

INSTRUCTION MANUAL

EDX-3000A/B

MEMORY RECORDER/ANALYZER

SOFTWARE

【FOR RECORDING DATA】

Thank you for purchasing KYOWA's product EDX-3000A/B Memory Recorder/Analyzer.

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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Kyowa Electronic Instruments Co., Ltd. assumes no liability for any damage resulting from the use of the software.

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 EDX-3000A/B Memory Recorder/Analyzer (hereinafter referred to as the EDX-3000A/B).

Example:

NOTE

Describes essential instructions for handling the EDX-3000A/B.

MEMO

Describes reference information for handling the EDX-3000A/B.

ESSENTIAL PRECAUTIONS FOR USING THE EDX-3000A/B

1. WHEN USING EDX-3000A/B WITH USB PORT

USB port of the EDX-3000A/B is equipped based on the assumption that is connected with general external memory units. It should be noted that when connecting external devices (USB mouse, USB keyboard, etc.) other than the external memory unit, you cannot use the product that requires to assemble the new driver software. In addition, during the measurement, do not install or uninstall the external memory unit or external input operation device that is connected to the USB port. Or, measuring operation may be adversely affected to cause faulty operation.

2. COUNTERMEASURES AGAINST COMPUTER VIRUS

The operating system of the EDX-3000A is Windows XP, and the operating system of the EDX-3000B is Windows Embedded 8.1 Industry Pro. KYOWA conducted virus scan by using the antivirus software published from Trend Micro Incorporated before shipment, and we confirm that the EDX-3000A/B is not infected with virus. However, anti-virus software is not installed to the EDX-3000A/B. Therefore, there is a chance that the EDX-3000A/B may be infected with a virus via memory devices such as USB memory stick or from network. If your EDX-3000A/B is infected with a virus, not only it may cause your computer to not operate correctly but also it may infect others. Carefully read and fully understand the following precautions before using the EDX-3000A/B.

2.1 How to prevent future infections from computer virus

- Do not install the software other than specified to the EDX-3000A/B.
- Do not activate the software other than EDX-3000A/B Software since the other software has no relation with the EDX-3000A/B.
- Scan a target USB memory stick before using.
- Connect the EDX-3000A/B to a highly reliable network environment only.
- Do not connect a network cable unless you really need to.
- Share a folder if necessary.
- After using a USB memory or connecting the EDX-3000A/B to network, regularly run a virus scan of the EDX-3000A/B.

2.2 How to find computer virus

There are two methods of virus detecting.

- Use another PC.

- 1) Connect the EDX-3000A/B and a PC that anti-virus software is already installed with a network cable.
- 2) Share a drive or folder of the EDX-3000A/B before virus check.

Run a virus check of the EDX-3000A/B from the PC.

- Execute virus check by the EDX-3000A/B.

- 1) Download a virus check program with another PC and copy the virus check program to a USB memory stick..

It is recommended to use the USB memory stick that has a write-protect switch.

In addition, be sure to use the latest virus check program.

- 2) Connect a mouse, key board, and USB memory stick to the EDX-3000A/B. Run a virus scan on the EDX-3000A/B by using the downloaded virus check program.

2.3 If you do have virus

- EDX-3000A

- If you have a System Restore Kit of the EDX-3000A

Restore the EDX-3000A according to the Instruction Manual.

Note that a built-in driver is all initialized after restoring the EDX-3000A. Check that necessary files are not infected with the virus and copy them to other media.

- If you do not have a System Restore Kit of the EDX-3000A

Contact KYOWA or our representatives for system restore.

We charge for the system restore.

- EDX-3000B

Contact KYOWA or our representatives for system restore.

We charge for the system restore.

2.4 Security patches and service packs of Microsoft

If you connect the EDX-3000B to the internet, you can install the security patches and service packs of Microsoft by using the Windows Update. However, if you install the software, the EDX-3000B may become unstable. We shall not be liable for any action taken by the EDX-3000B since new operating environment is different from ours. Installing the software is not without risks, do this at your own risk. In addition, if the EDX-3000B becomes unstable after installing the software, restore the EDX-3000B as described in “2.3”.

2.5 Installing anti-virus software

Generally, antivirus software can cause a dramatic increase in CPU usage since it is loaded in memory at all time and monitor the reading and writing of files and network. In addition, it is necessary to connect to the Internet all the time for updating the antivirus pattern file to the latest one. If such actions are taken during measurement, the EDX-3000A/B may not measure the data correctly. Therefore, we did not install the antivirus software on the EDX-3000A/B. However, if you really need to install antivirus software, fully understand the following items and install the anti-virus software at your own risk.

- If you have antivirus software installed, we shall not be liable to for any action taken by the EDX-3000A/B.
If the EDX-3000A/B becomes unstable after installing the software, restore the EDX-3000A/B as described in “2.3”.
- In the case of EDX-3000A, Install the antivirus software compatible to the Windows XP Service Pack 3. In the case of EDX-3000B, Install the antivirus software compatible to the Windows Embedded 8.1 Industry.
- It is recommended to turn OFF the features of anti-virus software such as real-time protection, auto-protect option during measurement. Or, the EDX-3000A/B may not measure data correctly.
- Quit the EDX-3000A/B software before updating a pattern file.
- If the EDX-3000A/B is send to KYOWA because of an internal driver failure or for periodic replacement, **customer installed software items are all deleted** since we newly run setup the EDX-3000A/B.
- We recommend you to conduct pretest based on the same measuring conditions before measurement.
Conduct pretest before measurement since effect of the antivirus software is not known.

3. About figures in this instruction manual

In this manual, we use images of EDX-3000A in order to explain unless otherwise noted.

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1. OUTLINE

This Instruction Manual describes operations of the EDX-3000A/B.

For using the EDX-3000A/B, see separate volume of Instruction Manual EDX-3000A/B for Hardware.

The EDX-3000A/B is an all-in-one type Memory Recorder/Analyzer that is capable of displaying, recording, as well as analyzing data.

For recording data, the EDX-3000A/B starts measurement according to preset measuring conditions. Then, the measured data is monitor displayed and stored in the hard disk at the same time.

- 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.
- The EDX-3000A/B can conduct various real-time processions (recording moving image data, calculating procession, averaging procession, and FFT analysis) as well as recording data.
Therefore, you can record the moving image data during testing and can check the calculation and analysis results in real-time.
- You can easily operate the EDX-3000A/B by using buttons on the Meas Operation Panel with a feeling like using a remote controller.
- The EDX-3000A/B can measure the data with key operation by registering the measuring operation to function keys.
- While recording data and if the power is lost, the EDX-3000A/B automatically shuts down by itself.
Therefore, you can measure data with ease without destroying any data file.
- The EDX-3000A/B can display the recorded data in numeric value or on graph, edit, cut out and convert the recorded data after the measurement.
The EDX-3000A/B can load the recorded data by using the commercially available software since the EDX-3000A/B can convert the recorded data into CSV format file.
- The EDX-3000A/B can conduct various calculations and analysis with the recorded data after the measurement finishes.
Therefore, you can check the processed results without moving data files to a PC.
- 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.

1-1 STARTING & EXITING EDX-3000A/B



< Outside drawing of EDX-3000A >



< Outside drawing of EDX-3000B >

■ Starting the EDX-3000A/B

Press the **POWER** button on the EDX-3000A/B front pane for 2 seconds to start the EDX-3000A/B.

■ Exiting the EDX-3000A/B

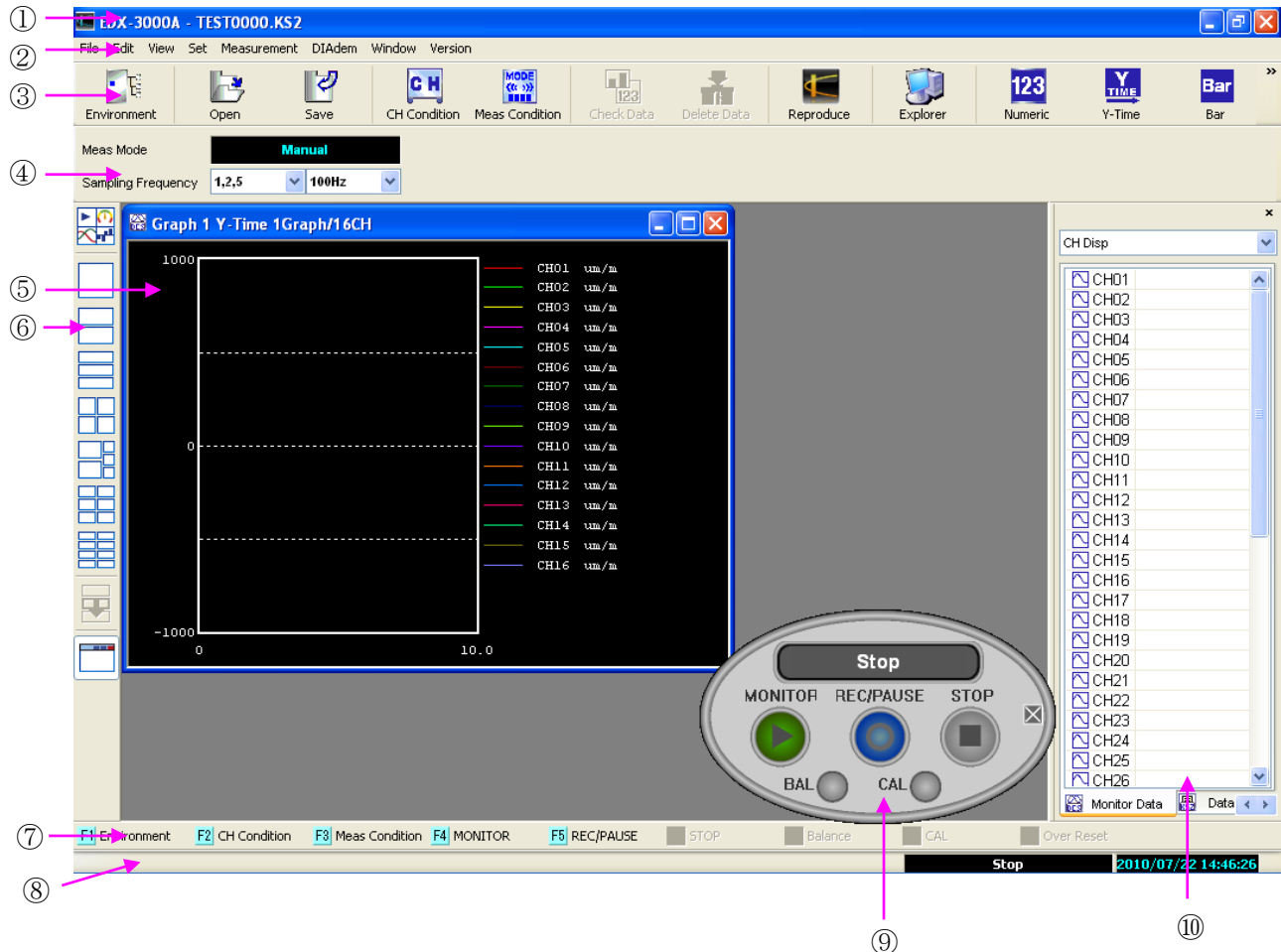
Press the **POWER** button on the front panel for 2 seconds while monitoring the data and the EDX-3000A/B exits.

The next time you reboot the EDX-3000A/B, the EDX-3000A/B starts with the measuring conditions and window at the end of the previous exit.

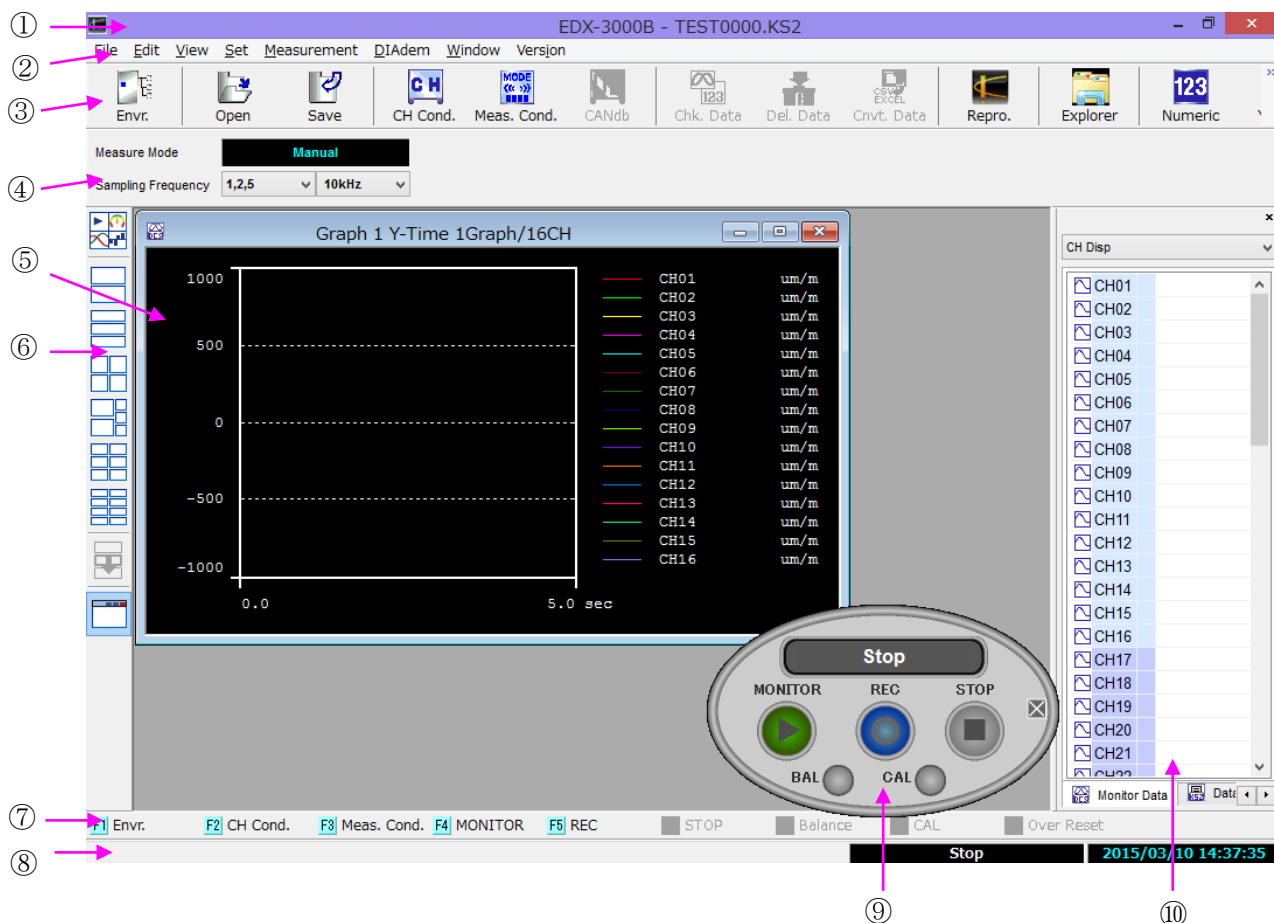
2. BASE OPERATION

2-1 BASE WINDOW

Starts the EDX-3000A/B and the following main window appears.



< Main window of EDX-3000A >

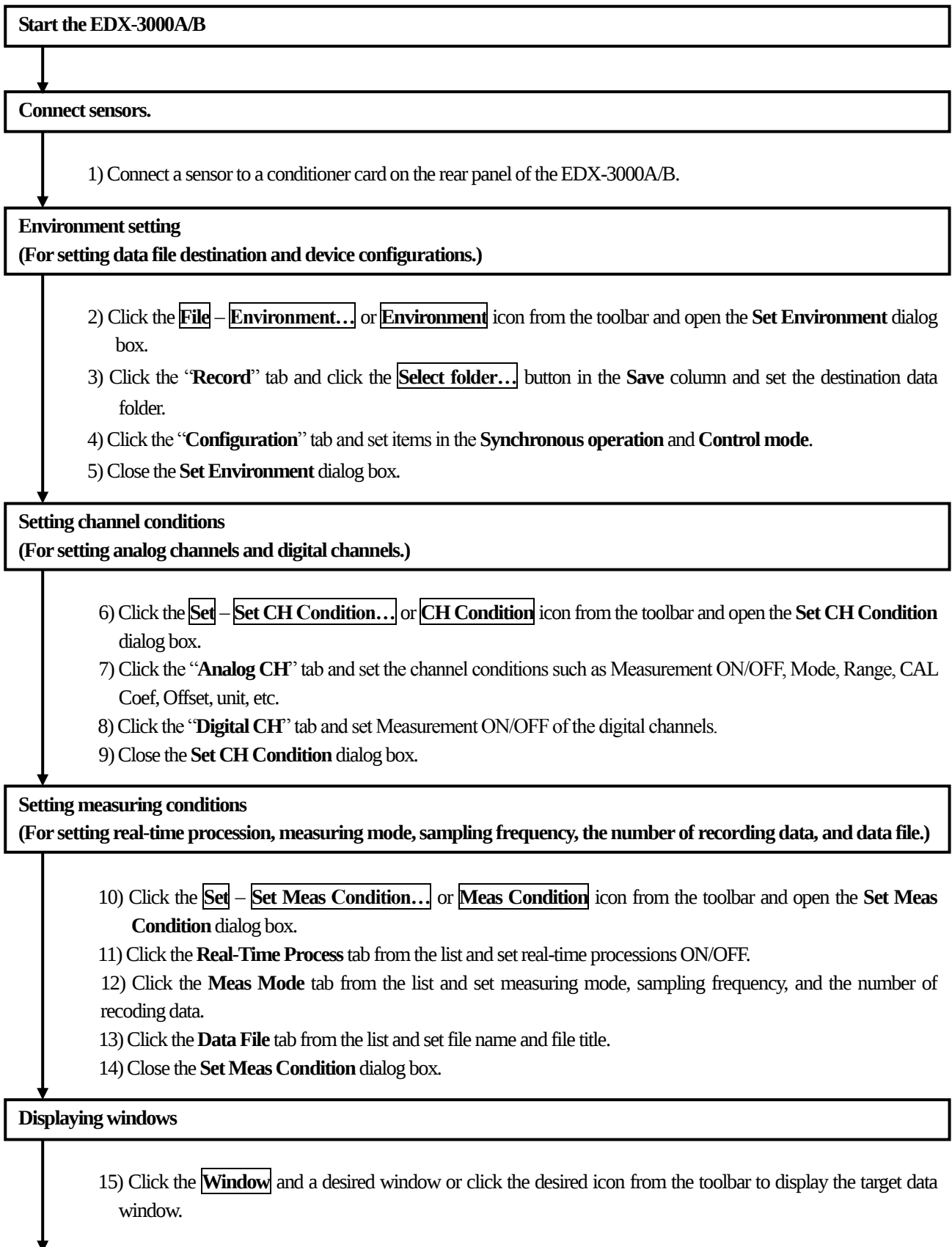


< Main window of EDX-3000B >

- | | |
|------------------------|---|
| ① Main Title Bar | Displays model, setting of synchronous operation, data file name, and file title. |
| ② Menu Bar | Provided with pull-down menus. |
| ③ Tool Bar | Icons of various menu bar functions are displayed.
You can add, remove, and sort icons arbitrary. |
| ④ Meas Mode Bar | Displays current Meas mode, sampling frequency, the number of recorded data, and recording time. |
| ⑤ Window | Data is numerically displayed or is displayed on a graph. |
| ⑥ Window Display Bar | For sorting windows and for showing or hiding the title bar of the window. |
| ⑦ Function Key Bar | Displays the registered tool bar buttons on the function key.
You can add or remove the registered tool bar button arbitrary. |
| ⑧ Status Bar | Displays measuring state, recording state and the current time. |
| ⑨ Meas Operation Panel | Measures the data by using buttons on the Meas Operation Panel with a feeling like using a remote controller. |
| ⑩ CH Display Bar | Displays the current measuring channels or data checking channels.
You can set the target CH on the display by dragging the target CH. |

2-2 BASIC MEASURING OPERATIONS

This section describes the basic measuring operations of the EDX-3000A/B.



(Next page)

(Previous page)

Measuring

- 16) Click the **MONITOR** button on the Meas Operation Panel. The measurement starts and the EDX-3000A/B becomes monitoring state and the data is displayed on the window.
- 17) Click the **REC/PAUSE** button and the data recording starts according to the Meas Mode.
- 18) Click the **STOP** button or after finishing recording the data for the preset number, the EDX-3000A/B gets back to monitoring state.
- 19) While the EDX-3000A/B is in monitoring state, click the **STOP** button again. The EDX-3000A/B stops measuring.

Checking data

- 20) Click the **Measurement** – **Latest Recorded Data File** or click the **Check Data** icon from the toolbar to display the data checking dialog box.
For unnecessary data, click the **Measurement** – **Latest Recorded Data File** or click the **Delete Data** from the tool bar for deleting.
For measuring the data again, click the **MONITOR** button. (See item 16).

Reproducing data

- 21) 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.

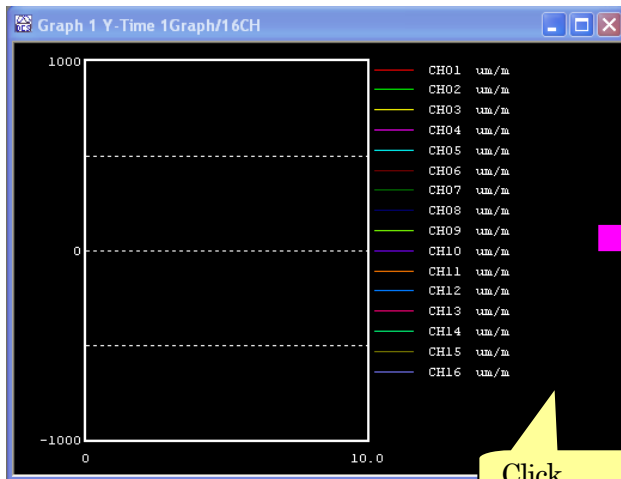
Exiting the EDX-3000A/B

2-3 BASIC OPERATIONS OF WINDOW

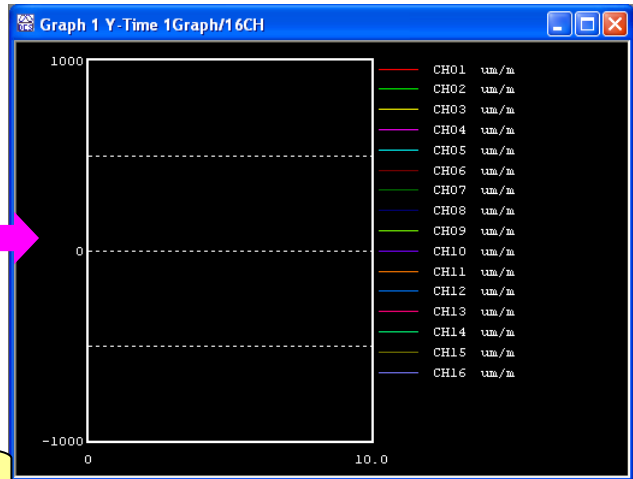
2-3-1 Active and Inactive Windows

To activate the desired window, click the target window.
Colors of title bar and frame are changed.

■ Inactive window

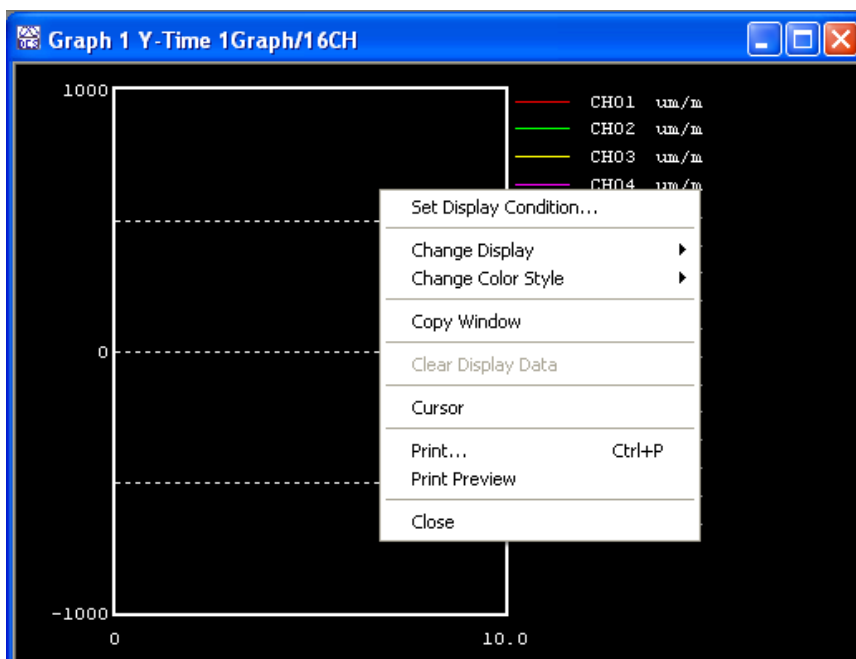


■ Active window



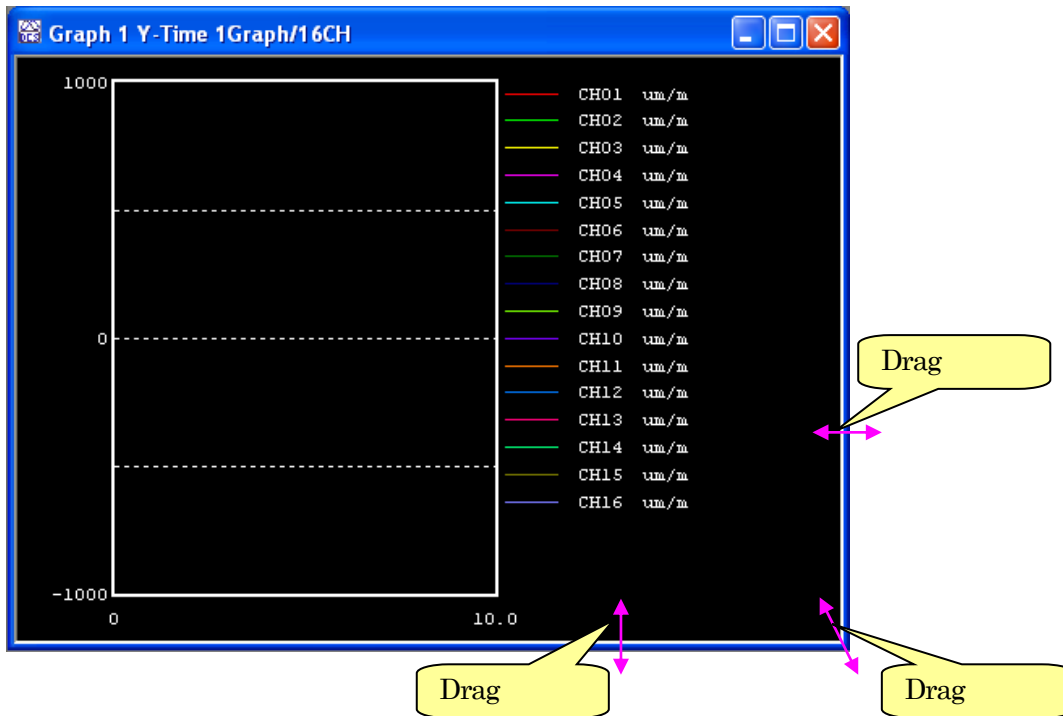
2-3-2 Pop-Up Menu

Right-click the window to display the pop-up menu.
The pop-up menu items vary with window types.



2-3-3 Zoom In and Zoom Out

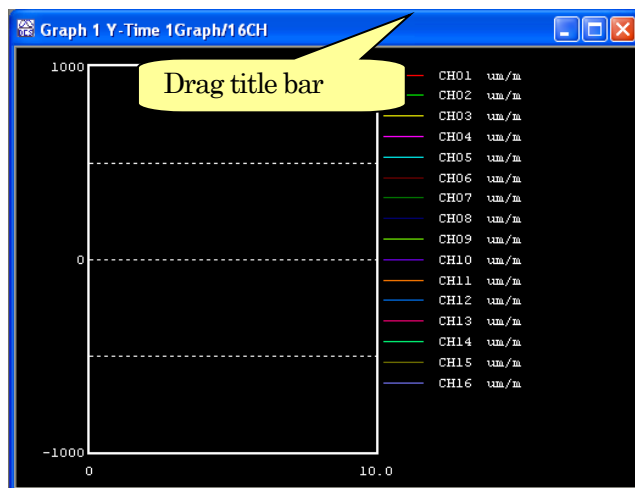
The target window can be changed to the arbitrary size by dragging flames.



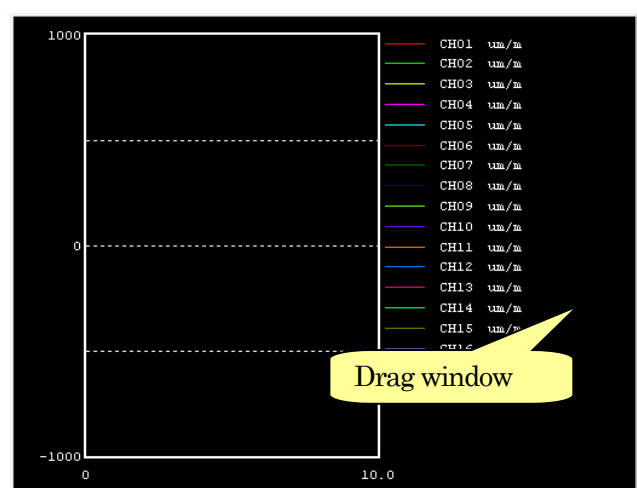
2-3-4 Moving a Window

The target window can be moved to arbitrary place in the main window by dragging the title bar.
For the window without title bar, drag the target window.

