

INSTRUCTION MANUAL
DCS-100A
DYNAMIC DATA RECORDING SOFTWARE
[FOR PCD-400 Series OPERATION]

Thank you for purchasing KYOWA's product DCS-100A Dynamid 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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NOTATIONS USED IN THE INSTRUCTION MANUAL

Certain notations are used as necessary to attract your attention to information that requires special care when handling the product, and to information provided for reference purposes.

Examples of Notations

NOTE

Essential precautions required when handling the DCS-100A.

MEMO

Reference items required when handling the DCS-100A.

IMPORTANT PRECAUTIONS WHEN USING DCS-100A

● For PC settings

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.

● Notation of the PCD-400 Series

The PCD-400A series and the PCD-400B series are denoted collectively as the PCD-400 series.

- The PCD-400A series includes the PCD-400A and the PCD-430A.
- The PCD-400B series includes the PCD-400B and the PCD-430B.

1. OUTLINE

This Instruction Manual describes method for controlling the PCD-400A Series by using the DCS-100A.

For the PCD-400A Series, see separate volume of "INSTRUCTION MANUAL PCD-400A SENSOR INTERFACE (FOR HARDWARE)." or separate volume of "INSTRUCTION MANUAL PCD-430A SENSOR INTERFACE (FOR HARDWARE)."

For the PCD-400B Series, see separate volume of "INSTRUCTION MANUAL PCD-400B/430B SENSOR INTERFACE (FOR HARDWARE)."

For common operations of the DCS-100A, 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 PCD-400 Series connected via the USB interface.

- Maximum 4 PCD-400 Series units (max. 16 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 PCD-400 Series 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 DCS-100A can record the moving image data during testing and can perform calculation in real-time as well as recording/monitoring data with the optional software DCS-101A.
- The DCS-100A can execute monitoring/recording the GPS data as well as monitoring/recording data with the optional software DCS-104A.
- The DCS-100A 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 optional software Dynamic Data Acquisition Software DAS-200A.
You can load the recorded data by using the commercially available software since the DCS-100A 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 PCD-400 Series by using the DCS-100A.

For details of ①, see separate volume of "DCS-100A DYNAMIC DATA RECORDING SOFTWARE INSTRUCTION MANUAL (FOR SETUP)"

For details of ②, ③, ④, ⑤, and ⑥, see separate volume of "INSTRUCTION MANUAL PCD-400A SENSOR INTERFACE (FOR HARDWARE)" separate volume of "INSTRUCTION MANUAL PCD-430A SENSOR INTERFACE (FOR HARDWARE)", or separate volume of "INSTRUCTION MANUAL PCD-400B/430B SENSOR INTERFACE (FOR HARDWARE)"

Install the USB device driver for the PCD-400 Series.

① Install the DCS-100A on your PC.

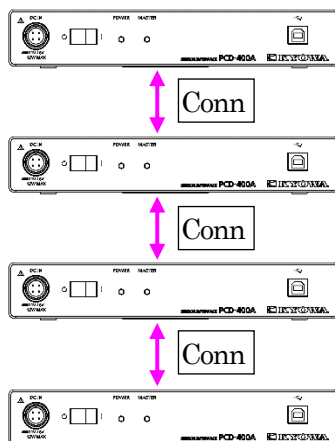
When setting up the DCS-100A, the USB device driver for the PCD-400 Series will be setup at the same time.

For details, see separate volume of "DCS-100A DYNAMIC DATA RECORDING SOFTWARE INSTRUCTION MANUAL (FOR SETUP)"

Connect the PCD-400 Series units (when connecting multiple units)

② When connecting multiple PCD-400 Series units, stack the PCD-400 Series units.

(The example of stacking 4 units is described as follows.)



NOTE

The PCD-400A series units and the PCD-400B series units cannot be stacked together.

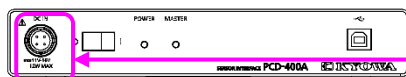
Connect sensors.

- ③ Connect sensors to the input adapter. Connect the input adapter to the PCD-400 Series.

Connect the power supply.

- ④ Connect the power supply to the PCD-400 Series.

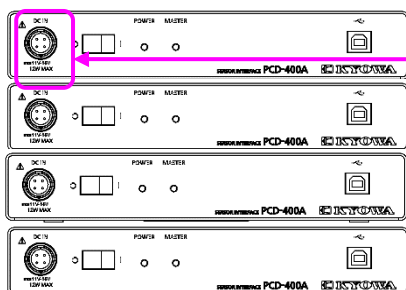
- When connecting single unit.



Power connector

Connect the power supply.

- When connecting 4 units.



Power connector

Connect the power supply to the power connector of the master unit, located at the top.

Connect the PC and PCD-400 Series.

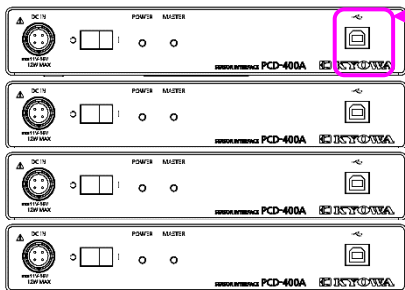
⑤ Connect the PC and PCD-400 Series by using a USB cable.

● When connecting single unit.



USB connector
Connect the USB cable.

● When connecting 4 units.

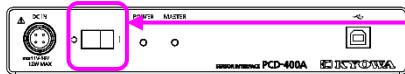


USB connector
Connect the USB cable to the power connector of the master unit, located at the top.

Turn ON the PCD-400 Series.

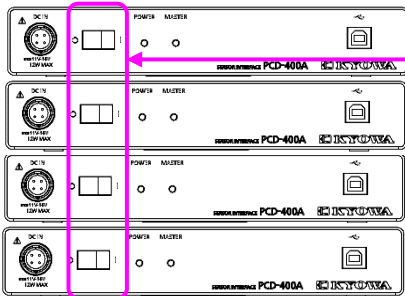
⑥ Turn ON the PCD-400 Series.

● When connecting single unit.



POWER switch
Turn ON the PCD-400 Series.

● When connecting 4 units.



POWER switch
Turn ON the all PCD-400 Series units.

MEMO

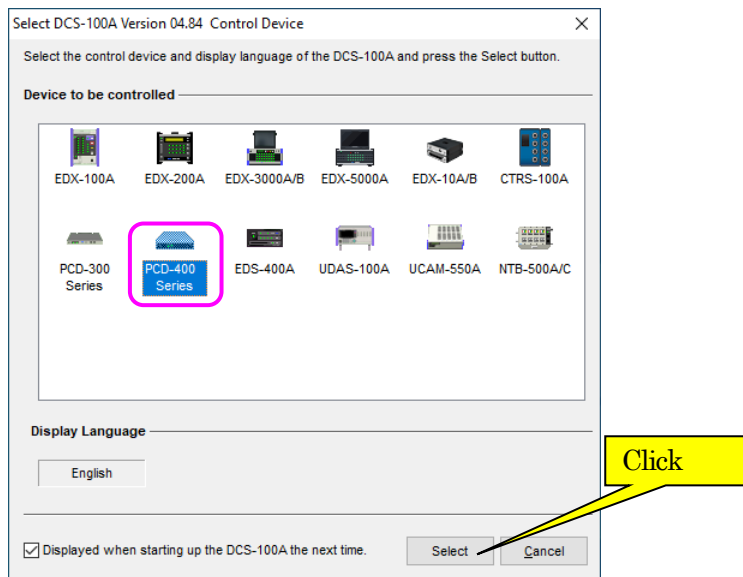
After setting up the USB device driver, connect the PCD-400 Series and PC via a USB cable for installing the USB device driver automatically. You will be able to use the PCD-400 Series.

Depending on the OS (operating system), the "Wizard" window may appear to help you setup the USB device driver. For details, see separate volume of "DCS-100A INSTRUCTION MANUAL (FOR USB DRIVER SET-UP)".

Start up the DCS-100A.

⑦ Start up the DCS-100A. The Device to be controlled window appears.

Click the PCD-400 Series icon on the Device to be controlled window. Click the **Select** button.



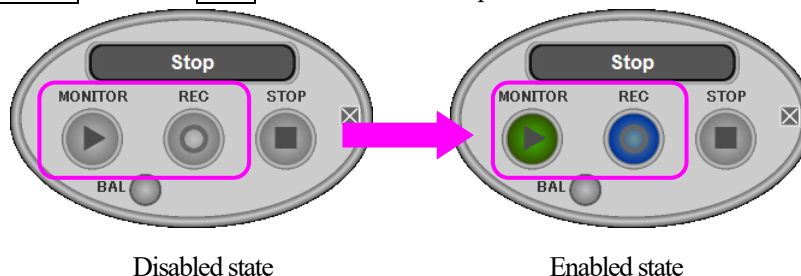
⑧ The main window of the DCS-100A appears.

Unit configuration

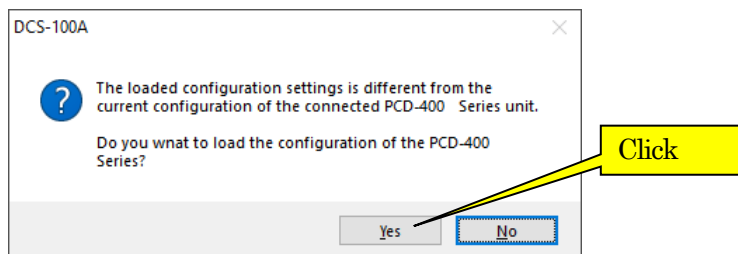
⑨ After recognizing the PCD-400 Series, the DCS-100A then automatically checks the unit configuration of the connected PCD-400 Series unit.

⑩ Execute the following operation based on the result.

- When the unit configuration matches the current configuration of the connected PCD-400 Series unit, the **MONITOR** button and **REC** button on the Meas Operation Panel become enabled state. → To ⑭.



- When the unit configuration does not match the current configuration of the connected PCD-400 Series unit, click the **Yes** button to load the unit configuration from the PCD-400 Series. → To ⑭.



If you click the **No** button, load the unit configuration by any of the following.

- Click the File - Connect... or click the Connect icon from the toolbar to load the unit configuration. → To ⑭.
- Load the unit configuration on the [Connect] tab on the Set Environment window. → To ⑪.

Setting environment

- ⑪ Click the File - Environment or click the Env. icon from the toolbar to open the Set Environment window.
(For details, see “ 3 SETTING ENVIRONMENT.”)
- ⑫ Click the [Connect] tab on the Set Environment window.
Set the unit configuration on the [Connect] tab on the Set Environment window.
(For details, see “ 3 - 1 CONNECT TAB.”)
- ⑬ After setting the unit configuration, click the **Connect...** button on the Set Environment window.
When the PCD-400 Series is correctly connected, click the **OK** button to close the window.

Channel conditions.

- ⑭ Click the Set - Set CH Condition... or click the CH Cond. icon from the toolbar to open the Set CH Condition window.
(For details, see “ 4 CHANNEL CONDITIONS.”)
- ⑮ Set the channels to be measured, Range, Calibr. const., Unit, etc. for every CH on the Set CH Condition window.
Then, click the **OK** button to close the window.

Measuring conditions.

- ⑯ Click the Set - Set Measure Condition... or select the Meas. Cond. icon from the toolbar to open the Set Measure Condition window. (For details, see “ 5 MEASURING CONDITIONS.”)
- ⑰ Click the [Measure Mode] tab.
Set the Measure Mode, Sampling Frequency, and Record Data on the [Measure Mode] tab.
(For details, see “ 5 - 1 MEASURE MODE CONDITIONS.”)
- ⑱ Click the [Data File] tab.
Set the Set Save Folder, File Name, and File No. on the [Data File] tab.
(For details, see “ 5 - 4 DATA FILE CONDITIONS.”)
- ⑲ Click the **OK** button to close the window.

Display windows

- ⑳ Click the Window and target window or click the target icon from the toolbar to display the target numeric/graph window.

Measure data.

- ㉑ Click the **MONITOR** button on the Meas Operation Panel. The measurement starts and the DCS-100A becomes monitoring state.
The measured data appears on windows.
- ㉒ Click the **BAL** button to execute the balance adjustment.
Close the Balance result window. The DCS-100A gets back to the monitoring state.
(For details, see “ 7 - 6 BALANCE ADJUSTMENT.”)
- ㉓ If the **REC** button is pressed, the recording of measured data starts according to the Measure mode.
- ㉔ Click the **STOP** button or after finishing recording the data for the pre-set number, the DCS-100A gets back to monitoring state.
- ㉕ Press the **STOP** button once again in monitoring mode.
The DCS-100A stops the measurement and becomes stopped state.

Check Data

- ㉖ Click the Measurement – Latest Recorded Data File or click the Check Data icon from the toolbar to display the data checking dialog box.
- ㉗ 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.

Exit the DCS-100A.

- ②⑧ Exit the DCS-100A.
Turn OFF the PCD-400 Series.

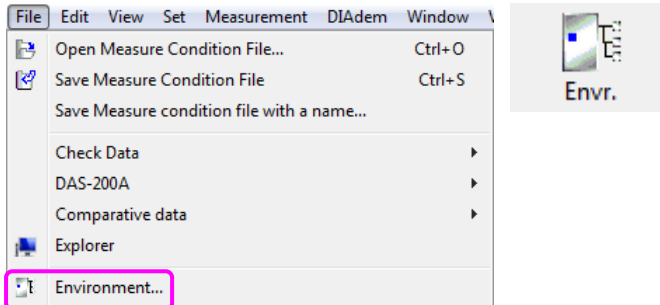
3. SETTING ENVIRONMENT

This section describes how to set unit configurations.

■How to display

Open the Set Environment window by any of the following.

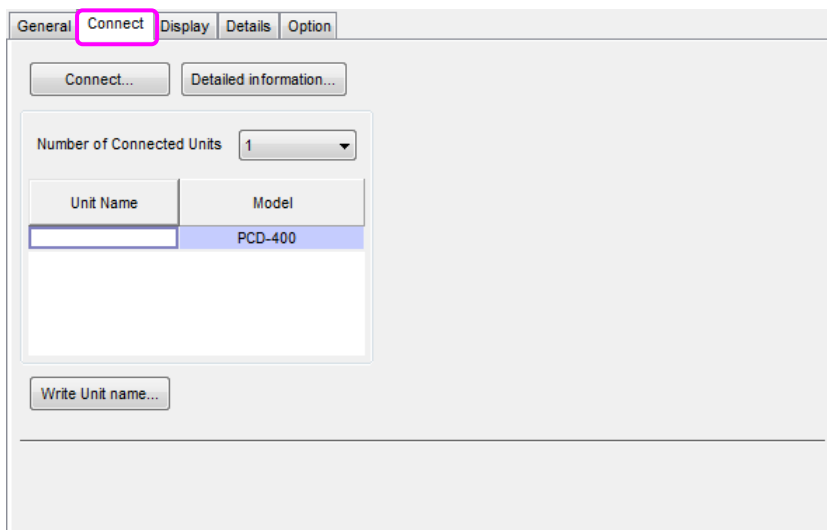
- Click the File - Environment.
- Click the Envr. icon from the toolbar.



3-1 CONNECT TAB

Set the unit configuration on the [Connect] tab on the Set Environment window.

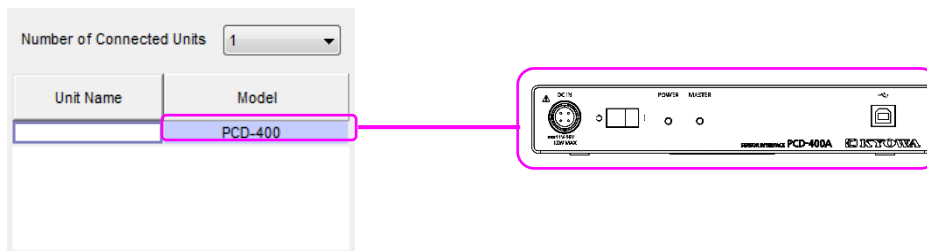
Click the [Connect] tab.



