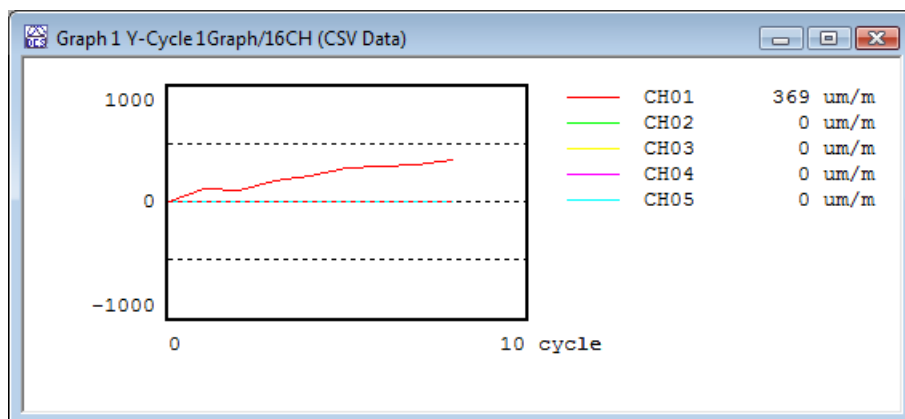
- Click the **Measurement** – **REC/PAUSE**.
- Click the **REC/PAUSE** icon from the toolbar.
- Click the **REC/PAUSE** button from the Meas Operation Panel.

The averaging value data is saved in the CSV format file. It appears on the Numeric Lists of numeric windows and Y-Cycle graphs of graph windows.

Example: Records the data 10 times.



Data No.	Time	CH01 um/m	CH02 um/m	CH03 um/m	CH04 um/m	CH05 um/m
1	2011/08/25 11:35:59	5	1	-1	-1	0
2	2011/08/25 11:36:16	117	0	0	0	0
3	2011/08/25 11:36:21	102	0	0	0	0
4	2011/08/25 11:36:26	179	0	0	0	0
5	2011/08/25 11:36:28	231	1	0	0	0
6	2011/08/25 11:36:31	287	0	0	0	0
7	2011/08/25 11:36:34	309	1	0	0	0
8	2011/08/25 11:36:39	322	0	0	0	0
9	2011/08/25 11:36:46	369	0	0	0	0



6) Ends monitoring data by any of the following.

(When recording data, the file No. is incremented by one after.)

- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button from the Meas Operation Panel.

8-7-4 Interval measurement

This section describes measurement flow when the Meas mode is set to Interval mode.

- 1) Open the **Set Meas Mode Condition** window as described below.
 - Point to **Set** on the menu bar and select **Set Meas Condition...**.
 - Select the **Meas Cond** icon from the toolbar.
- 2) Click the **Measure Mode** on the left and select **Interval**.
- 3) Put a check mark to a box next to the "Store the measured data in CSV format file."

- 4) Click the **Interval** from the left and set the interval conditions.

NOTE

For the static measurement, you need to set 2 seconds or longer as the interval time.

- 5) Starts monitoring data by any of the following.
 - Click the **Measurement** – **MONITOR**.
 - Click the **Monitor** icon from the toolbar.
 - Click the **MONITOR** button from the Meas Operation Panel.

The DCS-100A becomes the monitoring state. The measured data appears on windows other than the Numeric Lists of numeric windows and Y-Cycle graphs of graph windows.

6) The DCS-100A becomes a state for waiting by any of the following.

- Click the **Measurement** – **REC/PAUSE**.
- Click the **REC/PAUSE** icon from the toolbar.
- Click the **REC/PAUSE** button from the Meas Operation Panel.