■ Window with title bar

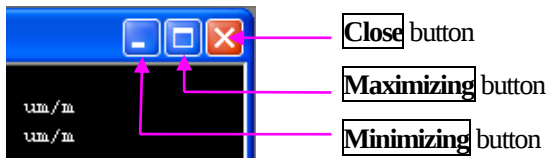


■ Window without title bar

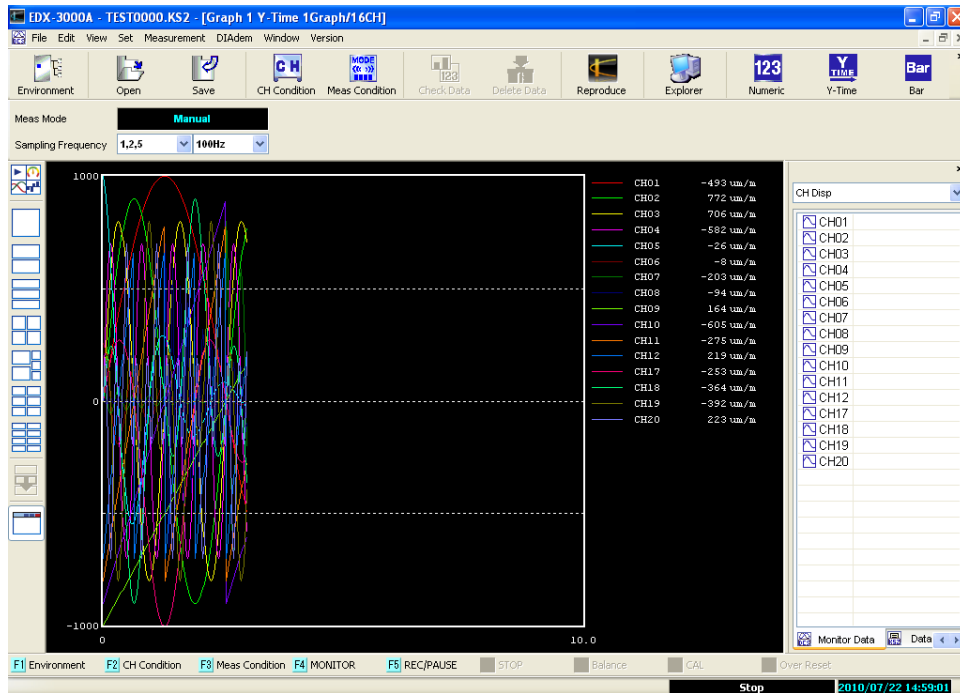


2-3-5 Maximizing and Minimizing

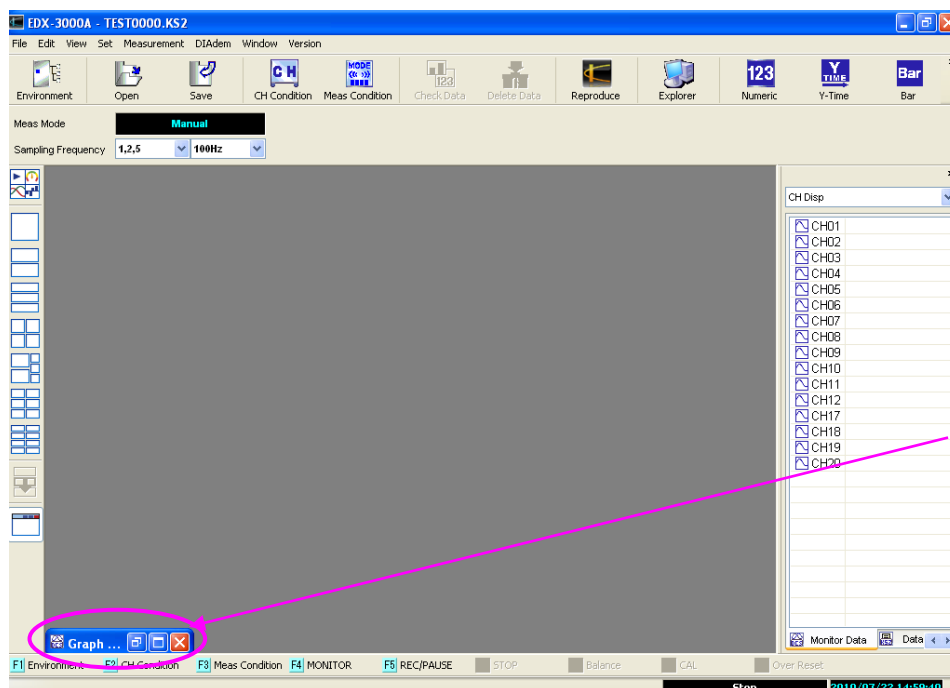
The target window can be maximized and minimized by the **Maximizing** and **Minimizing** buttons on the title bar. For closing the window, click the **Close** button on the title bar.



■ Maximizing window



■ Minimizing window



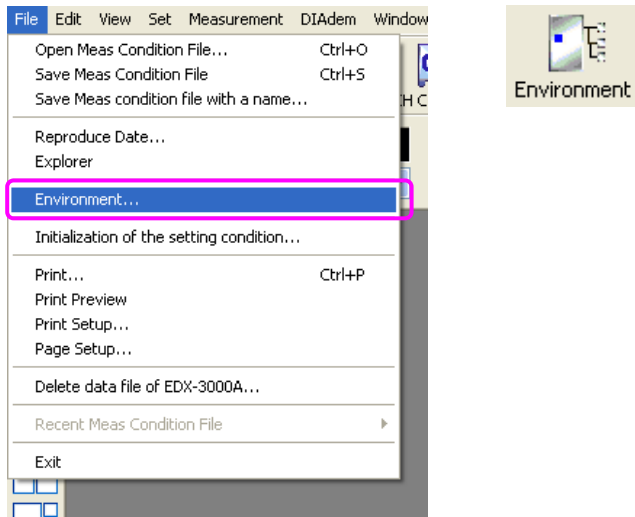
The minimized window

3. ENVIRONMENT SETTING

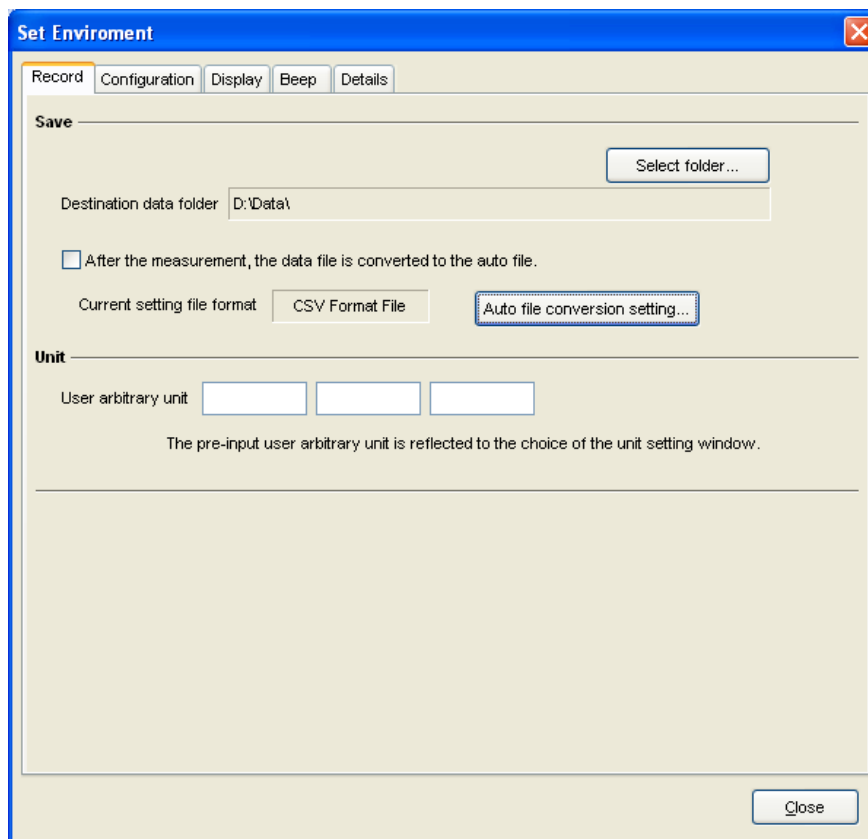
This chapter is related to Record tab and Configuration tab on the **Set Environment** dialog box.

Open the **Set Environment** dialog box by either of the following operations.

- Click the **File** – **Environment...**.
- Click the **Environment** icon from the toolbar.

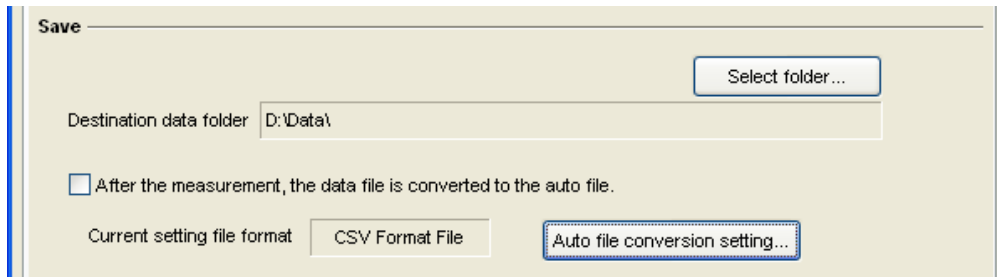


3-1 RECORDING TAB



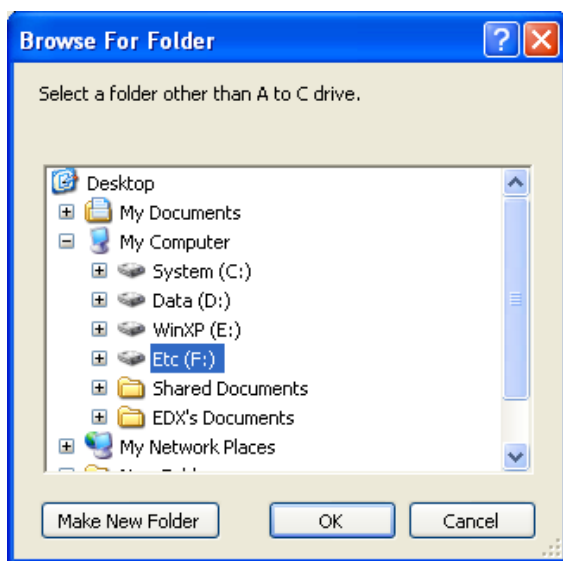
3-1-1 Saving Data File

This section describes how to set the destination data folder and how to convert the data file after measurement.



■ Destination data folder

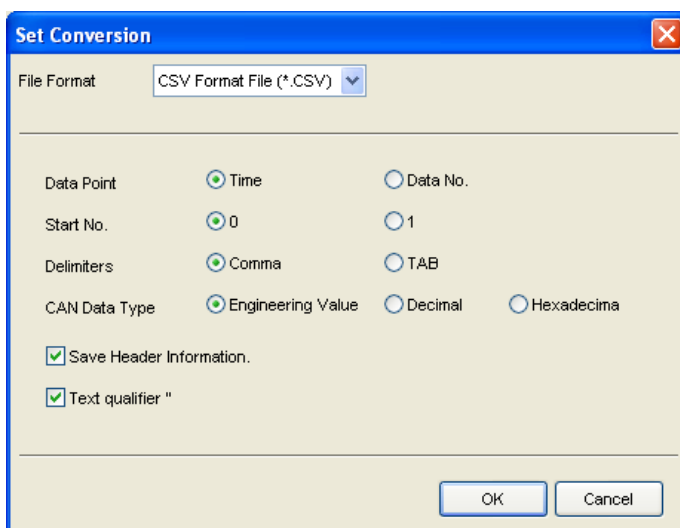
Click the **Select folder...** button and the following **Browse For Folder** dialog box appears. Then set the destination data folder.



■ Converting the data file after the measurement

For converting the data file automatically after the measurement, put a checkmark to the checkbox next to the “**After the measurement, the data file is converted to the auto file.**”

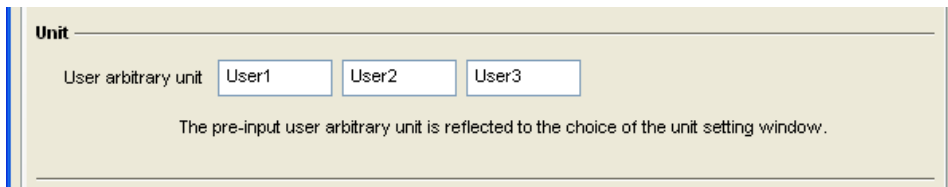
Click the **Auto file conversion setting...** button and the following **Set Conversion** dialog box appears. Set conditions for automatically converting the file.



3-1-2 Unit

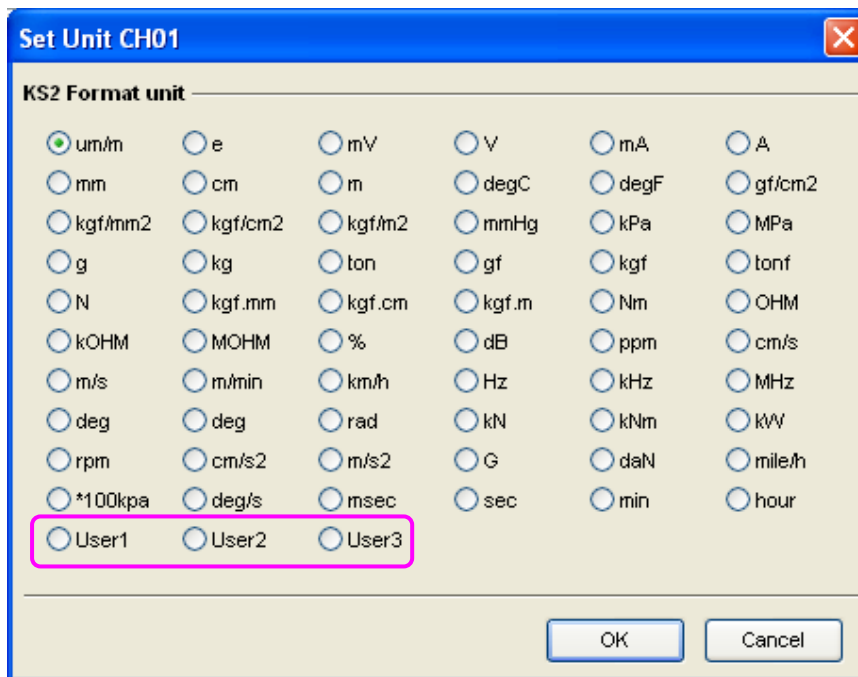
Up to 3 user arbitrary units can be registered.

Input the user arbitrary unit within 7 characters.



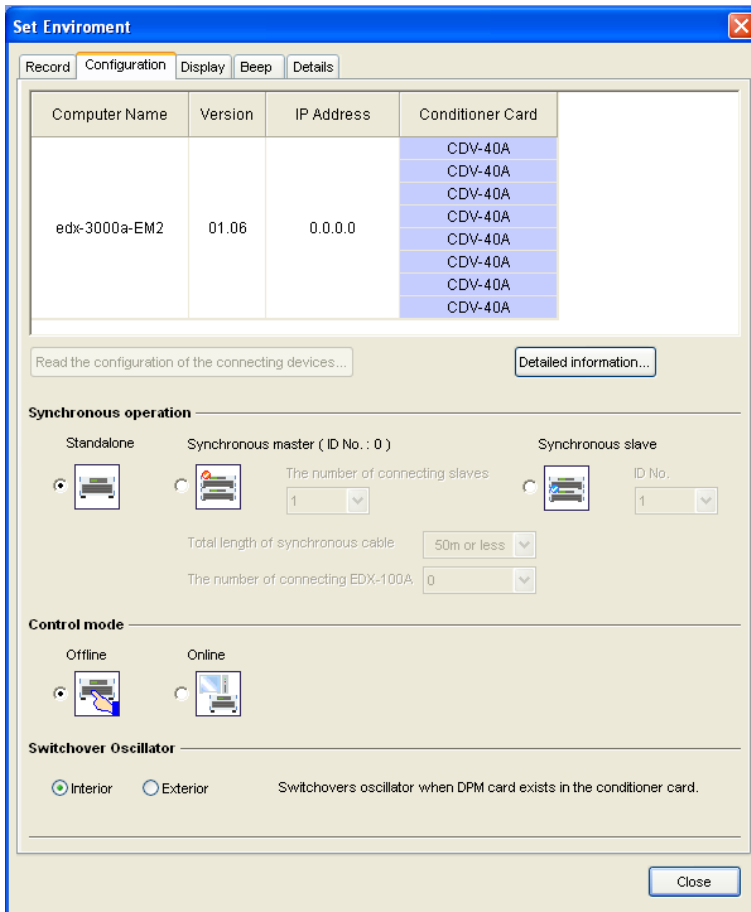
The image shows a window titled "Unit". It contains three input fields labeled "User1", "User2", and "User3" under the heading "User arbitrary unit". Below these fields, a note states: "The pre-input user arbitrary unit is reflected to the choice of the unit setting window."

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



The image shows a dialog box titled "Set Unit CH01". It contains a section labeled "KS2 Format unit" with a grid of radio buttons for selecting units. The units are arranged in 10 rows and 6 columns. The first row includes $\mu\text{m/m}$, e, mV, V, mA, and A. The second row includes mm, cm, m, degC, degF, and gf/cm^2 . The third row includes kgf/mm^2 , kgf/cm^2 , kgf/m^2 , mmHg, kPa, and MPa. The fourth row includes g, kg, ton, gf, kgf, and tonf. The fifth row includes N, kgf.mm, kgf.cm, kgf.m, Nm, and OHM. The sixth row includes kOHM, MOHM, %, dB, ppm, and cm/s. The seventh row includes m/s, m/min, km/h, Hz, kHz, and MHz. The eighth row includes deg, deg, rad, kN, kNm, and kW. The ninth row includes rpm, cm/s^2 , m/s^2 , G, daN, and mile/h. The tenth row includes *100kpa, deg/s, msec, sec, min, and hour. At the bottom of the dialog box, there are three radio buttons labeled "User1", "User2", and "User3", which are highlighted with a pink rectangle. Below these buttons are "OK" and "Cancel" buttons.

3-2 SETTING CONFIGURATION



The 'Set Environment' dialog box is shown with the 'Configuration' tab selected. It contains a table with device information, a button to read configuration, and sections for synchronous operation and control mode.

Computer Name	Version	IP Address	Conditioner Card
edx-3000a-EM2	01.06	0.0.0.0	CDV-40A
			CDV-40A
			CDV-40A
			CDV-40A
			CDV-40A
			CDV-40A
			CDV-40A
			CDV-40A

Read the configuration of the connecting devices... Detailed information...

Synchronous operation

Standalone ☒ Synchronous master (ID No. : 0) ☐ Synchronous slave ☐

The number of connecting slaves: 1

Total length of synchronous cable: 50m or less

The number of connecting EDX-100A: 0

Control mode

Offline ☒ Online ☐

Switchover Oscillator

☒ Interior ☐ Exterior

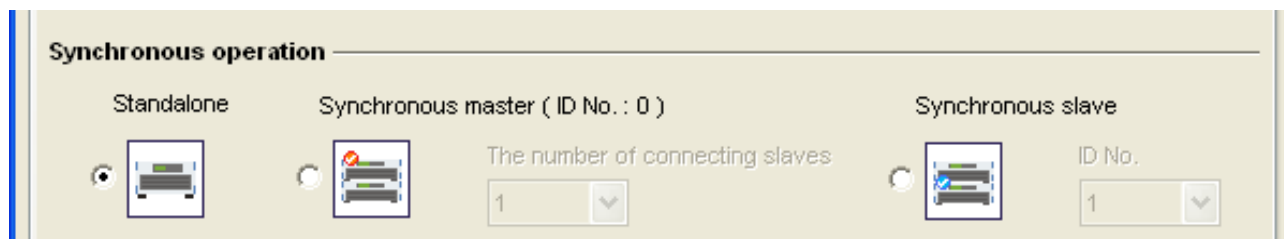
Switchovers oscillator when DPM card exists in the conditioner card.

Close

A computer name, version, IP address, and information of conditioner cards are displayed on the **Configuration** dialog box. Configurations of the connecting slaves are also displayed when the target EDX-3000A/B is a master device (Synchronous operation: Synchronous master).

For loading the configuration of the slave devices, click the **Read the configuration of the connecting devices...** button.

3-2-1 Synchronous Operation



Select the synchronous operation of the EDX-3000A/B.

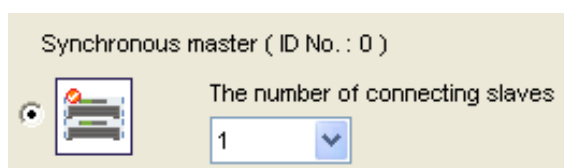
“Standalone”

For using only one EDX-3000A/B.

“Synchronous master”

For using multiple EDX-3000A/B units in synchronous operation with the target EDX-3000A/B as a master unit.

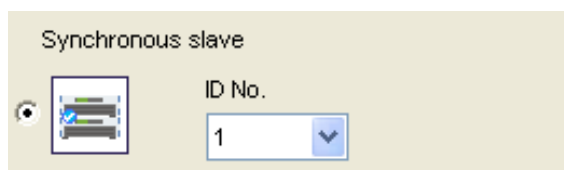
If the “Synchronous master” is checked, it is required to set the number of slave units of the EDX-3000A/B.



“Synchronous slave”

For using multiple EDX-3000A/B units in synchronous operation with the target EDX-3000A/B unit as a slave.

If the “Synchronous slave” is checked, it is required to set the ID No.



For synchronous operating the multiple EDX-3000A/B units, set any one EDX-3000A/B to the master and others to slave units. In addition, it is required to set all the ID numbers of the slave units to different ID numbers.

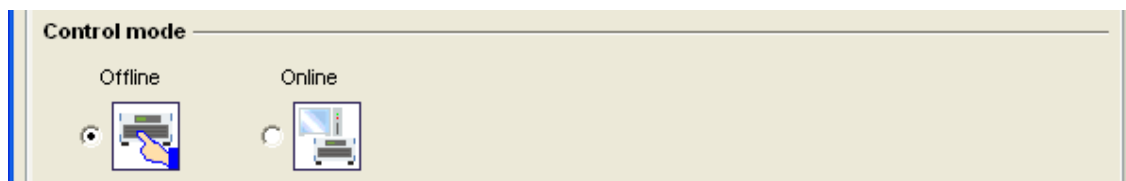
Example of configuration when using 3 EDX-3000A/B units in synchronous operation is described as follows.

Between the CONT. OUT terminal on the rear panel of the master EDX-3000A/B and CONT. IN terminal on the rear panel of the slave EDX-3000A/B and between the CONT. OUT terminal on the rear panel of the slave EDX-3000A/B and CONT. IN terminal on the rear panel of the slave EDX-3000A/B are connected with the synchronous cables.



Synchronous cable : ———

3-2-2 Control Mode



Click the control mode of the EDX-3000A/B.

“Offline” For operating the EDX-3000A/B by itself.

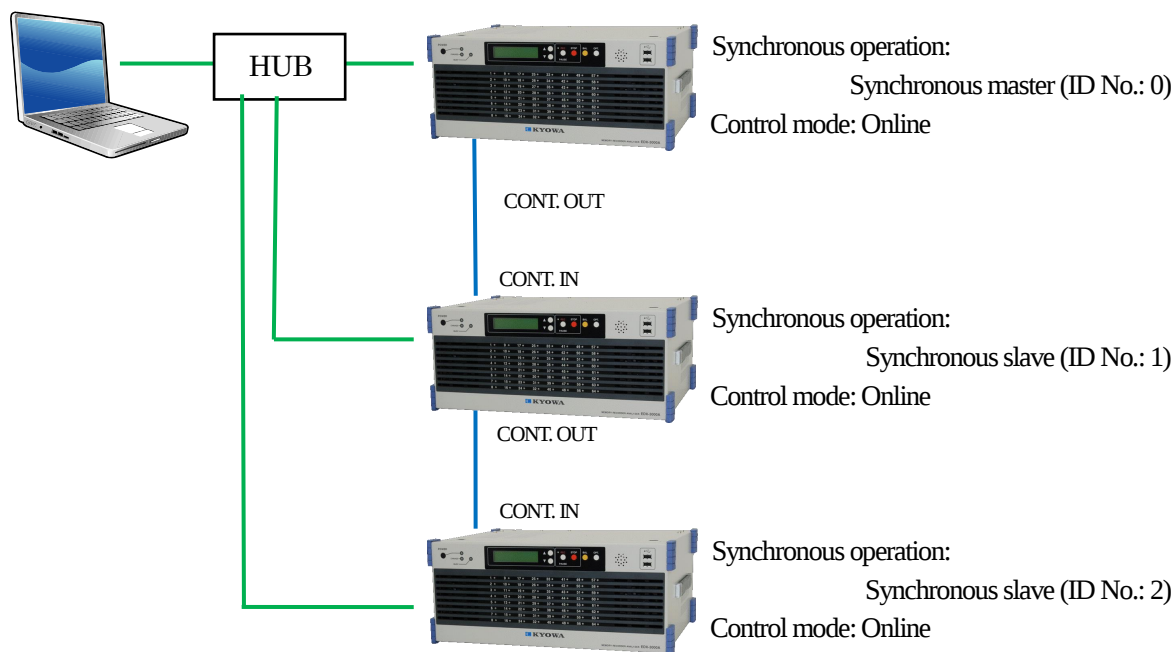
“Online” For operating the EDX-3000A/B by using the installed software (DCS-100A) in the PC.

For operating the EDX-3000A/B with the DCS-100A, set the control modes of all EDX-3000A/B units to **Online** and set synchronous operations of all EDX-3000A/B units to **Synchronous master** or **Slave**.

■ **Example 1:** For operating one EDX-3000A/B with the DCS-100A.



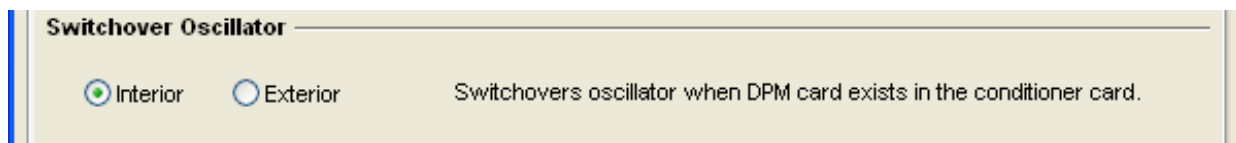
■ **Example 2:** For operating three EDX-3000A/B units with the DCS-100A.



Synchronous cable: —————

LAN cable : —————

3-2-3 Switchover Oscillator



Switch the oscillator when using the DPM card as the conditioner card.
"Interior" or "Exterior"

3-2-4 Loading the Configuration of Connecting Device

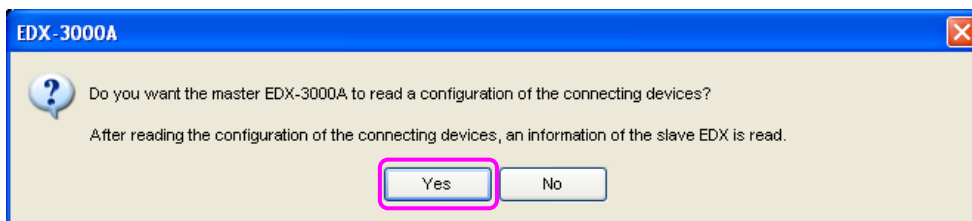
For operating the multiple EDX-3000A/B units in synchronous operation with the control mode set to **Offline**, it is required to load the configurations of the slaves that are connected to the master unit as follows.

Before loading the configurations, check the followings.

- The synchronous operation of the target EDX-3000A/B is set to **Synchronous master**.
- The synchronous operations of the connecting EDX-3000A/B units are set to **Synchronous slave**.
- ID numbers of slaves are correctly set.



- 1) Click the **Read the configuration of the connecting devices...** button and the following message appears.
Click the **Yes** button.



- 2) The connecting slave units are searched and the configurations of the slave EDX-3000A/B units are loaded to the master EDX-3000A/B.

MEMO

For operating the multiple EDX-3000A/B units in synchronous operation with the control mode set to **Offline**, it is necessary to load the configurations of the connecting devices with the master EDX-3000A/B unit.

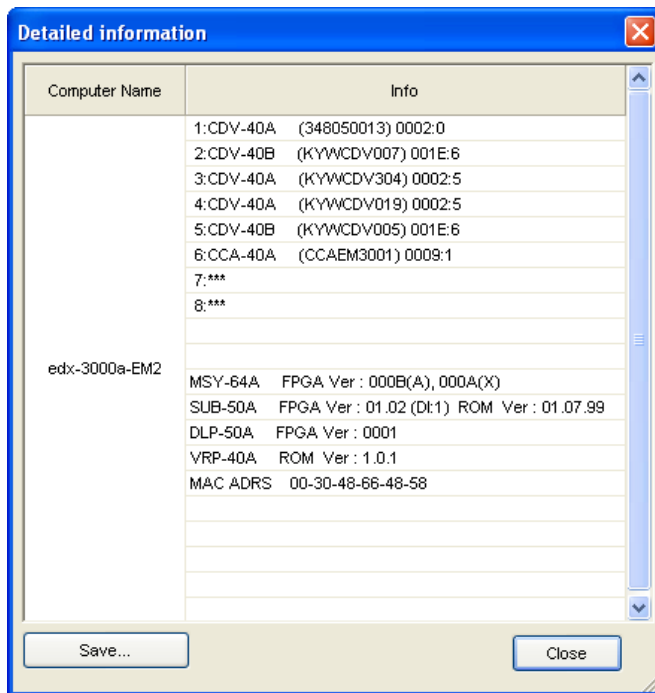
3-2-5 Detailed Information



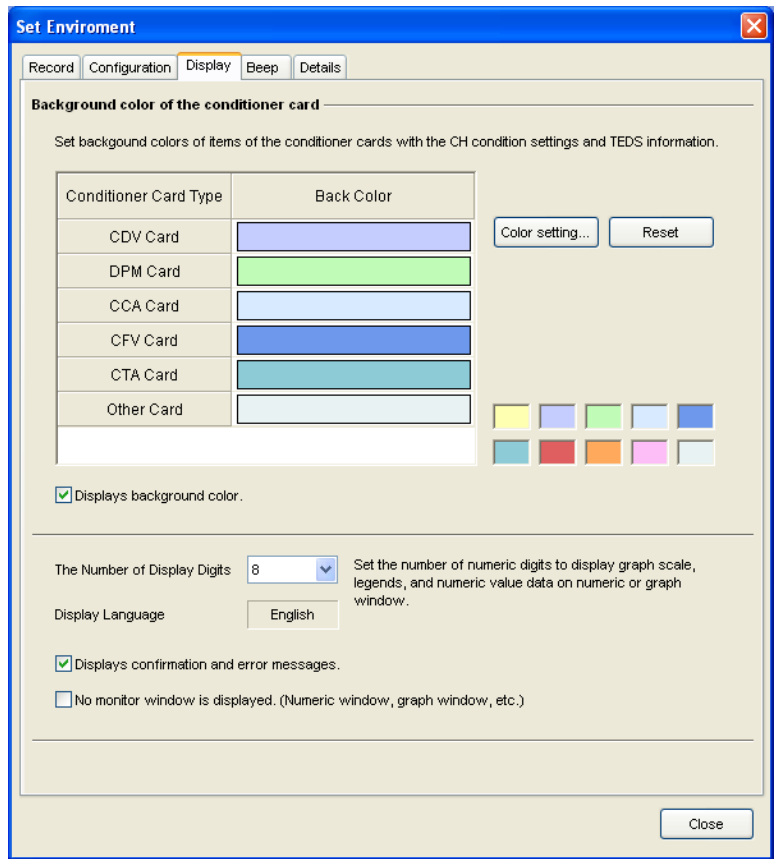
Click the **Detailed information...** button and the following **Detailed information** dialog box appears.