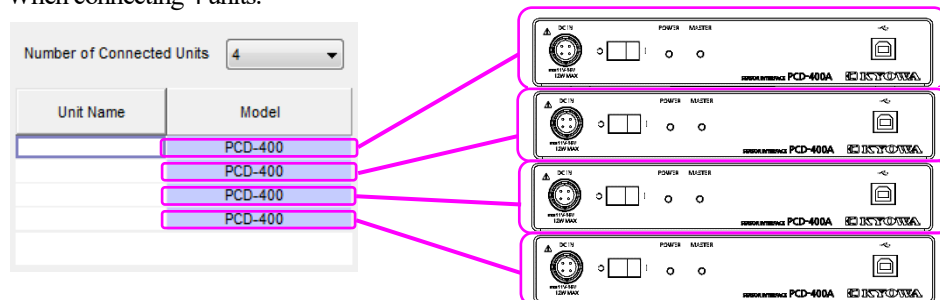
■ Unit Configuration

The connected PCD-400 Series units appears on the DCS-100A as follows.

- When connecting single unit.



- When connecting 4 units.



NOTE

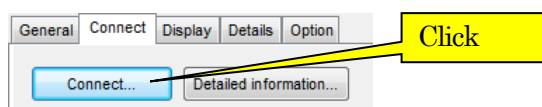
The model of PCD-400A and PCD-400B is displayed as PCD-400.
The model of PCD-430A and PCD-430B is displayed as PCD-430.

3-1-1 To check/set the unit configuration

With the DCS-100A, before measurements, be sure to set the unit configuration of the PCD-400 Series.

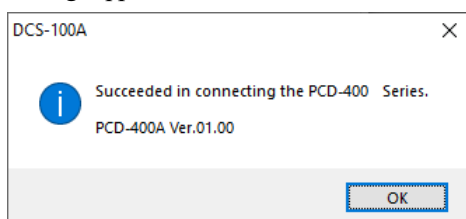
■ Operation Method

- (1) Click the **Connect...** button for checking whether the unit configuration matches the current configuration of the connected PCD-400 Series unit.



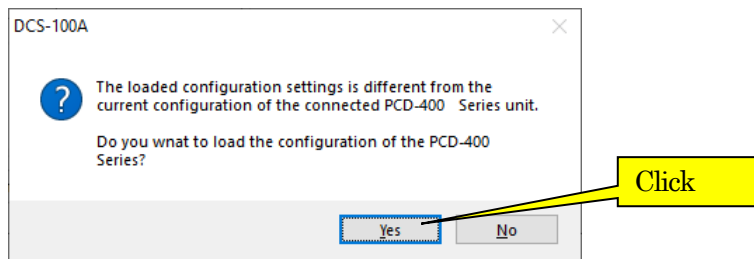
- (2) Execute the following operation based on the result.

- When the unit configuration matches the current configuration of the connected PCD-400 Series unit, the following message appears.

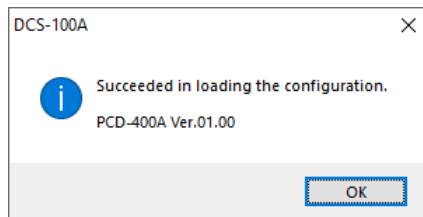


- When the unit configuration does not match the current configuration of the connected PCD-400 Series unit, the following message appears.

To load the current unit configuration, click the **Yes** button.

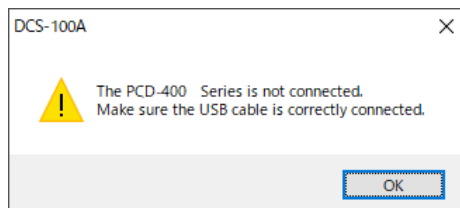


When the unit configuration has been loaded successfully, the following message appears.



The DCS-100A matches the unit configuration automatically.

- When the unit configuration loading failed, the following message appears.



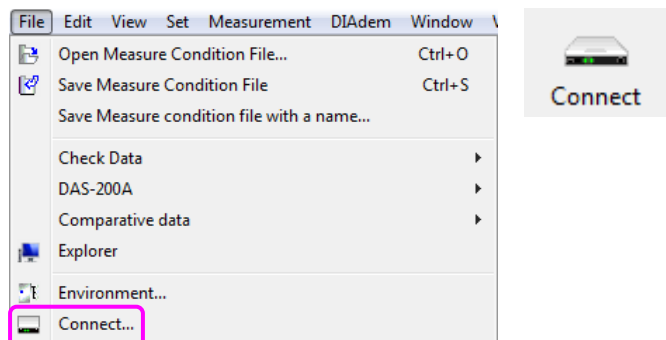
Check the following items.

- The PCD-400 Series is ON.
- Open the Device Manager to verify that the PCD-400 Series is recognized properly.
- The PC and PCD-400 Series are connected by using an USB cable.

MEMO

Check/set the unit configuration by any of the following.

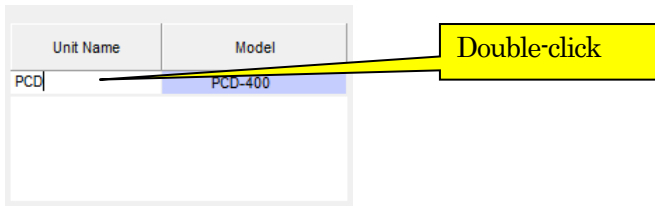
- Click the File - Connect.
- Click the Connect icon from the toolbar.



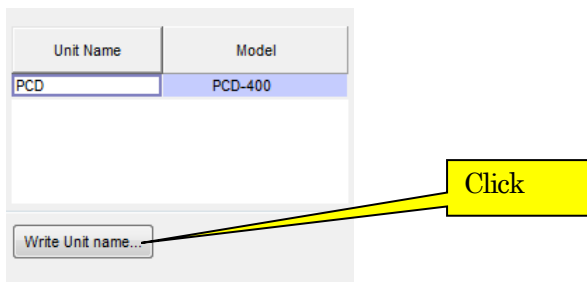
3-1-2 To write the unit name.

You can write the unit name within 30 characters.

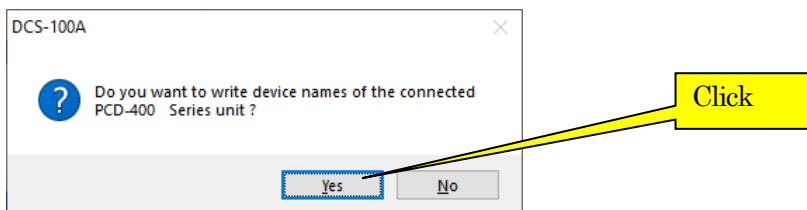
- (1) Double-click the target unit name or press the **SPACE** key to be in input available state.
Input the target unit name.



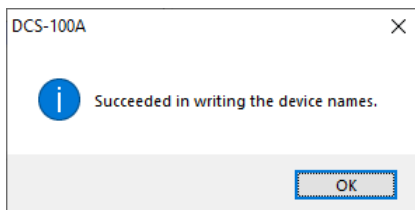
- (2) Click the **Write Unit name...** button.



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

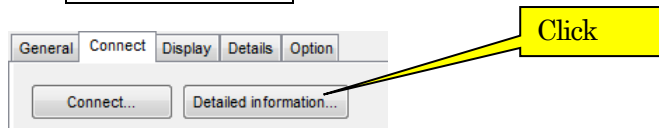


- (4) When the unit name has been written successfully, the following message appears.

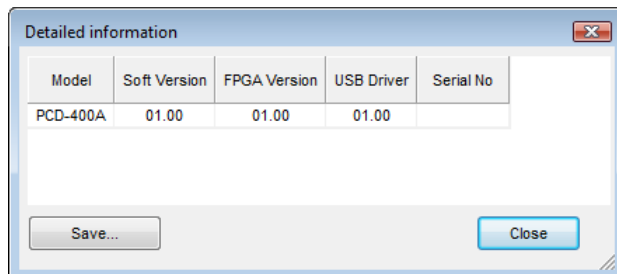


3-1-3 Detailed information

(1) Click the **Detailed information...** button.



(2) The following Detailed information window appears.



3-2 GENERAL TAB

This section describes how to convert the data file, after measurements, automatically.

Click the [General] tab.

The screenshot shows the 'General' tab selected in a software interface. The 'Record' section has a checkbox labeled 'After the measurement, data is automatically converted into CSV Format File.' which is currently unchecked. To the right of this checkbox is a button labeled 'Set Automatic Conversion...'. Below the 'Record' section is the 'Unit' section, which includes a label 'Set User's Unit' followed by three empty text input fields. A note below these fields states: 'The entered User's unit is reflected on the Set Unit screen.'

■ Converting the data file after the measurement

To automatically convert the KS2 file format to another after the measurement, put a check mark to the check box next to the "After the measurement, data is automatically converted into CSV format file."

This screenshot is similar to the previous one, but the checkbox 'After the measurement, data is automatically converted into CSV Format File.' is now checked. The 'Set Automatic Conversion...' button remains visible to the right.

Click the Set Automatic Conversion... button and the following Set Conversion window appears.
Set conditions on the Set Conversion window.

The 'Set Conversion' dialog box is shown. It has a 'File Format' dropdown menu which is open, showing options: 'CSV Format File (*.CSV)', 'XLS Format File (*.XLS)', 'XLSX Format File (*.XLSX)', and 'RPC III Format File (*.rsp)'. The 'CSV Format File (*.CSV)' option is highlighted. Below the dropdown, there are several settings: 'Data Point' with radio buttons for 'Time' (selected) and 'Data No.'; 'Start No.' with radio buttons for '0' (selected) and '1'; 'Delimiters' with radio buttons for 'Comma' (selected) and 'TAB'; and 'CAN Data Type' with radio buttons for 'Engineering Value' (selected), 'Decimal', and 'Hexadecima'. At the bottom, there are two checked checkboxes: 'Save Header Information.' and 'Text qualifier "'. At the very bottom are 'OK' and 'Cancel' buttons.

■Unit

Up to 3 user arbitrary units can be registered.

Input the user arbitrary unit within 7 characters.

The determined units can be selected by selecting Unit on the Set CH Condition window.

3-3 DISPLAY TAB

This section describes how to set display conditions.

Click the [Display] tab.

■Background colors of units

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

Color setting... button

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

Reset button

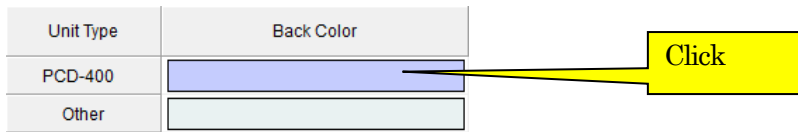
Resets the item to the default state.

To valid the settings of the background color on the Set CH Condition window, put a check mark to the check box next to the "When starting up the DCS-100A the next time, the Control Device window is displayed."

[Operation example 1]

This section describes how to change the background color of the PCD-400 by using the Back Color list.

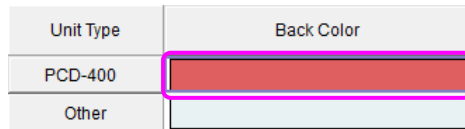
- (1) Click the current background color of the PCD-400.



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



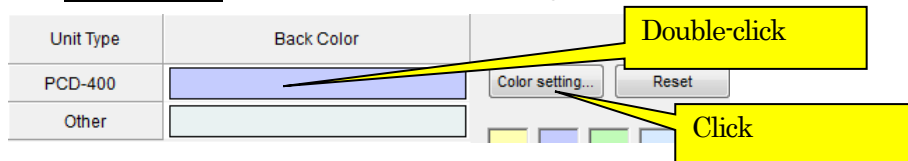
- (3) The background color of the PCD-400 is changed.



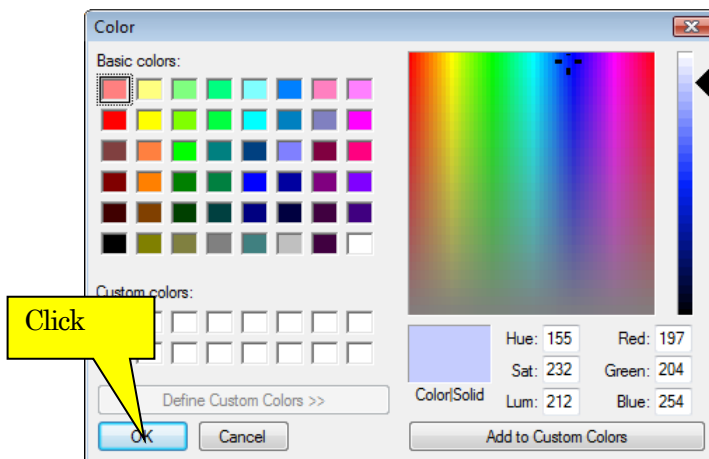
[Operation example 2]

This section describes how to change the background color of the PCD-400 by using the Color dialog box.

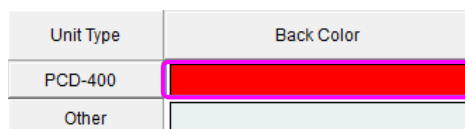
- (1) Click the current background color of the PCD-400.
- (2) Click the Color setting... button or double-clicks the background color of the PCD-400 and the Color dialog box appears.



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



- (4) The background color of the PCD-400A is changed.



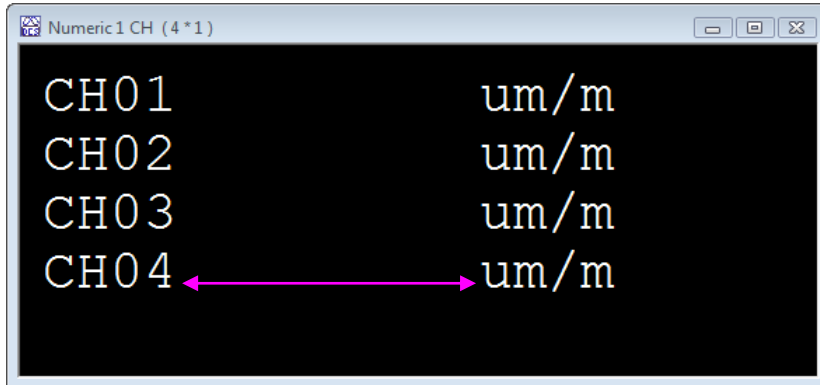
■ The number of numeric digits to be displayed

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

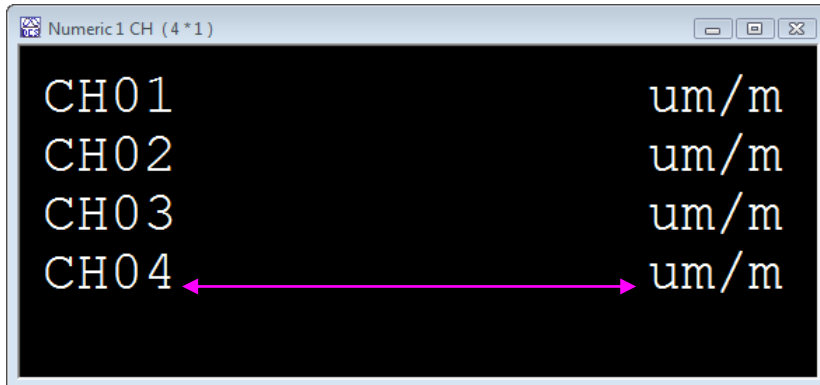
(Range: 6 to 11 digits)

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

- When the number of numeric digits to be displayed: 6



- When the number of numeric digits to be displayed: 11



■ Number of digits of the name

Sets the "number of digits of the name" on numeric windows' legend and graph windows' legend.

(Range: 10, 20, 30, and 40 digits)

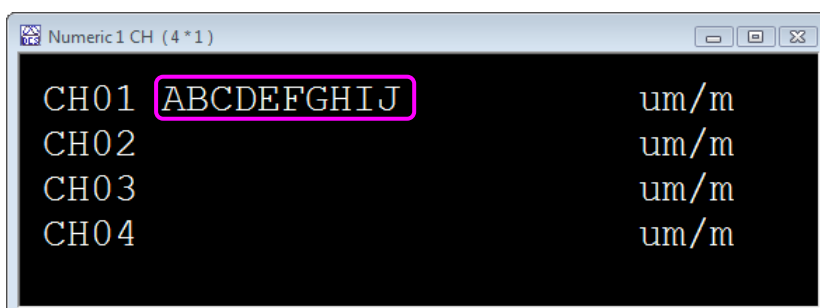
When the channel name exceeds the "number of digits of the name", the channel name within the "number of digits of the name" appears.

[Example]

Channel name of CH01: ABCDEFGHIJKLMN

Number of digits of the name: 10 digits

The channel name of 10 digits (ABCDEFGHJIJ) appears as follows.



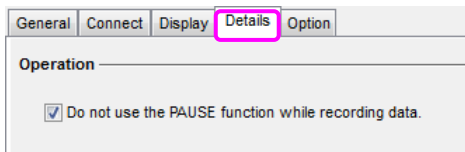
■ **Show or hide the Device to be controlled window.**

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

3-4 DETAILS TAB

This section describes how to set detailed conditions.