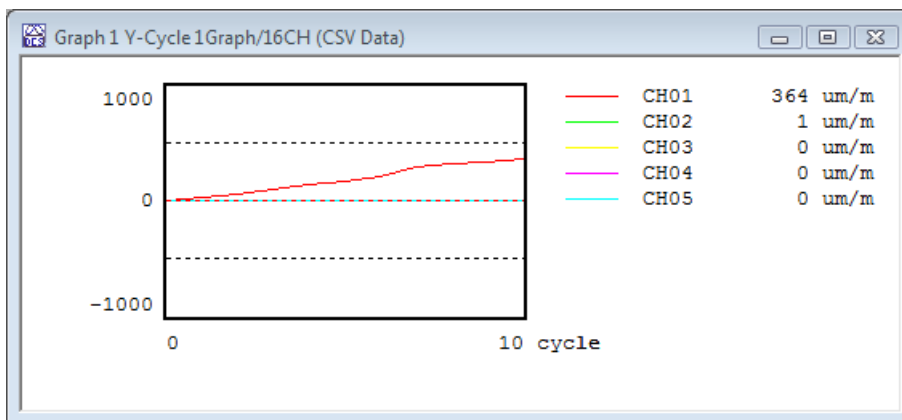
Every time the recording start time will come, the averaging value data is saved in the CSV format file. It appears on the Numeric Lists of numeric windows and Y-Cycle graphs of graph windows.

Example: Recording data with the following conditions.

Recording start time: 2011/01/15 18:25:00, the number of repeat times: 10, interval time: 10 seconds

Numeric 1 List (CSV Data)

Data No.	Time	CH01	CH02	CH03	CH04	CH05
		CH01 Name	CH02 Name	CH03 Name	CH04 Name	CH05 Name
		um/m	um/m	um/m	um/m	um/m
1	2011/08/25 11:45:00	5	1	0	0	0
2	2011/08/25 11:45:10	25	1	0	0	0
3	2011/08/25 11:45:20	62	1	0	0	0
4	2011/08/25 11:45:30	94	1	0	0	0
5	2011/08/25 11:45:40	138	1	0	0	0
6	2011/08/25 11:45:50	161	1	0	0	0
7	2011/08/25 11:46:00	216	1	0	0	0
8	2011/08/25 11:46:10	296	1	0	0	0
9	2011/08/25 11:46:20	320	1	0	0	0



After satisfying the Record Data on the **Measure mode** window or operate any of the following. The DCS-100A becomes the monitoring state. (When recording data, the file No. is incremented by one after.)

- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button from the Meas Operation Panel.

7) Ends monitoring data by any of the following.

- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button from the Meas Operation Panel.

8-8 STROKE CHANGE PROCESSION

This section describes how to measure displacements larger than the rated capacity of displacement sensors.

Every time the displacement exceeds the rated capacity of the displacement sensor, the stroke change procession is performed. And the output before the stroke change procession is added to the output after the stroke change procession. The stroke change procession enables multiple outputs of the displacement sensor to be connected.

■ Measuring conditions

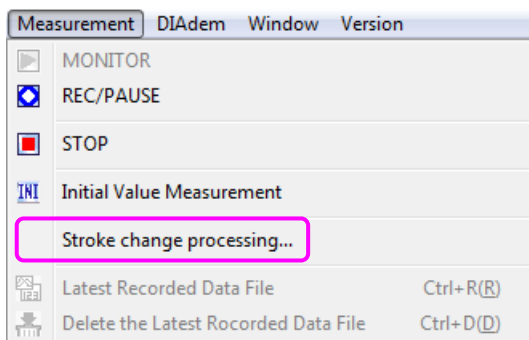
Measurement Function is "MEASURE" only.

■ Operation Method

1) Starts monitoring data by any of the following.

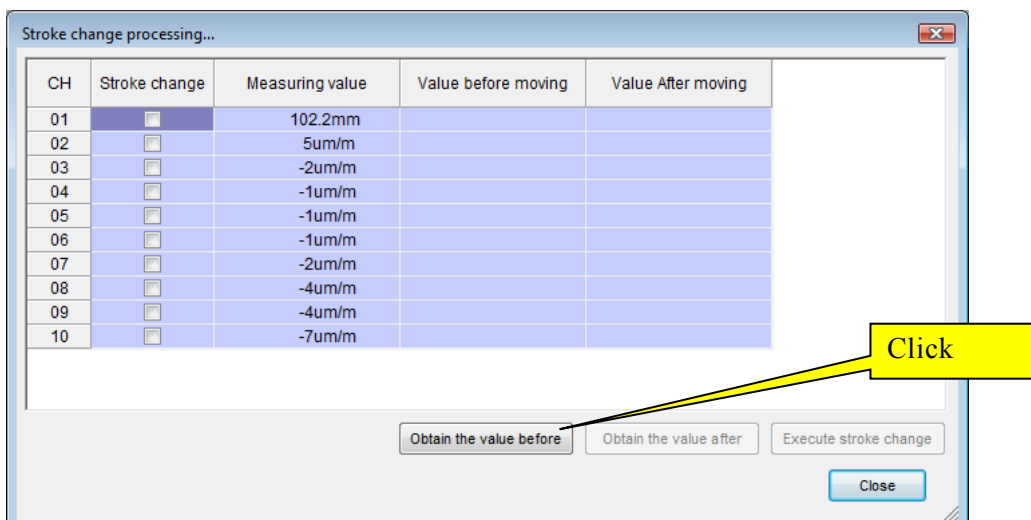
- Click the **Measurement** – **MONITOR**.
- Click the **Monitor** icon from the toolbar.
- Click the **MONITOR** button from the Meas Operation Panel.