The detailed information of the EDX-3000A/B slave units is also displayed when the synchronous operation is set to

Synchronous master.

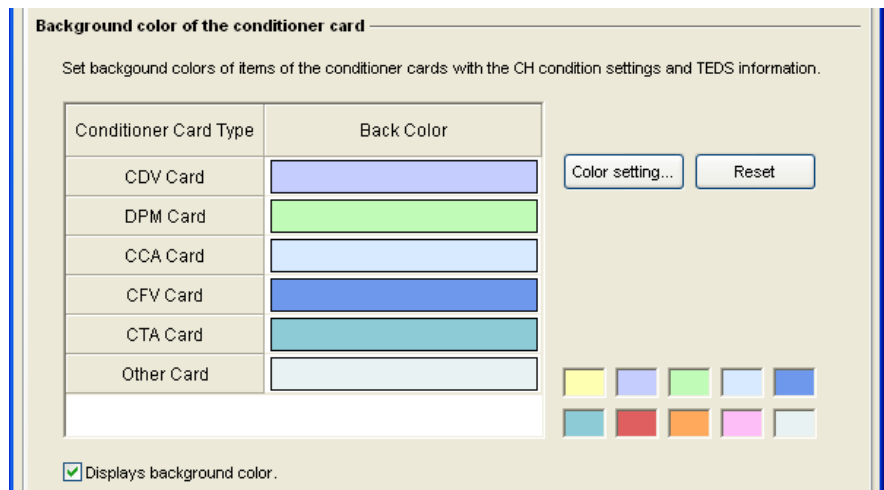


3-3 SETTING DISPLAY



3-3-1 Background Color of Conditioner Card

This section describes how to set the background color of items on the **Set CH Condition** dialog box and **TEDS Information** dialog box with respect to every conditioner card.



Color setting... button

The **Color** dialog box appears.

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

Reset button

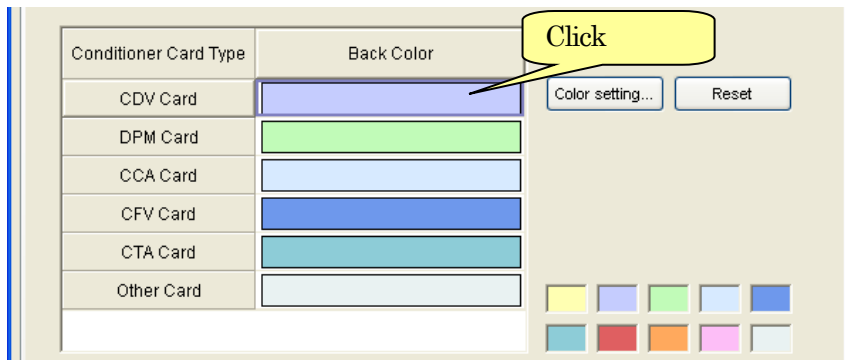
Background colors of all conditioner cards are initialized.

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

■ Operation example 1

This section describes how to change the background color of the CDV card by using the Back Color list.

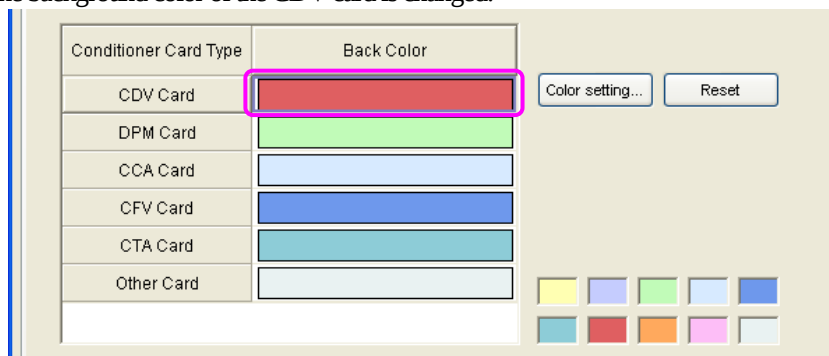
1) Click the current background color of the CDV card.



2) Click the target color from background color list.



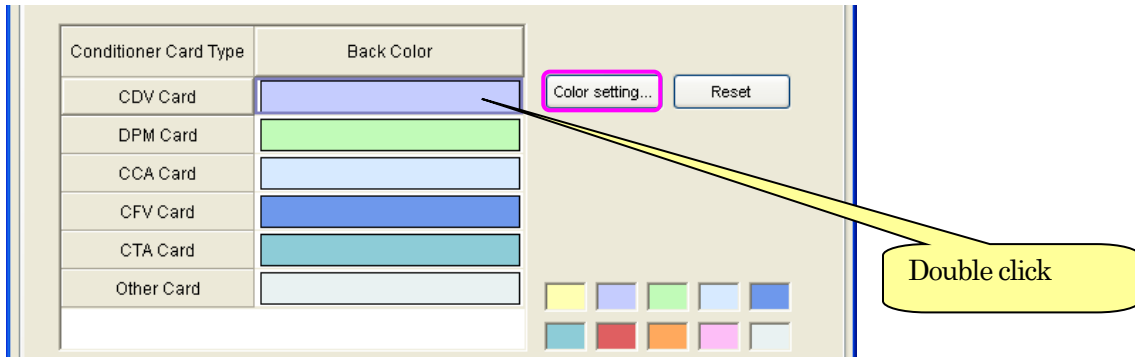
3) The background color of the CDV card is changed.



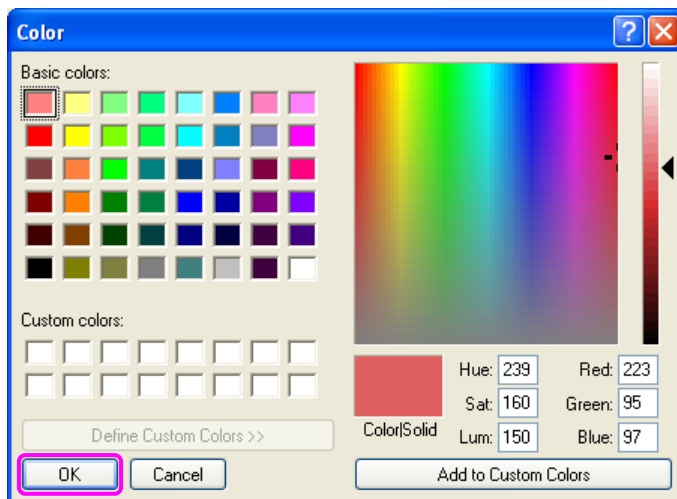
■ Operation example 2

This section describes how to change the background color of the CDV card by using the **Color** dialog box.

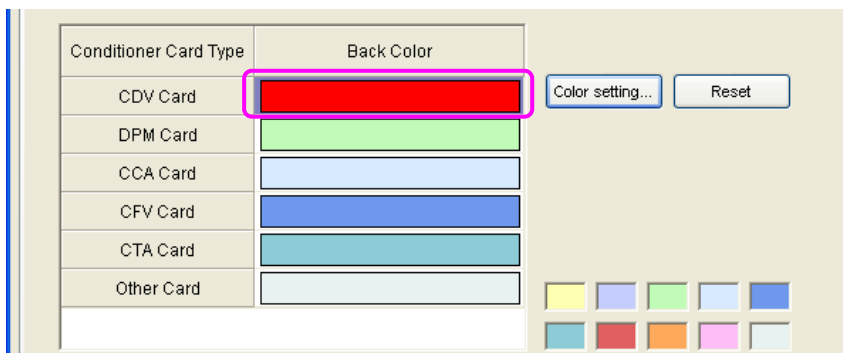
- 1) Click the current background color of the CDV card.
- 2) Click the **Color setting...** button or double-click the background color of the CDV card and the **Color** dialog box appears.



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



- 4) The background color of the CDV card is changed.
(Red is newly set as the background color of the CDV card in the following.)



3-3-2 The Number of Numeric Digits to be Displayed

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

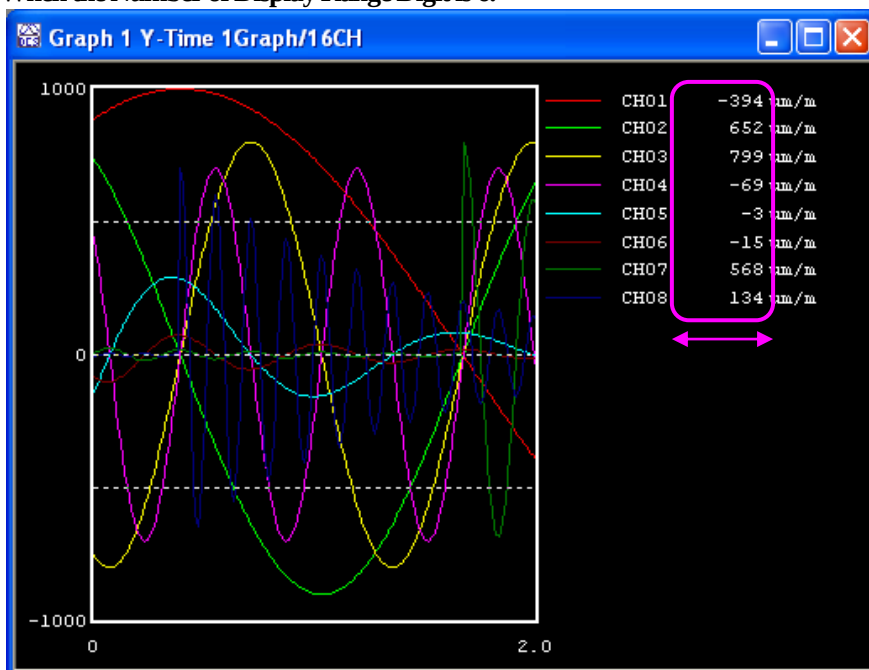
The number of numeric digits should be within 6 to 11. If the number of numeric values exceeds the specified numeric display range, it shall be expressed in exponential notation.

(The sign is included in the number of numeric digits.)

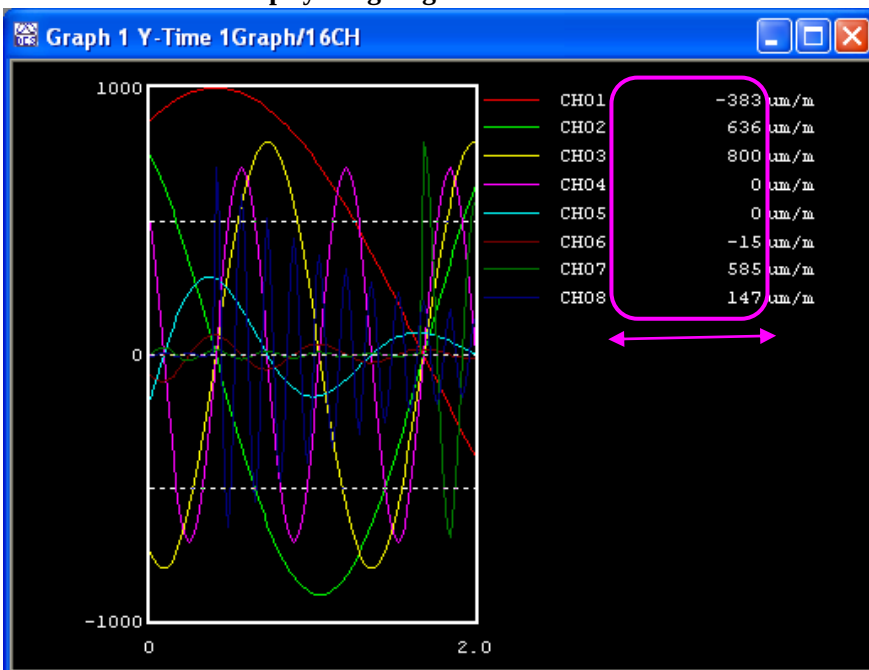
3-3-2-1 Relation Between the Number of Numeric Display Digits of Display Setting and CH Condition

If the number of display digits is known in advance, the graph display range can be enlarged by decreasing the number of display range digits.

- When the Number of Display Range Digit is 6.



- When the Number of Display Range Digits is 11.

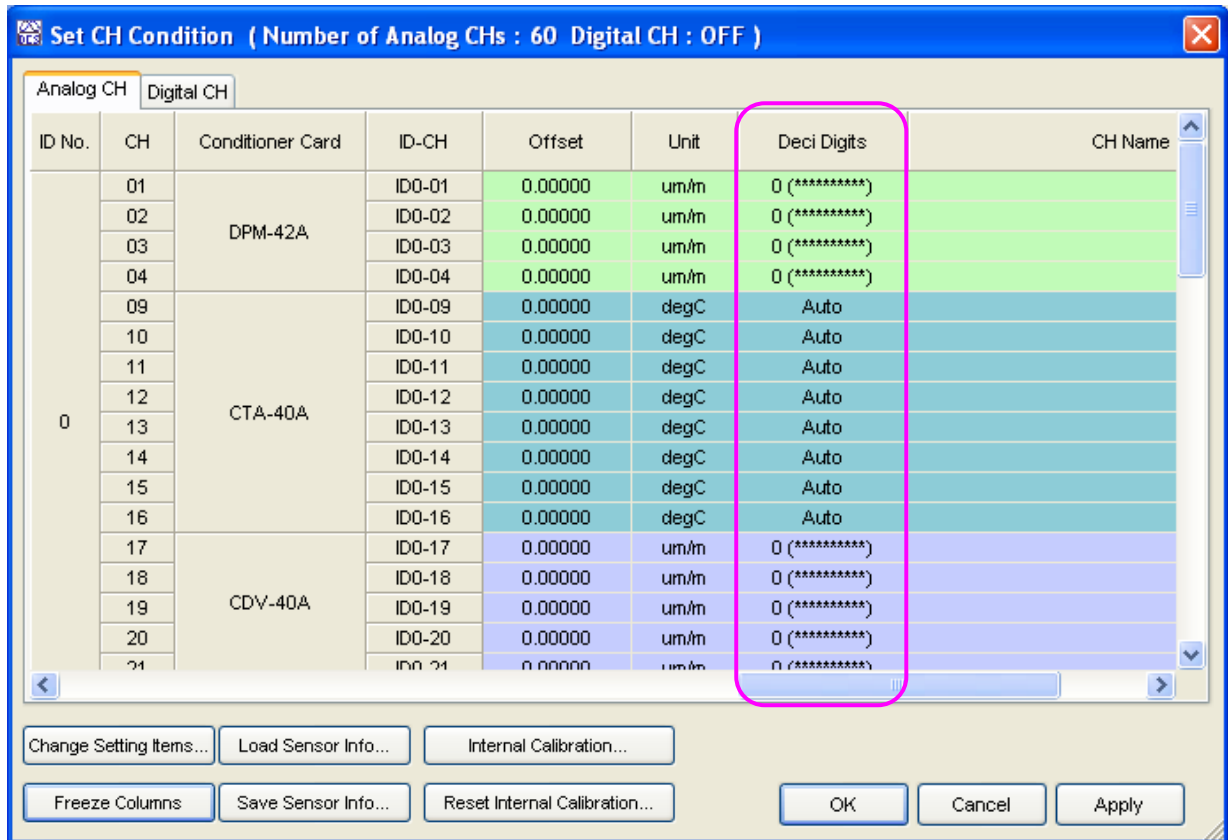


The number of numeric display digits of the **Set CH Condition** dialog box is set on the **Deci Digits** (the number of digits below decimal point) menu of the graph legends and numeric display.

However, the **Deci Digits** (the number of digits below decimal point) of the actual numeric value is not always the number of digits determined at this time.

Enabled number of digits below decimal point is set by the following.

- 1) Obtained by calculating the maximum value from the previously set range, CAL coefficient, and off set.
- 2) Obtain the number of integer digits of the maximum value obtained in item 1).
- 3) A value obtained by subtracting the number of digits obtained in item 2) from the number of display range digits determined in **Set Environment** dialog box is settable number of digits below decimal point.



● **When Range: 1000 $\mu\text{m}/\text{m}$, CAL Coefficient: 1.0, and Offset: 0.0**

Calculating the maximum value

$$\text{Maximum value} = 1000 \times 1.0 + 0.0 = 1000$$

Calculating the number of integer digits

$$\text{The number of integer digits} = 4$$

Example 1) When the number of display digits is 11, settable number of digits below decimal point is obtained by the following expression.

$$11 (\text{The number of display range digit}) - 1 (\text{Sign: } \pm) - 4 (\text{The number of integer digits}) - 1 (\text{Decimal point: } .) = 5$$

Display format: $\pm*****.*****$

Settable number of digits below decimal point shall be from 0 to 5.

Therefore, if 6 to 8 are selected for the number of digits below decimal point, the actual number of digits below decimal point shall be 5.

Example 2) When the number of display digits is 6, settable number of digits below decimal point is obtained by the following expression.

$$6 (\text{The number of display range digit}) - 1 (\text{Sign: } \pm) - 4 (\text{The number of integer digits}) - 1 (\text{Decimal point: } .) = 0$$

Display format: $\pm*****$

Therefore, settable number of digits below decimal point shall be only 0.

■ **List of the Number of Settable Numeric Display Digits with the Number of Display Range Digits**

The number of Numeric Display Digits	The number of Display Range Digits					
	6	7	8	9	10	11
0 (*****))	○	○	○	○	○	○
1 (*****.)	×	○	○	○	○	○
2 (*****.)	×	×	○	○	○	○
3 (*****.)	×	×	×	○	○	○
4 (*****.)	×	×	×	×	○	○
5 (*****.)	×	×	×	×	×	○
6 (*****.)	×	×	×	×	×	×
7 (**.*****))	×	×	×	×	×	×
8 (*.*****))	×	×	×	×	×	×

○: Settable

×: Setting unavailable

■ **When the Number of Numeric Display Digits in Set CH Condition Dialog Box is Automatically Set**

Obtain the maximum value and express the numeric in 5 significant figures to the utmost extent.

Example of maximum value and display format

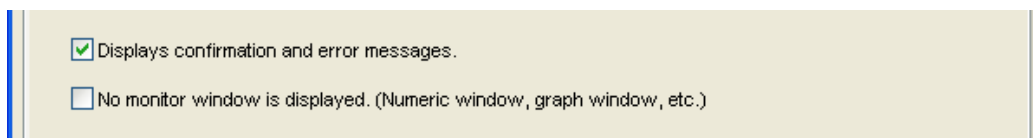
Maximum value	Display Format of the Numeric of Display Range Digits		
	6	8	11
±100000	±1E ± 05	__±100000	_____±100000
±10000	±10000	____±10000	_____±10000
±1000	__±1000	__±1000.0	_____±1000.0
±100	±100.0	__±100.00	_____±100.00
±10	±10.00	__±10.000	_____±10.000
±1	±1.0000	__±1.0000	_____±1.0000
±0.1	±0.100	±0.10000	_____±0.10000
±0.01	±0.010	±0.01000	____±0.010000
±0.001	±0.001	±0.00100	__±0.0010000
±0.0001	±1E - 04	±0.00010	±0.00010000

Example)

When the measured value is 0.012345, the number of display range shall be described in the following table.

Numeric of Display Range Digits	Numeric Display
6	0.012
7	0.0123
8	0.01234
9	0.0123456
10	0.0123456
11	0.0123456

3-3-3 Message Dialog Box

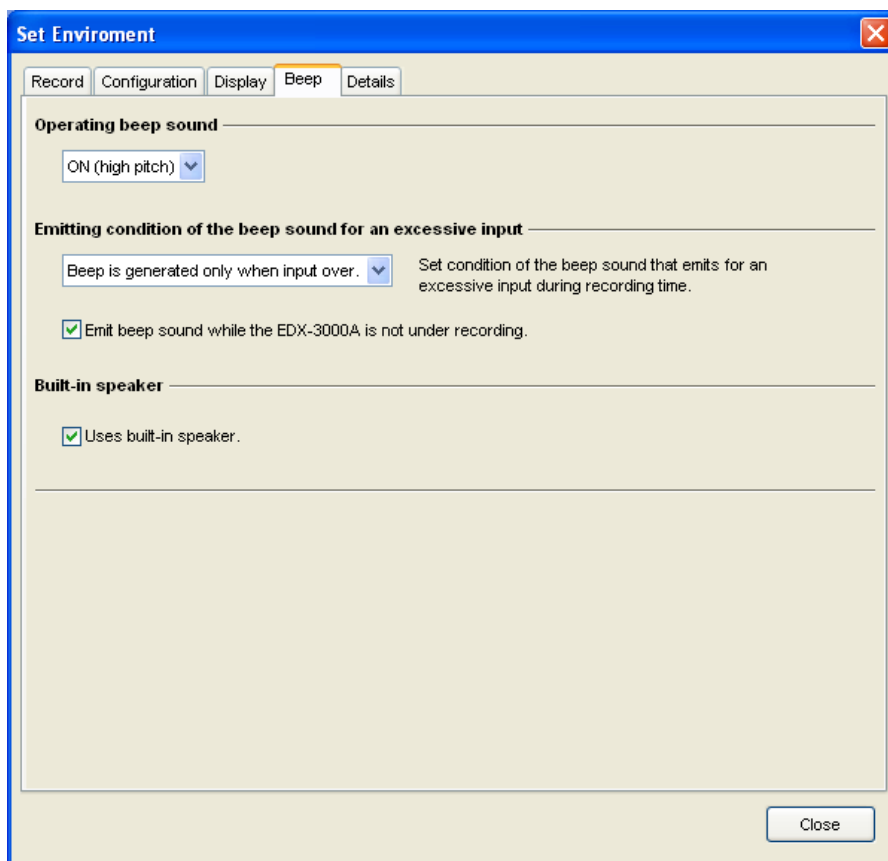


☒ Displays confirmation and error messages.

☐ No monitor window is displayed. (Numeric window, graph window, etc.)

- If you release a checkmark in the box next to the **Displays confirmation and error messages.**, no message appears when the various procession finished correctly or when error happened.
When the control mode of the EDX-3000A/B is set to **Online**, no message appears regardless of checkmark in the box next to the **Displays confirmation and error messages.**
- If you put a checkmark in the box next to the **No monitor window is displayed (Numeric window, graph window, etc.)**, no monitor window appears.

3-4 BEEP SOUND



Set Environment

Record Configuration Display **Beep** Details

Operating beep sound

ON (high pitch) ▼

Emitting condition of the beep sound for an excessive input

Beep is generated only when input over. ▼ Set condition of the beep sound that emits for an excessive input during recording time.

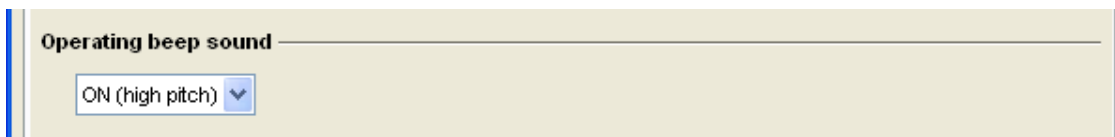
☒ Emit beep sound while the EDX-3000A is not under recording.

Built-in speaker

☒ Uses built-in speaker.

Close

■ Operating beep sound



Operating beep sound

ON (high pitch) ▼

Select the ON/OFF of the beep sound generated when MONITOR, RECORD, STOP, BALANCE, etc. actions are performed.
“OFF”, “ON (high pitch)”, or “ON (low pitch)”

■ Emitting condition of the beep sound for an excessive input

Emitting condition of the beep sound for an excessive input	
Beep is generated only when input over. ▼	Set condition of the beep sound that emits for an excessive input during recording time.
☒ Emit beep sound while the EDX-3000A is not under recording.	

Select the beep sound generated when data of every channel exceeds the specified range.

High pitched beep generates regardless of the setting if other than **None** is selected.

“None (no beep is generated)”

“Beep is generated only when input over.”

“Beep is generated until STOP/PAUSE.”

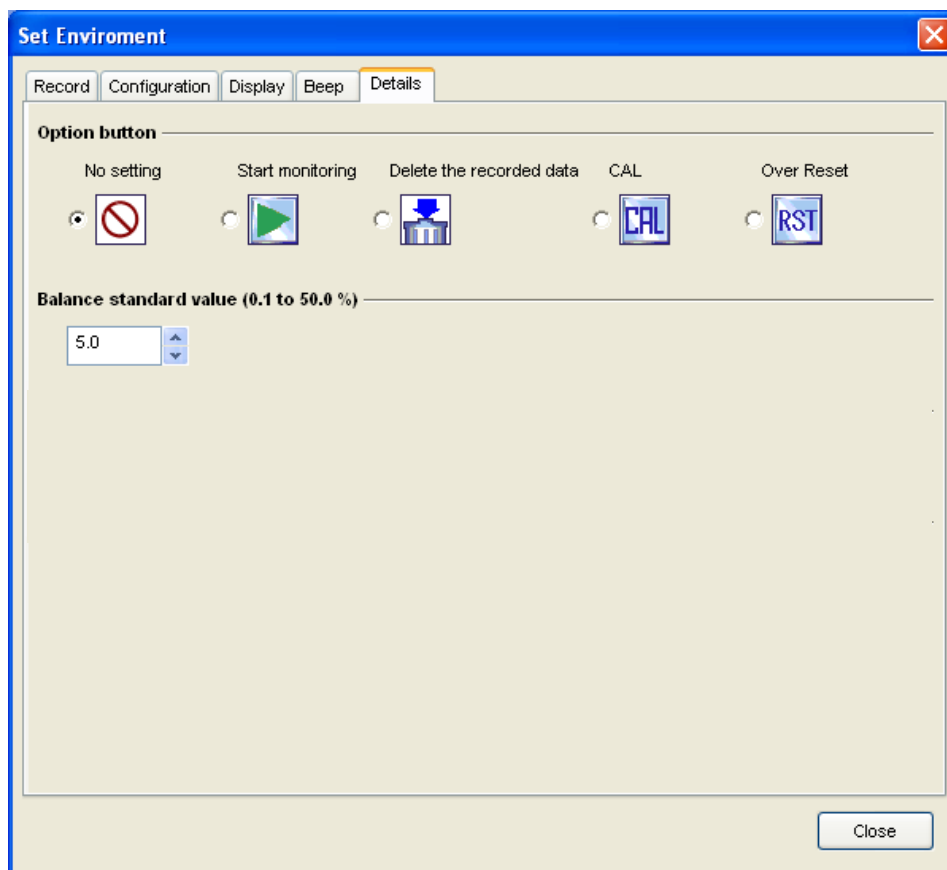
If you put a checkmark in the box next to the “**Emit beep sound while the EDX-3000A/B is not under recording**,” beep sound emits during monitoring the data.

■ Built-in speaker

Built-in speaker
☒ Uses built-in speaker.

Select whether use or not use the built-in speaker.

3-5 DETAILS



■ Option buttons



For selecting the **OPT.** button operation in front of the EDX-3000A/B.

- | | |
|----------------------------|---|
| “No setting” | Nothing happen when the OPT. button is pressed. |
| “Start monitoring” | The EDX-3000A/B starts monitoring data. |
| | Same function as the Measurement – MONITOR . |
| “Delete the recorded data” | The latest recorded data file is deleted after the measurement. |
| | Same function as the Measurement – Delete the Latest Recorded Data File . |
| “CAL” | Output CAL or stop CAL. |
| | Same function as the Measurement – Output/Stop CAL . |



■ Balance standard value (0.1 to 50.0%)

Balance standard value (0.1 to 50.0 %)	
5.0	 

Set the balance standard value.

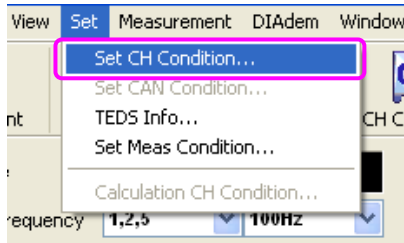
4. CH CONDITION

This section describes how to set the measurement ON/OFF, Mode, Range, Calibration constant, Unit, etc. for every CH.