Click the [Details] tab.



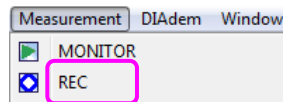
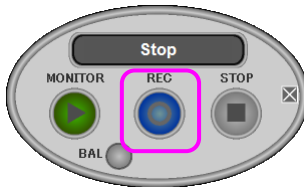
■ Operation Method

To disable the PAUSE function, put a check mark to the check box next to the "Do not use the PAUSE function while recording data."

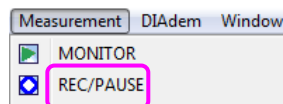
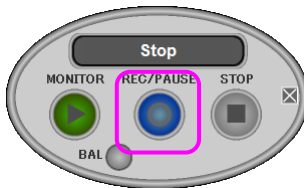
MEMO

The **REC** button on the Meas Operation Panel and the Measurement's drop-down menu varies with the PAUSE function state.

- PAUSE function: Disabled state



- PAUSE function: Enabled state



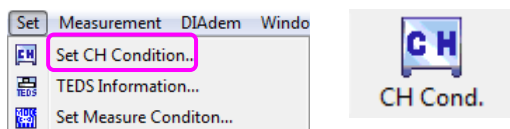
4. CHANNEL CONDITIONS

This chapter describes how to set the channels to be measured, Range, Calibr. const., Unit, etc. for every CH.

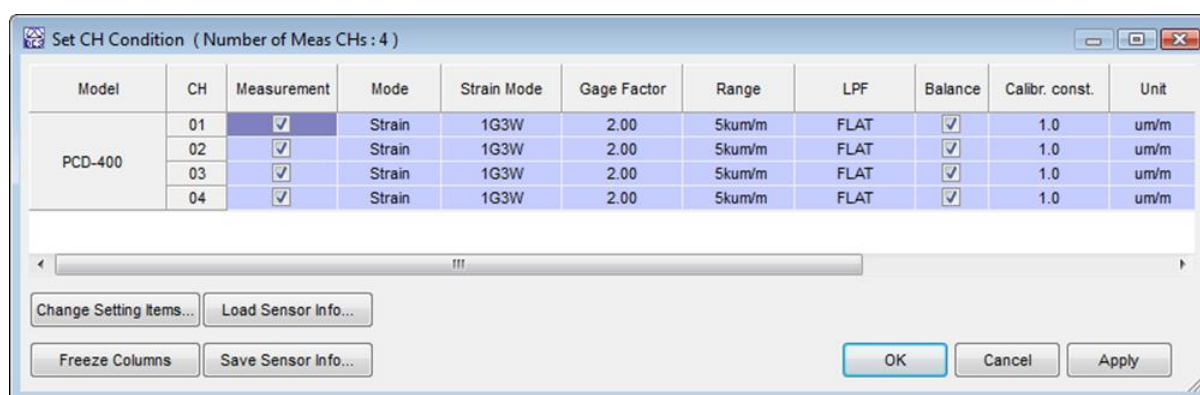
■How to display

Open the Set CH Condition window by any of the following.

- Click the Set - Set CH Condition....
- Click the CH Cond. icon from the toolbar.



■Set CH Condition window



Change Setting Items... button Setting items displayed on the window are added, removed, or sorted.

Freeze Columns button Freeze columns ON/OFF
It allows you to keep some of your data in the same place as you scroll through the rest of your spreadsheet.

Load Sensor Info... button Loads the sensor information (Calibr. const., rated capacity, rated output, etc.) from the sensor information file (CSV format) for setting the channel conditions.

Save Sensor Info... button Saves the sensor information (Calibr. const., rated capacity, rated output, etc.) as the sensor information file (CSV format).

OK button Determines the pre-set contents and closes the window.

Cancel button Cancels the pre-set contents and closes the window.

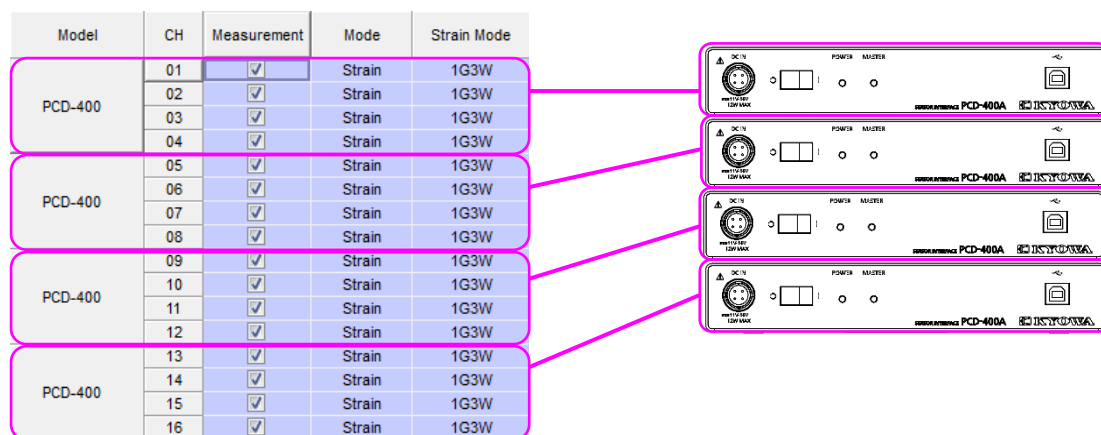
Apply button Determines the current set contents.

MEMO

For loading/saving the sensor information file, see separate volume of the "DCS-100A DYNAMIC DATA RECORDING SOFTWARE INSTRUCTION MANUAL (FOR COMMON OPERATION.)"

■ Channels of units

The connected PCD-400 Series units appears on the DCS-100A as follows.



■ Setting Items

● Unit name

Displays the unit name of the PCD-400 Series that is set on the Set Environment window.

● Model

Displays the model of the PCD-400 Series.

NOTE

The model of PCD-400A and PCD-400B is displayed as PCD-400.
The model of PCD-430A and PCD-430B is displayed as PCD-430.

● CH

Display the CH No.

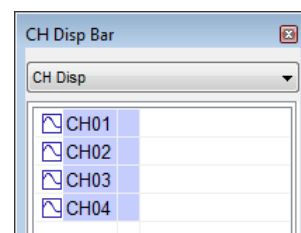
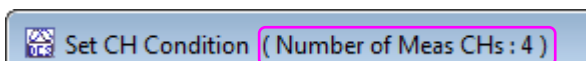
The CH No. is assigned in serial numbers starting from CH01.

● Measurement

Put a check mark to the check box next to the target channel.

The channels to be measured are displayed on the CH Disp bar on the main window.

The number of current measuring channels is displayed on the title bar on the Set CH Condition window.



● Mode

Displays the mode.

Model	Mode
PCD-400	Strain
PCD-430	Strain, Voltage

● Strain mode

Select the strain mode.

Model	Strain mode
PCD-400	1G2W, 1G3W, 2G, 4G
PCD-430	

●Gage factor

Input the gage factor of the target gage. (Setting range: 0.01 to 999.99, default: 2.00)

For the "1G2W" and "1G3W" only.

●Range

Select the range.

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

Model	Range	
	Strain mode	Voltage mode
PCD-400	200μm/m, 500μm/m, 1kμm/m, 2kμm/m, 5kμm/m, 10 kμm/m, 20 kμm/m	None
PCD-430		1V, 2V, 5V, 20V, 50V

●Meas Range

Numeric value of the Meas Range is obtained by multiplying the Range and the Calibr. const.

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

●High-pass filter

Select the cutoff frequency of the high-pass filter.

Model	High-pass filter
PCD-400	None
PCD-430	OFF, 0.2Hz

●Low-pass filter

Select the cutoff frequency of the low-pass filter.

Model	Low-pass filter	
	Strain mode	Voltage mode
PCD-400	FLAT, 100 Hz, 30 Hz, 10 Hz	None
PCD-430		FLAT, 300Hz, 100 Hz, 30 Hz, 10 Hz

●Balance

Put a check mark to the check box next to the target channel.

Putting a check mark may be not available due to the PCD-400 Series model and Mode.

●Offset Zero

Put a check mark to the check box next to the target channel.

"Measurement" - "Execute Offset Zero": The apparent measured data becomes 0.

"Measurement" - "Initialize Offset Zero": Initializes the offset value to 0.

●Rated Capacity (sensor physical quantity)

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

When changing the Rated Capacity, the Calibr. const. is automatically changed.

●Rated output (Sensor output)

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

When changing the Rated Output, the Calibr. const. and Rated output (mV/V) are automatically changed.

●Rated Output (mV/V)

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

When changing the Rated Output, the Calibr. const. and Rated output are automatically changed.

For the "4G" only.

●Calibr. const.

Set Calibr. const. to be multiplied to the measured data.

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

For Calibr. const., 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 Calibr. const., the Rated Capacity is automatically changed.

●Offset

Set Offset value in physical quantity (A value multiplied by the Calibr. const.).

(Setting range: $-1 \times 10^{+8}$ to -1×10^{-8} , 0.0, 1×10^{-8} to $1 \times 10^{+8}$)

Set the offset value to shift the measured value at a certain amount.

MEMO

After setting the Calibr. const., offset, and gage factor, the measured data is obtained as follows.

- For the strain modes “1G2W” and “1G3W”.

The measured data = The measured data (in range) $\times$ Calibr. const. $\times$ 2.00/Gage Factor + Offset

The DCS-100A compensates the measured data (in range) based on the nonlinearity of the quarter bridge system

- For the strain modes other than the “1G2W” and “1G3W”.

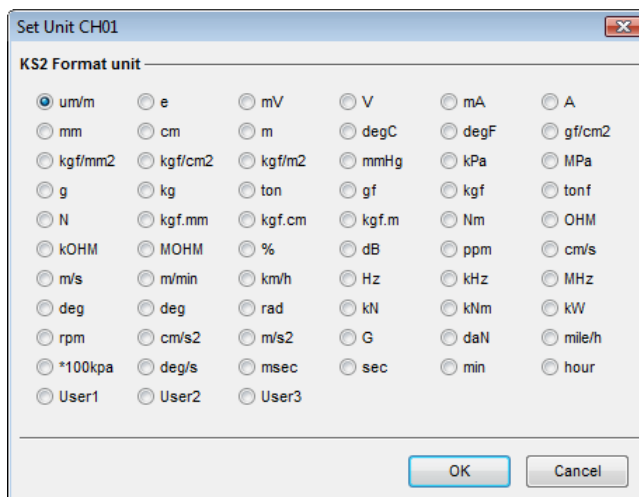
The measured data = The measured data (in range) $\times$ Calibr. const. + Offset

●Unit

Set the physical quantity unit according to input sensors.

Double-click the target CH item 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 Set Unit window, users can register up to 3 original units (User's unit).

(For details, see “3 - 2 GENERAL TAB.”)

●Chk. Val. (Up)

Set the Chk. Val. (Up) of the Range in percent figures.

(Setting range: -100 to 100%)

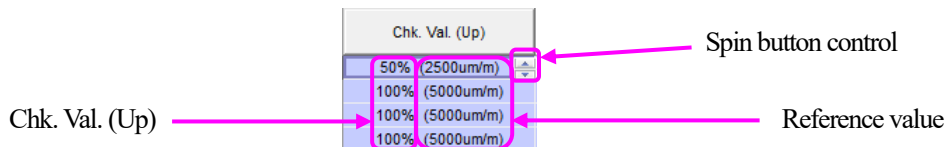
By setting the Chk. Val. (Up) and Chk. Val. (Down), you can detect erroneous status (the measured data of a CH exceeds the Check Values).

After exceeding the Chk. Val. (Up), numbers on numeric/graph windows will be displayed in red.

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

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

(For the exceeding values and over reset, see “7 - 7 DISPLAYING EXCEEDING VALUE.”)



●Chk. Val. (Down)

Set the Chk. Val. (down) of the Range in percent figures.

(Setting range: -100 to 100%)

Set the Chk. Val. (Down) in the same manner as the Chk. Val. (Up).

(For the exceeding values and over reset, see “7 - 7 DISPLAYING EXCEEDING VALUE.”)

MEMO

Values described in parenthesis (), in the Chk. Val. (Up) Chk. Val. (Down), are reference physical quantities.

●Deci Digits

Set the number of digits below the decimal point.

See separate volume of the "DCS-100A DYNAMIC DATA RECORDING SOFTWARE INSTRUCTION MANUAL OR COMMON OPERATION)"

●CH Name

Input comments within 40 characters.

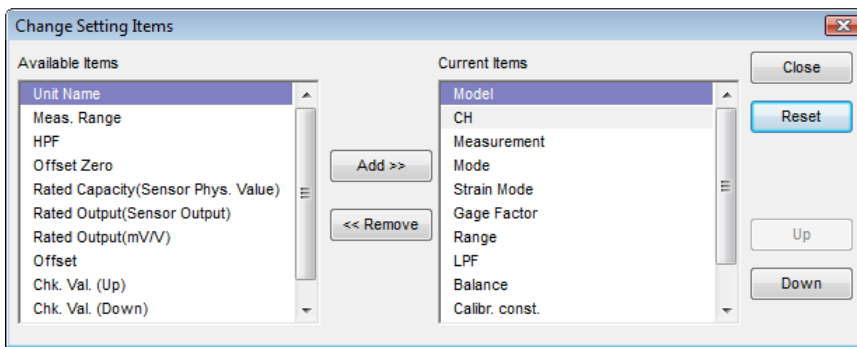
Double-click the target CH item or press the **SPACE** key to be in input available state.

Input the target comments.

■ 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

The item currently not on the window is added to the window.

Remove button

The item currently 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

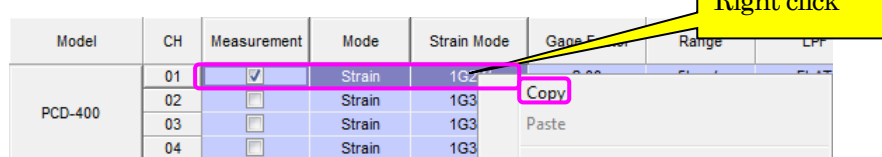
Sorts the current setting items.

Choose the setting item you want to move, and click **Up** or **Down** button.

■ Copy and Paste

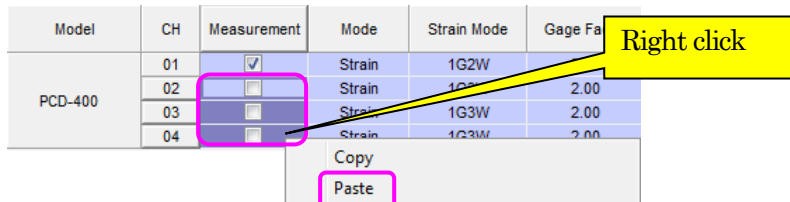
- (1) Drag the setting item of the copy source CH and right-click.

Select the Copy from the menu.



- (2) Drag the channels to be pasted and right-click.

Select the Paste from the menu.