2) Click the **Measurement** - **Stroke change processing...**.

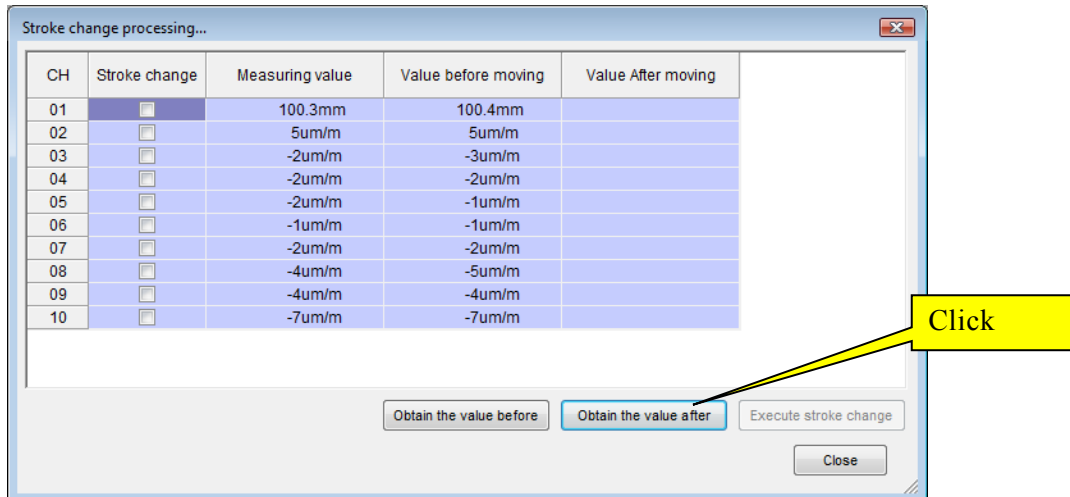


3) The following window appears.

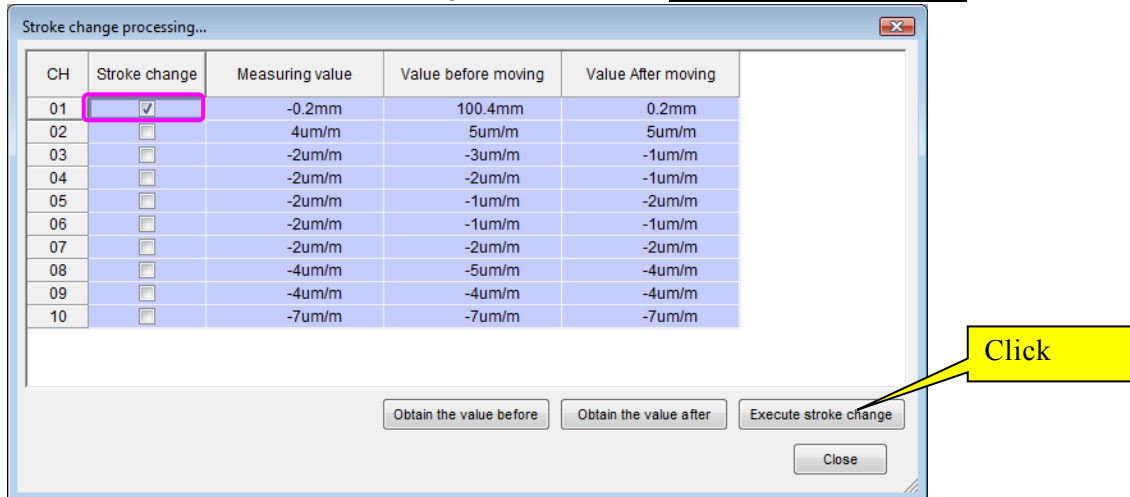
Click the **Obtain the value before** to obtain the measured value before the stroke change procession.