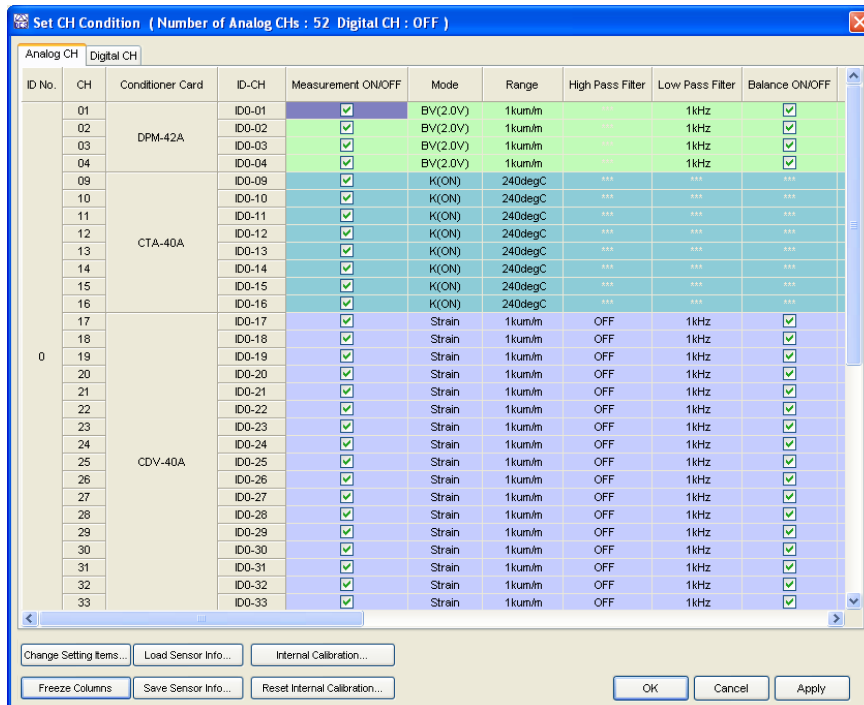
■How to display

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).

Internal Calibration... button

Performs internal calibration of analog channels.

Perform an internal sensitivity compensation when a sensor is connected.

Reset Internal Calibration... button

Reset the internal calibration of the analog channels.

OK button

Determines the pre-set contents and closes the window.

Cancel button

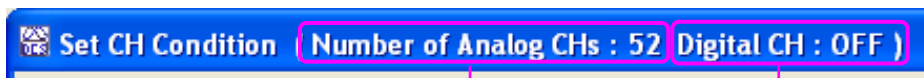
Cancels the pre-set contents and closes the window.

Apply button

Determines the current set contents.

■ Title Bar

The number of analog channels required to measure and the digital CH measurement ON or OFF that are set on the current **Set CH Condition** dialog box are displayed on the title bar.



Measure Digital CH (ON) or not measure Digital CH (OFF)
Number of Analog channels: 52

■ Copy and paste of setting items

You can copy the content of the setting item and paste it to the setting item of another channel.

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

Click the **Copy** from the menu and then, copy contents of the setting item of the copy source.

CH	Conditioner Card	Measurement ON/OFF	Mode	Range	High Pass Filter	Low Pass Filter	Bandwidth
01	DPM-42A	☒	BV(2.0V)	1kum/m	...	...	...
02		☐	BV(0.5V)	5kum/m	...	...	...
03		☐	BV(0.5V)	5kum/m	...	...	...
04		☐	BV(0.5V)	5kum/m	...	...	...
09		☒	K(ON)	240degC	...	...	...
10		☒	K(ON)	240degC	...	...	...
11		☒	K(ON)	240degC	...	...	...
12		☒	K(ON)	240degC	...	...	...

Click

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

Click the **Paste** from the menu to paste the desired data.

CH	Conditioner Card	Measurement ON/OFF	Mode	Range	High Pass Filter	Low Pass Filter	Bandwidth
01	DPM-42A	☒	BV(2.0V)	1kum/m	...	1kHz	...
02		☐	BV(0.5V)	5kum/m	...	1kHz	...
03		☐	BV(0.5V)	5kum/m	...	1kHz	...
04		☐	BV(0.5V)	5kum/m	...	1kHz	...
09		☒	K(ON)	240degC	...	...	...
10		☒	K(ON)	240degC	...	...	...
11		☒	K(ON)	240degC	...	...	...
12		☒	K(ON)	240degC	...	...	...

Click

3) Then, the setting items of the copy source are pasted to the setting range of the destination channels.

CH	Conditioner Card	Measurement ON/OFF	Mode	Range	High Pass Filter	Low Pass Filter	Bandwidth
01	DPM-42A	☒	BV(2.0V)	1kum/m	...	...	...
02		☒	BV(2.0V)	1kum/m	...	...	...
03		☒	BV(2.0V)	1kum/m	...	...	...
04		☒	BV(2.0V)	1kum/m	...	...	...
09		☒	K(ON)	240degC	...	...	...
10		☒	K(ON)	240degC	...	...	...

4-1 ANALOG CHANNEL CONDITION

This section describes how to set measurement ON/OFF of analog channels, mode, range, CAL coefficient, offset, and unit. Select the **Analog CH** tab on the **Set CH Condition** dialog box.

ID No.	CH	Conditioner Card	ID-CH	Measurement ON/OFF	Mode	Range	High Pass Filter	Low Pass Filter	Balance ON/OFF
01		DPM-42A	ID0-01	☒	BV(2.0V)	1kum/m	1kHz	1kHz	☒
02			ID0-02	☒	BV(2.0V)	1kum/m	1kHz	1kHz	☒
03			ID0-03	☒	BV(2.0V)	1kum/m	1kHz	1kHz	☒
04			ID0-04	☒	BV(2.0V)	1kum/m	1kHz	1kHz	☒
09		CTA-40A	ID0-09	☒	K(ON)	240degC	1kHz	1kHz	☒
10			ID0-10	☒	K(ON)	240degC	1kHz	1kHz	☒
11			ID0-11	☒	K(ON)	240degC	1kHz	1kHz	☒
12			ID0-12	☒	K(ON)	240degC	1kHz	1kHz	☒
13			ID0-13	☒	K(ON)	240degC	1kHz	1kHz	☒
14			ID0-14	☒	K(ON)	240degC	1kHz	1kHz	☒
15			ID0-15	☒	K(ON)	240degC	1kHz	1kHz	☒
16			ID0-16	☒	K(ON)	240degC	1kHz	1kHz	☒
17		CDV-40A	ID0-17	☒	Strain	1kum/m	OFF	1kHz	☒
18			ID0-18	☒	Strain	1kum/m	OFF	1kHz	☒
19			ID0-19	☒	Strain	1kum/m	OFF	1kHz	☒
20			ID0-20	☒	Strain	1kum/m	OFF	1kHz	☒
21			ID0-21	☒	Strain	1kum/m	OFF	1kHz	☒
22			ID0-22	☒	Strain	1kum/m	OFF	1kHz	☒
23			ID0-23	☒	Strain	1kum/m	OFF	1kHz	☒
24			ID0-24	☒	Strain	1kum/m	OFF	1kHz	☒
25			ID0-25	☒	Strain	1kum/m	OFF	1kHz	☒
26			ID0-26	☒	Strain	1kum/m	OFF	1kHz	☒
27			ID0-27	☒	Strain	1kum/m	OFF	1kHz	☒
28			ID0-28	☒	Strain	1kum/m	OFF	1kHz	☒
29			ID0-29	☒	Strain	1kum/m	OFF	1kHz	☒
30			ID0-30	☒	Strain	1kum/m	OFF	1kHz	☒
31			ID0-31	☒	Strain	1kum/m	OFF	1kHz	☒
32			ID0-32	☒	Strain	1kum/m	OFF	1kHz	☒
33			ID0-33	☒	Strain	1kum/m	OFF	1kHz	☒

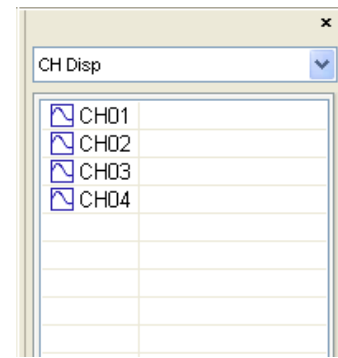
4-1-1 Setting Items

- **ID-No. (*)**
Displays the ID number of the EDX-3000A/B.
- **Device Name (*)**
Displays the device name of the EDX-3000A/B.
- **ID-CH (*)**
Displays the ID-CH number.
- **CH**
Displays the CH No.
- **Conditioner Card**
Displays a model of the current installed conditioner card.

- **Measurement ON/OFF (Essential)**

Put a checkmark on the measurement target CH box.

The target measurement channels are displayed on the CH Display Bar of the main window as shown in the right.



- **Mode (Essential)**

Set the CH mode.

- **Range**

Set measuring range.

Since the **Range** is coupled with **Meas Range** item, when selecting and setting the **Meas Range**, the **Range** is automatically set.

- **High Pass Filter**

Set cutoff frequency of the High Pass Filter.

- **Low Pass Filter**

Set cutoff frequency of the Low Pass Filter.

- **Balance ON/OFF**

Put a checkmark in the box of the balance target channel.

Balance ON/OFF can be set only in **Strain** mode.

- **Int CAL ON/OFF**

Put a checkmark in the target CH of internal sensitivity compensation.

This function is effective when using the Strain/Voltage card: CDV-40B series , Dynamic Strain Meter card: DPM series or Strain/Voltage/Acceleration measurement card CVM-40A/41A..

- **Input cable**

Select input cables.

Available items vary with conditioner cards.

For details, see the following table.

- **Cable correction value**

Enter cable correction values when using custom-made cables.

You are able to enter the cable correction values when selecting the “Custom Cable” in the “Input cables” column.

Table Input cables and cable correction value statuses

Conditioner cards	Input cables	Cable correction value statuses
CDV-40B series	U-40 to 48 (0.5m)	Invalid (unable to enter numbers, *** appears.)
	U-39 (1.0m)	
	U-38 (1.5m)	
	Custom Cable	Valid (able to enter numbers) ^{NOTE}
CVM-40A/41A series	U-121 (0.5m)	Invalid (unable to enter numbers, *** appears.)
	U-122 (1.0m)	
	U-123 (1.5m)	
	Custom Cable	Valid (able to enter numbers) ^{NOTE}
Other conditioner cards	***	Invalid (*** appears.)

NOTE) The available “cable correction values” are 0 to 50.

NOTE

- If you use this function, the EDX-3000A/B software version should be version 01.45 or higher.
- The internal sensitivity compensation uses the input cable No. and custom-made cable correction values. After changing the input cable No. and custom-made cable correction values, be sure to execute the internal sensitivity compensation again.

- **CAL Coefficient**

Set CAL Coefficient to be multiplied to the measured data.

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

(Initial value: 1, setting range: -1×10^8 to -1×10^{-8} , 1×10^{-8} to 1×10^8)

Since the **CAL Coefficient** is coupled with **Rated Capacity** and **Rated Output**, when selecting and setting the **Rated Capacity** and **Rated Output** item, the **CAL Coefficient** is automatically calculated.

- **Offset**

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

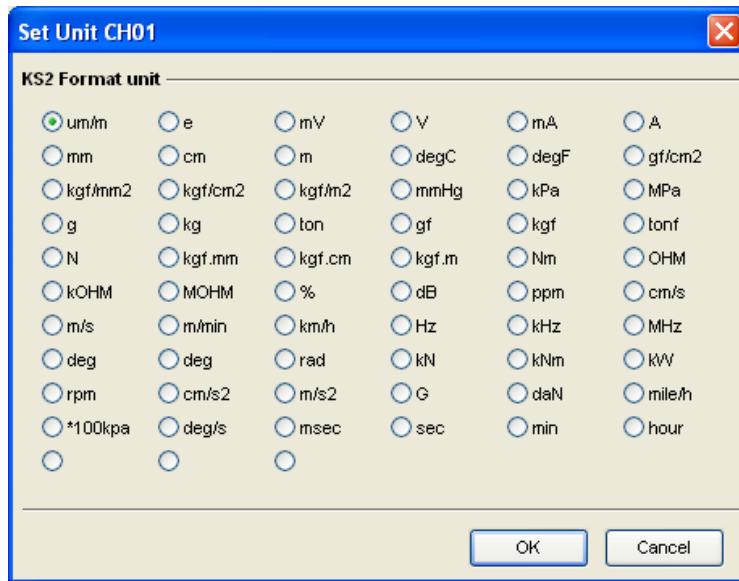
Offset is set when a certain value is added for the measured value.

(Initial value: 0, setting range: -1×10^8 to -1×10^{-8} , 0, 1×10^{-8} to 1×10^8)

- **Unit (Arbitrarily set)**

Set engineering value unit according to input sensors.

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



- **CH Name (Arbitrarily set)**

Input a comment character string according to the input sensor.

Input **CH Name** within 40 characters.

- **Meas Range (*)**

Set measuring range.

Numeric value of the **Meas Range** is in engineering value obtained by multiplying the Meas range with the CAL coefficient and offset value.

Since the **Meas Range** is coupled with the **Range**, when selecting the **Meas Range**, the **Range** automatically changes.

- **CAL ON/OFF (*)**

Put a check mark in the CAL target channel check box.

- **CAL Range**

Select a calibration output.

- **Rated Capacity (*)**

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

Obtain **CAL Coefficient** automatically by calculating the **Rated Output** and **Rated Capacity**.

- **Rated Output (*)**

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

Obtain **CAL Coefficient** automatically by calculating the **Rated Output** and **Rated Capacity**.

For strain measurement, input the rated output in the unit of mV/V.

- **Deci Digits**

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

On selecting the **Auto**, the numeric having 5 numbers with no sign is automatically displayed.

- **Offset Zero ON/OFF (*)**

Put a check mark in the box of the target channel in the **Offset Zero ON/OFF** column.

The monitoring measurement value is set as off set value and the measurement value is set to “0” visibly by executing the Offset ZERO.

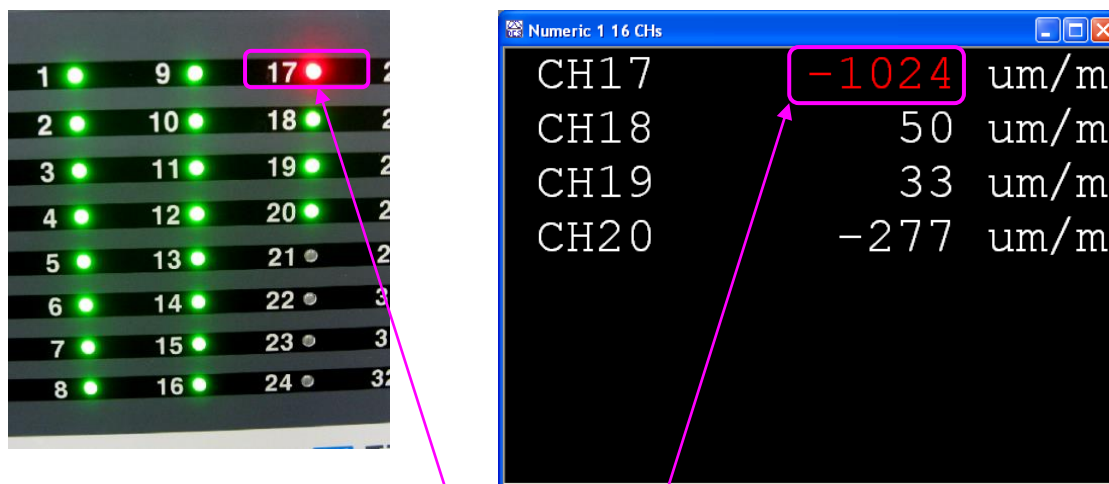
To initialize the preset offset value to “0,” click the **Measurement**-**Exec Offset Zero**.

- **Over Check Value (Up) (*)**

Set the over check value (up). (Setting range: -100 to 100%)

You can set the over level value arbitrary by setting the **Over Check Value (Up)**.

When the measurement value of every CH exceeds the over level value that is calculated from the measuring range and over check value (up) during monitoring the data, you can check that the input value is exceeding with the LED indicator in front of the EDX-3000A/B and with the numeric window as follows.



The input value is exceeding the over level value.

- **Over Check Value (Down) (*)**

Set the over check value (down). (Setting range: -100 to 100%)

NOTE

In the default state, the (*) items are not displayed on the **Set CH Condition** dialog box.
At this time, add the items on the **Change Setting Items** dialog box.

■ List of Channel Conditioner Parameter Options by Conditioner Card

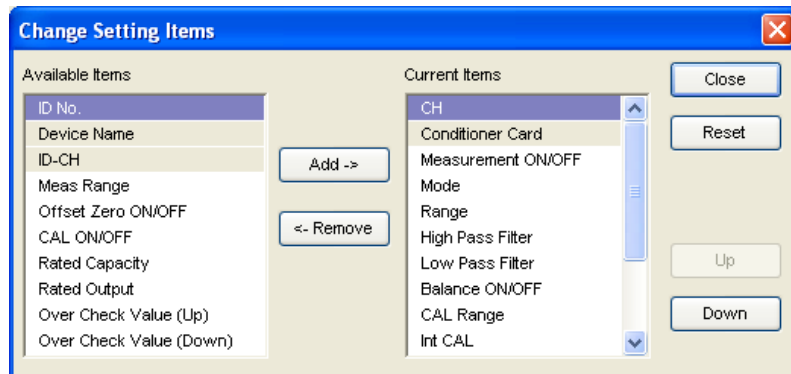
The mode, range low pass filter, high pass filter, and CAL range of every conditioner card are displayed as follows.

Card	Mode	Range	Low pass filter	High pass filter	CAL range
CDV-40B CDV-40B-F	Strain	500 $\mu\text{m/m}$ 1 $\text{k}\mu\text{m/m}$ 2 $\text{k}\mu\text{m/m}$ 5 $\text{k}\mu\text{m/m}$ 10 $\text{k}\mu\text{m/m}$ 20 $\text{k}\mu\text{m/m}$ 50 $\text{k}\mu\text{m/m}$ OFF	FLAT 10 kHz 3 kHz 1 kHz 300 Hz 100 Hz 30 Hz 10 Hz	OFF 0.2 Hz 1 Hz	100% 50% SHUNT
	Voltage	0.1 V 0.2 V 0.5 V 1.0 V 2.0 V 5.0 V 10.0 V OFF	AUTO * * CDV-40B-F only		100% 50%
CFV-40A	ZC/S ZC/N TTL	50 Hz 100 Hz 500 Hz 1 kHz 2 kHz 5 kHz 10 kHz 20 kHz OFF	None	OFF ON	100% 50%
CTA-40A	K (ON) K (OFF)	240 °C 480 °C 1230 °C OFF	None	None	100% 50% CHECK
	T (ON) T (OFF)	210 °C 400 °C OFF			
CCA-40A CCA-40A-F	Voltage Reserve	20 mV 50 mV 100 mV 200 mV 500 mV 1000 mV 2000 mV 5000 mV OFF	FLAT 10 kHz 3 kHz 1 kHz 300 Hz AUTO * * CCA-40A-F only	None	DC100% DC50% AC100% AC50%
DPM-42A DPM-42A-F	BV (2.0 V)	200 $\mu\text{m/m}$ 500 $\mu\text{m/m}$ 1 $\text{k}\mu\text{m/m}$ 2 $\text{k}\mu\text{m/m}$ 5 $\text{k}\mu\text{m/m}$ 10 $\text{k}\mu\text{m/m}$ 20 $\text{k}\mu\text{m/m}$ OFF	FLAT 1 kHz 300 Hz 100 Hz 30 Hz 10 Hz AUTO *	None	100% 50% SHUNT
	BV (0.5 V)	1 $\text{k}\mu\text{m/m}$ 2 $\text{k}\mu\text{m/m}$ 5 $\text{k}\mu\text{m/m}$ 10 $\text{k}\mu\text{m/m}$ 20 $\text{k}\mu\text{m/m}$ 50 $\text{k}\mu\text{m/m}$ OFF	* DPM-42A-F only		

4-1-2 Change Setting Items

Click the **Change Setting Items** button to display the following dialog box.

Setting items displayed on the **Set CH Condition** dialog box are added, removed, or sorted.



Add -> button

Item currently not on the window is added to the **Set CH Condition** dialog box.

<- Remove button

Item currently displayed on the window is removed from the **Set CH Condition** dialog box.

Close button

Determines the setting item and closes the dialog box.

Reset button

Resets the item to the default state.

Up button

For moving the target item to up.

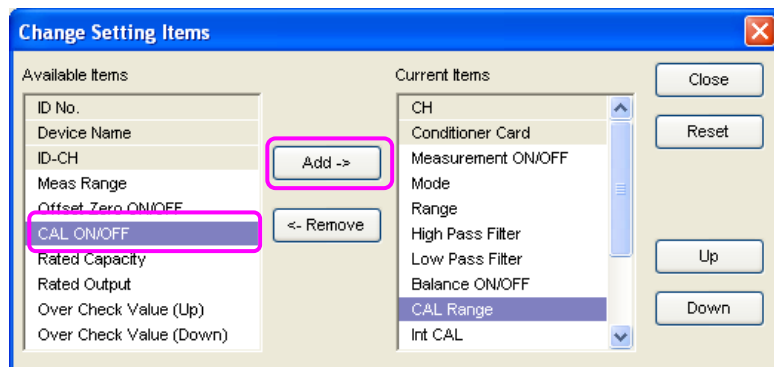
Down button

For moving the target item to down.

■ Operation Example

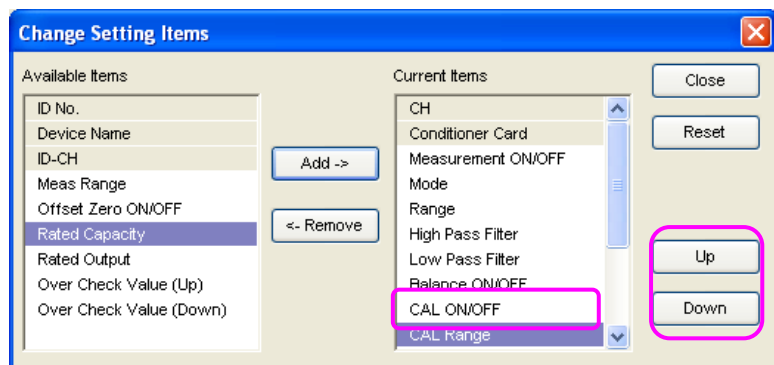
Procedures for adding the CAL ON/OFF setting item to the **Set CH Condition** dialog box are described below.

- 1) Select **CAL ON/OFF** in **Available Items**, move the cursor to a location in **Current items** where you want to inset the selected item and then, click the **Add ->** button.



- 2) The **CAL ON/OFF** is added to **Current Items**.

In addition, items in the **Current Items** can be moved to any location by clicking the **Up** or **Down** button.



- 3) Finally, click the **Close** to exit the **Change Setting Items** dialog box.

4-1-3 Compensating internal calibration

The internal calibration is conducted when a sensor is connected to the EDX-3000A/B or when changing the input cable No. and custom-made cable correction values of CH conditions.

The internal calibration is compensated as follows for every conditioner card.

- CDV-40B series
 - 1) Strain mode: Check the bridge resistance of the strain gage in 4-gage circuit or the strain gage transducer to compensate the sensitivity.
 - 2) Voltage mode: Compensate the internal zero point.
- DPM-42 series
 - 3) Check the bridge resistance of the strain gage in 4-gage circuit or strain gage transducer to compensate the sensitivity.
- CVM-40A/41A
 - 4) Strain mode: Check the bridge resistance of the strain gage in 4-gage circuit or the strain gage transducer to compensate the sensitivity.
 - 5) Voltage mode: Compensate the internal zero point.
 - 6) Piezoelectric mode: Not available.

For items 1) , 3) and 4), always conduct this function with the sensor connected.

For item 2) and 5), conduct this function when mounting a new conditioner card or changing the mounted slot.

■ How to conduct the internal calibration

- 1) Put a check mark to the check box next to the target CH in the “Int. CAL” column.

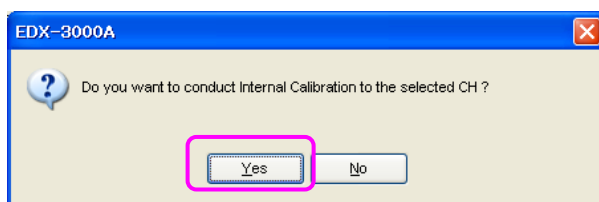
Select appropriate input cables (when input cable is custom cable, set cable correction value).

For details, see “4-1-1.”

Card	CH	Int. CAL	Input cable	Cable correction value
CVM-41A	01	☒	U-122 (1.0m)	---
	02	☒		
	03	☒		
	04	☒		
	05	☒		
	06	☒		
	07	☒		
	08	☒		
CVM-40A	09	☐	U-122 (1.0m)	---
	10	☐		
	11	☐		
	12	☐		
	13	☐		
	14	☐		
	15	☐		
	16	☐		
CDV-40A	17	☒	U-39 (1.0m)	---
	18	☒		
	19	☒		

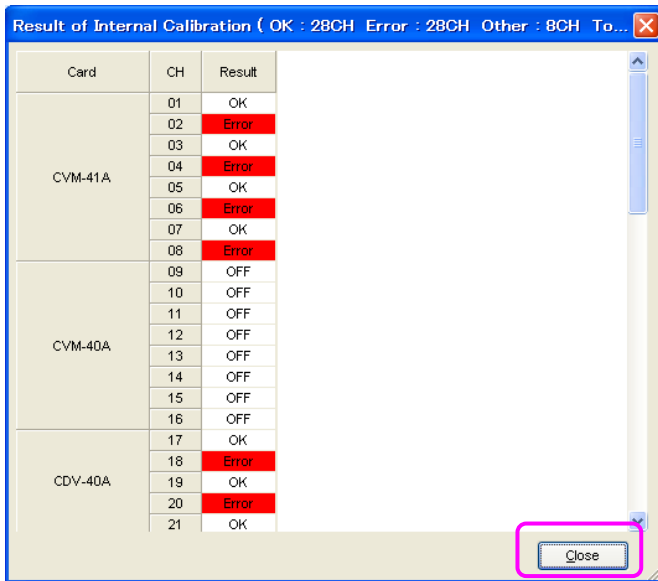
- 2) Click the **Internal Calibration...** button and the following message appears.

Click the **Yes** button.



4) The internal sensitivity is compensated and the results appear on the **Result of Internal Calibration** dialog box in the following.

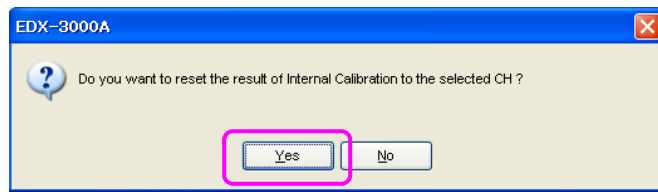
Click the **Close** button to close the **Result of Internal Calibration** dialog box.



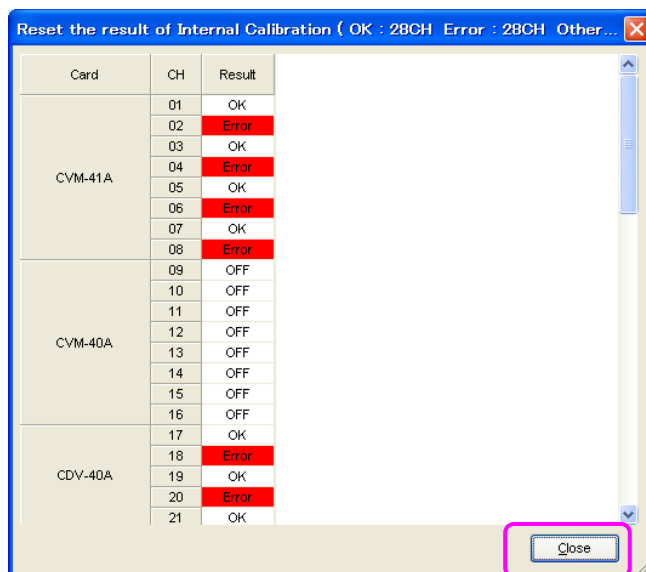
OK	Normal
NG	Faulty
OFF	Internal calibration not applicable.

■ How to Reset the results of the internal calibration

- 1) Click the **ResetInternal Calibration...** button and the following message appears.
Click the **Yes** button.



- 2) The results of the internal calibration are initialized and the initialized results are displayed on the **Reset the result of Internal Calibration** dialog box.
Click the **Close** button to close the **Reset the result of Internal Calibration** dialog box.



4-2 DIGITAL CH CONDITION

Set the measurement ON/OFF and bit name of the digital CH.

Select the **Digital CH** tab on the **Set CH Condition** dialog box.

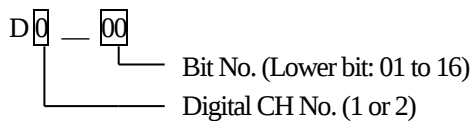
ID No.	Bit	Measurement ON/OFF	Bit Name
0	D1_01		
	D1_02		
	D1_03		
	D1_04		
	D1_05		
	D1_06		
	D1_07		
	D1_08		
	D1_09		
	D1_10		
	D1_11		
	D1_12		
	D1_13		
	D1_14		
	D1_15	☐	
	D1_16		
1	D2_01		
	D2_02		
	D2_03		
	D2_04		
	D2_05		
	D2_06		
	D2_07		
	D2_08		
	D2_09		
	D2_10		
	D2_11		
	D2_12		
	D2_13		
	D2_14		

4-2-1 Setting Items

●Bit

Set bit No.

The bit No. is described as follows.



● Measurement ON/OFF (arbitrarily set)

Put a checkmark to measure the digital channels.

The target digital channels are displayed on the CH Display Bar on the main window as follows.

● Bit Name (arbitrarily set)

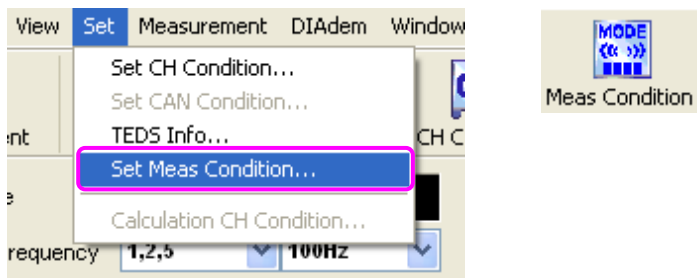
Input comment character string (within 40 characters) corresponding to the input bit.