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

Model	CH	Measurement	Mode	Strain Mode
PCD-400	01	☒	Strain	1G2W
	02	☒	Strain	1G2W
	03	☒	Strain	1G2W
	04	☒	Strain	1G2W

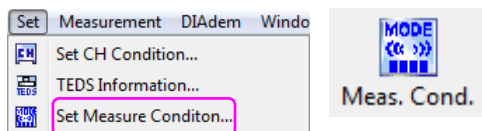
5. MEASURING CONDITIONS

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

■How to display

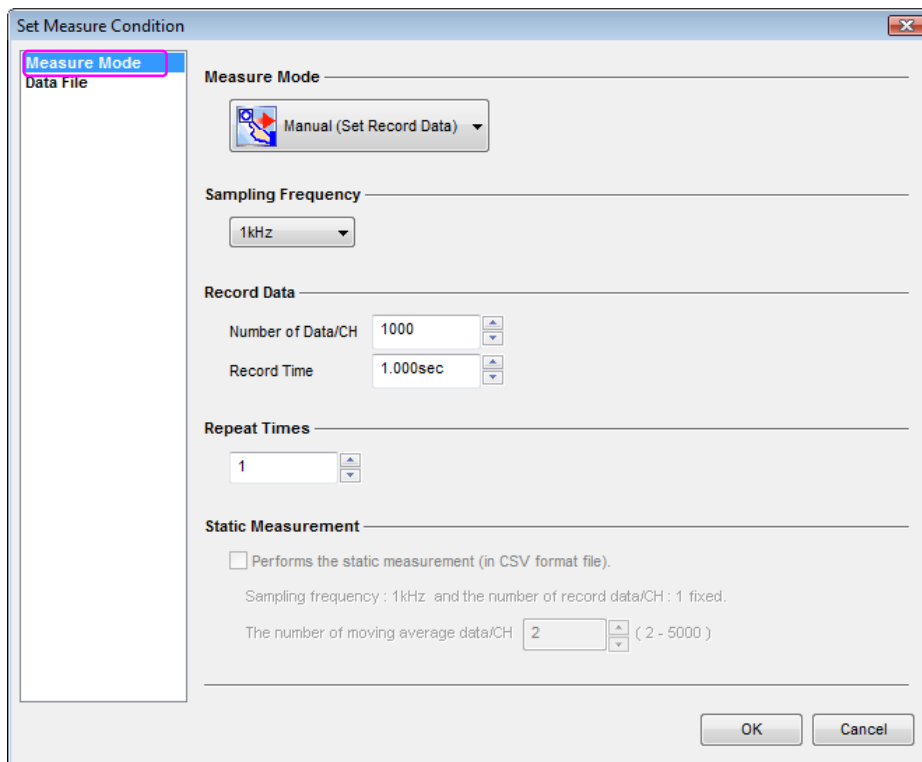
Open the Set Measure Condition window by any of the following.

- Click the Set - Set Measure Condition....
- Click the Meas. Cond. icon from the toolbar.



5-1 MEASURE MODE CONDITIONS

This section describes how to set Measure Mode, Sampling Frequency, and Record Data on the Measure Mode window. Click the [Measure Mode] tab.



OK button Determines the pre-set contents and closes the window.

Cancel button Cancels the pre-set contents and closes the window.

■Measure Mode

Select the target 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 pre-set number of recorded data. |
| "Interval" | Automatically records data at the pre-set time interval. |
| "Analog Trigger" | Automatically starts recording data when measured value of the specified analog CH satisfies the analog trigger conditions. |

■ Sampling Frequency

Select the target item from the following.

1Hz, 2Hz, 5Hz, 10Hz, 20Hz, 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 2kHz, 10kHz

■ Record Data

If you click other than Manual in the Measure 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

Input the number of repeat times.

Measure Mode	The number of repeat times
Manual	1 fixed
Manual (Set Record Data) Interval Analog Trigger	1 to 9999 If you set "0," the actual number of repeat times is 65535.

■ Static Measurement

To perform the static measurement, put a check mark to the check box next to the "Performs the static measurement (in CSV format file)."

(For details, see “7 - 8 STATIC MEASUREMENT.”)

5-2 INTERVAL CONDITIONS

This section describes how to set the interval conditions.

■How to display

- (1) Select the Interval on the Set Meas Condition dialog box to display the Interval tab in the left.
- (2) Click the [Interval] tab.

The screenshot shows the 'Set Meas Condition' dialog box with the 'Interval' tab selected. The 'Measure Mode' section on the left has 'Interval' highlighted. The main area contains three sections: 'Start Time' with a checked 'Set Interval Start Time' box and a date/time field set to '2014/10/10 00:00:00'; 'Interval Time' with four spinners for Day (0), Hour (0), Minute (1), and Second (0); and 'Repeat Times' with a spinner set to 1. A note below the Interval Time section states: 'Set interval time to a time more than 'record time (1.000sec) + 10 second'.'

■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]** button is pressed if putting no check mark.
- (2) Set the interval time.
- (3) Input the number of repeat times.
(Setting range: 1 to 9999. If you set "0," the actual number of the repeat times is 65535.)

MEMO

If the **[REC]** button is pressed 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 pre-set repeat times, a message appears and the interval measurement finishes.

NOTE

“Recording time + 10 sec or more” should be set as the interval time.

5-3 ANALOG TRIGGER CONDITIONS

This section describes how to set the analog trigger conditions.

■How to display

- (1) Select the Analog Trigger on the Set Meas Condition window to display the [Analog Trigger] tab in the left.
- (2) Click the [Analog Trigger] tab.

The screenshot shows the 'Analog Trigger' configuration window. On the left, a sidebar has three tabs: 'Measure Mode', 'Analog Trigger' (which is highlighted with a pink border), and 'Data File'. The main window area is titled 'Analog Trigger' and contains the following settings:

- Start Trigger:** CH No. 01, Slope Positive, Level (Physical Value) 2500. The range -5000 - 5000 um/m is displayed on the right.
- End Trigger:** CH No. 01, Slope Positive, Level (Physical Value) 2500. The range -5000 - 5000 um/m is displayed on the right.
- Pre Trigger Data(Delay):** Number of Data/CH 1000 (range 0 - 160000), Time 1.000sec (range 0 - 00:02:40).
- Post Trigger Data(Delay):** Number of Data/CH 1000 (range 0 - 160000), Time 1.000sec (range 0 - 00:02:40).
- ☒ Set End Trigger.
- Repeat Times:** 1.

■How to operate

- (1) Select trigger CH that you want to record from.
You can select the trigger CH from the channels to be measured (with check marks) and calculation channels (optional).
- (2) Select the trigger slope 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.

MEMO

•Trigger slope: Positive

Trigger level value: 100

Triggered when the measured data (less than 100) increases 100 or more.

...96 97 98 99 100 101 102 103 104 105 ...

└─ Measured data which satisfies the trigger conditions.

•Trigger slope: Negative

Trigger level value: 100

Triggered when the measured data (more than 100) decreases 100 or less.

... 103 102 101 100 99 98 97 96 95 94 ..

└─ Measured data which satisfies the trigger conditions.

- (3) Input the trigger level value (value to be triggered) in physical quantity.
Input available range is displayed on the right.

- (4) For recording data before starting the recording, set the Pre Trigger Data Delay in time or number of data/CH.
Input available range is displayed on the right.

MEMO

The maximum value of the pre-trigger data delay and post-trigger data delay are obtained as follows.

$$\text{Maximum value of the data delay} = 2,560,000 / (\text{Data size} \times \text{The number of channels to be measured})$$

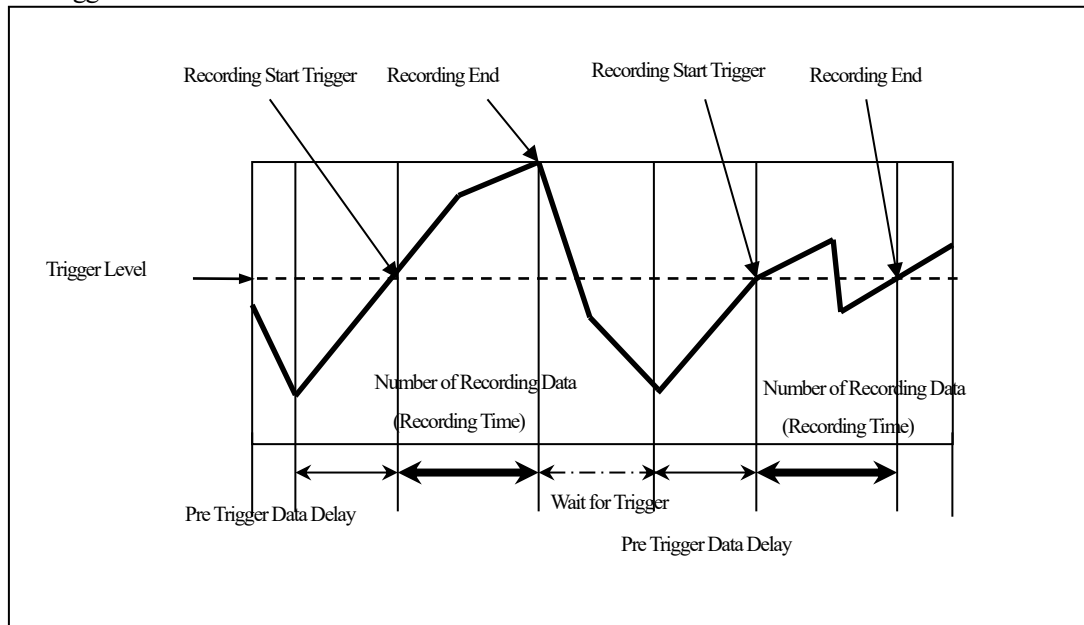
The data size of the PCD-400 Series is 4.

- (5) To set the end trigger, put a check mark to the check box next to the "Set End Trigger."
Set the conditions of the End Trigger in a same manner to the Start Trigger.
- (6) Input the number of repeat times.
(Setting range: 1 to 9999. If you set "0," the actual number of the repeat times is 65535.)

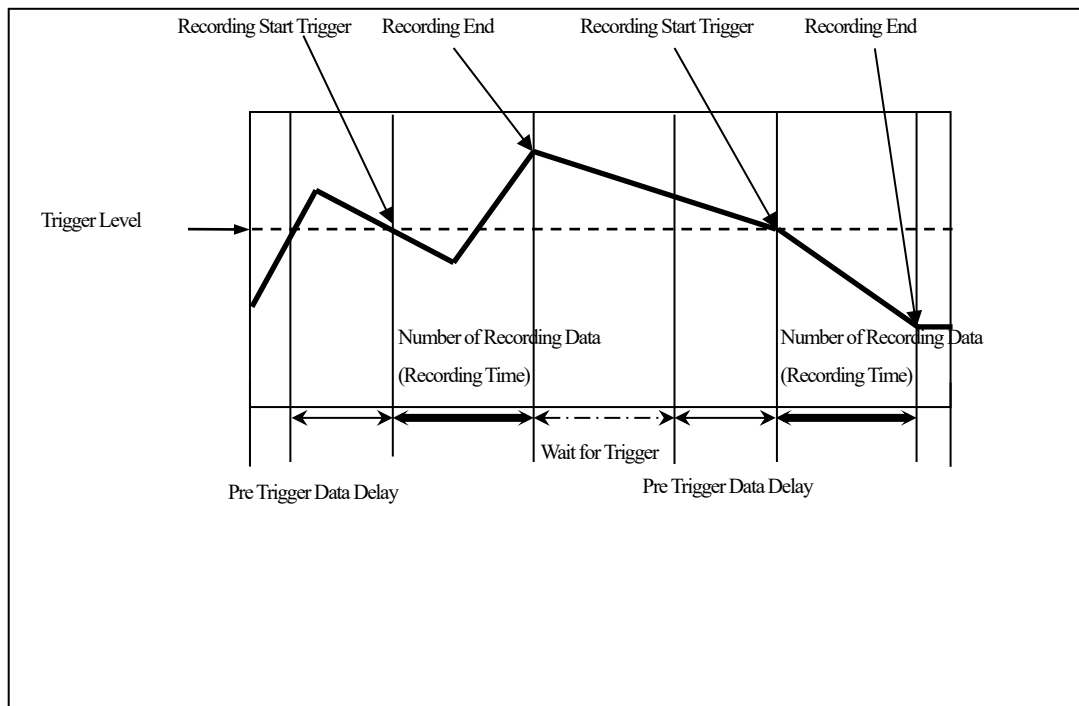
■ Example of trigger slope with start trigger.

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

Start Trigger: Positive



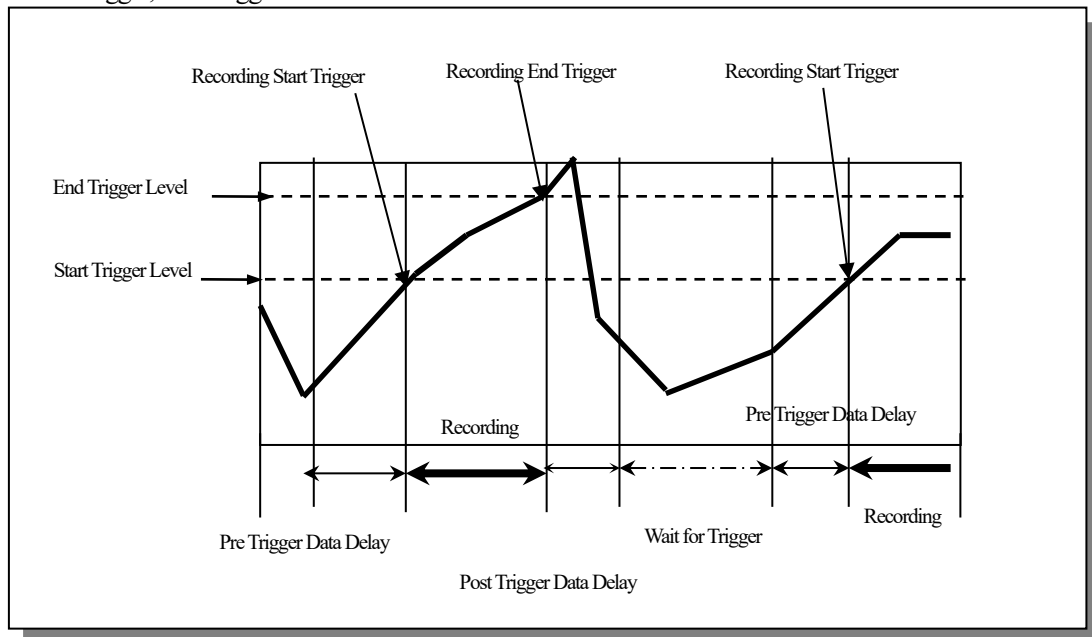
Start Trigger: Negative



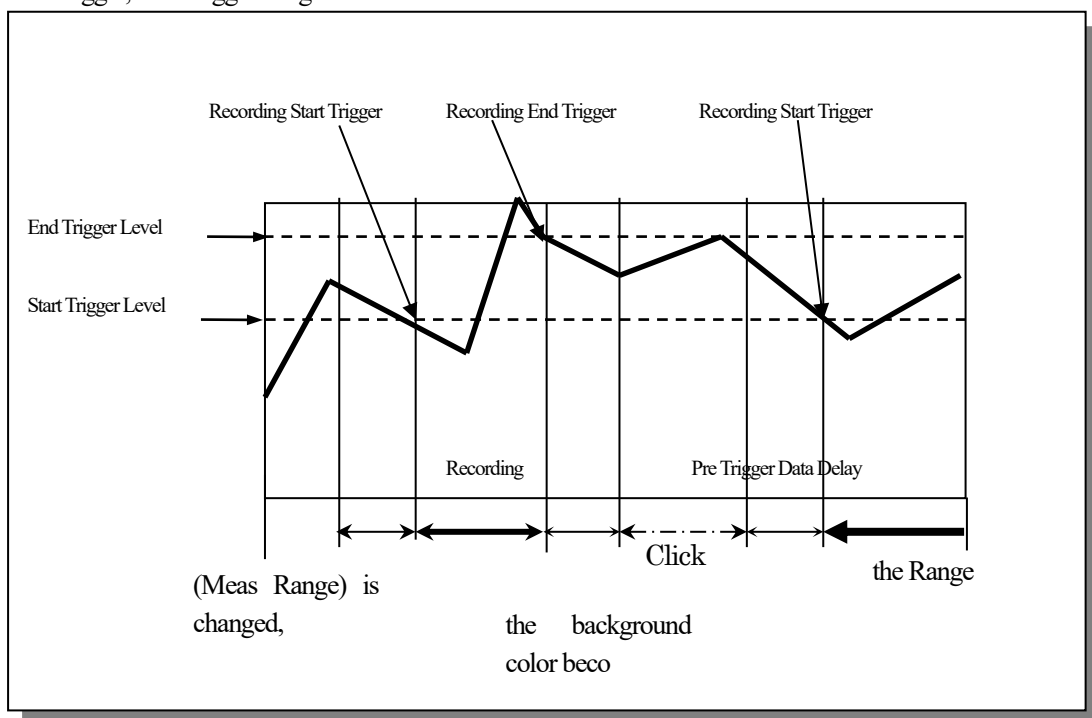
■ Example of trigger slope with end trigger.

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



5-4 DATA FILE CONDITIONS

This section describes how to set relating items of data files.

Click the [Data File] tab.