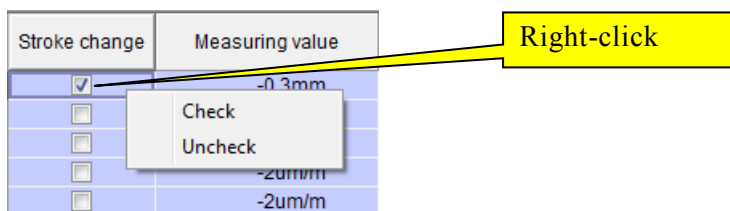
Click the **Obtain the value after** to obtain the measured value after the stroke change procession.



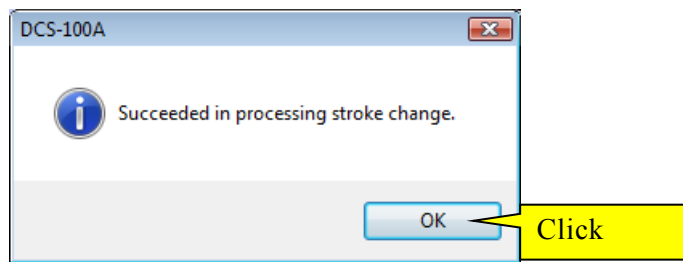
Put a check mark to a box next to the target CH. Click the **Execute stroke change** button.



Right-click the mouse on the column with boxes. By using the pop-up menu, you can put check marks to the boxes of the selected channels at one time.



- 5) The measured value before the stroke change procession subtracts from the measured value after the stroke change procession. And the obtained value is added to the initial value.
After the stroke change procession succeeded, the following message appears. Click the **OK** button.



- 6) The window closes. The DCS-100A starts monitoring data again.
The stroke-changed measured values appear on every window.

A screenshot of a window titled "Numeric 1 All CHs". The window has a black background with white text. It displays a list of channels (CH01 to CH10) and their corresponding values. The value for CH01, "100.1", is highlighted with a pink rectangular box.

CH01	100.1	mm
CH02	5	um/m
CH03	-2	um/m
CH04	-1	um/m
CH05	-1	um/m
CH06	-1	um/m
CH07	-2	um/m
CH08	-5	um/m
CH09	-4	um/m
CH10	-7	um/m

9 SAVING AND LOADING MEAS CONDITION FILE

This section describes details of saving and loading Meas condition file.

9-1 SAVING MEAS CONDITION FILE WITH A NAME

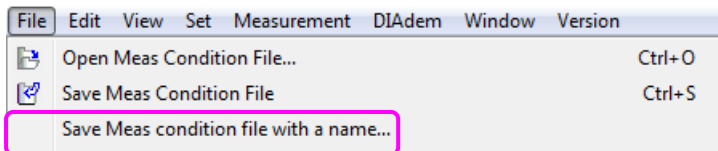
This section describes how to save the current Meas condition to the Meas condition file (Extension: U5H).

When the measurement is carried out with the same condition the next time, loading this Meas condition file enables to set Meas condition at a time.