5. MEASURING CONDITIONS

This chapter describes how to set real-time process, meas mode, sampling frequency, the number of recording data, and data file.

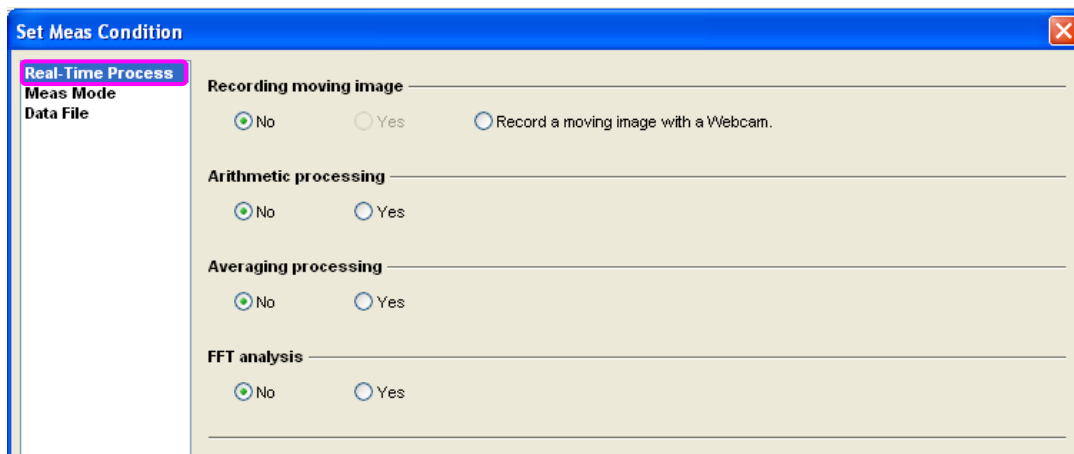
Open the **Set Meas Condition** dialog box by either of the following.

- Click the **Set** – **Set Meas Condition...**.
- Click the **Meas Condition** icon from the toolbar.



5-1 REAL-TIME PROCESS

Click the **Real-Time Process** on the **Set Meas Condition** dialog box.



■ Recording moving image

Click the desired procession.

“No”

No recording is conducted.

“Yes”

For recording the moving image as well as the measured data at the same time by using the high speed camera, etc.

“Record a moving image with a Webcam”

For recording the moving image as well as the measured data at the same time by using the Web cam.

■ Arithmetic processing

Click the desired procession.

“No”

No arithmetic procession is conducted.

“Yes”

Conducts arithmetic procession.

If you click the “Yes,” the measured data is conducted four arithmetic operations, filtering, differential/integral operation, and moving average operation. And the calculated result is saved in the window or data file as calculated data.

Open the **Set Calculation Condition** dialog box for setting the arithmetic processing.

■ Averaging processing

Click the desired procession.

“No”

“Yes”

No averaging procession is conducted.

Conducts averaging procession.

If you click the “Yes,” the all target data for displaying or all target data for saving becomes averaged data.

■ FFT analysis

Click the desired procession.

“No”

“Yes”

No FFT analysis is conducted.

Conducts FFT analysis.

If you click the “Yes,” the analysis results can be displayed on the **FFT Analysis** dialog box.

MEMO

The EDX-3000A/B can conduct real-time processions at the same time such as arithmetic processing the data as well as recording moving image by using the Web cam.

NOTE

Available **Meas Mode** and sampling frequency are restricted based on the selected real-time processions.

In addition, if the pre-set measuring conditions (sampling frequency, Meas Mode, etc) do not satisfying the restrictions of the target real-time procession, the not available real-time processions are made invalid and you cannot click the desired real-time processions.

Set the measuring conditions within the restrictions of the target real-time procession and click the desired real-time processions.

5-2 MEAS MODE

Click the **Meas Mode** on the **Set Meas Condition** dialog box.

The screenshot shows the 'Set Meas Condition' dialog box with the following settings:

- Meas Mode:** Manual (Set Record Data)
- Sampling Frequency:** 1,2,5 (selected), 100Hz (selected). Below this, it states: 'The number of measuring CHs of EDX-3000A units are listricted by the selected sampling frequency.' and 'Clockout frequency dividing' 1 (selected), (Frequency that is output from the EDX-3000A: 100Hz)
- Record Data:** Number of Data/CH: 1000 (selected), Record Time: 10.000sec (selected)
- Repeat Times:** 1 (selected)

■ Meas Mode

Click the target measuring mode.

If you change the measuring mode, a display also changes.

“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.
“Digital Trigger”	Automatically start recording data when bit of the digital CH satisfies the trigger conditions.
“Ext Trigger”	Automatically starts recording data by the trigger conditions when the external trigger signal is received.
“Complex Trigger”	Automatically starts recording data when satisfying the AND/OR trigger conditions of the following conditions. (1) 4 channels (analog trigger and digital trigger) (2) 1-CH external trigger (3) Manual trigger

■ Sampling Frequency

- Select the sampling frequency.

The sampling frequency is common to all channels.

Sampling Frequency	Options
1,2,5 system	1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz, 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 5 kHz, 10 kHz, 20 kHz, 50 kHz, 100 kHz, 200 kHz
2n system	2 Hz, 4 Hz, 8 Hz, 16 Hz, 32 Hz, 64 Hz, 128 Hz, 256 Hz, 512 Hz, 1.024 kHz, 2.048 kHz, 4.096 kHz, 8.192 kHz, 16.384 kHz, 32.768 kHz, 65.536 kHz, 131.072 kHz
External clock	Input a sampling frequency of the external clock.

MEMO

The sampling frequency of 2n system is used for making the frequency resolution of the FFT analysis result to the nice round numeric value.

Sampling Frequency	Resolution of FFT (2048) analysis result
4.096 kHz	1.0000 Hz
5.000 kHz	1.2207 Hz

- Set the clock out frequency dividing. (Setting range: : 1 to 65535)

The EDX-3000A/B can output clock (arbitrary divided internal sampling clock).

It allows the EDX-3000A/B and the external device (other manufacture made logger, high speed camera, etc) work together in measuring data.

The EDX-3000A/B outputs the external clock output from the CLK OUT terminal on the rear panel of the EDX-3000A/B in the following.



■ Number of Data/CH and Record Data

If you click other than **Manual** in the **Meas Mode**, input the number of recorded data or recording time.

The **Number of Data** work with the **Record Data**. You can set either two items.

■ Repeat Times

Set the repeat times. (Setting range: 1 to 9999)

5-3 SETTING INTERVAL MEASUREMENT CONDITIONS

Set various conditions for internal measurement.

Select the **Interval** on the **Set Meas Condition** dialog box.

Set Meas Condition

Real-Time Process
Meas Mode
Interval
Data File

Start Time

☒ Set Interval Start Time.

2010/01/01 00:00:00

If start date is not set, the date when [REC/PAUSE] button is pressed shall be the start date.

Interval Time

Day Hour Minute Second

0 0 1 0

Set interval time to a time more than 'record time (10.000sec) + 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/PAUSE** button is pressed if putting no check mark.
- 2) Set the interval time.

NOTE

- “Recording time + 10 sec or more” should be set as the interval time.
 - If the **REC/PAUSE** button is pressed after the interval start time, is passed, 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.

5-4 SETTING ANALOG TRIGGER MEASUREMENT CONDITIONS

Set various conditions for analog trigger mode measurement.

Select the **Analog Trigger** on the **Set Meas Condition** dialog box.

The screenshot shows the 'Set Meas Condition' dialog box with the 'Analog Trigger' tab selected. The left sidebar contains 'Real-Time Process', 'Meas Mode', 'Analog Trigger' (highlighted), and 'Data File'. The main area is titled 'Analog Trigger' and contains the following settings:

	CH No.	Slope	Level(Physical Value)	
Start Trigger	01	Positive	500.0000	-1000.000 - 1000.000 um/m
End Trigger	01	Positive	500.0000	-1000.000 - 1000.000 um/m
Pre Trigger Data(Delay)	Time	10.000sec		0 - 00:43:41
	Number of Data/CH	1000		0 - 262144
Post Trigger Data(Delay)	Time	10.000sec		0 - 00:43:41
	Number of Data/CH	1000		0 - 262144

At the bottom, there is a checkbox labeled 'Set End Trigger' which is checked.

■ How to operate

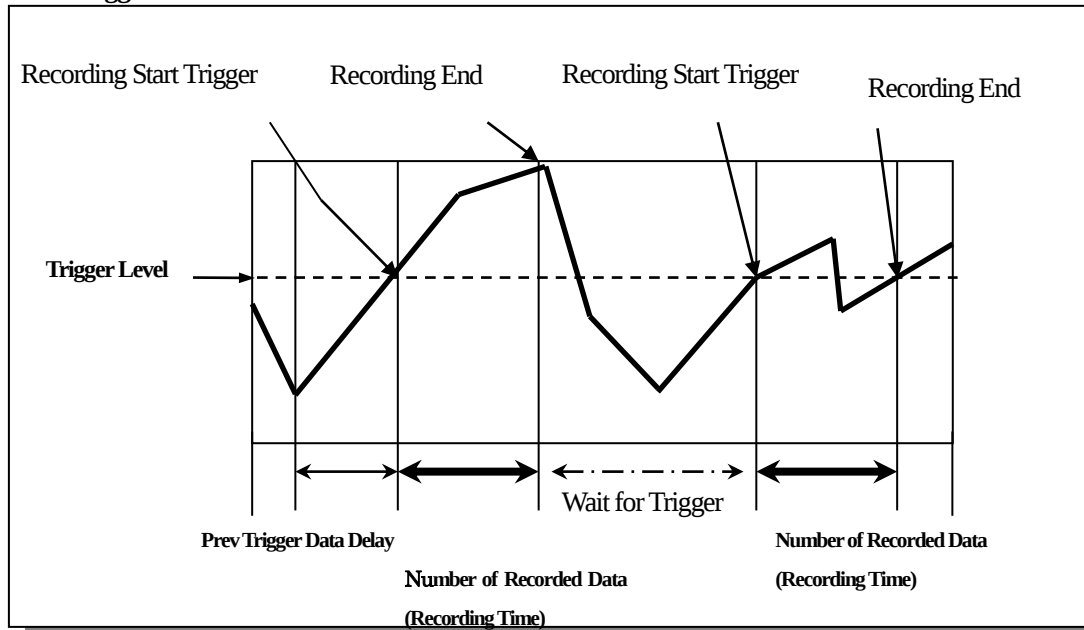
- 1) Select trigger CH No. that starts and ends recording data.
- 2) Set **Slope** (how to cross the data on the slope for the trigger level).
“Positive” or “Negative”
- 3) Input **Level** (level value is a measured value to be triggered).
Input an engineering value within a value relevant to engineering value of the setting range ($\text{Setting range} \times \text{CAL coefficient} + \text{Offset}$).
- 4) To record the data before starting the recording, input Prev Trigger Data (Delay) with time (unit: sec) or with the number of data/CH.
Setting available range of delay amount is shown on the right of the data entry field.
- 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**.

In analog trigger mode measurement, data recording starts from the following position according to **Trigger Slope** and **Trigger Level** and records data for the preset number of times.

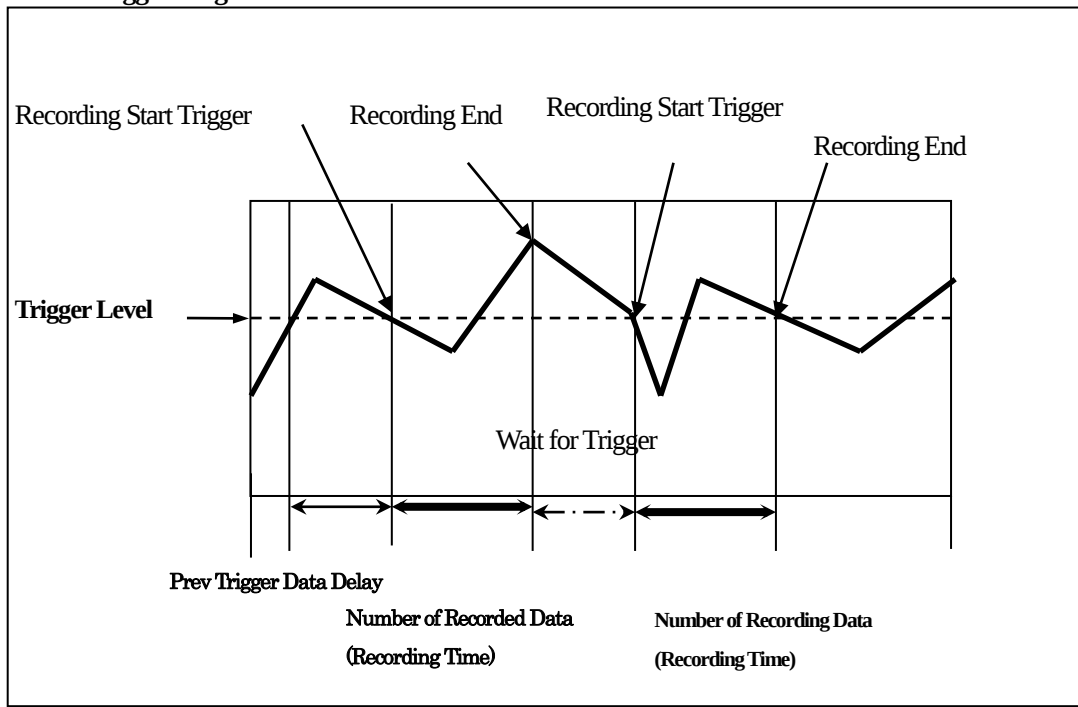
Trigger slope are classified into the following 2 types.

- “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.

■ Start Trigger: Positive

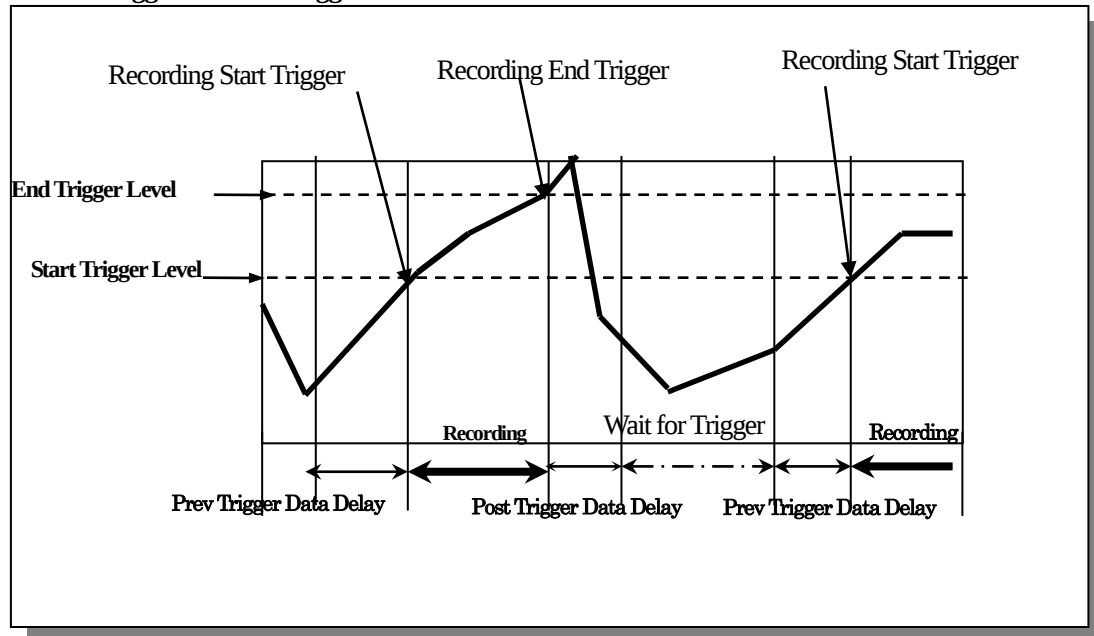


■ Start Trigger: Negative

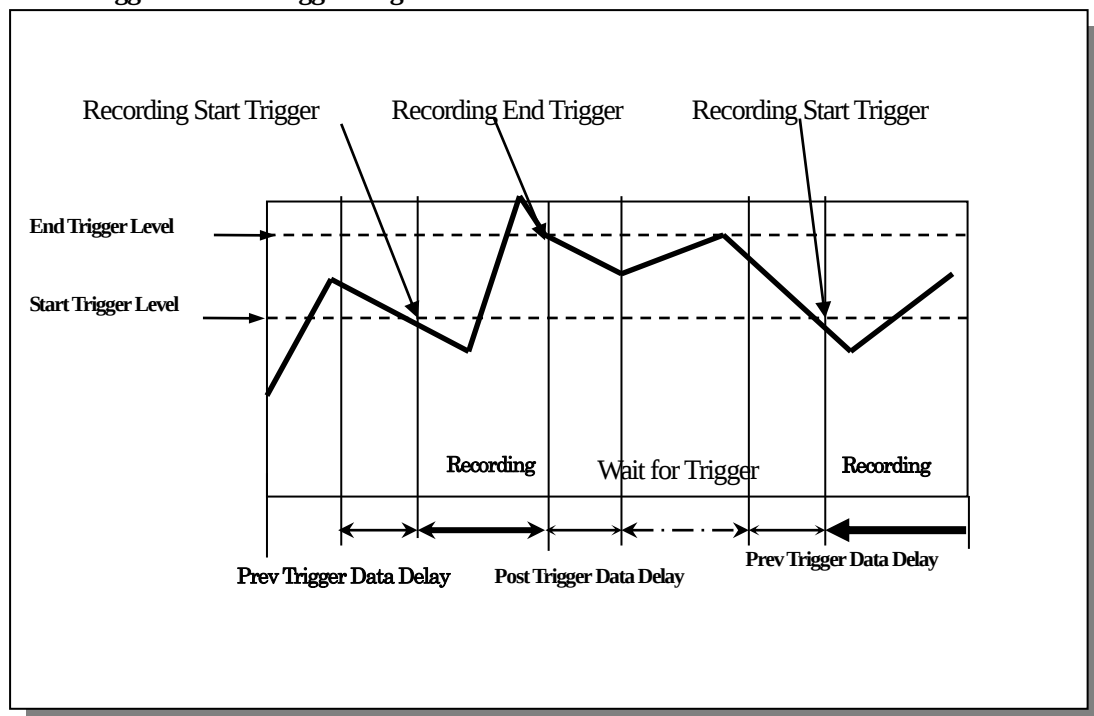


Example of trigger slope with end trigger.

■ Start trigger and End Trigger: Positive



■ Start Trigger and End Trigger: Negative



5-5 SETTING DIGITAL TRIGGER MEASUREMENT CONDITIONS

Set various conditions for digital trigger mode measurement.

Select the **Digital Trigger** on the **Set Meas Condition** dialog box.

Set Meas Condition

Real-Time Process
Meas Mode
Digital Trigger
Data File

Digital Trigger

Start Trigger: Bit (1-16) 1, Level 1
End Trigger: Bit (1-16) 1, Level 1

Pre Trigger Data(Delay): Time 10.000sec, 0 - 00:12:56
Number of Data/CH 1000, 0 - 77672

Post Trigger Data(Delay): Time 10.000sec, 0 - 00:12:56
Number of Data/CH 1000, 0 - 77672

☐ Set End Trigger.

■ How to operate

1) Select trigger bit that starts recording data. (Setting range: 0 to 16)

The EDX-3000A/B records digital input data for 32 bits. However, the setting available bits as the trigger conditions are 1 to 16.

2) Select “0” or “1” as trigger level.

The EDX-3000A/B starts recording data when the preset bit (set as the trigger bit) satisfies the setting level.

3) To record the data before starting the recording, input Prev Trigger Data (Delay) with time (unit: sec) or with the number of data/CH.

Setting available range of delay amount is shown on the right of the data entry field.

4) 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**.

5-6 SETTING EXTERNAL TRIGGER MEASUREMENT CONDITIONS

Set various conditions for external trigger mode measurement.

Select the **Ext Trigger** on the **Set Meas Condition** dialog box.

The screenshot shows the 'Set Meas Condition' dialog box. On the left, a sidebar contains three options: 'Real-Time Process', 'Meas Mode', and 'Ext Trigger' (which is highlighted with a pink box). The main area is titled 'Ext Trigger' and contains the following settings:

- Start Trigger Slope:** A dropdown menu set to 'Positive'.
- End Trigger Slope:** A dropdown menu set to 'Positive'.
- Pre Trigger Data(Delay):**
 - Time:** A text box containing '10.000sec' with a range of '0 - 00:38:50'.
 - Number of Data/CH:** A text box containing '1000' with a range of '0 - 233016'.
- Post Trigger Data(Delay):**
 - Time:** A text box containing '10.000sec' with a range of '0 - 00:38:50'.
 - Number of Data/CH:** A text box containing '1000' with a range of '0 - 233016'.
- Set End Trigger:** A checkbox that is checked.

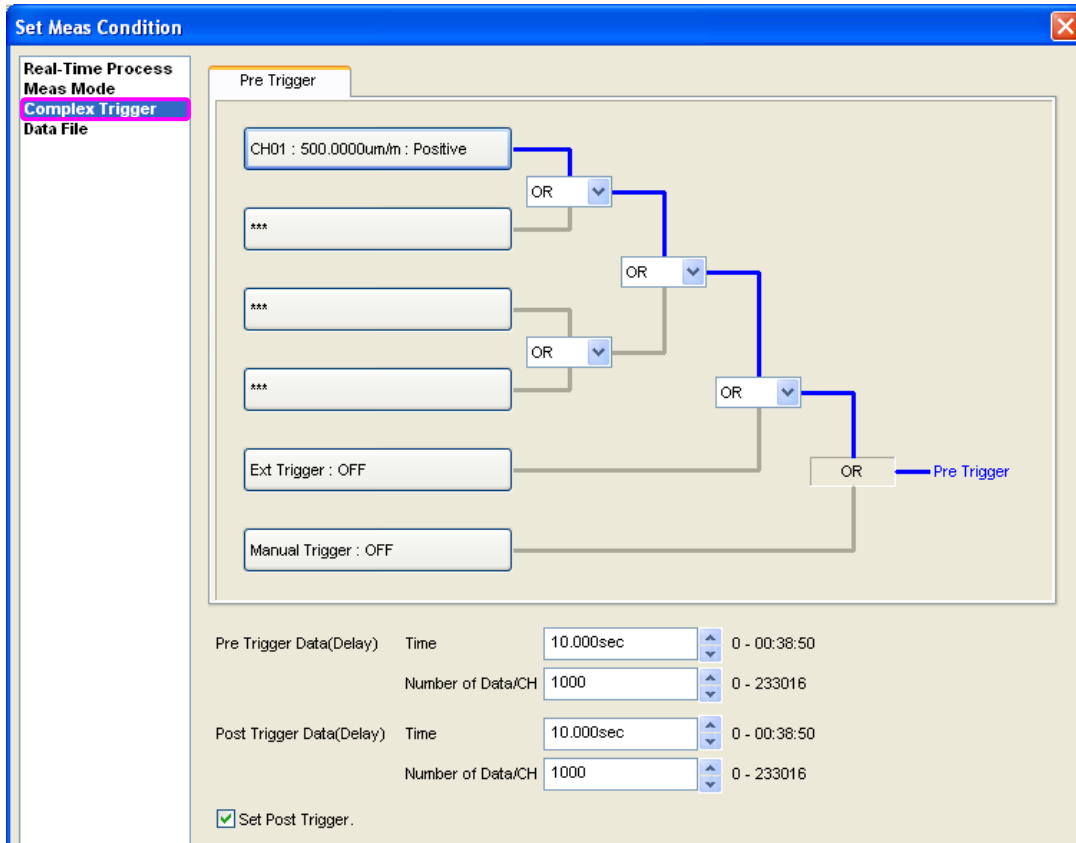
■ How to operate

- 1) Set slope (how to cross the data on the slope for the trigger level).
“Positive” or “Negative”
- 2) To record the data before starting the recording, input Prev Trigger Data (Delay) with time (unit: sec) or with the number of data/CH.
Setting available range of delay amount is shown on the right of the data entry field.
- 3) To set the end trigger, put a check mark in the box next to the “**Set End Trigger.**”
Set the conditions of the **End Trigger** in a same manner to the **Start Trigger**.

5-7 SETTING COMPLEX TRIGGER MEASUREMENT CONDITIONS

Set various conditions for complex trigger mode measurement.

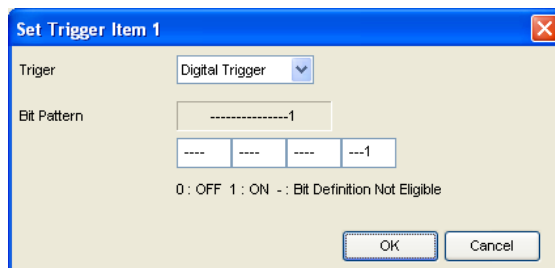
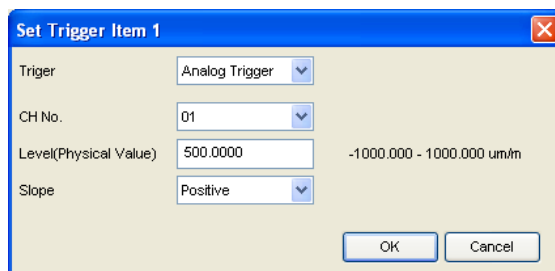
Select the **Complex Trigger** on the **Set Meas Condition** dialog box.



■ How to operate

1) Set AND/OR conditions of 4-CH (analog trigger + digital trigger), 1-CH external trigger, and manual trigger.

● Click the Analog Trigger Condition button or **Digital Trigger Condition** button to display the following dialog box.



Select the desired trigger from **None**, **Analog Trigger**, or **Digital Trigger** and set conditions.

- Click the Ext Trigger Condition button.

And the menu changes in due order from **Ext Trigger ON: Positive** → **Ext Trigger ON: Negative** → **EXT Trigger: OFF**.

- Specify AND/OR

Enabled trigger conditions until starting the trigger measurement is displayed with blue line.

2) To record the data before starting the recording, input Prev Trigger Data (Delay) with time (unit: sec) or with the number of data/CH.

Setting available range of delay amount is shown on the right of the data entry field.

3) 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**.

5-8 SETTING DATA FILE

This menu is used to set the file name, file title and file No.

The screenshot shows a software window titled "Set Meas Condition". On the left is a sidebar with three menu items: "Real-Time Process", "Meas Mode", and "Data File". The "Data File" item is highlighted with a pink background. The main area of the window is titled "Data File Name" and contains four input fields: a text box with "TEST0000.KS2", a text box with "TEST", an empty text box, and a spinner box set to "0".

■ File Name

Set a file name within 20 characters. (Default value: TEST)

■ File Title

Set a file title within 40 characters.

■ File No.

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

Data file names are specified as shown below.

The file name in this section is enclosed by the **frame** for convenience.

Meas Mode	Data File Name										
Manual Manual (Set Record Data)	<table><tr><td>TEST</td><td>0 0 0 0</td><td>. KS2</td></tr><tr><td>(1)</td><td>(2)</td><td></td></tr></table>	TEST	0 0 0 0	. KS2	(1)	(2)					
TEST	0 0 0 0	. KS2									
(1)	(2)										
Interval											
Analog Trigger	<table><tr><td>TEST</td><td>0 0 0 0</td><td>_Δ</td><td>0 0 0 0</td><td>. KS2</td></tr><tr><td>(1)</td><td>(2)</td><td></td><td>(3)</td><td></td></tr></table>	TEST	0 0 0 0	_Δ	0 0 0 0	. KS2	(1)	(2)		(3)	
TEST	0 0 0 0	_Δ	0 0 0 0	. KS2							
(1)	(2)		(3)								

(1) File Name A file name with up to 20 alphanumeric characters is assigned.

(2) File No. A file number between 0000 and 9999 is assigned.

The file number is incremented by one after every recording. Once the file number reaches 9999, measurement can no longer be made.

(3) Repeat Times Repeat times between 0000 and 9999 is assigned.