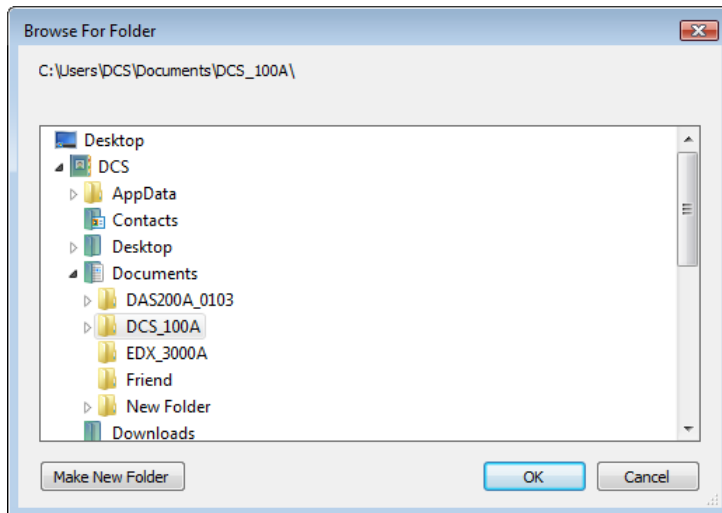
The screenshot shows the 'Measure Mode' dialog box with the 'Data File' tab selected. The 'Set Save Folder' field is set to 'C:\Users\DCS\Documents\DCS_100A\'. The 'Data File Name' field is set to 'Test0000.KS2'. The 'File Name' field is set to 'Test'. The 'File Title' field is empty. The 'File No.' field is set to '0'.

■Set Save Folder

Set the Set Save Folder for saving the collected data file.

Click the Browse... button to display the Browse For Folder.

Select the target folder.



■File Name

Set a file name within 20 characters.

■File Title

Set a file name 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.

Measure Mode	Data File Name
Manual	TEST 0000 . KS2 (1) (2)
Manual (Set Record Data) when the repeat time is 1.	
Manual (Set Record Data) when the repeat time is 2 or larger.	TEST 0000 _△ 0000 . KS2 (1) (2) (3)
Interval	
Analog Trigger	

① File Name

② File No.

③ The repeat time

The file number is incremented by one after every recording.

The repeat times is automatically incremented by one after every recording

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

M: "Manual measurement (Set Record Data)"

I: "Interval measurement"

A: "Analog trigger measurement"

6. LOADING TEDS SENSOR INFORMATION

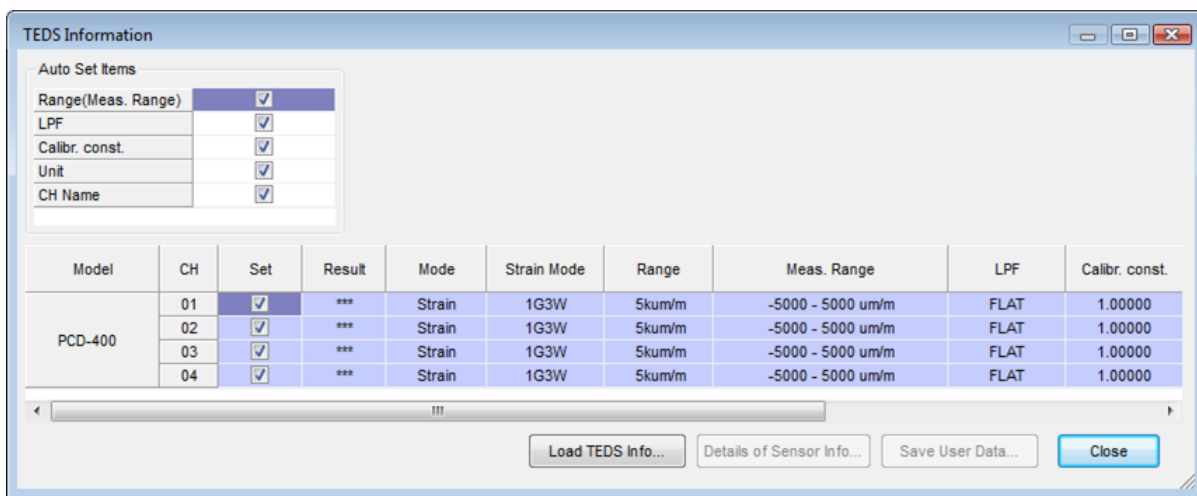
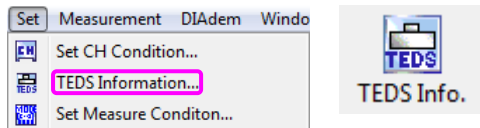
The PCD-400 Series is capable of loading Transducer Electronic Data Sheet (TEDS) sensor information and capable of setting the most appropriate range, CAL coefficient, unit, etc automatically.

(Note that the DCS-100A cannot 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.



6-1 LOADING TEDS SENSOR INFORMATION

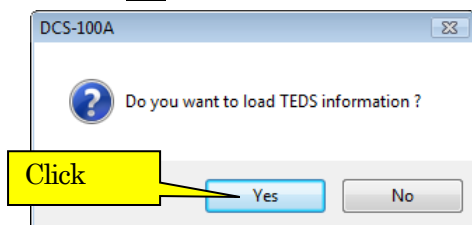
After executing the loading of the TEDS sensor information, the DCS-100A loads the TEDS information of all the sensor-mounted channels.

■Operation Method

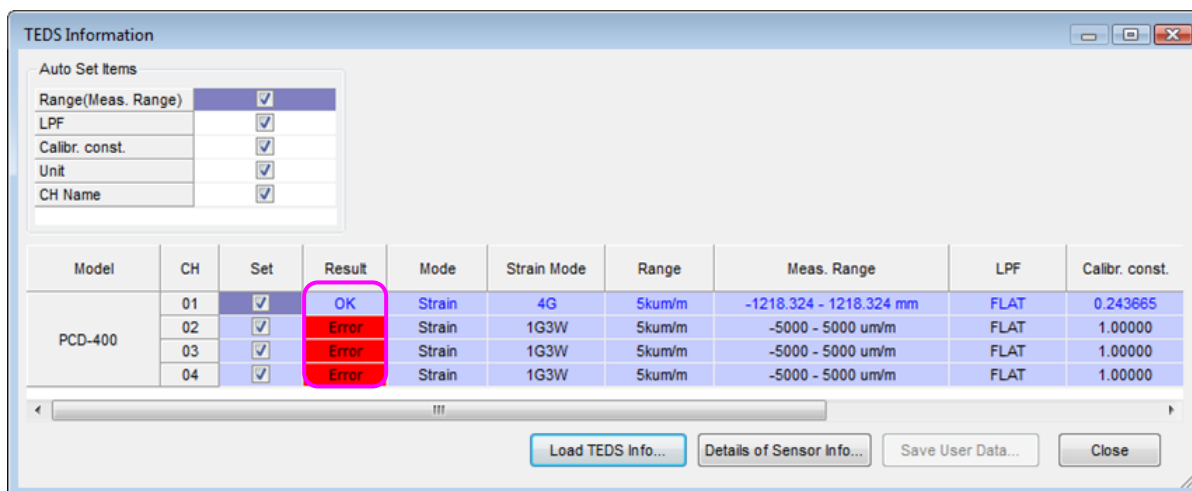
(1) Click the **Load TEDS info...** button.

(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 To change the range and meas range

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

Range	Meas. Range
200um/m	-48.73294 - 48.73294 mm
5kum/m	-48.73294 - 48.73294 mm
5kum/m	-121.8324 - 121.8324 mm
5kum/m	-243.6647 - 243.6647 mm
	-487.3294 - 487.3294 mm
	-1218.324 - 1218.324 mm
	-2436.647 - 2436.647 mm
	-4873.294 - 4873.294 mm

MEMO

When the Range (Meas Range) is changed, the background color becomes yellow.

You cannot change the Mode, Unit, Low-pass filter, Calibr. const., CH Name, etc. on this window.

You can change the above items on the Set CH Condition window.

6-1-2 To write a user data.

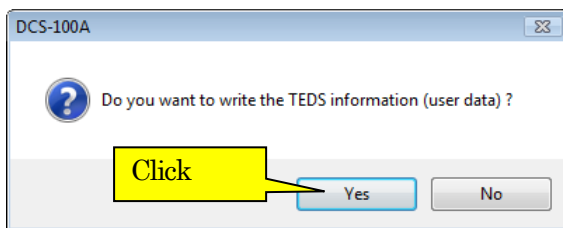
This section describes how to write the changed user data into the TEDS sensor (manufacture ID: KYOWA only) after loading the TEDS information.

■Operation Method

- (1) After loading the TEDS information, change the user data and put a check mark to the check box next to the target item.
When the user data is changed, the background color becomes yellow.

User Data	User Data Change
KYOWA	☒
***	***
***	***
***	***

- (2) Click the **Save User Data...** button.
The following message appears.
Click the **Yes** button.



- (3) The DCS-100A writes the user data into the TEDS sensor to display the following window.

Written result of the TEDS information (user data) (OK : 1CH Other : 3CH Total : 4CH)		
Model	CH	Result
PCD-400	01	OK
	02	OFF
	03	OFF
	04	OFF
Close		

6-1-3 Details of TEDS sensors

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

MEMO

- You can 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	0x43000000C426462D
Manufacture ID	58
Model Number	1
Version Letter	A
Version Number	1
Serial Number	2
Template ID	33
Physical Measurand	
Minimum physical value	1000.00
Maximum physical value	1000.00
Transducer Electrical Signal Type	Bridge Sensor
Minimum electrical output [V/V]	0.00205200
Maximum electrical output [V/V]	0.00205200
Mapping Method	Linear
Bridge Type	FULL
Bridge element impedance [Ohm]	120.000
Response Time [sec]	1.00000E-6
Excitation level, nominal [V]	2.00000
Excitation level, min [V]	1.00000
Excitation level, max [V]	5.00000
Calibration Date	2008/09/12
Calibration Initials	KUR
Calibration Period [days]	365
Measurement location ID	9
User Data1	1--1
User Data2	LDT-1K,FB9610056,20090912,111

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 THE CHANNEL CONDITIONS

This section describes how to set the loaded TEDS information to the channel conditions, based on the pre-set conditions, after loading the TEDS information and closing the TEDS Information window.

6-2-1 Setting column

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

Model	CH	Set
PCD-400	01	☒
	02	☒
	03	☒
	04	☒

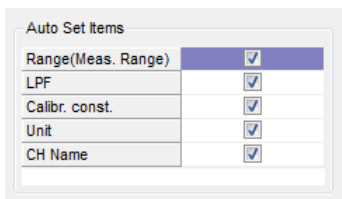
MEMO

After loading the TEDS information, 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 can put a check mark or release a check mark before loading TEDS information and after loading TEDS information.



Item	Set
Range(Meas. Range)	☒
LPF	☒
Calibr. const.	☒
Unit	☒
CH Name	☒

NOTE

The Auto Set Items window is for all channels. You cannot set items of every channel.

■Range (Meas Range)

To set the Mode, Strain mode, and 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 CAL Coefficient.
Check the Meas Range as a reference for selecting the Range.
- For a sensor with the rated capacity not stated on the TEDS information window, the Range is set to its maximum value.

■Low-pass filter

To set the Mode, Strain mode, and Low-Pass Filter to the channel conditions, put a check mark to the target item.

■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.

MEMO

- When the not available unit is stated in the TEDS information, the unit 'mm' is used.
- If the 'Pa' unit is stated in the TEDS information, convert values into 'kPa' or 'MPa' by using the rated capacity.

■CH Name

To set the User data to the CH Name, included in the channel conditions, put a check mark to the target item.

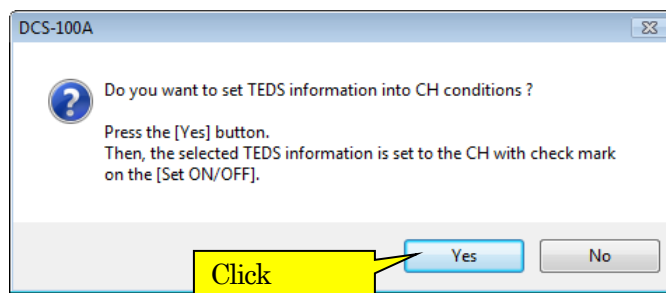
The CH Name is the user data of the ID=58 (Kyowa Electronic Instruments Co., Ltd.) TEDS sensor.

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

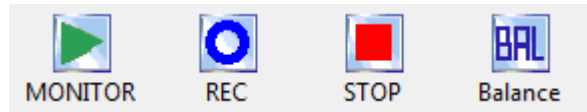
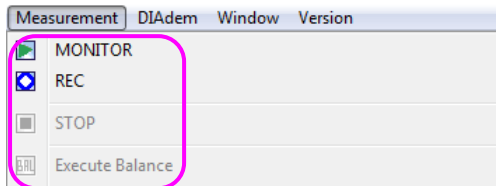
To set the channel conditions, put a check mark on the Set column of the target CH as well as put a check mark next to the target item on the Auto Set Items window.

Make sure the target channel conditions have check marks on the Set column and on the Auto Set Items window.

7. MEASURING DATA

Execute measurements by any of the following.

- Click the Measurement's drop-down menu.
- Click the Measurement's icon from the toolbar.
- Click the Measurement's button from the Meas Operation Panel.

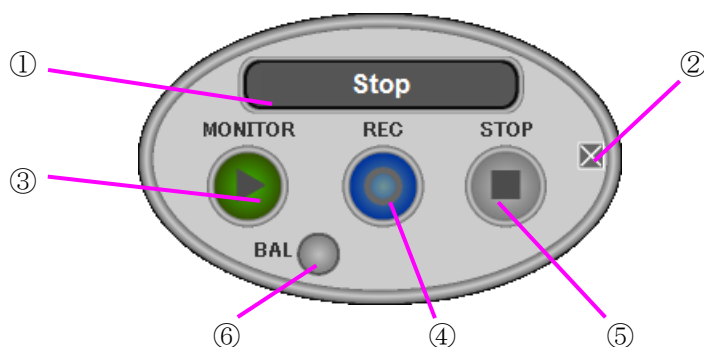


MEMO

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.

7-1 MEAS OPERATION PANEL



① Display state

Displays the measurement state.

Stop	Stopping the measurement.
Monitoring	In the process of monitor measurement.
Recording	Recording data.
Pausing	Pausing recording during the manual measurement.
Wait for Intvl	Interval measurement condition is not satisfied
Wait for Trg	Trigger measurement condition is not satisfied

② button

Closes the Meas Operation Panel.

③ button

Starts monitoring data.

The same operation is available by clicking the Measurement - MONITOR.

④ button

Manual measurement

Starts recording.

Interval measurements

Waiting for the interval measurement.

Trigger measurement

Waiting for the trigger.

The same operation is available by clicking the Measurement - REC/PAUSE.

⑤ button

Stops recording data or stops monitoring data.

The same operation is available by clicking the Measurement - STOP.

⑥ button

Executes balance adjustment and displays the Balance result window.

The same operation is available by clicking the Measurement - Execute Balance.

MEMO

To hide the Meas Operation Panel, click the View - Control Bar - Meas Operation Panel - Disp to release a check mark.

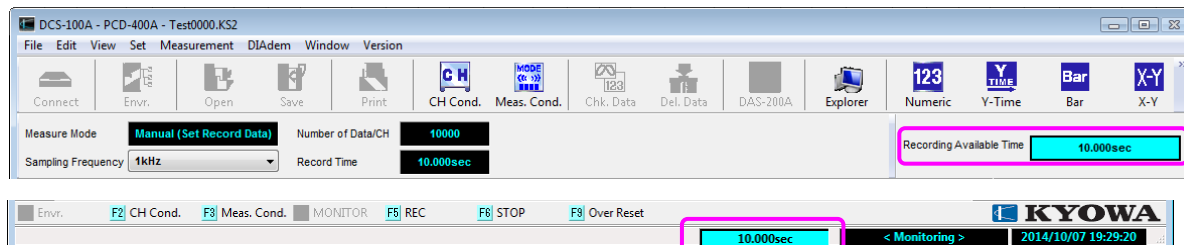
To show the Meas Operation Panel, click the View - Control Bar - Meas Operation Panel - Disp to put a check mark.

7-2 MEASURING MODE BAR AND STATUS BAR

Various items are displayed on the measuring mode bar and status bar.

■Recording available time

When the DCS-100A starts monitoring data, the "recording available time" appears on the measuring mode bar and status bar.



The "recording available time" is as follows.

- When the number of recording data is specified, by using the number of recording data and sampling frequency, the "recording available time" is calculated.
- When the number of recording data is not specified, the maximum recording available time of the Set Save Folder is displayed.

When you start recording data, the "recording available time" starts decreasing.