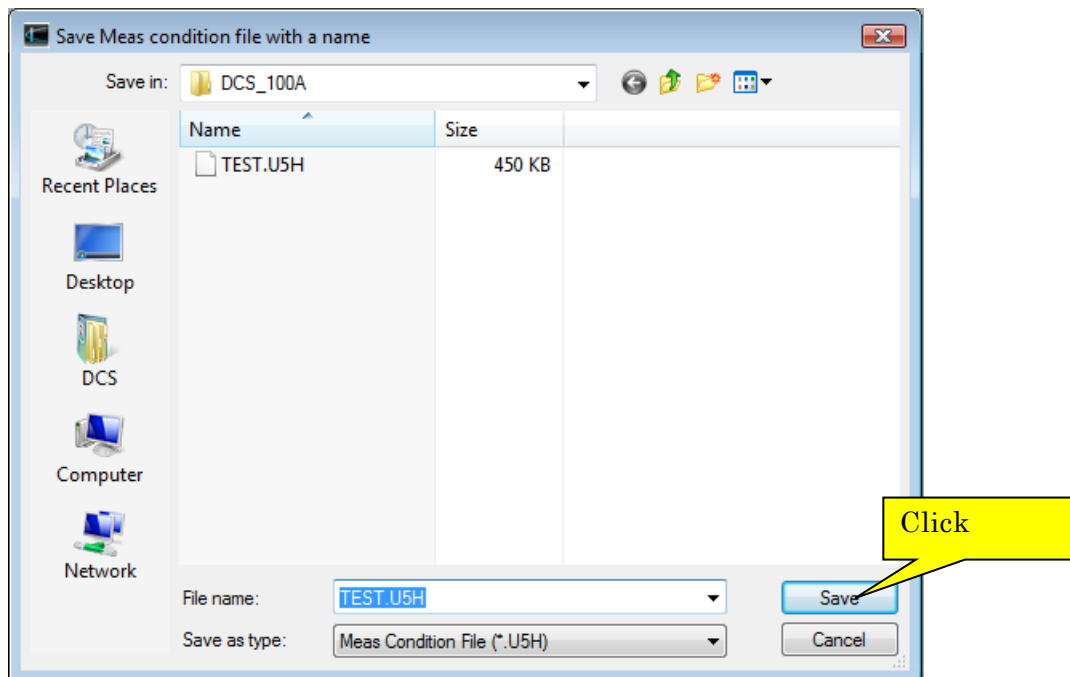
The Meas conditions to be saved include measuring conditions, display conditions of graphs and numerical values.

■ Operation Method

- 1) Point to **File** on the menu bar and select **Save Meas Condition file with a name...** to open the **Save Meas Condition file with a name** window.



- 2) Select the file name or folder name and click the **Save** button.



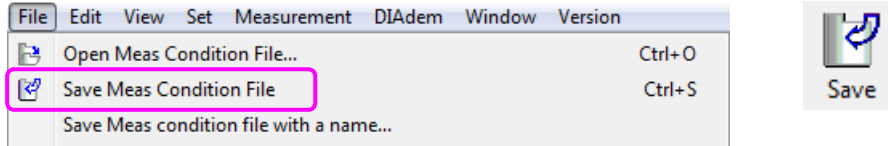
9-2 SAVING MEAS CONDITION FILE

This section describes how to save the current Meas condition to the Meas condition file (Extension: U5H).

■ Operation Method

Saves the Meas condition file by any of the following.

- Point to **File** on the menu bar and select **Save Meas Condition File** menu.
- Select the **Save** icon from the toolbar.



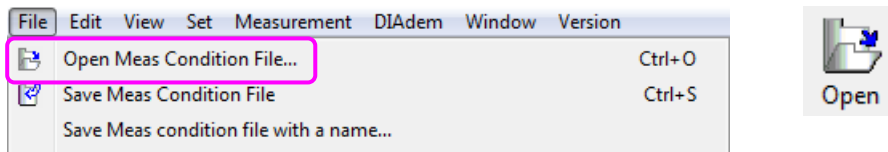
9-3 OPENING MEAS CONDITION FILE

This section describes how to load the previously saved Meas condition file (Extension: U5H).

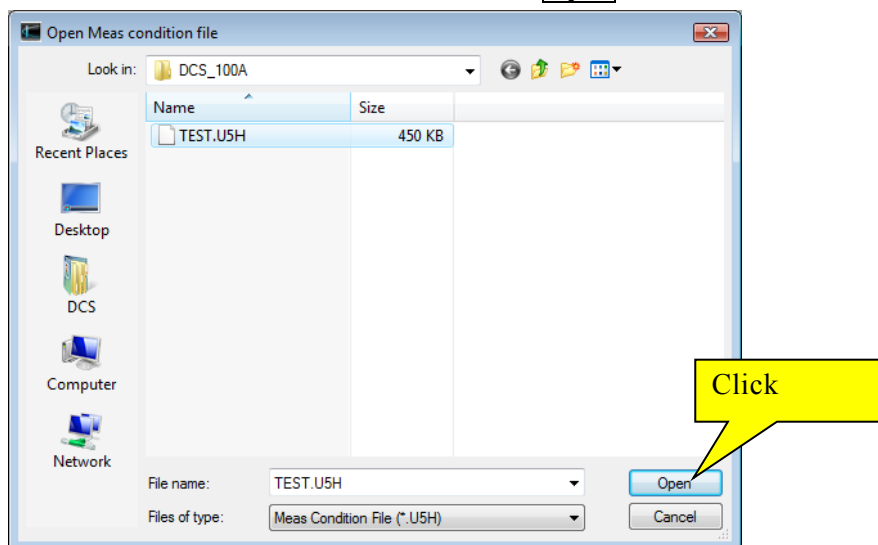
■ Operation Method

1) Open the **Open Meas condition file** window as described below.