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

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

M: Manual measurement

I: Interval measurement

A: Analog trigger measurement

D: Digital trigger measurement

E: External trigger measurement

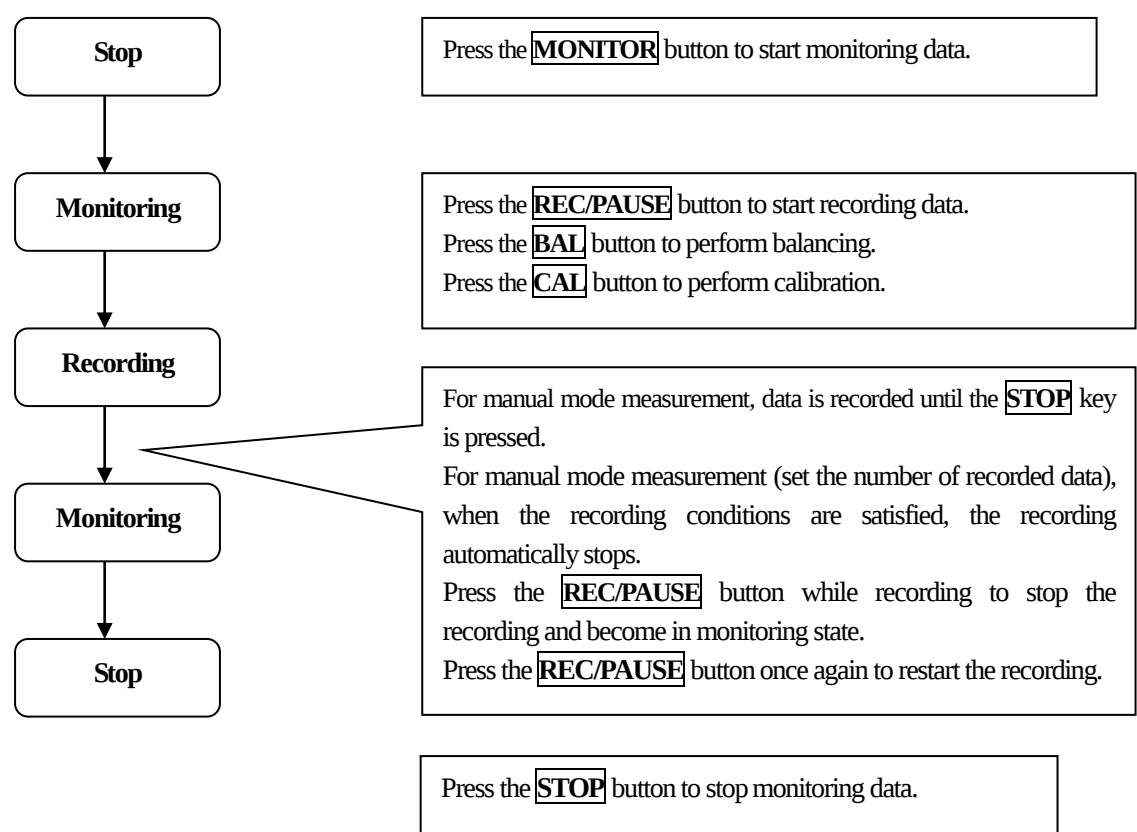
C: Complex trigger

6. MEASUREMENT

6-1 MANUAL MEASUREMENT

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

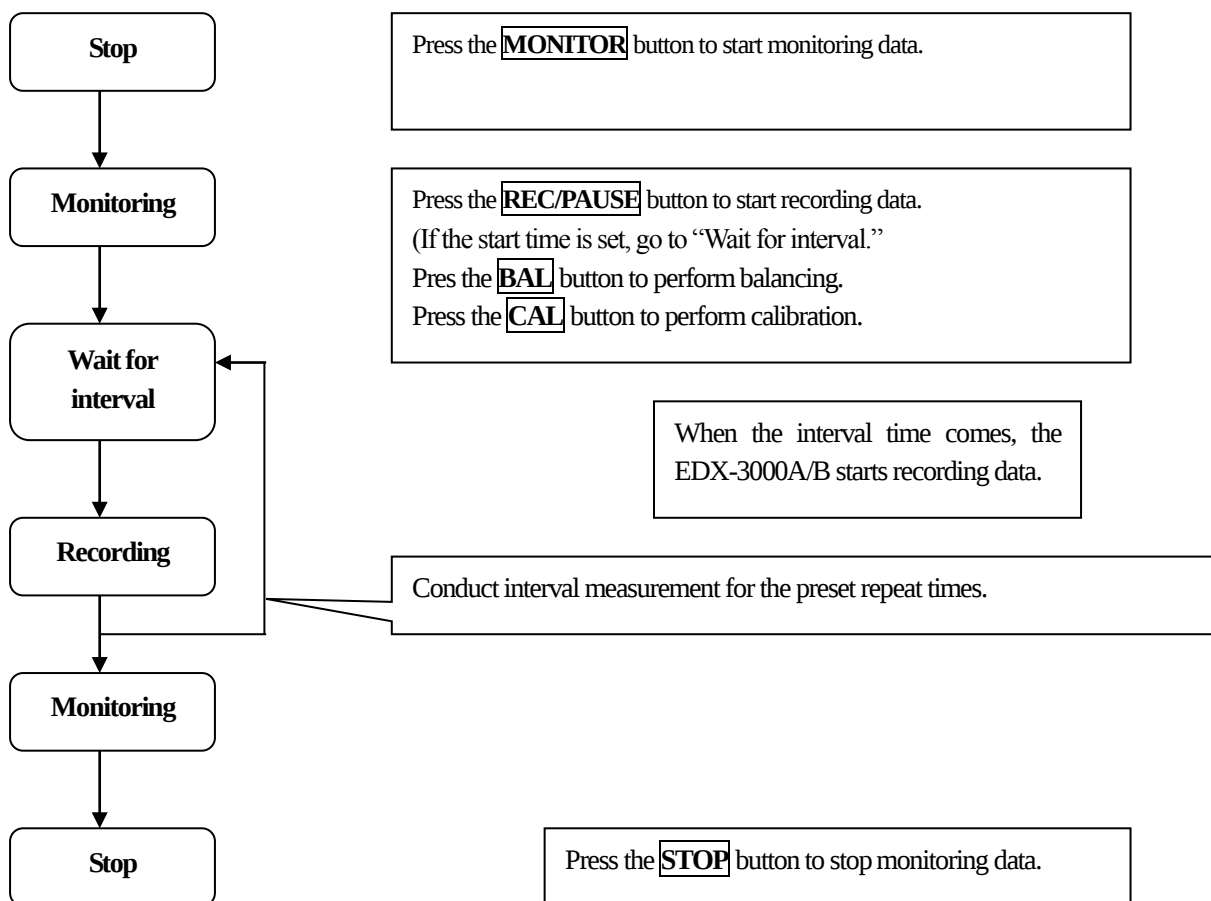
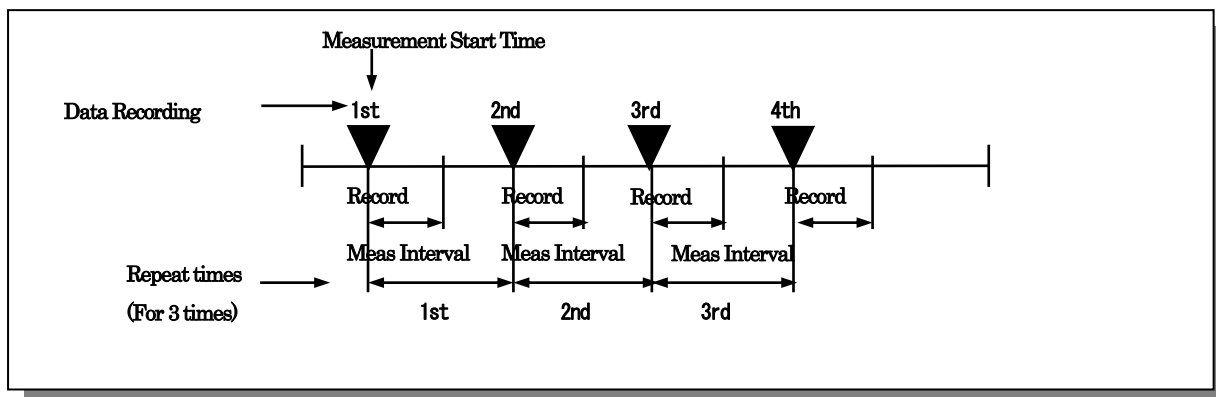
- The manual mode measurement starts by manually pressing the **REC/PAUSE** button. Thereafter, press the **STOP** button to stop recording the data.
- The manual mode measurement (Set the number of recorded data) starts by manually pressing the **REC/PAUSE** button and records the preset number of recorded data.



6-2 INTERVAL MEASUREMENT

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

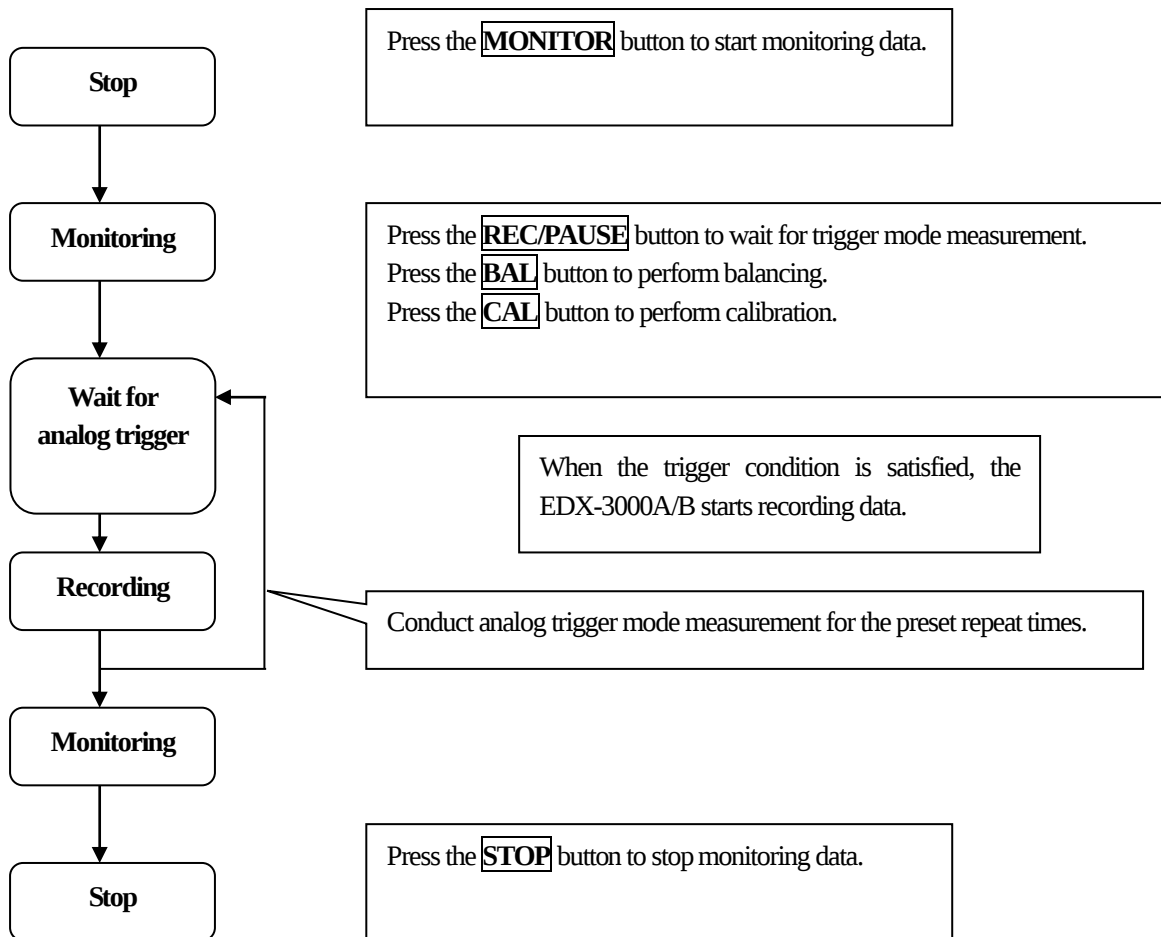
The interval mode measurement automatically records data at preset time interval.



6-3 ANALOG TRIGGER MEASUREMENT

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

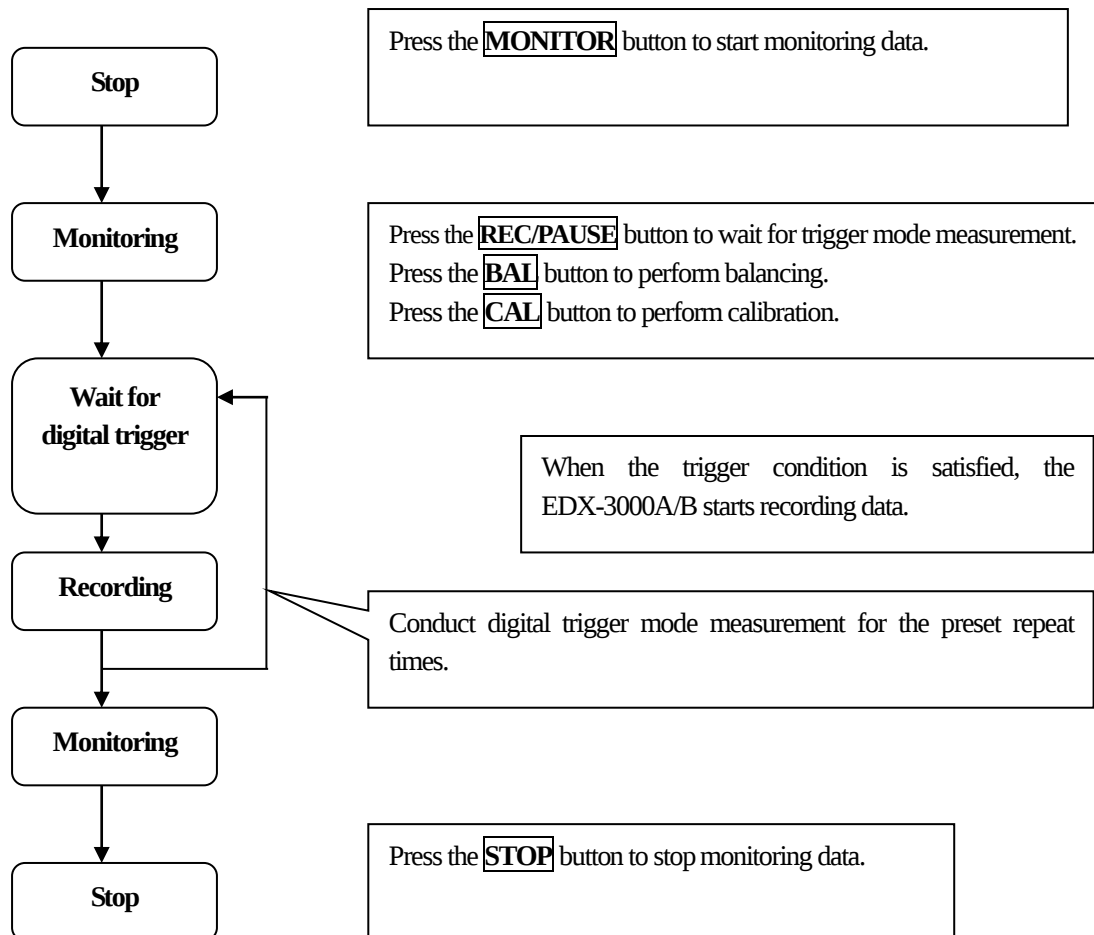
The analog trigger mode measurement automatically starts recording data when measured value of the specified analog CH satisfies the trigger conditions and records data for the preset number of repeat times (recording time).



6-4 DIGITAL TRIGGER MEASUREMENT

This section describes a measurement flow when Meas mode is set to **Digital Trigger** mode.

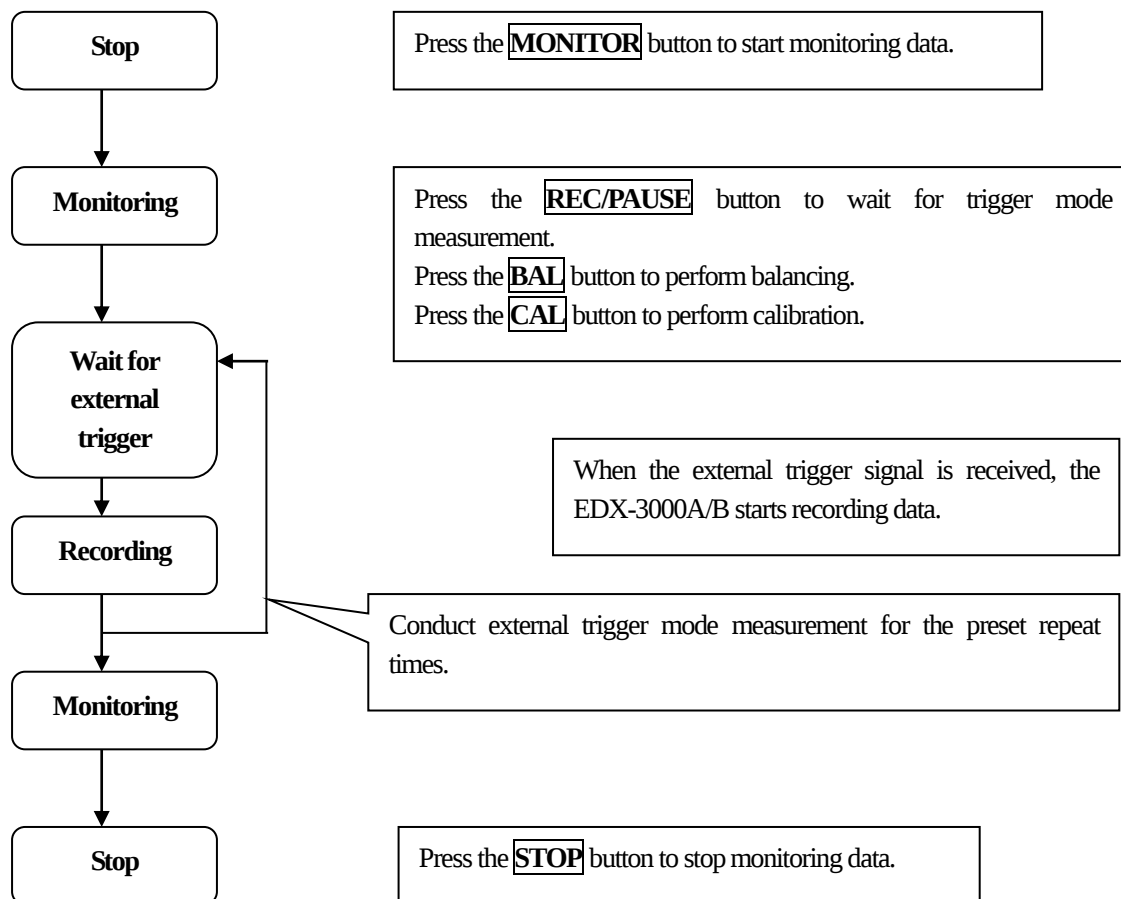
The digital trigger mode measurement is automatically starts recording when bit of the specified digital CH satisfies the trigger conditions and automatically records data.



6-5 EXTERNAL TRIGGER MEASUREMENT

This section describes a measurement flow when Meas mode is set to External Trigger mode.

The external trigger mode measurement starts recording data when the external trigger signal is received.
For how to connect the external trigger signal, refer to the EDX-3000A/B Instruction Manual for Hardware.

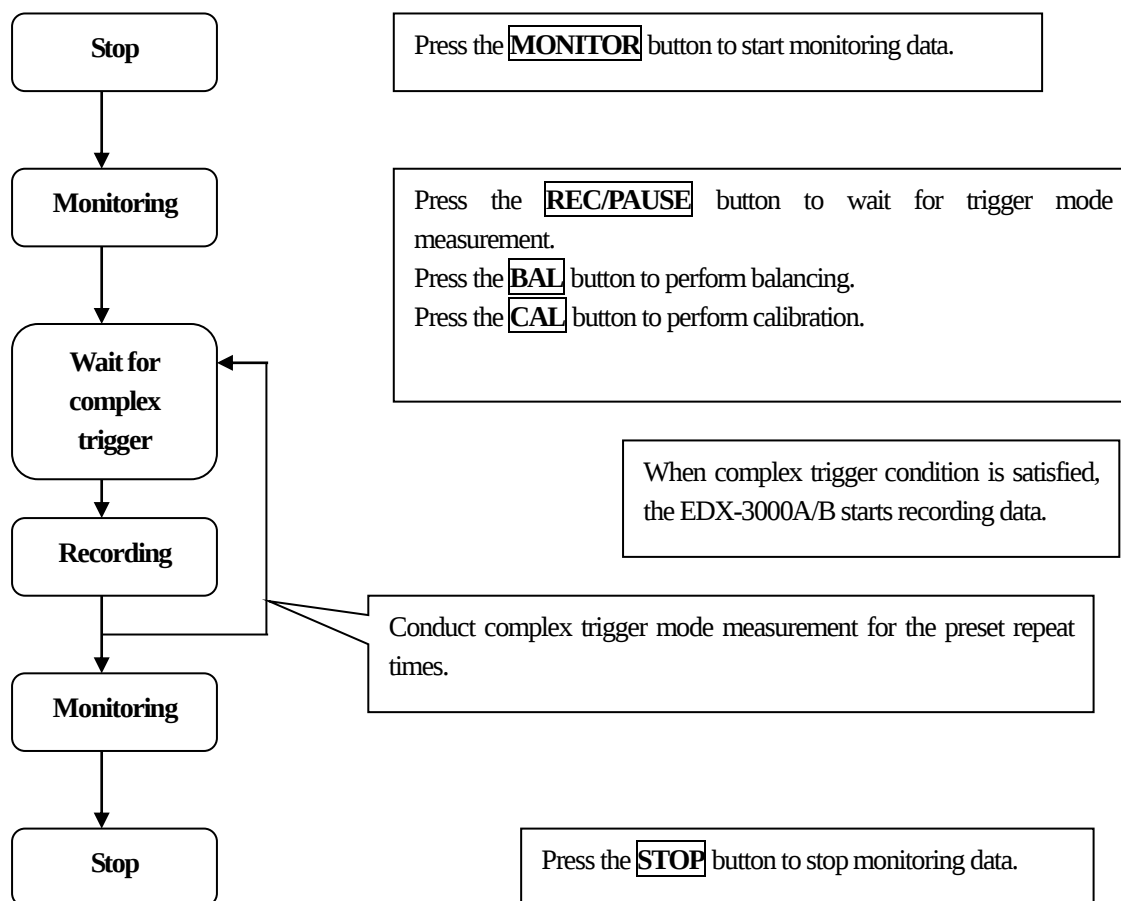


6-6 COMPLEX TRIGGER MEASUREMENT

This section describes a measurement flow when Meas mode is set to **Complex Trigger** mode.

The complex trigger mode measurement automatically starts recording data when 40-CH analog/digital trigger conditions, 1-CH external trigger, and AND/OR manual trigger conditions are satisfied.

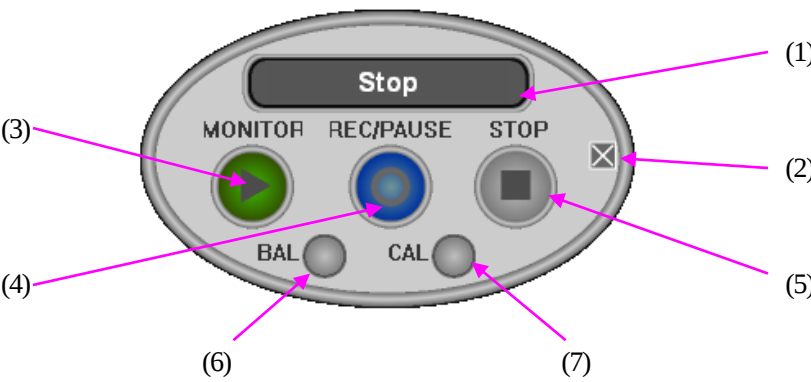
For trigger specifications of the analog trigger and external trigger, see previous sections “**6-3 ANALOG TRIGGER MEASUREMENT**” and “**6-5 EXTERNAL TRIGGER MEASUREMENT**.”



6-7 EXECUTING MEASUREMENT

While conducting monitor measurement, measured data is recorded according to the preset meas mode conditions.

6-7-1 Meas Operation Panel



(1) Display state Displays the measuring state as follows.

Stop	Stopping the measurement
Monitoring	In the process of monitor measurement
Recording	Recording data
Stopping record	Pausing recording with the PAUSE button pressed.
Wait for Intvl	Interval measurement condition is not satisfied.
Wait for $\Delta\Delta\Delta$ Trg	A state that required conditions of each trigger measurement are not satisfied. $\Delta\Delta\Delta$: Analog trigger/External trigger/Complex trigger

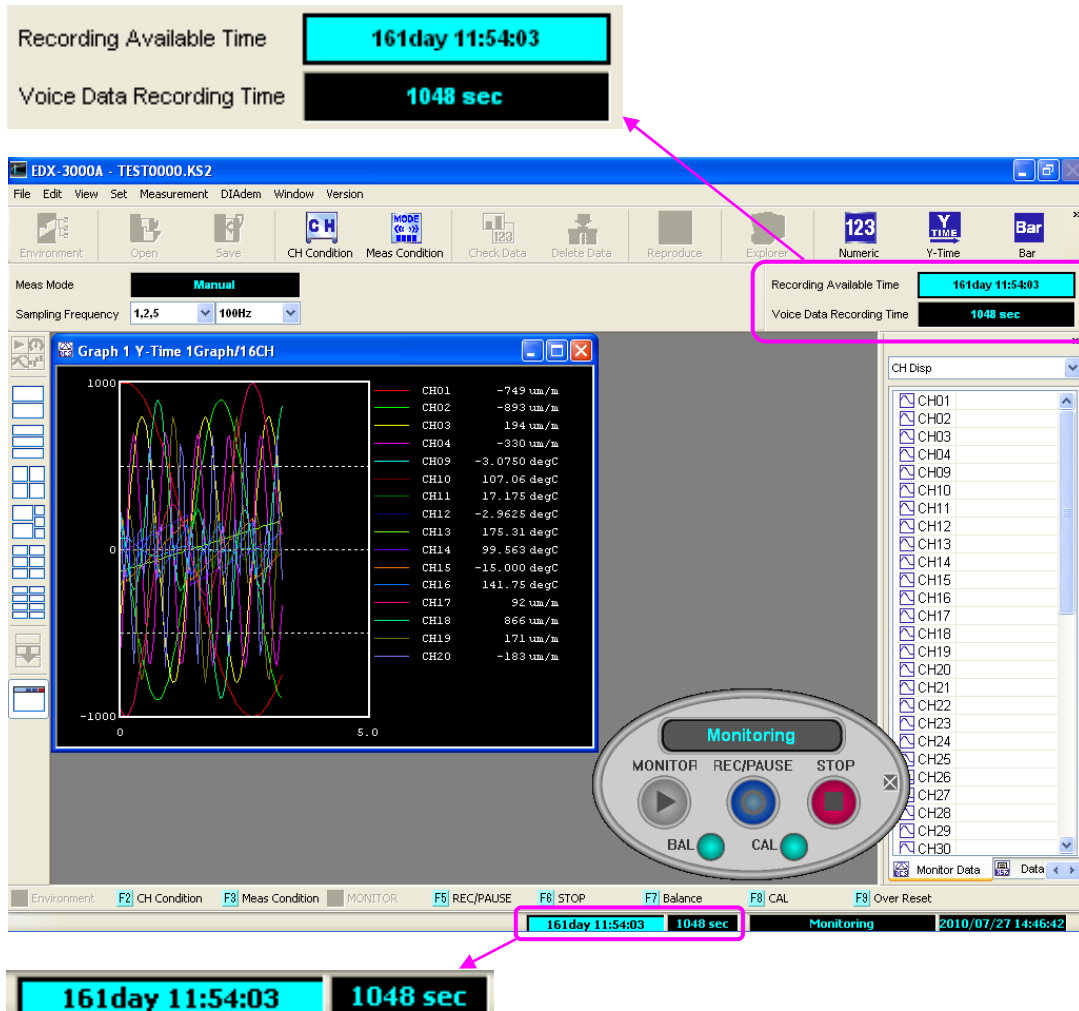
- (2) **X** button Closes the Meas Operation Panel.
- (3) **MONITOR** button Starts monitor measurement.
Same function as the **Measurement** – **MONITOR**.
- (4) **REC/PAUSE** button Start recording/pausing recording data.
Same function as the **Measurement** – **REC/PAUSE**.
- (5) **STOP** button Stops recording/monitoring data.
Same function as the **Measurement** – **STOP**.
- (6) **BAL** button Performs balancin and displays the balancing result.
Same function as the **Measurement** – **Exec Balance**.
- (7) **CAL** button Performs calibration in the order of +CAL output, - CAL output and CAL stop.
Same function as the **Measurement** – **Output/Stop CAL**.

6-7-2 Displaying Meas Mode Bar and Status Bar

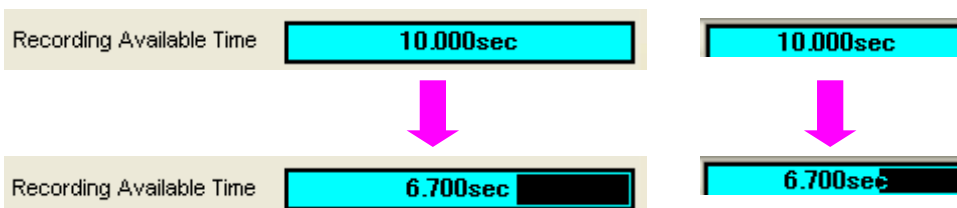
Various items are displayed on the Meas Mode Bar and Status bar according to the measuring status.

■ Recording Available Time and Voice Data

Monitoring starts and the **Recording Available Time** appears on the Meas Mode Bar and **Voice Data** appears on the Status Bar.



- The time that is displayed on the **Recording Available Time** varies as follows.
 - When the number of recording data is fixed.: Displays recording time that is calculated from the number of recording data and sampling frequency.
 - When the number of recording data is not fixed.: Displays maximum available recording time with the internal disk of the EDX-3000A/B.
- Remaining recording available time is displayed as bar meter and decreases after starting the data recording.



- **Voice Data Recording Time** displays the remaining time of the available voice recording time.
(Voice is recorded through the remote controller.)



Input voice.