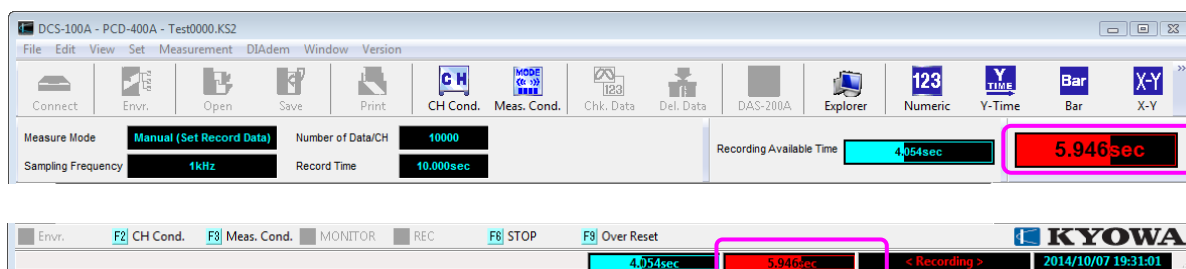
MEMO

- When selecting the "Manual (Set Record Data)" and "Interval" or when executing trigger measurements without setting the end trigger, the number of recording data is specified.
- When selecting the "Manual" or when executing trigger measurements with setting the end trigger, the number of recording data is not specified.
- When executing trigger measurements without setting the end trigger, the "recording available time" is obtained as follows.

Recording Available Time = (The number of recording data + Pre Trigger Data Delay)/Sampling frequency

■Recording time

When the DCS-100A starts monitoring data, the "recording time" (elapsed time after recording starts) appears on the measuring mode bar and status bar.



When the number of recording data is specified, the bar indicates the "recording time."

When you start recording data, the "recording time" starts increasing.



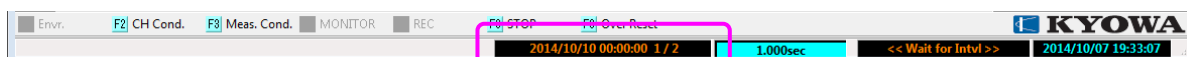
MEMO

When executing trigger measurements without setting the end trigger, the "recording available time" is obtained as follows.

"Recording Available Time" = (The number of recording data + Pre Trigger Data Delay)/Sampling frequency

■ Measuring conditions

When the DCS-100A becomes "Wait for Intvl (Waiting for the interval measurement) during interval measurements or "Wait for Trg (Waiting for the trigger) during the trigger measurements, measuring conditions appear on the status bar.



● Interval measurement

2014/06/12 00:00:00 1 / 2

The "data recording start time" and "the number of repeat times" appear.

● Analog trigger measurement

CH01 > 5000.0mm 1 / 10

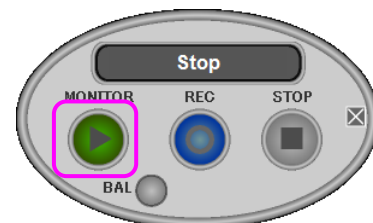
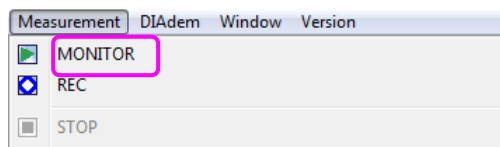
The "trigger CH", "trigger level", and "the number of repeat times" appear.

7-3 MANUAL MEASUREMENT

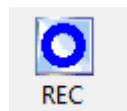
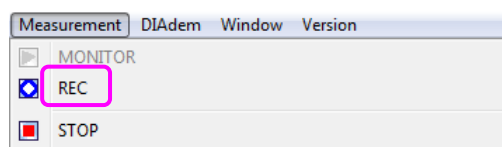
This section describes measurement flow when the Measure mode is Manual or Manual (Set Record Data) mode.

●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.
 - Click the Record icon from the toolbar.
 - Click the **REC** button from the Meas Operation Panel.



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



- (4) To pause the data recording, with the PAUS function in enabled state, execute any of the following operation during recording data.

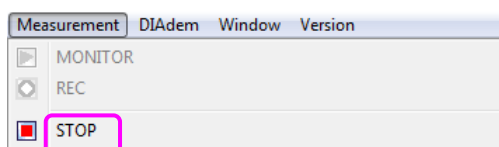
To restart the data recording, execute any of the following operation during pausing.

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

MEMO

Enable/Disable the PAUSE function on the [Detail] tab on the Set Environment window.
(For details, see “3-4 DETAILS TAB.”)

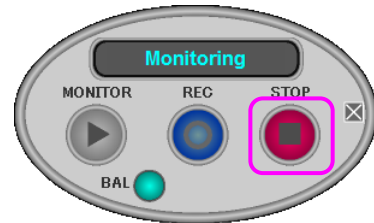
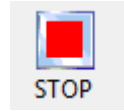
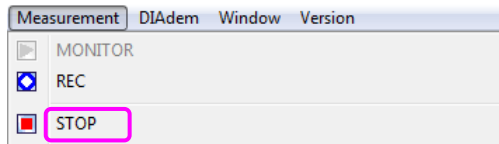
- (5) Stops recording data by any of the following.
 - Click the Measurement - STOP
 - Click the Stop icon from the toolbar.
 - Click the **STOP** button from the Meas Operation Panel.



When Measure mode is the Manual (Set Record Data) mode, the DCS-100A records data until satisfying the Record Data on the Measure Mode window.

(6) Stops 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.



7-3-1 Repeated Recording of Manual Measurements

When selecting the "Manual (Set Record Data)", you can execute the repeated recording by setting the number of repeat times. When recording data for a long time, a data file is created by every pre-set number data (or by every pre-set time) by executing the repeated recording.

■ Measuring conditions

- The Measure mode is "Manual (Set Record Data)."
- You cannot pause the recording operation (by clicking the Measurement - REC/PAUSE or **REC/PAUSE** button on the Meas Operation Panel) while recording data

■ Operation Method

(1) Open the Set Measure Condition window by any of the following.

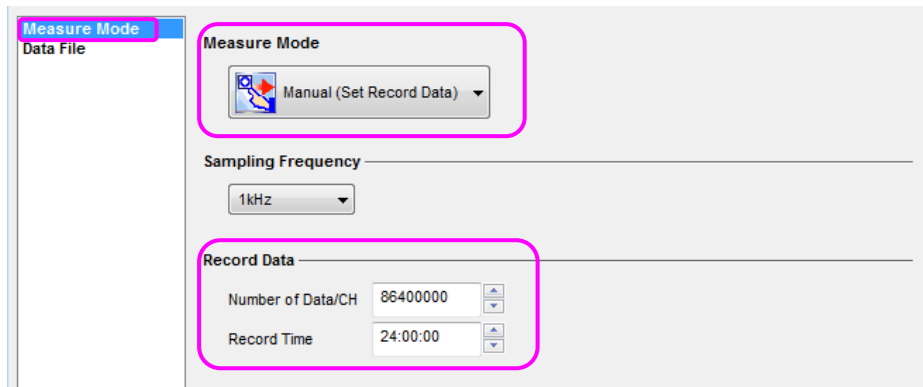
- Click the Set - Set Measure Condition....
- Click the Meas. Cond. icon from the toolbar.

(2) Select the Measure Mode tab.

Select the Manual (Set Record Data).

Select the Number of Data/CH or Record Time.

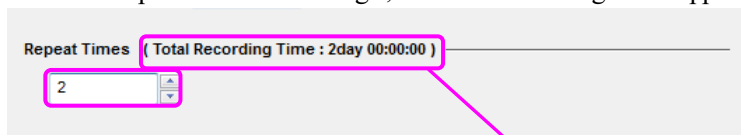
The number of recording data or data-recording time saved in one file is determined.



(3) Select the Repeat Times. (Setting range: 1 to 9999)

The DCS-100A records data by every pre-set number data (or by every pre-set time) for the number of repeat times.

When the "Repeat Times" is 2 or larger, the "Total Recording Time" appears next to the "Repeat Times."



Total Recording Time

$$2 \text{ days} = \text{Record Time } 24:00:00 \times \text{Record Time } 2$$

(4) The DCS-100A starts recording as follows.

(Suppose the recording starts at 8:00, data file name is Test, and File No. is 0000.)

First day, The recording starts at 8:00.

Second day

8:00

Third day, The recording ends at 8:00.

Saved in the Test0000_M0000.KS2.

Saved in the Test0000_M0001.KS2.

After executing the measurement for the pre-set number of repeat times, the DCS-100A becomes monitoring state.

If you stop the repeated recording by clicking the Measurement - REC/PAUSE or **REC/PAUSE** button from the Meas Operation Panel during the repeated recording, the DCS-100A becomes monitoring state.

■Data File Name

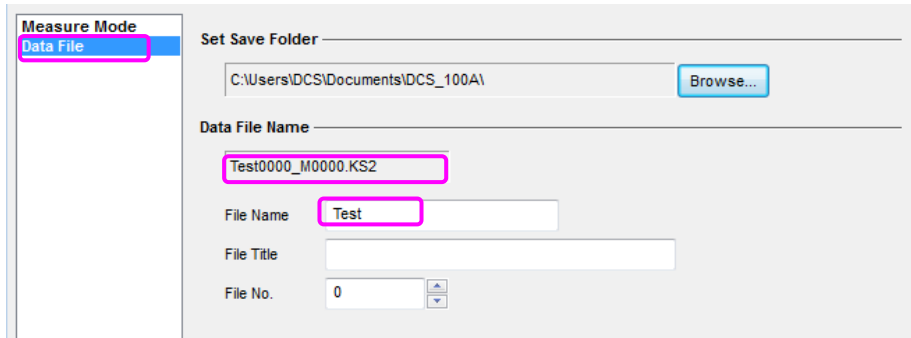
The "Data File Name" is determined by using the items and the "Repeat Times" on the Set Measure Condition window.

- When the Repeat Times is 1.

Data File Name: File name + File No.KS2

- When the Repeat Times is 2 to 9999.

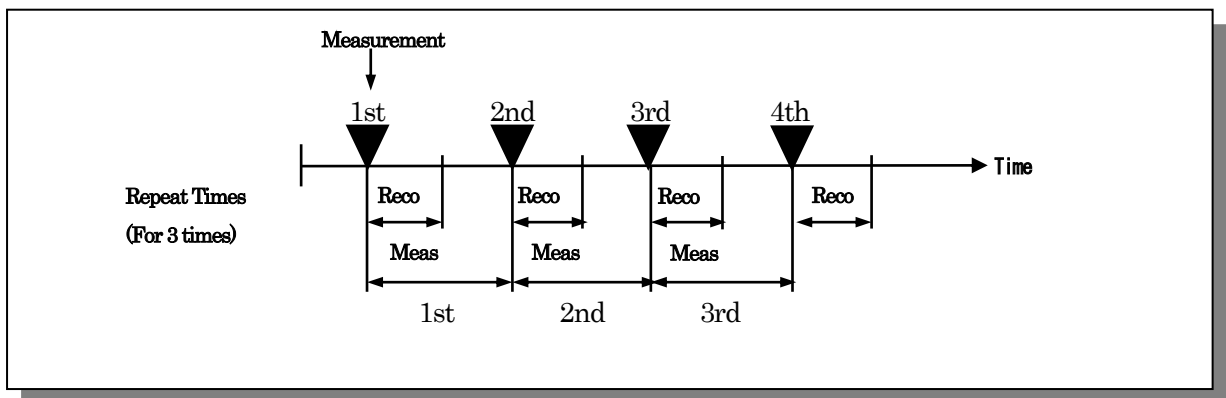
Data File Name: File name + File No._M Repeat Times.KS2



7-4 INTERVAL MEASUREMENT

This section describes measurement flow when the Measure mode is Interval mode.

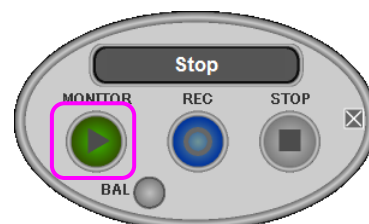
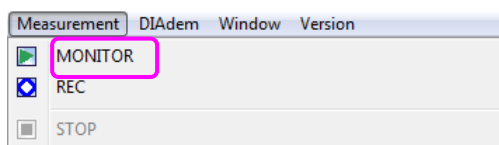
The Interval measurement automatically records data at the pre-set time interval until satisfying the Record Data on the Measure Mode window.



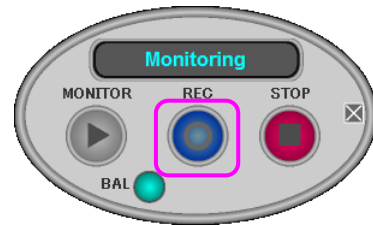
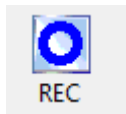
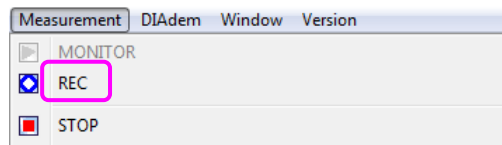
■Operation Method

- (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) Displays the "Wait for Intvl" by any of the following.
- Click the Measurement - REC.
 - Click the Record icon from the toolbar.
 - Click the **REC** button from the Meas Operation Panel.



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

2014/10/10 00:00:00 1 / 2 **<< Wait for Intvl >>**

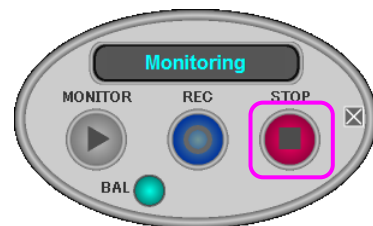
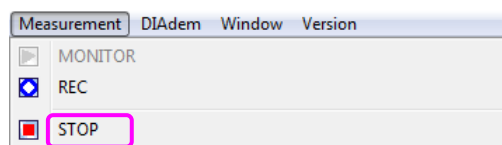
- (3) Recording starts and the recording status appears on the status bar.

5.946sec **< Recording >**

- (4) After executing the measurement for the pre-set repeat times, the DCS-100A becomes monitoring state.

- (5) Stops 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.



7-5 ANALOG TRIGGER MEASUREMENT

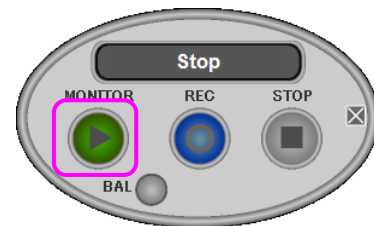
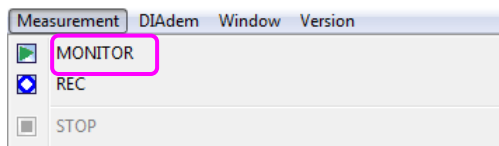
This section describes measurement flow when the Measure mode is Analog Trigger.

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

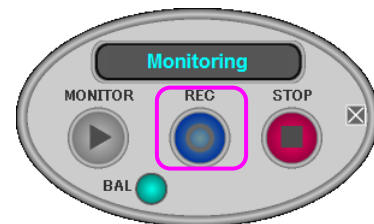
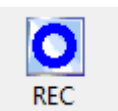
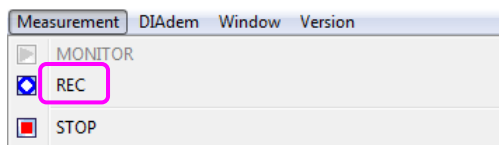
(1) Starts monitoring data by any of the following.

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



(2) Displays the "Wait for Trg" by any of the following.

- Click the Measurement - REC.
- Click the Record icon from the toolbar.
- Click the **REC** button from the Meas Operation Panel.



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



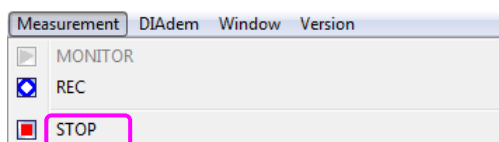
(3) Recording starts and the recording status appears on the status bar.



(4) After executing the measurement for the pre-set repeat times, the DCS-100A becomes monitoring state.

(5) Stops 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.



7-6 BALANCE ADJUSTMENT

Balance adjustment should be executed during monitoring data.

Balance adjustment cannot be executed while the DCS-100A is in stopped state and is recording data.

■ Operation Method

(1) Open the Set CH Condition window by any of the following.

- Click the Set - Set CH Condition....
- Click the CH Cond. icon from the toolbar.

(2) Put a check mark to the target channel on the Balance column on the Set CH Condition window.