- Point to **File** on the menu bar and select **Open Meas Condition File** menu.
- Click the **Open** icon from the toolbar.



Select the file name or folder name and click the **Open** button.



10 SETTING AND LOADING THE INTERNET PARAMETERS OF THE UCAM-550A

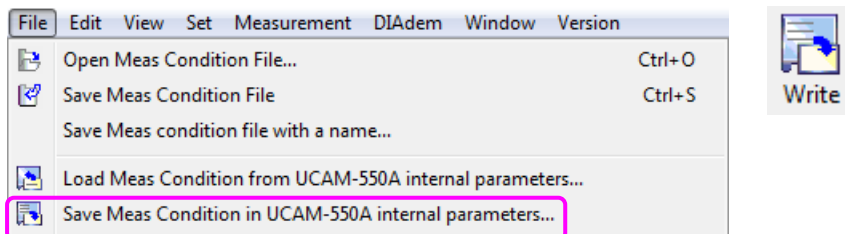
10-1 SETTING THE INTERNAL PARAMETERS OF THE UCAM-550A

This section describes how to set the current measuring conditions to the internal parameters of the UCAM-550A.

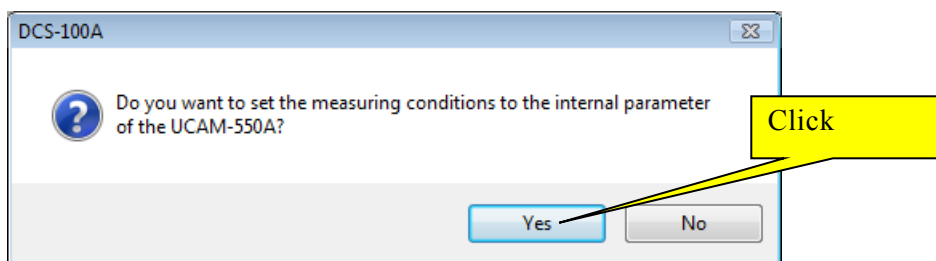
■ Operation Method

1) Sets the measuring conditions to the internal parameters by any of the following.

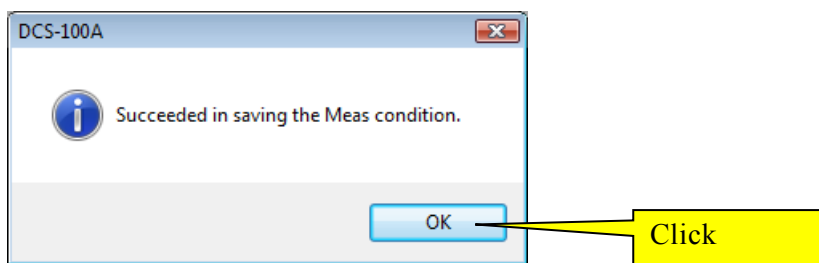
- Point to **File** on the menu bar and select **Save Meas Condition in UCAM-550A internal parameters...**
- Click the **Write** icon from the toolbar.



2) The following message appears. Click the **Yes** button.



3) After the measuring conditions are set to the internal parameters of the UCAM-550A, the following message appears. Click the **OK** button.



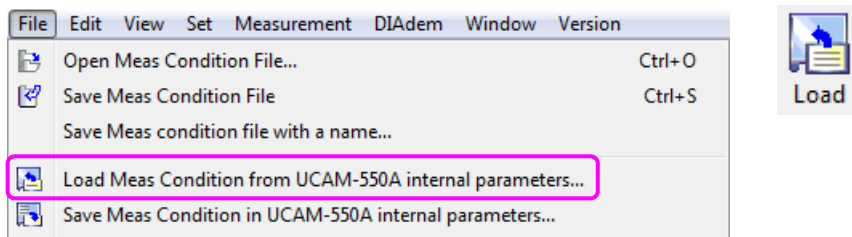
10-2 LOADING DATA FROM THE INTERNAL PARAMETERS OF THE UCAM-550A

This section describes how to load data from the internal parameters of the UCAM-550A.