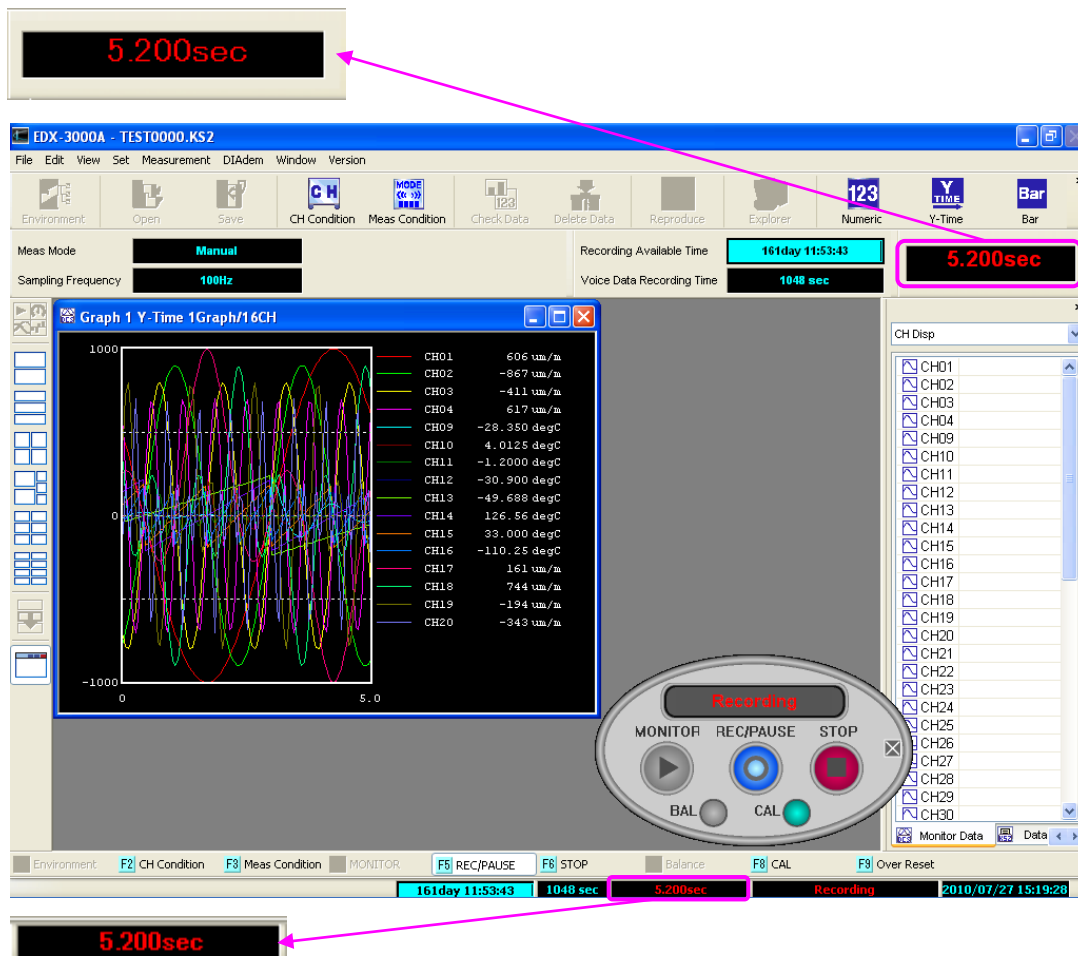
MEMO

- Measuring condition with the number of recording data fixed
Meas Mode: Manual (Set Record Data)
Meas Mode: Interval
Meas Mode: Analog Trigger with no Post Trigger set
- Measuring condition with the number of recording data not fixed.
Meas Mode: Manual
Meas Mode: Analog Trigger with not Post Trigger set
- The recording available time is described as follows when Meas Mode is set to Analog Trigger with no Post Trigger set.

Recording available time = (The number of recording time + Pre Trigger Data [Delay]) / Sampling frequency

■ Recording Time

Start recording data displays recording time (elapsed time from the data recording start time) on the Meas Mode Bar and Status Bar.



- When the number of recording data is fixed.: The recorded time is displayed as bar meter and numbers on the display increases after starting the data recording



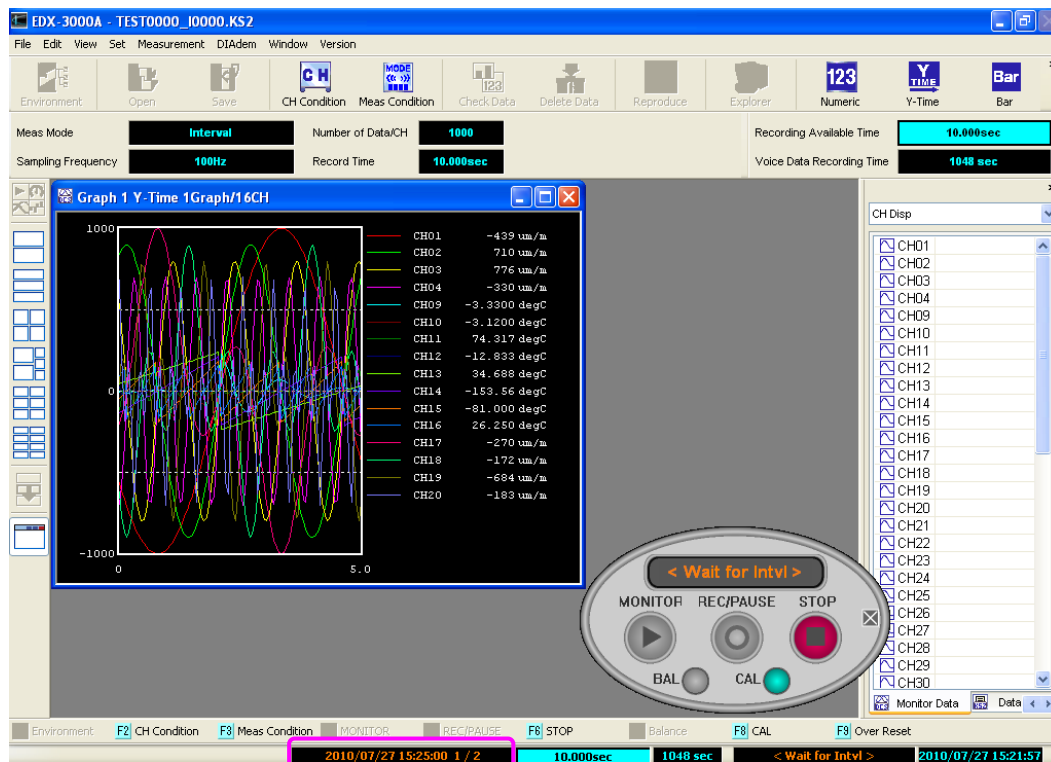
MEMO

The recording available time is described as follows when Meas Mode is set to Analog Trigger with no Post Trigger set.

Recording available time = (The number of recording time + Pre Trigger Data [Delay]) / Sampling frequency

■ Measuring Conditions

While conducting interval measurement and trigger measurement with monitoring state, the measuring conditions are displayed on the status bar.



● Interval

2010/07/27 15:25:00 1 / 2

Measurement start date and measurement repeat times are displayed.

● Analog Trigger

CH01 > 5000.0mm 1 / 10

Trigger CH, trigger level, and measurement repeat times are displayed.

● External Trigger

Ext Trigger Signal Positive 1 / 1

Measurement repeat times is displayed.

● Complex Trigger

Complex Trigger 1 / 1

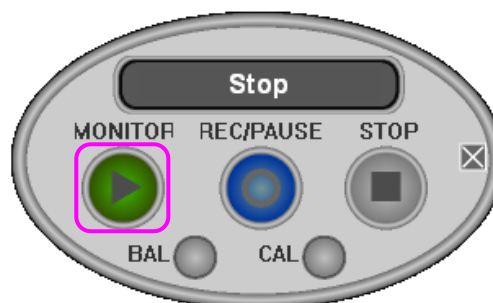
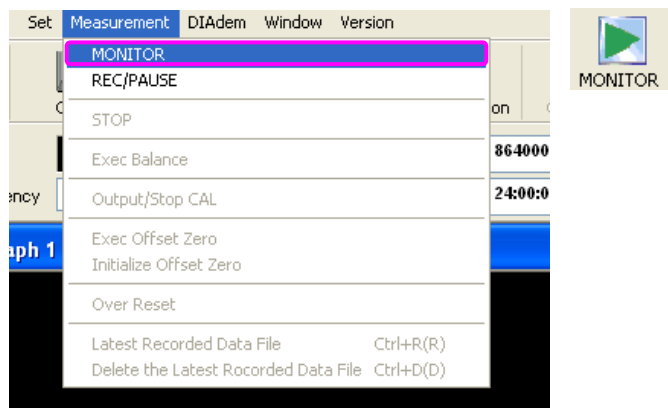
Measurement repeat times is displayed.

6-7-3 Manual Mode Measurement

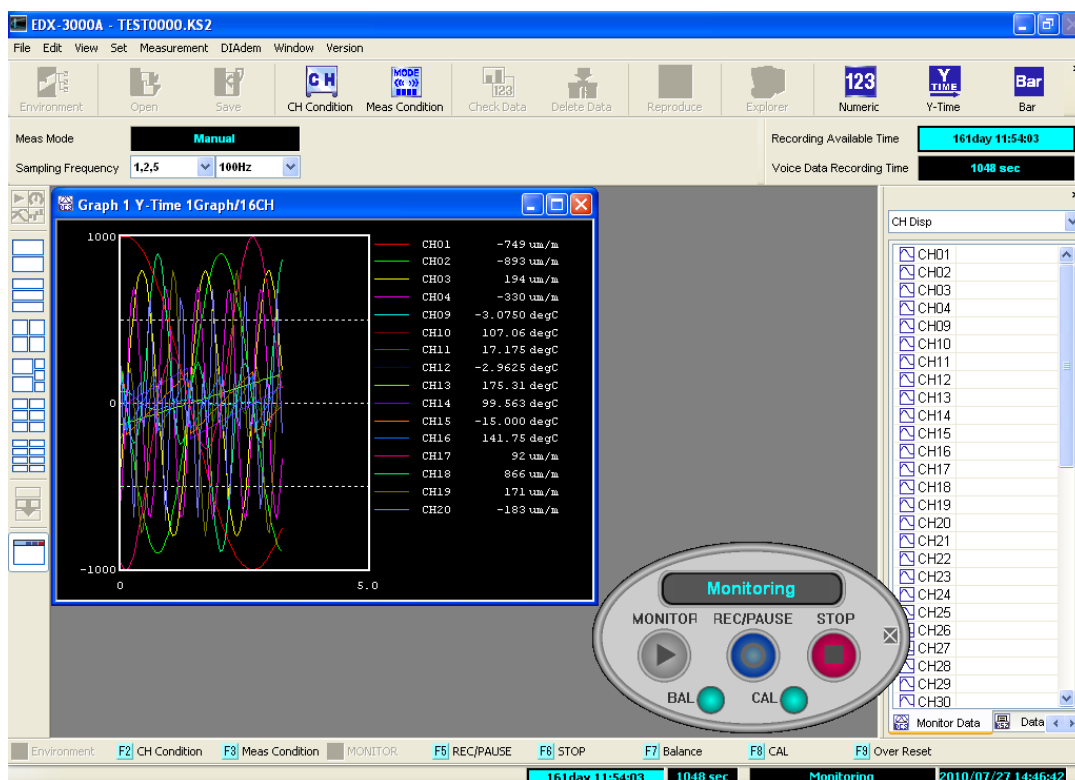
■ How to operate

1) Starts monitor mode measurement by any of the following.

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

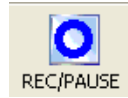
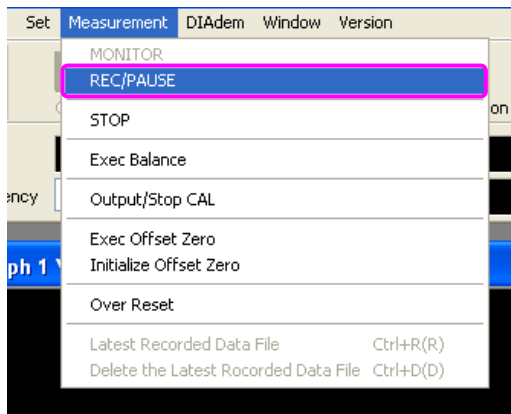


Monitoring window is described as follows.

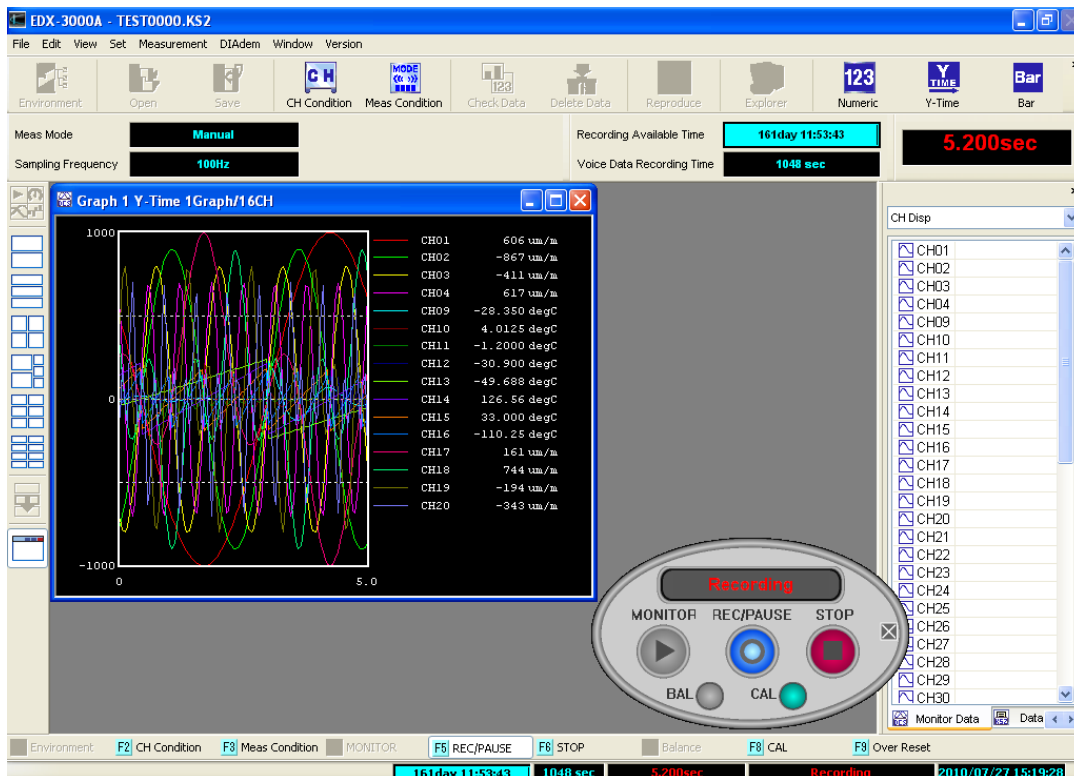


2) Starts recording data by any of the following.

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



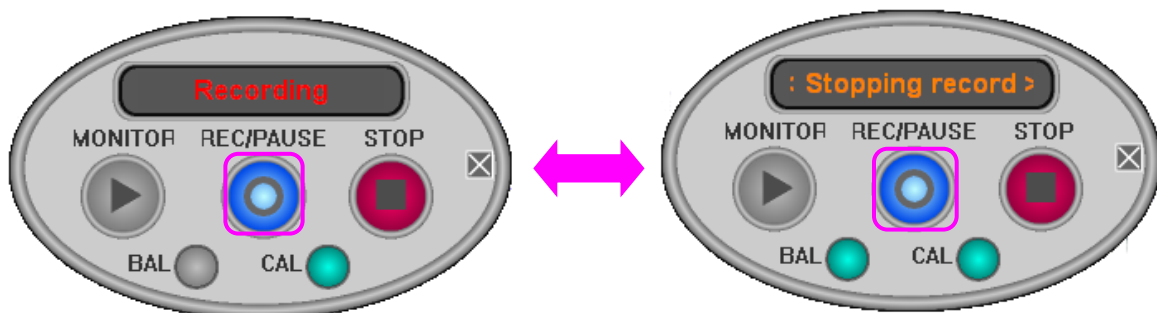
Recording window is described as follows.



To pause the data recording, conduct any of the following operation during recording data.

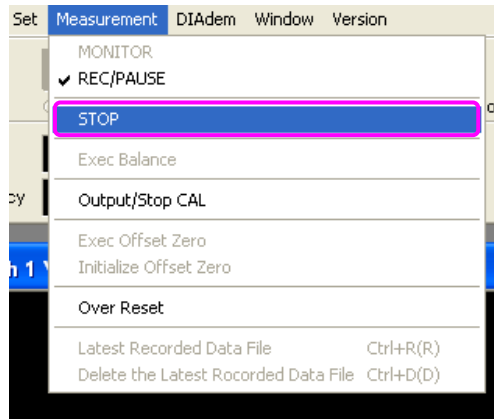
In addition, if you want to record data again, conduct any of the following operation again during pausing.

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



3) The EDX-3000A/B 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 on the Meas Operation Panel.



When the Meas Mode is set to **Manual (set the number of recorded data)**, after satisfying the recording conditions, the EDX-3000A/B automatically ends data recording.

4) Ends monitoring data by any of the following.

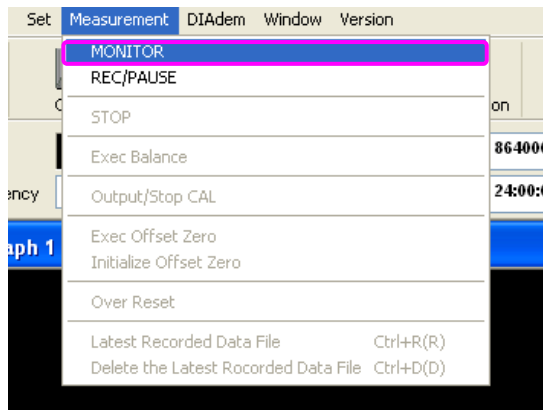
- Click the **Measurement** – **STOP**.
- Click the **STOP** icon from the toolbar.
- Click the **STOP** button on the Meas Operation Panel.

6-7-4 Interval Measurement and Trigger Measurement

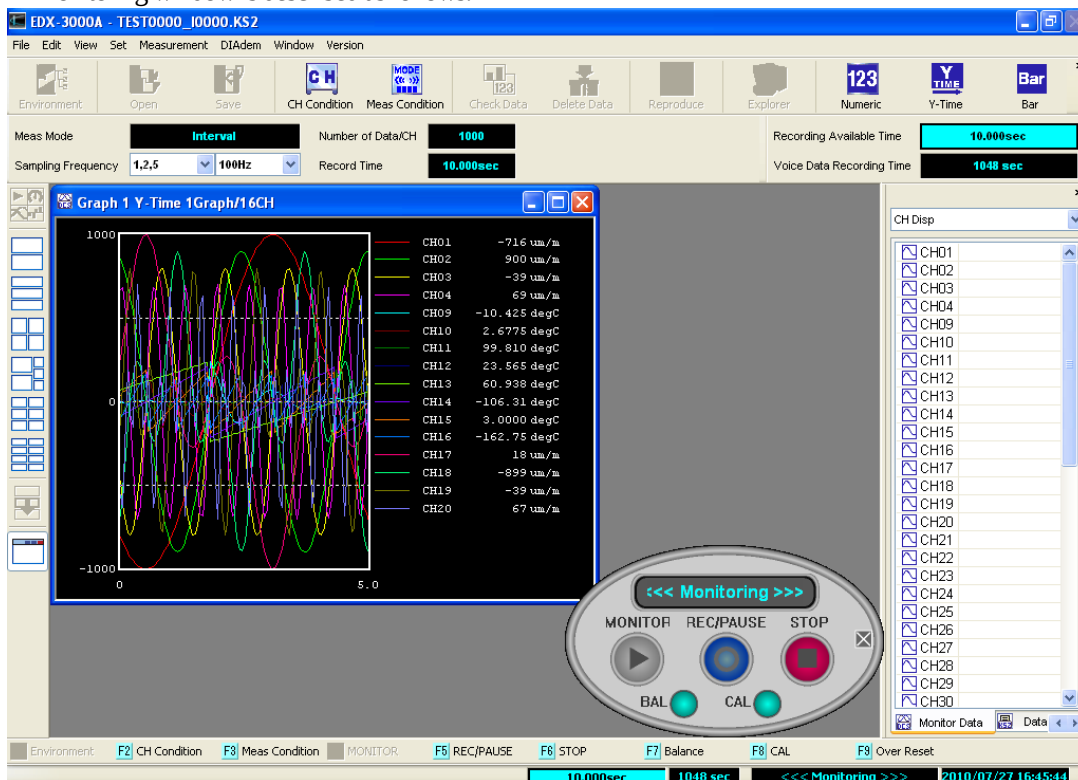
■ How to operate

1) Starts monitor mode measurement by any of the following.

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

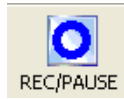
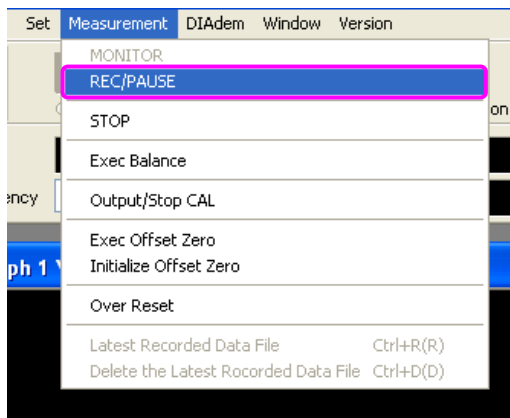


Monitoring window is described as follows.

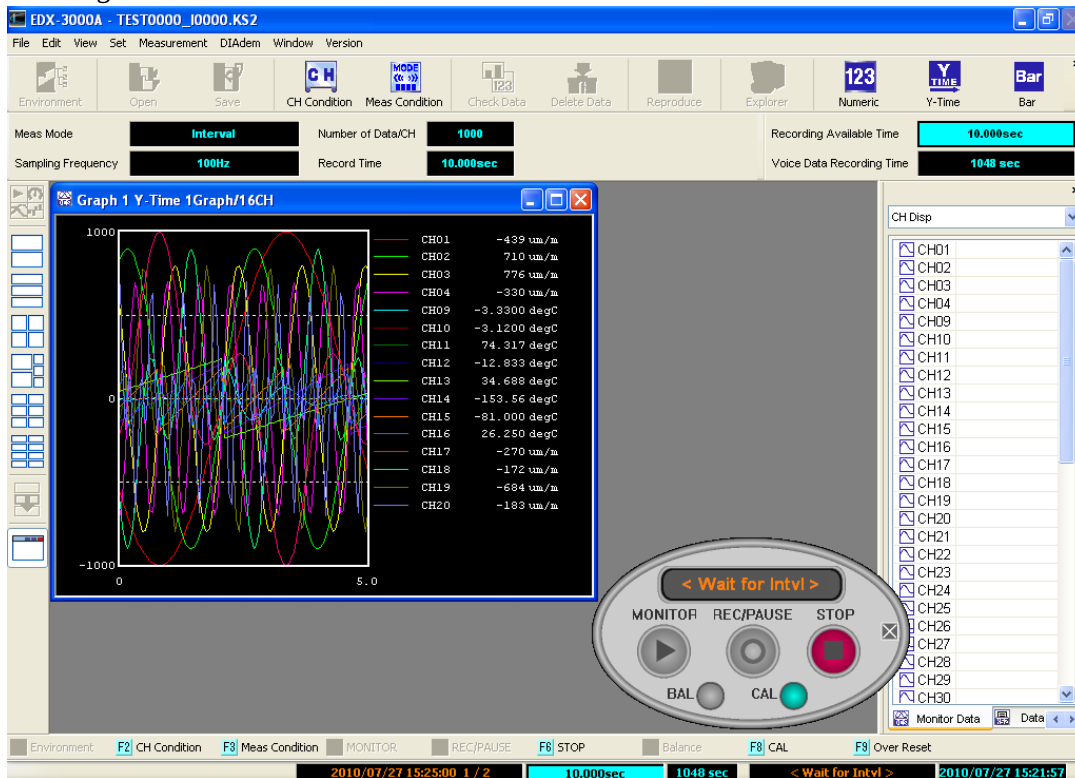


2) Obtain a state for waiting by any of the following.

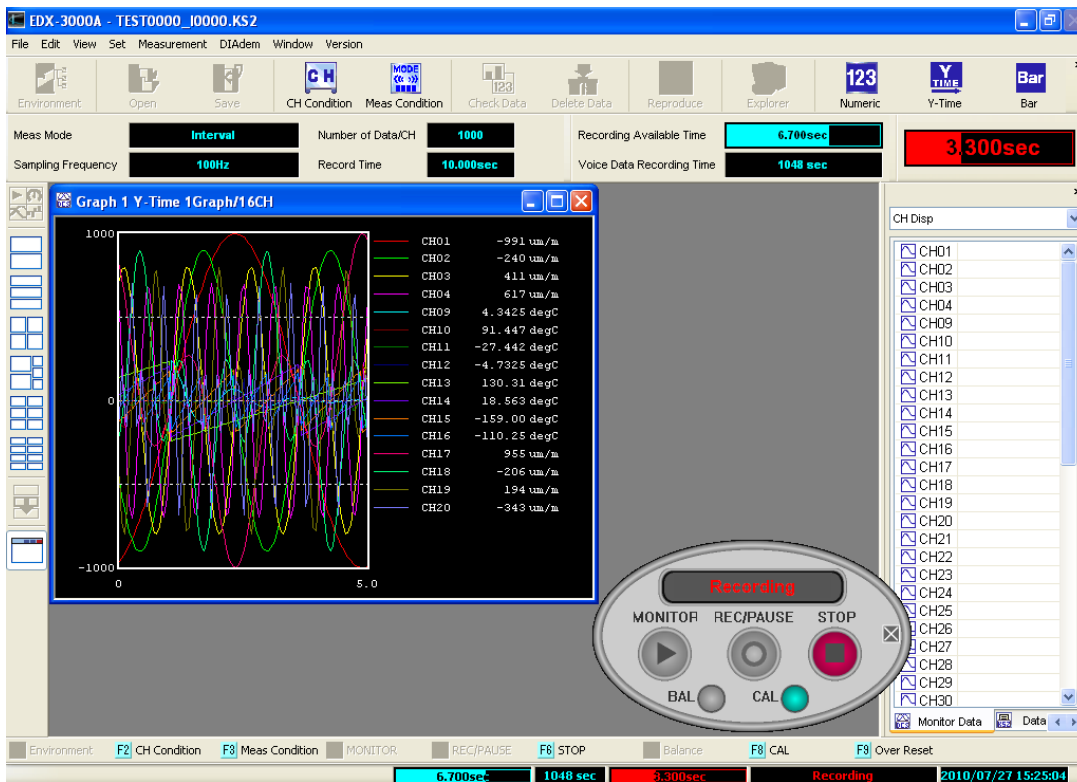
- Click the **Measurement** – **REC/PAUSE**.
- Click the **REC** icon from the toolbar.
- Click the **REC/PAUSE** button on the Meas Operation Panel.



Pausing window is described as follows.



- 3) After satisfying the recording conditions, the EDX-3000A/B starts recording data automatically.
Recording window is described as follows.



- 4) After conducting the measurement for the preset repeat times, the EDX-3000A/B becomes in monitoring state.
In addition, after conducting the data recording for the preset number of repeat times, the EDX-3000A/B becomes in monitoring state.
- 5) End the monitoring by any of the following.
- Click the **Measurement** – **STOP**.
 - Click the **STOP** icon from the toolbar.
 - Click the **STOP** button on the Meas Operation Panel.

6-8 BALANCING

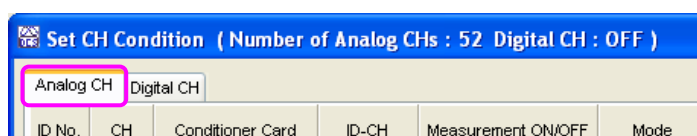
Balancing should be performed during monitoring or while the operation is pausing.
Balancing cannot be performed during stopping or during recording.

■ How to operate

1) Open the **Set CH Condition** dialog box by either of the following.

- Click the **Set** – **Set CH Condition...**.
- Click the **CH Condition** icon from the toolbar.

2) Put check marks on target CHs in the Balance ON/OFF column in the **Set CH Condition** dialog box.

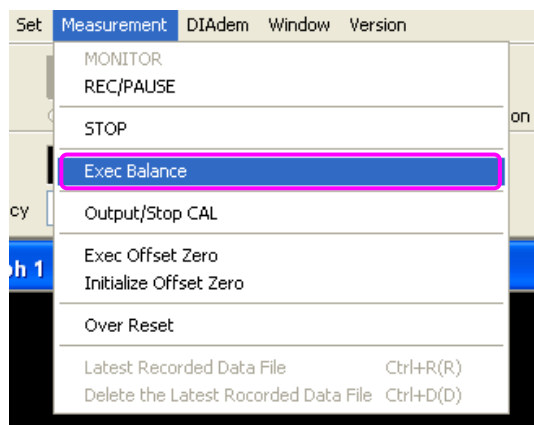


3) Start monitoring data by any of the following.

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

4) Execute balance by any of the following.

- Click the **Measurement** – **Exec Balance**.
- Click the **Balance** icon from the toolbar.
- Click the **BAL** button on the Meas Operation Panel.



5) The following **Balance results** dialog box appears.

Click the **Close** button to restart monitoring.

Balance result (OK : 22CH NG : 22CH Other : 8CH Total : 52CH)		
CH	Conditioner Card	Result
01	DPM-42A	OK
02		NG
03		OK
04		NG
09	CTA-40A	OFF
10		OFF
11		OFF
12		OFF
13		OFF
14		OFF
15		OFF
16		OFF
17	CDV-40A	OK
18		NG
19		OK
20		NG
21		OK
22		NG
23		OK
24		NG
25		OK

OK	Normal
NG	Faulty
OFF	Balancing not applicable
* *	Measurement not applicable

MEMO

Even while monitoring or pausing, you can change balance target channels in **Set CH Condition** dialog box.

6-9 CAL ON/OFF

Calibration is a function that forcibly input analog signal that is equivalent to 50 % or 100% of the specified range to analog channels in order to confirm that analog channels are properly operating.

As the calibration value is entered with sensors connected, the calibration value is added to the sensor output.

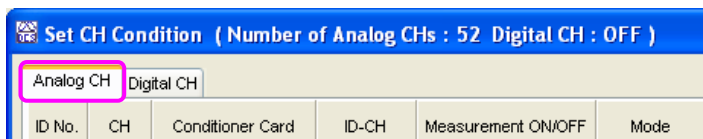
■ How to operate

1) Open the **Set CH Condition** dialog box by either of the following.

- Click the **Set** – **Set CH Condition**.
- Click the **CH Condition** icon from the toolbar.

2) Put a check mark on the CAL target CH in the **CAL ON/OFF** column.

Select a calibration output value from the list box of the **CAL Range** column.