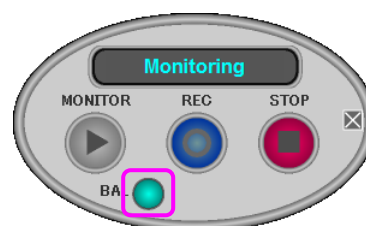
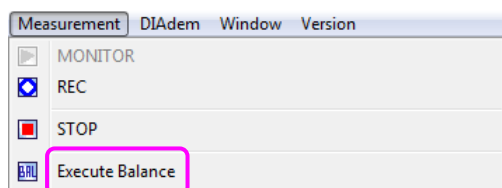
Model	CH	Balance
PCD-400	01	☒
	02	☒
	03	☐
	04	☐

(3) Start 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.

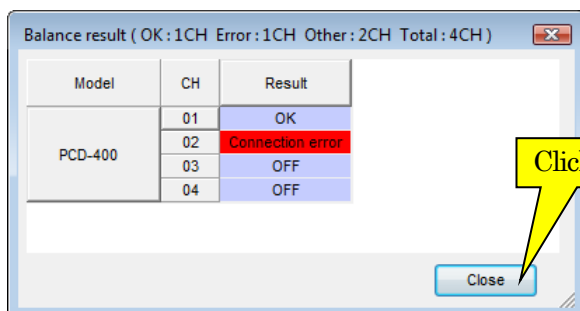
(4) Execute the balance adjustment by any of the following.

- Click the Measurement - Execute Balance.
- Click the Balance icon from the toolbar.
- Click the **BAL** button from the Meas Operation Panel.



(5) The following Balance result window appears.

- Click the **Close** button to monitor data again.



Passed	Working properly
Error	Not working properly.
OFF	N/A (Balance: OFF)
Connection error	Sensor connection error
***	N/A

MEMO

While the DCS-100A is monitoring data, you can change settings on the Balance column on the Set CH Condition window.

7-7 DISPLAYING EXCEEDING VALUE

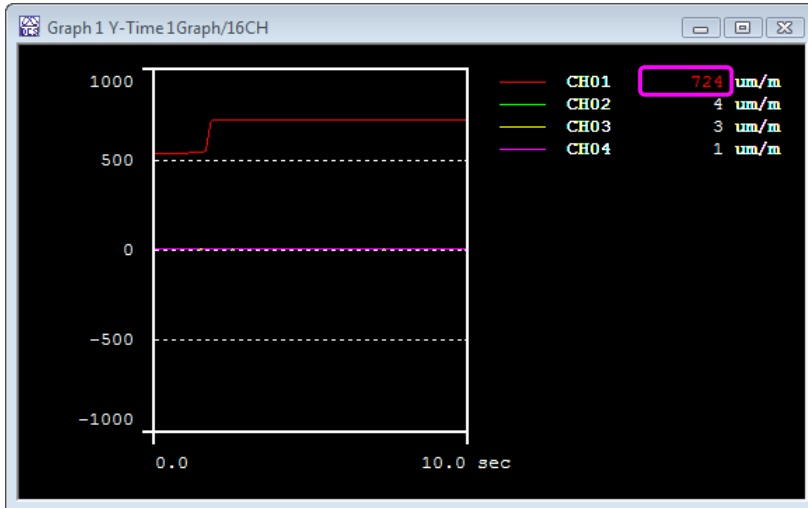
When the measured data exceeds the Chk. Val. (Up) or Chk. Val. (Down) once during monitoring and recording data, since then, the measured value on numeric and graph windows are displayed in red.

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 the CH01 exceeded the Chk. Val. (Up) value.



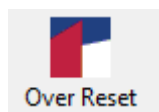
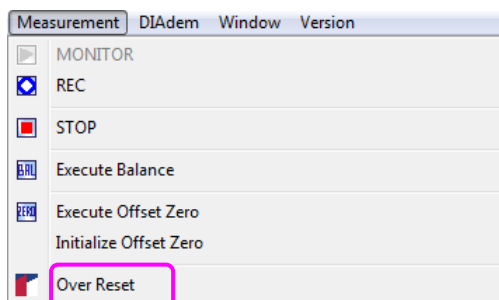
MEMO

For setting the Chk. Val. (Up) and Chk. Val. (Down), click the Set - Set CH Condition... for displaying the Set CH Condition window.

■Over Reset

Reset the exceeding state to the previous state [before exceeding the check value (up) or check value (down)] by any of the following.

- Click the Measurement – Over Reset.
- Click the Over Reset icon from the toolbar.



7-8 STATIC MEASUREMENT

The Measure 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

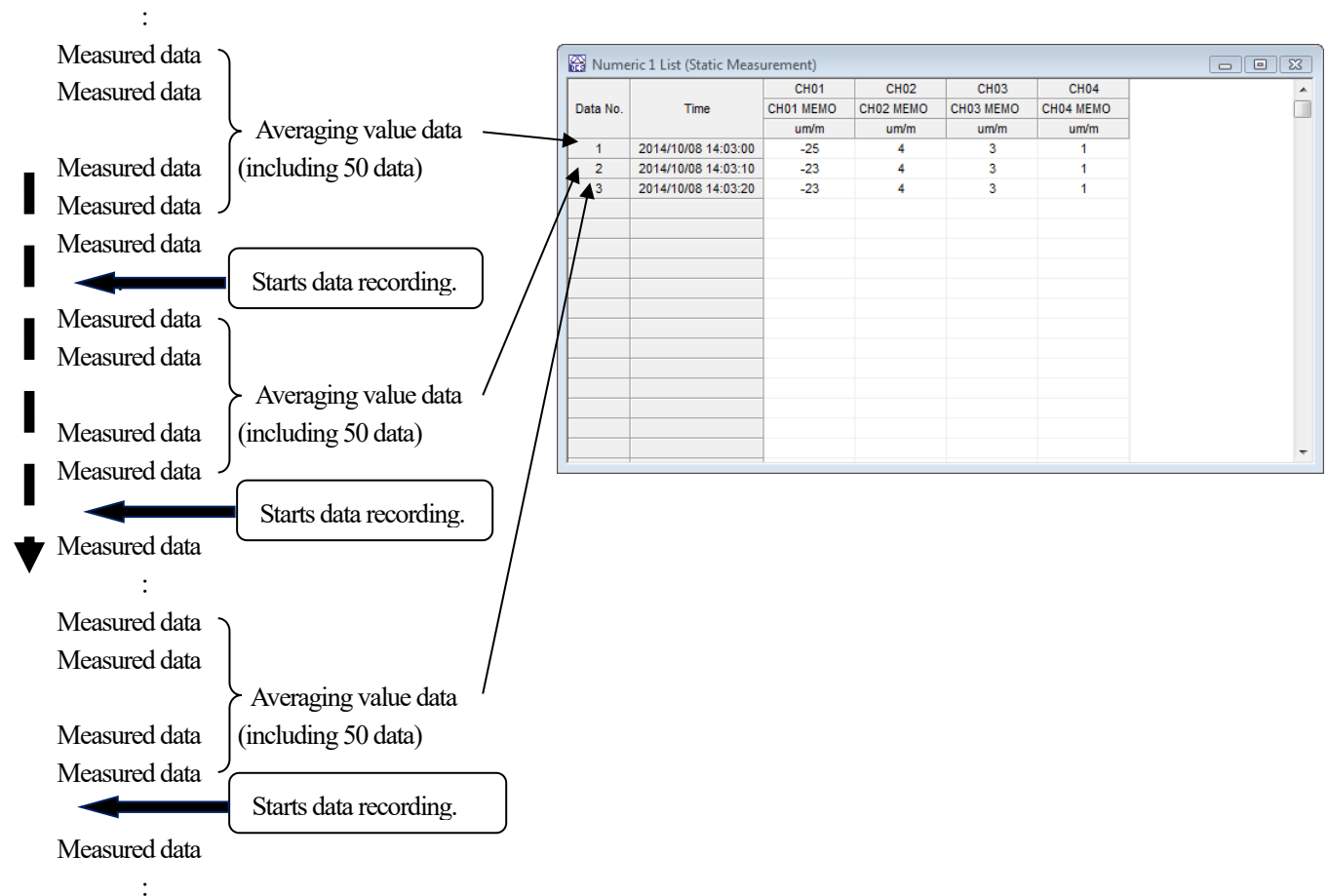
- The Measure mode is "Manual" and "Interval" modes only.
- The sampling frequency is 1k Hz or higher.

■ Operation flow

The averaging value data is the average value immediately after starting the recording.

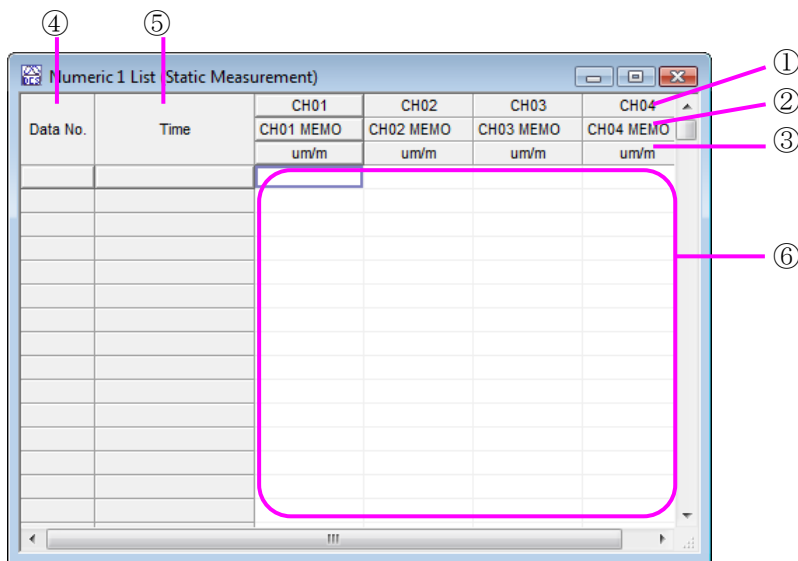
[Example]

When "the number of average value/CH" is 50, the averaging value data indicates the average value of 50 data immediately after starting the recording.



7-8-1 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 Time
- ⑥ The averaging value data of the CH

MEMO

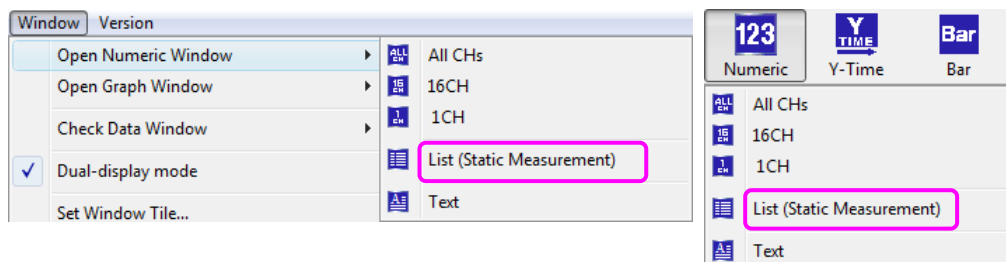
The "Static measurement" appears on the title on the Numeric Lists of numeric windows and Y-Cycle graphs on graph windows.



How to display

Open the numeric window by any of the following.

- Click the Window - Open Numeric Window - List (Static Measurement).
- Point to Numeric icon from the toolbar and select the List (Static Measurement).



● **To hide the target CH column.**

To hide the target CH column, press the **Delete** key.

- (1) Point a mouse cursor onto the target channel.

Data No.	Time	CH01	CH02	CH03	CH04
		CH01 MEMO	CH02 MEMO	CH03 MEMO	CH04 MEMO
		um/m	um/m	um/m	um/m

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

Data No.	Time	CH01	CH04
		CH01 MEMO	CH04 MEMO
		um/m	um/m

● **To change the order of channels.**

To change the order of channels, drag and drop the fixed cells.

- (1) Drag the target fixed cells.

Data No.	Time	CH01	CH02	CH03	CH04
		CH01 MEMO	CH02 MEMO	CH03 MEMO	CH04 MEMO
		um/m	um/m	um/m	um/m

- (2) Drop them to change the order of channels.

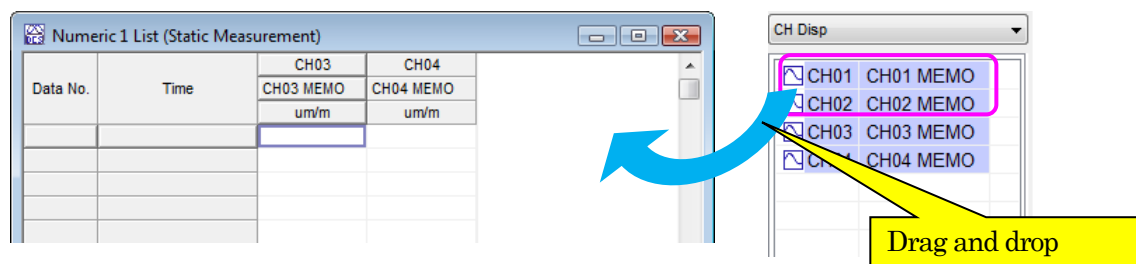
Data No.	Time	CH01	CH03	CH02	CH04
		CH01 MEMO	CH03 MEMO	CH02 MEMO	CH04 MEMO
		um/m	um/m	um/m	um/m

● **To display the target channels.**

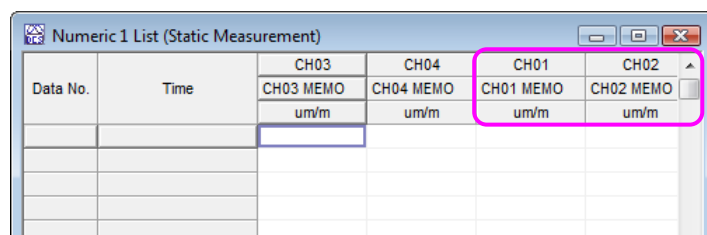
To display the target channels, drag and drop the channels on the CH Disp bar to the Numeric List window.

- (1) Select the target channels on the CH Disp Bar.

Drag and drop them to the Numeric List window to display the target channels.



- (2) The target channels appear on the window.



7-8-2 Data file name

The name of the CSV format file is determined by using the items on the Set Measure Condition window.

The name of the CSV format file: File name File No. . CSV

Data File Name

Test0000.CSV

File Name: Test

File Title:

File No.: 0

MEMO

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

NOTE

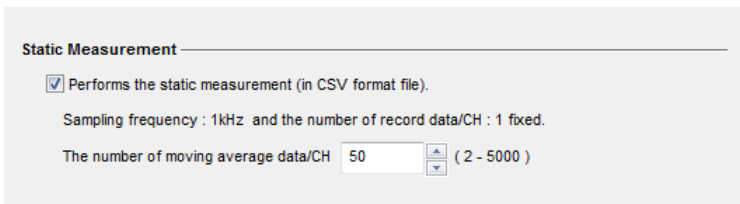
You cannot reproduce the CSV format files with the DCS-100A.
For reproducing the CSV format files, use the optional software DAS-200A.

7-8-3 Manual measurement

This section describes measurement flow when Measure mode is Manual.

■Operation Method

- (1) Open the Set Measure Condition window by any of the following.
 - Click the Set - Set Measure Condition....
 - Click the Meas. Cond. icon from the toolbar.
- (2) Click the "Measure Mode" on the left and select "Manual."
- (3) Put a check mark to the check box next to the "Performs the static measurement (in CSV format file)."
Then select the number of moving average data/channels from the drop-down list.



Static Measurement

☒ Performs the static measurement (in CSV format file).

Sampling frequency : 1kHz and the number of record data/CH : 1 fixed.

The number of moving average data/CH 50 (2 - 5000)

MEMO

The number of average value/CH: The number of data within 2 to 5 seconds.

[Example]

Suppose the sampling frequency is 100 Hz.

The number of average value/CH is 2 to 500 (100Hz × 5 seconds).

- (4) Start 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 averaging value data appears on windows other than the Numeric Lists of numeric windows and Y-Cycle graphs of graph windows.