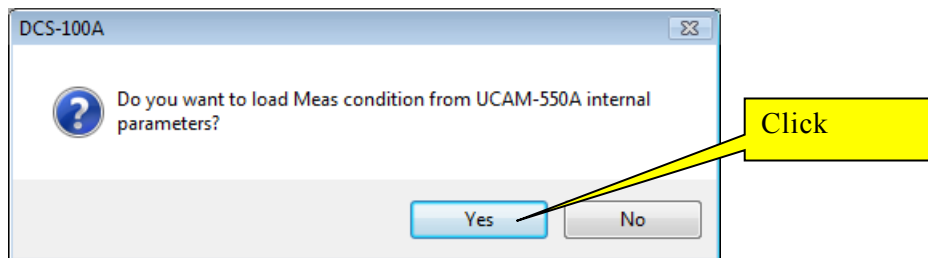
■ Operation Method

1) Loads the measuring conditions from the internal parameters by any of the following.

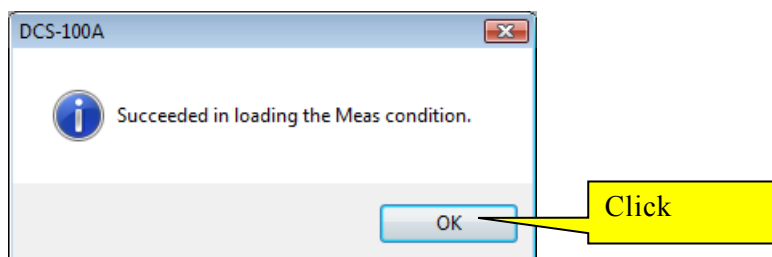
- Point to **File** on the menu bar and select **Load Meas Condition from UCAM-550A internal parameters...**
- Click the **Load** icon from the toolbar.



2) The following message appears. Click the **Yes** button.



3) After the measuring conditions are loaded from the internal parameters of the UCAM-550A, the following message appears. Click the **OK** button.



11 SPECIFICATIONS

The DCS-100A is a Software that, by controlling the UCAM-550A from the PC, is designed to set various Meas conditions, conduct data recording, display data on graphs, convert files, etc. The LAN interface is used for communication between the UCAM-550A and PC.

Number of controllable units:

Standard-issue DCS-100A: Maximum 6 UCAM-550A units (maximum 300 channels)

DCS-100A with the DCS-106A: Maximum 20 UCAM-550A units (maximum 1000 channels)

Saving Format: KYOWA standard file format KS2 to save data in the PC.

Sampling Frequency: 1, 2, 10, 20, 50 Hz

Meas Mode: Manual, Manual (Set Record Data), Interval, Analog Trigger

Measurement Functions: MEASURE and ORIGINAL

MEASURE: The measured value = Sensor output value - Initial value

ORIGINAL: The measured value = Sensor output value

Setting Channel Conditions: CH, Mode, Range, CAL Coefficient, Offset, Unit, Initial Value, CH Name, Deci Digits, Rated Capacity, and Rated Output (Display items can freely be selected.)

Initial Value Measurement: Measures the initial value of each sensor.

Manual measurement: Records data from REC to STOP or from REC up to the number of data points specified for recording

Interval measurement: Automatically records data by setting recording start time and recording intervals.

Analog trigger measurement: Start/stop recording data according to preset trigger conditions. (Absolute trigger: trigger reference value is fixed.)

End Trigger: Settable

Delay Amount: Up to 3000 data/CH for both start and end trigger.

Trigger CH: Arbitrary 1 CH

Trigger Level: Physical quantity

Trigger slope: Up/Down

Stroke Change Function

Burnout checking (USM-51B/52B only.)

Loading TEDS sensor information

Loads the TEDS information automatically and sets the channel conditions. (USM-51B/52B only.)

Setting and loading the parameters: Setting and loading the internal parameters of the UCAM-550A are available.

Setting Environment

Setting hardware configuration Sets the number, name and IP address of connected UCAM-550A units.

Configuration of the measuring units can be read on the UCAM-550A.

Communication check: Loads the UCAM-550A version.