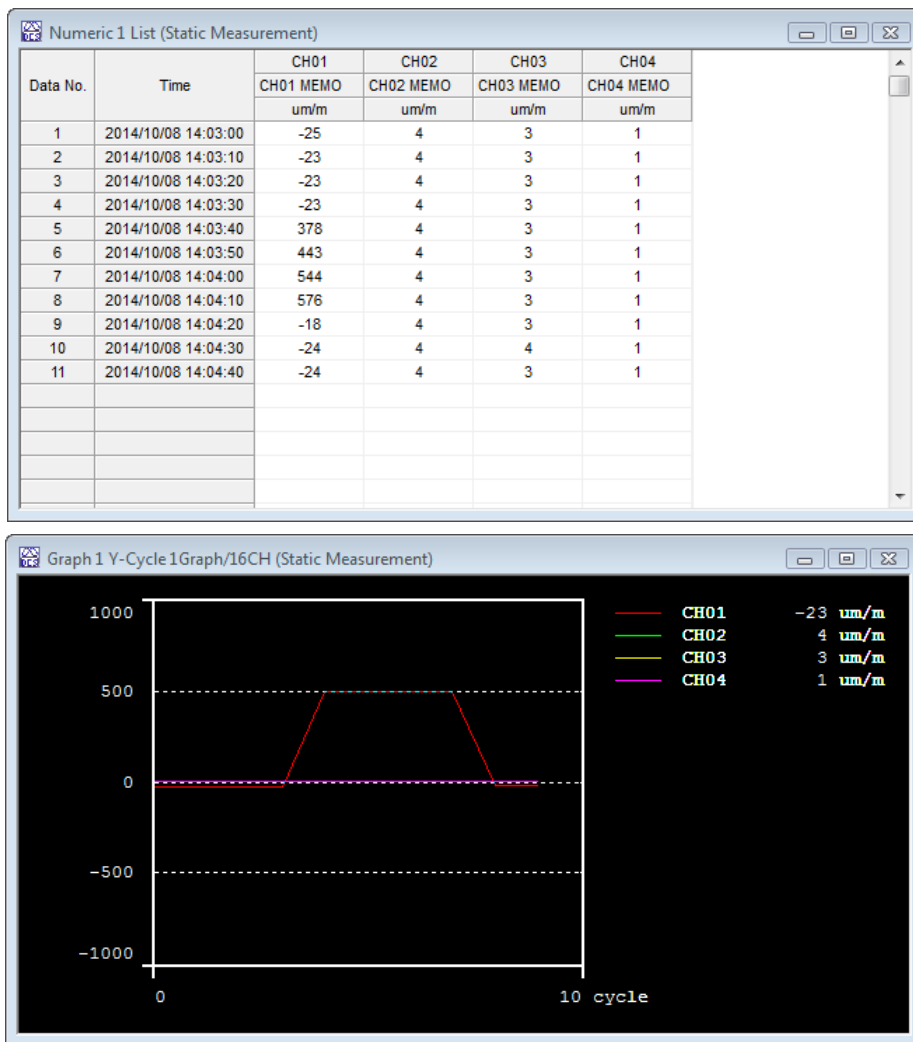
- (5) Record data by any of the following.
- Click the Measurement - REC.
 - Click the Record icon from the toolbar.
 - Click the **REC** button from the Meas Operation Panel.

The averaging value data is saved in the CSV format file in every recording operation.

It appears on the Numeric Lists of numeric windows and Y-Cycle graphs of graph windows.

[Example]

Suppose the DCS-100A recorded data for 10 times.



- (6) Stop 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.

7-8-4 Interval measurement

This section describes measurement flow when the Measure mode is Interval mode.

- (1) Open the Set Measure Condition window by any of the following.
 - Click the Set - Set Measure Condition....
 - Click the Meas. Cond. icon from the toolbar.
- (2) Click the "Measure Mode" on the left and select "Interval."
- (3) Put a check mark to the check box next to the "Performs the static measurement (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) Start 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 averaging value data appears on windows other than the Numeric Lists of numeric windows and Y-Cycle graphs of graph windows.

- (6) Displays the "Wait for Intvl" by any of the following.
- Click the Measurement - REC.
 - Click the Record icon from the toolbar.
 - Click the **REC** 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]

Suppose the DCS-100A recorded data with the following conditions.

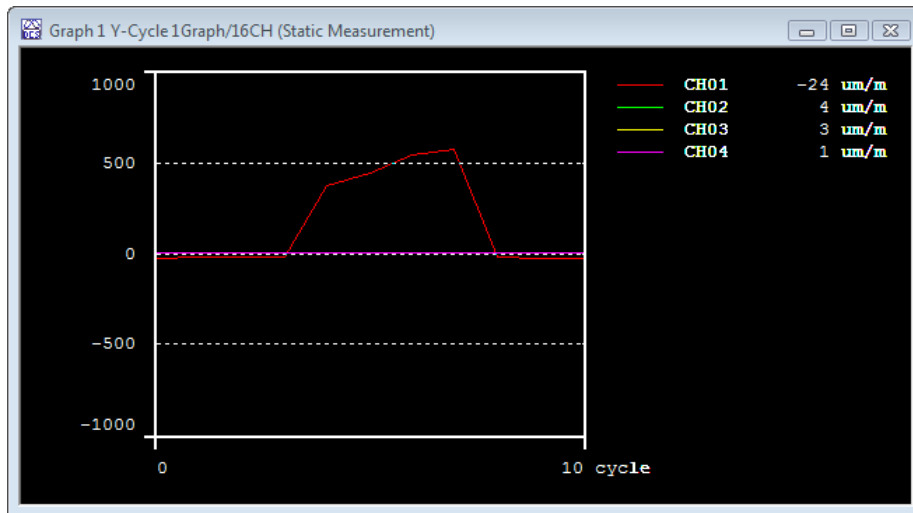
Recording start time: 2014/10/08 14:03:00

The number of repeat times: 10

Interval time: 10 seconds

Numeric 1 List (Static Measurement)

Data No.	Time	CH01	CH02	CH03	CH04
		CH01 MEMO	CH02 MEMO	CH03 MEMO	CH04 MEMO
		um/m	um/m	um/m	um/m
1	2014/10/08 14:03:00	-25	4	3	1
2	2014/10/08 14:03:10	-23	4	3	1
3	2014/10/08 14:03:20	-23	4	3	1
4	2014/10/08 14:03:30	-23	4	3	1
5	2014/10/08 14:03:40	378	4	3	1
6	2014/10/08 14:03:50	443	4	3	1
7	2014/10/08 14:04:00	544	4	3	1
8	2014/10/08 14:04:10	576	4	3	1
9	2014/10/08 14:04:20	-18	4	3	1
10	2014/10/08 14:04:30	-24	4	4	1
11	2014/10/08 14:04:40	-24	4	3	1



After satisfying the Record Data on the Measure mode window or after executing the operations as described below, 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) Stop 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. SAVING AND LOADING MEAS CONDITION FILE

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

8-1 SAVING MEAS CONDITION FILE WITH A NAME

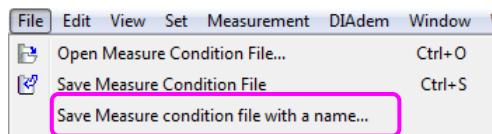
This section describes how to save the current Meas condition to the Meas condition file (Extension: P4H).

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 condition file includes environment settings, channel conditions, measuring conditions, display conditions on graphs and on numeric windows, and arithmetic operation conditions (optional).

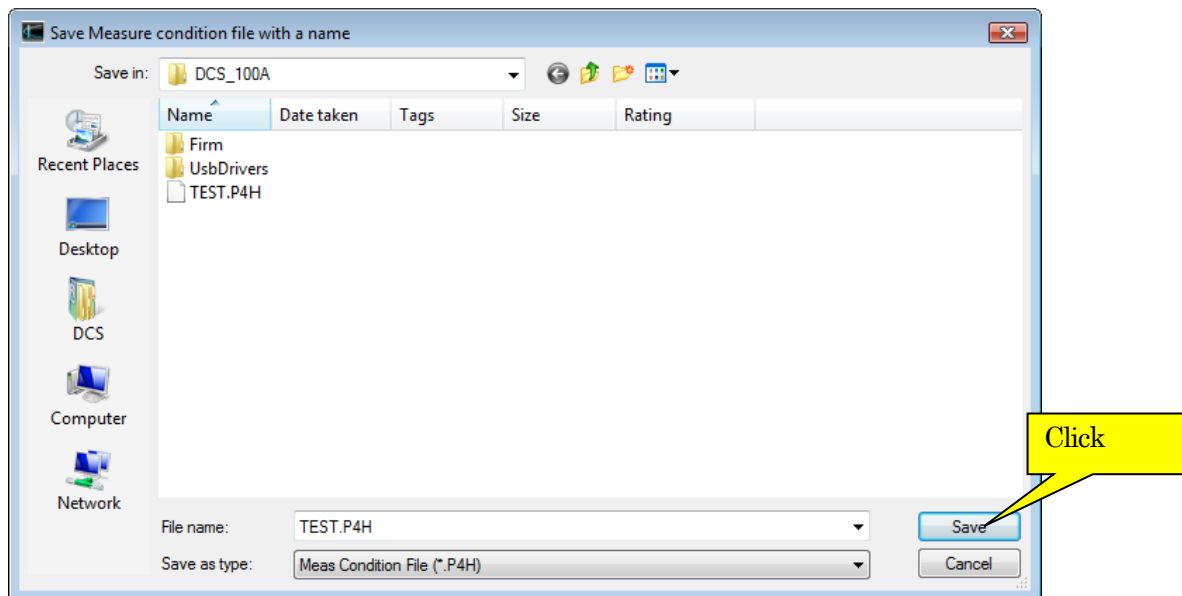
■Operation Method

- (1) Click the File - Save Meas Condition file with a name... to open the Save Meas Condition file with a name window.



- (2) Select the Save in folder and input the File name.

Click the **Save** button.



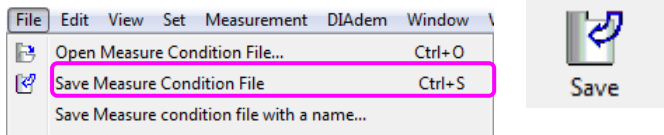
8-2 SAVINF MEAS CONDITION FILE

This section describes how to save the current Meas condition to the existing Meas condition file (Extension: P4H).

■Operation Method

Save the Meas condition file by any of the following.

- Click the File - Save Meas Condition File.
- Click the Save icon from the toolbar.



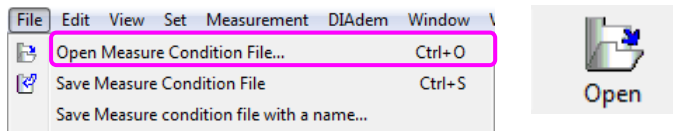
8-3 OPENING MEAS CONDITION FILE

This section describes how to load the previously saved Meas condition file (Extension: P4H).

■Operation Method

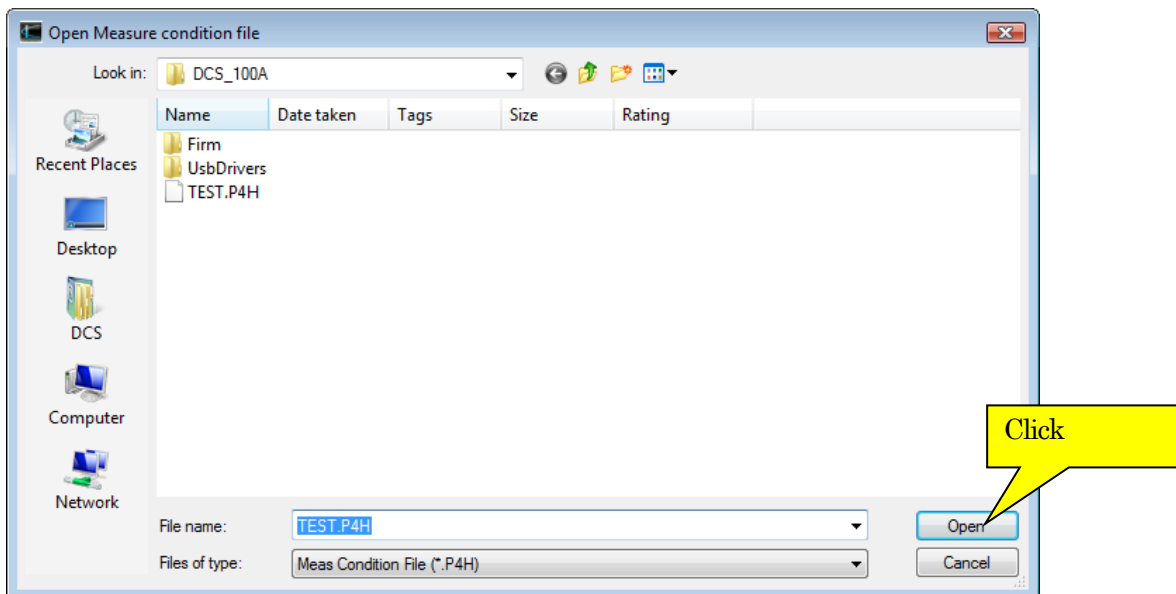
- (1) Open the Open Measure Condition File window by any of the following.

- Click the File - Open Measure Condition File.
- Click the Open icon from the toolbar.



- (2) Select the file name or folder name.

Click the Open button.



9. APPENDIX

- The maximum number of data is 50,000 data/CH.

For the static measurements, the maximum number of data on Y-Cycle graphs is 1000.

- The restrictions are described as follows.

	Manual measurement	Interval measurement	Trigger measurement
Measure mode	Manual and Manual (Set Record Data)	Interval	Analog Trigger
Sampling frequency	No limit (1 to 10k Hz)		
The number of channels	No limit (1 to 16 channels)		
The number of repeat times	Manual measurement: 1 fixed Manual (Set Record Data) *1	*1	
Maximum data file size	Up to the hard disk free space		
PAUSE function	Available *3	Not available	
Execute balance adjustment.	Available while monitoring data only (Not available while stopping/recording data.)		
Offset Zero	Available while monitoring data only (Not available while stopping/recording data.)		
DCS-101A Recording moving image.	Available *2	Not available	
DCS-101A Arithmetic operations	Available		
DCS-101A FFT analysis	Available		
DCS-104A Recording GPS data.	Available *2	Not available	

	Static Measurement
Measure mode	Manual, Interval
Sampling frequency	1 to 1kHz
The number of channels	No limit (1 to 16 channels)
The number of repeat times	Manual measurement: 1 fixed Interval measurement: *1
Maximum data file size	Up to the hard disk free space
PAUSE function	Not available
Execute balance adjustment.	Available while monitoring data only (Not available while stopping/recording data.)
Offset Zero	Available while monitoring data only (Not available while stopping/recording data.)
DCS-101A Recording moving image.	Not available
DCS-101A Arithmetic operations	Available
DCS-101A FFT analysis	Not available
DCS-104A Recording GPS data.	Not available

*1 Setting range: 1 to 9999. If you set "0," the actual number of the repeat times is 65535.

*2 The number of repeat times: 1 fixed

*3 Not available when the number of repeat times is not 1.

Not available when using the DCS-101A (Recording moving image) and DCS-104A (Recording GPS data).

10. SPECIFICATIONS

Number of connected units	Maximum 4 measuring units (maximum 16 channels)
Interface	USB
Saving format	Save data in the PC. (KYOWA standard file format KS2)
Channel conditions	Channels to be measured, Strain mode, Range, Low-pass filter, Balance adjustment, Calibr. const., Offset, Gage factor, Unit, CH Name, Meas. Range, Deci Digits, Rated Capacity, Rated Output, Chk. Val. (up), Chk. Val. (down), Offset ZERO (Display items can freely be selected.)
Sampling frequency	1 Hz to 10k Hz (1/2/5 system)
Measure mode	Manual, Manual (Set Record Data), Interval, Analog Trigger
Manual measurement	Records data from REC to STOP or from REC 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 the pre-set trigger conditions. (Trigger level value: Fixed)
Trigger condition	
End trigger	Settable
Delay	Up to 640,000 data/CH for both start and end analog trigger measurement. *The delay time varies with the number of channels to be measured.
Trigger channel	Any 1 channel
Trigger level	A physical quantity
Trigger slope	Positive or Negative
Static measurement	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. *Measure Mode: Manual and Interval only.
Repeated recording of manual measurements	When recording data for a long time, a data file is created by every pre-set number data (or by every pre-set time) by executing the repeated recording and is saved in the KYOWA standard file format KS2. *Measure Mode: Manual (Set Record Data) only.
Setting environment	
Setting hardware configuration	Sets the unit name and configuration. Capable of setting the unit name to the PCD-400 Series. Capable of loading the number of controllable units from the PCD-400 Series.
Automated conversion of file formats	After the measurement is completed, the DCS-100A automatically converts the file formats (CSV format, XLS format, XLSX format and RPC III format).
Arbitrary units	Arbitrary 3 units can be registered.