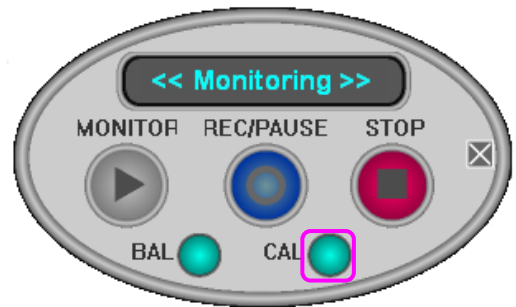
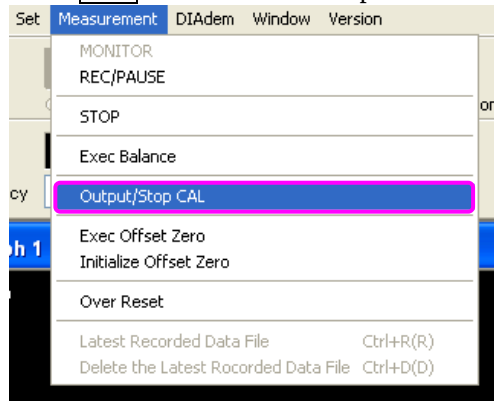
Int CAL ON/OFF	CAL Coefficient
☒	1.000000
☒	1.000000
☒	1.000000
☒	1.000000
***	1.000000
***	1.000000
***	1.000000
***	1.000000
***	1.000000
***	1.000000
***	1.000000
***	1.000000
☒	1.000000
☒	1.000000
☒	1.000000
☒	1.000000
☒	1.000000
☒	1.000000

3) Start monitoring data by either of the following.

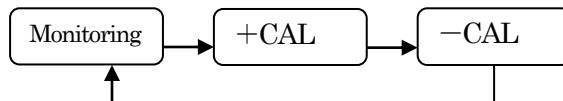
- Click the **Measurement** – **MONITOR**.
- Click the **MONITOR** icon from the toolbar.
- Click the **MONITOR** button on the Meas Operation Panel.

4) Perform calibration by either of the following.

- Click the **Measurement** – **Output/Stop CAL**.
- Click the **CAL** icon from the toolbar.
- Click the **CAL** button on the Meas Operation Panel.



The following actions are repeated every time when the above operation is done.



5) The status bar displays the signal output status.

Outputting +CAL

Outputting -CAL

MEMO

You can change **CAL ON/OFF** items and **CAL Range** items on the **Set CH Condition** dialog box during monitoring state and during pausing state.

6-10 OFFSET ZERO

“Offset Zero” is a function that substitutes the current measured value to the **Offset** in the **Set CH Condition** dialog box and forcibly sets the current value to zero.

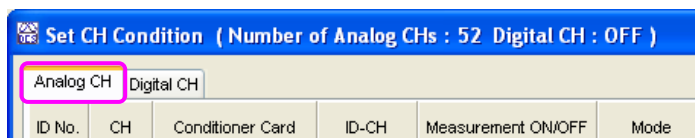
The measured value becomes around zero with the balancing function when **Strain** mode in selected **Set CH Condition** dialog box.

It is required to set the current measured value to zero by substituting the current measured value to offset value if **Voltage** mode is selected.

You can easily substitute the current measured value to the offset value by using the Offset Zero function.

■ How to operate

- 1) Open the **Set CH Condition** dialog box with either of the following operations.
 - Click the **Set – Set CH Condition...**.
 - Click the **CH Condition** icon from the toolbar.
- 2) Click the **Analog CH** tab on the **Set CH Condition** dialog box and put a checkmark to the target CH box in the **Offset Zero ON/OFF** column.

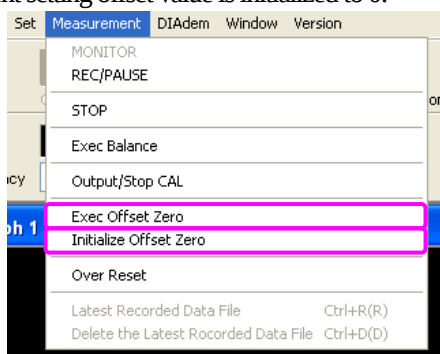
[illegible]

- 3) Starts monitoring data with any of the following operations.
 - Click the **Measurement** – **MONITOR**.
 - Click the **MONITOR** icon from the toolbar.
 - Click the **MONITOR** button on the Meas Operation Panel.
- 4) Click the **Measurement** – **Exec Offset Zero** to execute offset ZERO.

The current measured value is set to the offset value.

Click the **Measurement** – **Initialize Offset Zero** to execute offset zero.

The current setting offset value is initialized to 0.



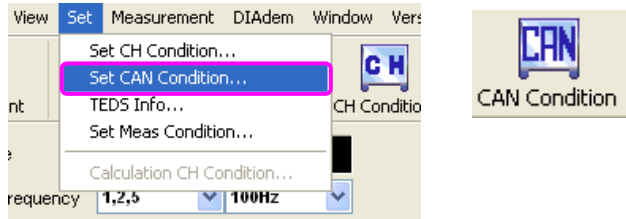
7. SETTING CAN CONDITION

For recording the CAN data with the EDX-3000A/B, set CAN communication conditions, CAN-ID conditions, and CAN-CH conditions.

Set the CAN conditions in due order from **CAN Comm** tab → **CAN-ID** tab → **CAN-CH** tab.

Open the **Set CAN Condition** dialog box by either of the following.

- Click the **Set** — **Set CAN Condition...**.
- Click the **CAN Condition** icon from the toolbar.



NOTE

If any CAN card is installed in the EDX-3000A/B, the CAN conditions cannot be set.

Set CAN Condition (The total number of the CAN-IDs : 0 The total number of the CAN-CHs : 0)

CAN-ID		CAN-CH		CAN Comm						
CAN-ID	Measurement ON/OFF	Port No.	Format	Frame ID	Data Length (Byte)	Endian	LSB/MSB	Number of CAN-CHs	CAN-ID Name	
1	☐	1	Standard	000	1	Little	***	0		
2	☐	1	Standard	000	1	Little	***	0		
3	☐	1	Standard	000	1	Little	***	0		
4	☐	1	Standard	000	1	Little	***	0		
5	☐	1	Standard	000	1	Little	***	0		
6	☐	1	Standard	000	1	Little	***	0		
7	☐	1	Standard	000	1	Little	***	0		
8	☐	1	Standard	000	1	Little	***	0		
9	☐	1	Standard	000	1	Little	***	0		
10	☐	1	Standard	000	1	Little	***	0		
11	☐	1	Standard	000	1	Little	***	0		
12	☐	1	Standard	000	1	Little	***	0		
13	☐	1	Standard	000	1	Little	***	0		
14	☐	1	Standard	000	1	Little	***	0		
15	☐	1	Standard	000	1	Little	***	0		
16	☐	1	Standard	000	1	Little	***	0		

Print... Print Preview... Load Condition... Save Condition... Change Setting Items... OK Cancel

Print button

Print the current displaying CAN conditions.

Print Preview... button

Allows you to see a preview of the current displaying CAN conditions exactly as it will be printed.

Load Condition... button

Loads the pre-saved CAN condition file (extension: CAN).

Save Condition... button

Saves the current CAN conditions as the CAN condition file (extension: CAN).

Change Setting Items... button

Add, delete, and sort setting items displayed on the **Set CAN Condition** dialog box.

OK button

Determines the set contents and closes the **Set CAN Condition** dialog box.

Cancel button

Cancels the set contents and closes the **Set CAN Condition** dialog box.

■ Title Bar

The total number of the CAN-IDs and The total number of the CAN-CHs that are set on the current Set CAN Condition dialog box are displayed on the title bar.

Set CAN Condition (The total number of the CAN-IDs : 1 The total number of the CAN-CHs : 4)

■ Copy and paste of setting items

Capable of copying the contents of setting items and pasting the setting items of another CAN-ID or another CAN-CH. How to copy and paste the setting items of CAN-CH are displayed as follows.

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

Click the **Copy** from the menu and then, copy contents of the setting items of the copy source.

CAN-CH	Measurement ON/OFF	Start Bit	Bit Length	Data Type	CAL Coefficient	Offset
1	☒	0	32	Float	1.0	0.0
2	☐	16	32	Signed	1.0	0.0
3	☐	16	32	Signed	1.0	0.0
4	☐	16	32	Signed	1.0	0.0
5	☐	0	16	Signed	1.0	0.0
6	☐	0	16	Signed	1.0	0.0
7	☐			Signed	1.0	0.0
8	☐			Signed	1.0	0.0

2) Drag the CAN-CH range of the paste destination and right-click.

Click the **Paste** from the menu to paste the desired data.

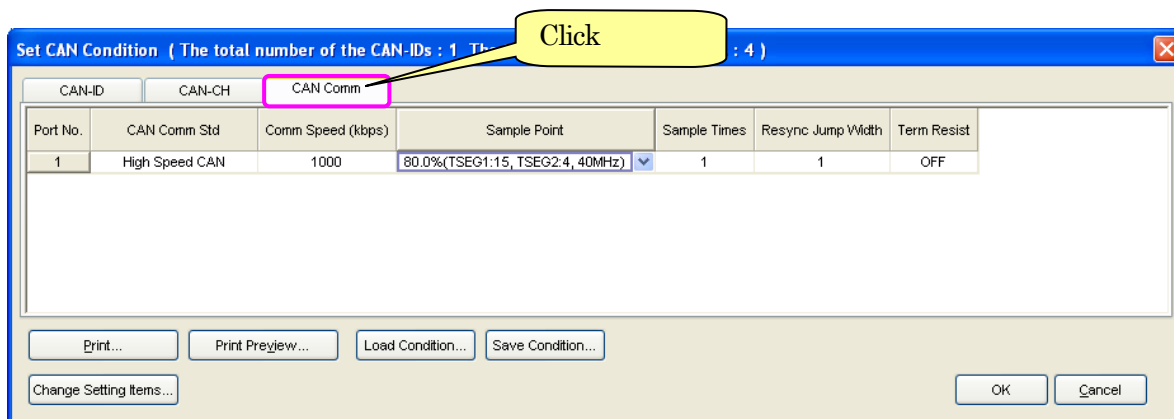
CAN-CH	Measurement ON/OFF	Start Bit	Bit Length	Data Type	CAL Coefficient	Offset
1	☒	0	32	Float	1.0	0.0
2	☐	16	32	Signed	1.0	0.0
3	☐	16	32	Signed	1.0	0.0
4	☐	16	32	Signed	1.0	0.0
5	☐	0	16	Signed	1.0	0.0
6	☐	0	16	Signed	1.0	0.0
7	☐	0	16	Signed	1.0	0.0
8	☐	0			1.0	0.0

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

CAN-CH	Measurement ON/OFF	Start Bit	Bit Length	Data Type	CAL Coefficient	
1	☒	0	32	Float	1.0	
2	☒	0	32	Float	1.0	
3	☒	0	32	Float	1.0	
4	☒	0	32	Float	1.0	
5	☐	0	16	Signed	1.0	
6	☐	0	16	Signed	1.0	
7	☐	0	16	Signed	1.0	
8	☐	0	16	Signed	1.0	

7-1 SETTING CAN COMMUNICATION CONDITIONS

Click the **CAN Comm** tab on the **Set CAN Condition** dialog box and set the CAN communication conditions.



■ Setting Items

● EDX-ID No.

ID No. of the CAN card installed EDX-3000A/B.

● Device Name

Device name of the EDX-3000A/B.

● Port No.

Displays communication port No.

The Port No. is determined with the type of the CAN card as follows.

CAN—40A: 1 fixed

CAN—41A: 1 to 2

● CAN Comm Std

Select the **Communication Standard** from the following.

“High Speed CAN” or “Low Speed CAN”

If the CAN Comm Std is changed, the communication conditions are changed as follows.

	High Speed CAN	Low Speed CAN
Communication Speed (kbps)	500	125
Sample Point	80.0% (TSEG1:15, TSEG2:4, 40 MHz)	
Sample Times	1	
Synchronous Jump Width (SJW)	2	

• Comm Speed (kbps)

Set communication speed.

The communication speed shall be as follows according to the preset CAN communication standard.

- High Speed CAN: 1000, 800, 500, 250, 125, 100, 83.3, 62.5, 50, 33.3, 25, 20, 10 (kbps)
- Low Speed CAN: 125, 100, 83.3, 62.5, 50, 33.3, 25, 20, 10 (kbps)

• Sample Point

Set Sample Point.

Setting available sample point values are listed in the following.

Set the desired sample point and the TSEG1 and TSEG2 values are automatically set.

In addition, 40 MHz and 32 MHz in parentheses () is a value of operation clock of CAN controller.

Communication Speed: Other than 800 kbps

- 85.0% (TSEG1:16, TSEG2:3, 40 MHz)
- 80.0% (TSEG1:15, TSEG2:4, 40 MHz)
- 75.0% (TSEG1:14, TSEG2:5, 40 MHz)
- 70.0% (TSEG1:13, TSEG2:6, 40 MHz)
- 65.0% (TSEG1:12, TSEG2:7, 40 MHz)
- 60.0% (TSEG1:11, TSEG2:8, 40 MHz)
- 80.0% (TSEG1: 7, TSEG2:2, 40 MHz)
- 70.0%(TSEG1: 6, TSEG2:3, 40 MHz)
- 60.0%(TSEG1: 5, TSEG2:4, 40 MHz)
- 87.5%(TSEG1:13, TSEG2:2, 32 MHz)
- 81.3% (TSEG1:12, TSEG2:3, 32 MHz)
- 75.0% (TSEG1:11, TSEG2:4, 32 MHz)
- 68.8% (TSEG1:10, TSEG2:5, 32 MHz)
- 62.5% (TSEG1: 9, TSEG2:6, 32 MHz)
- 56.3% (TSEG1: 8, TSEG2:7, 32 MHz)
- 75.0%(TSEG1: 5, TSEG2:2, 32 MHz)
- 62.5% (TSEG1: 4, TSEG2:3, 32 MHz)

Communication Speed: 800 kbps

- 85.0% (TSEG1:16, TSEG2:3, 32 MHz)
- 80.0% (TSEG1:15, TSEG2:4, 32 MHz)
- 75.0% (TSEG1:14, TSEG2:5, 32 MHz)
- 70.0% (TSEG1:13, TSEG2:6, 32 MHz)
- 65.0% (TSEG1:12, TSEG2:7, 32 MHz)
- 60.0% (TSEG1:11, TSEG2:8, 32 MHz)
- 80.0% (TSEG1: 7, TSEG2:2, 32 MHz)
- 70.0% (TSEG1: 6, TSEG2:3, 32 MHz)
- 60.0% (TSEG1: 5, TSEG2:4, 32 MHz)

NOTE

In the list box, only items that are set to TSEG2 value of more than current setting synchronous jump width (SJW) are displayed.

If the desired sample point for setting is not displayed, check the synchronous jump width value (SJW).

- **Sample Times**

Select the desired sample times from the following options.

“1” or “3” (times)

- **Resync Jump Width**

Set synchronous jump width value from the following.

(Unit of the synchronous jump width value is TimeQuanta.)

“1”, “2”, “3”, or “4”

NOTE

In the list box, only item that is set to less than TSEG2 value of currently set sample point is displayed.

If the desired synchronous jump width value for setting is not displayed, check the sample point value.

- **Term Resist**

Set termination resistance from the following.

“OFF” or “ON”

7-2 SETTING CAN-ID CONDITION

Click the **CAN-ID** tab on the **Set CAN Condition** dialog box and set the CAN-ID conditions.

This section describes data frame conditions on the CAN bus.

The EDX-3000A/B can record up to 16 types of data frame.

Click

CAN-ID	Measurement ON/OFF	Port No.	Format	Frame ID	Data Length (Byte)	Endian	LSB/MSB	Number of CAN-CHs	CAN-ID Name
1	☐	1	Standard	000	1	Little	***	0	
2	☐	1	Standard	000	1	Little	***	0	
3	☐	1	Standard	000	1	Little	***	0	
4	☐	1	Standard	000	1	Little	***	0	
5	☐	1	Standard	000	1	Little	***	0	
6	☐	1	Standard	000	1	Little	***	0	
7	☐	1	Standard	000	1	Little	***	0	
8	☐	1	Standard	000	1	Little	***	0	
9	☐	1	Standard	000	1	Little	***	0	
10	☐	1	Standard	000	1	Little	***	0	
11	☐	1	Standard	000	1	Little	***	0	
12	☐	1	Standard	000	1	Little	***	0	
13	☐	1	Standard	000	1	Little	***	0	
14	☐	1	Standard	000	1	Little	***	0	
15	☐	1	Standard	000	1	Little	***	0	
16	☐	1	Standard	000	1	Little	***	0	

- **Display ID**

ID No. of the data frame with CAN card installed is displayed in serial number.

- **CAN-ID**

ID numbers of maximum 16 types of data frames.

- **Measurement ON/OFF**

Put a checkmark to box of the target CAN-ID in the **Measurement ON/OFF** column.

Monitors and records only data frame ID with a checkmark (ON).

MEMO

Data file size of CAN-ID of which data is not required to record becomes small by releasing the target check mark of the **Measurement ON/OFF** column.

- **Format**

Select format of data frame ID from the following.
“Standard” or “Extension”

- **Frame ID**

Set data frame ID in hex number.

Setting range

- Standard data frame format: 0 to 7FFH (11 bits)
- Extended data frame format 1 to 1 FFFFFFFFH (29 bits)

NOTE

Suppose the CAN-ID is set to ON.

If duplicated data frame ID is set with the same data frame format, **Measurement ON/OFF** of the duplicated data frame ID is automatically changed to OFF when setting the CAN-ID conditions is finished.

- **Data Length (Byte)**

Set data length of the internal data frame.

Setting range is 1 to 8 (Bytes).

NOTE

When data length is changed, **Start Bit**, **Bit Length**, and **Data Type** in the CAN-CH condition may be automatically changed.

After changing the data length, be sure to check the CAN-CH conditions.

- **Endian (Byte)**

Select data frame endian from the following.

- Little

Data length is incremented by byte to the right by considering the data frame head as the least significant byte.

Example 1) Data length: 8 bytes

7	0	15	8	23	16	31	24	39	32	47	40	55	48	63	56
---	---	----	---	----	----	----	----	----	----	----	----	----	----	----	----

LSB

MSB

(Least Significant Byte)

(Most Significant Byte)

Example 2) Data length: 4 bytes

7	0	15	8	23	16	31	24
---	---	----	---	----	----	----	----

LSB

MSB

(Least Significant Byte)

(Most Significant Byte)

- Big

Data length is incremented by byte by to the left by considering the data frame end as the least significant byte.

Example 1) Data length: 8 bytes

63	56	55	48	47	40	39	32	31	24	23	16	15	8	7	0
----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---

MSB

LSB

(Most Significant Byte)

(Least Significant Byte)

Example 1) Data length: 4 bytes

31	24	23	16	15	8	7	0
----	----	----	----	----	---	---	---

MSB

LSB

(Most Significant Byte)

(Least Significant Byte)

- **LSB/MSB**

When cutting out the CAN-CH data, specify the location (LSB/MSB) for start cutting the data.

It is only enabled with the Endian set to Big.

Select from the following.

“LSB” or “MSB”

- **Number of CAN-CHs**

Display the number of CAN channels that is set to measurement ON in CAN-CH conditions.

(Editing not allowed.)

- **CAN-ID Name**

Set data frame ID name (within 40 characters).

7-3 SETTING CAN-CH CONDITION

Click the **CAN-CH** tab on the **Set CAN Condition** dialog box and set the CAN-CH conditions.

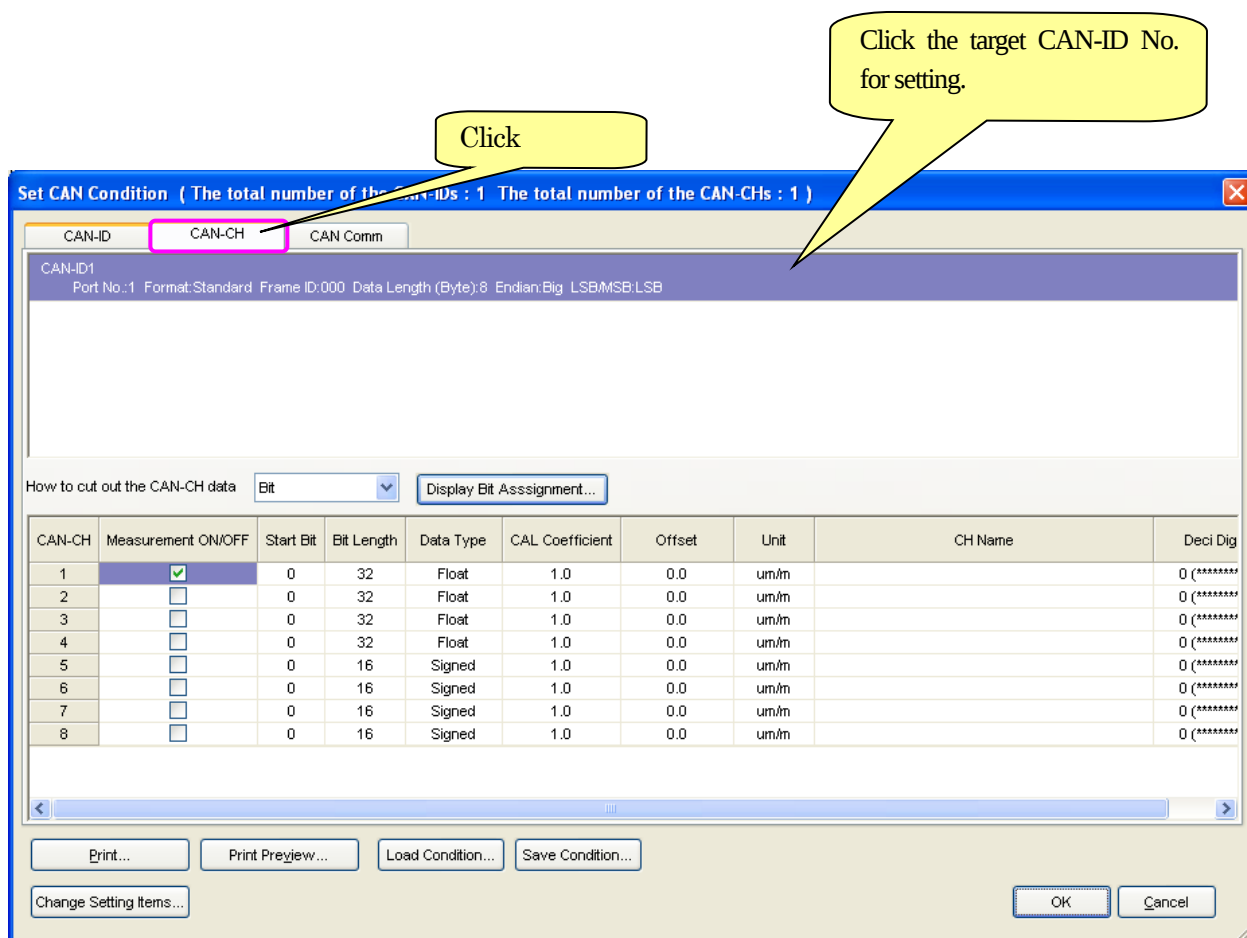
How to cut out data in the data frame on the CAN bus is set on the **Set CAN Condition** dialog box..

Up to 8-CH per data frame can be set as CAN-CH.

The following is an example of 3 data included in a data frame with data length: 8 bytes and endian: Big.

63	32	31	16	15	0
CH 3		CH 2		CH 1	

	Start Bit	Bit Length
CH 1	0	16
CH 2	16	32
CH 3	32	32



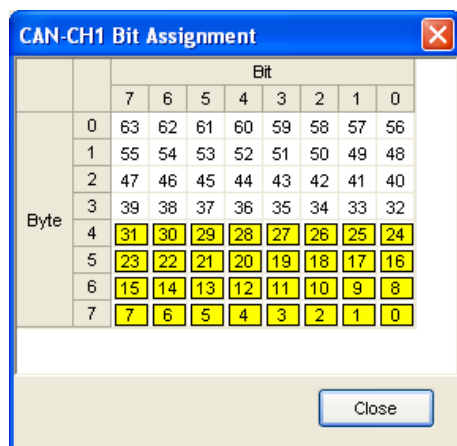
• How to cut out the CAN-CH data

Select how to cut out the CAN-CH data from the following.

- Bit: Set data position with bit No.
- Point: Set data position with XY (X: Byte No., Y: Bit No.)

• **Display Bit Assignment...** button

Click the **Display Bit Assignment...** button and the preset cut out range of the selected CAN channels are displayed in yellow.



• Display CH

Displays CH No. when graphically and numerically displaying the CAN data in CH unit.

• CAN-CH

Displays CAN-CH No. of maximum 8 channels.

• Measurement ON/OFF

Set CAN-CH.

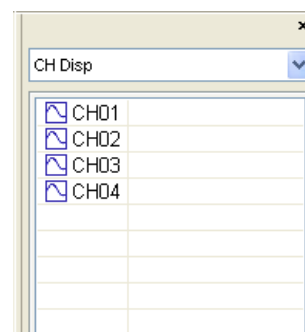
- Measurement ON
- Measurement OFF

Data is cut out with start bit (SB), bit length (LN), data type, etc. that are set in the measured data frame to be displayed in numeric value.

Displaying the cut out data from the measured data frame is not allowed.

If all the CAN-CHs are not subjected to measure, set the **Measurement ON/OFF** column in CAN-ID conditions to OFF.

The target CAN channels are displayed on the CH Display Bar on the main window as in the right.



MEMO

- Regardless of the Measurement ON/OFF, the recorded data is stored with all the data of the preset data frame ID. However, note that displaying the data in engineering unit is not available unless the data is correctly set.
- It is recommended to set the number of CAN-CH with a check mark in the Measurement ON/OFF column to the same number of data types in the data frame.

- **Start Bit** (Displayed when how to cut out the CAN-CH data: Bit)

Set a position for start cutting the CAN-CH data with bit No.

Setting available range is described as follows.

0 to 63 (Setting range varies with data length and bit length of the data frame.)

- **Start Point** (Displayed when how to cut out the CAN-CH data: Point)

Set CAN-CH data start cutting point with X and Y (X: Byte No., Y: Bit No.).

Setting available range is described as follows.

00 to 77

- **End Point** (Displayed when How to cut out the CAN-CH data is set to Point)

Set CAN-CH data start cutting point with X and Y (X: Bite No., Y: Bit No.).

Setting available range

00 to 77

- **Bit Length**

Set bit length of cut out CAN-CH data.

Setting available range is described as follows.

1 to 64 (Setting range varies with data length and bit length of the data frame.)

- **Data Frame**

Select the type of cut out data from the following.

- Signed Signed integer type data
- Unsigned Unsigned integer type data
- Float Real type data (32 bit: 4 bytes)
Float range: -3.4028E+38 to -1.1755E-38, 0,
1.1755E-38 to 3.4028E+38
- Double Real type data (64 bits: 8 bytes)
Double range: -1.7976E+308 to -2.2250E-308, 0,
2.2250E-308 to 1.7976E+308

NOTE

- Float and Double data types are selectable only when data length of the data frame is more than 4 bytes and 8 bytes, respectively.
If selecting the above is not available, check **Data Length** on the **CAN-ID Condition** dialog box.
- When selecting the real type data, **Start Bit/Bit Length** may be automatically changed.
After setting the data type, always check the **Start Bit/Bit Length**.
In addition, if the Data Length and Endian of the data frame are set incorrectly, malfunction may be caused to the EDX-3000A/B.
- The EDX-3000A/B is capable of displaying only data in the Float range. Thereafter, if real type data is selected, the correct value may not be displayed.

• CAL Coefficient

Set CAL coefficient to convert the cut out data into physical value.

The physical value is converted with the following expression.

$$\text{Physical value} = \text{Cut out data} \times \text{CAL Coefficient} + \text{Offset}$$

Input available range is described as follows.

-1.0E8 to -1.0E-8 or 1.0E-8 to 1.0E8

MEMO

The CAL coefficient and offset are set when real type data is converted into physical value data.

If this setting is not required, set the above items to “1.0” and “0.0” respectively.

NOTE

When the value converted to a physical value exceeds the Float type range, no correct value is displayed.

• Offset

Offset is set when a certain value is shifted for the physical value converted data.

Input available range is described as follows.

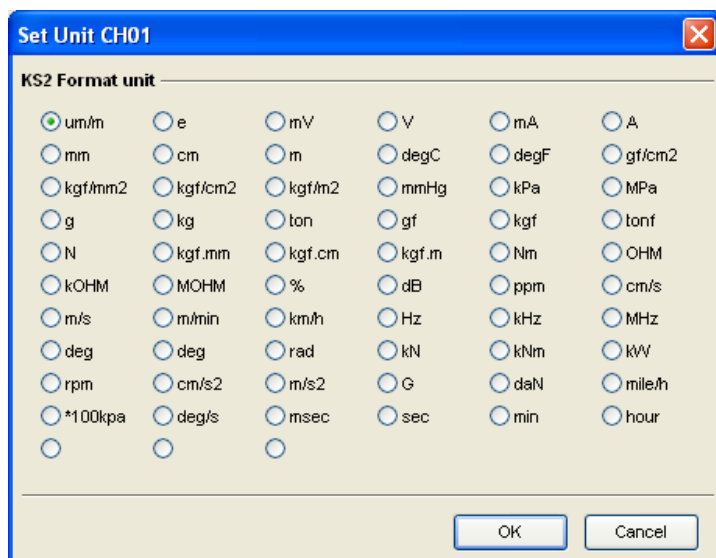
-1.0E8 to -1.0E-8, 0.0, 1.0E-8 to 1.0E8

• Unit

Set engineering unit according to CAN sensor.

Double click the target CH or press the **SPACE** key to display the **Set Unit** dialog box.

Select the relevant unit from the unit list.



• CH Name

Set the CH name within 40 characters.

• Deci Digits

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

If **Auto** is selected, numeric value is automatically set to be in 5 numbers without sign.

7-4 MONITORING CAN DATA

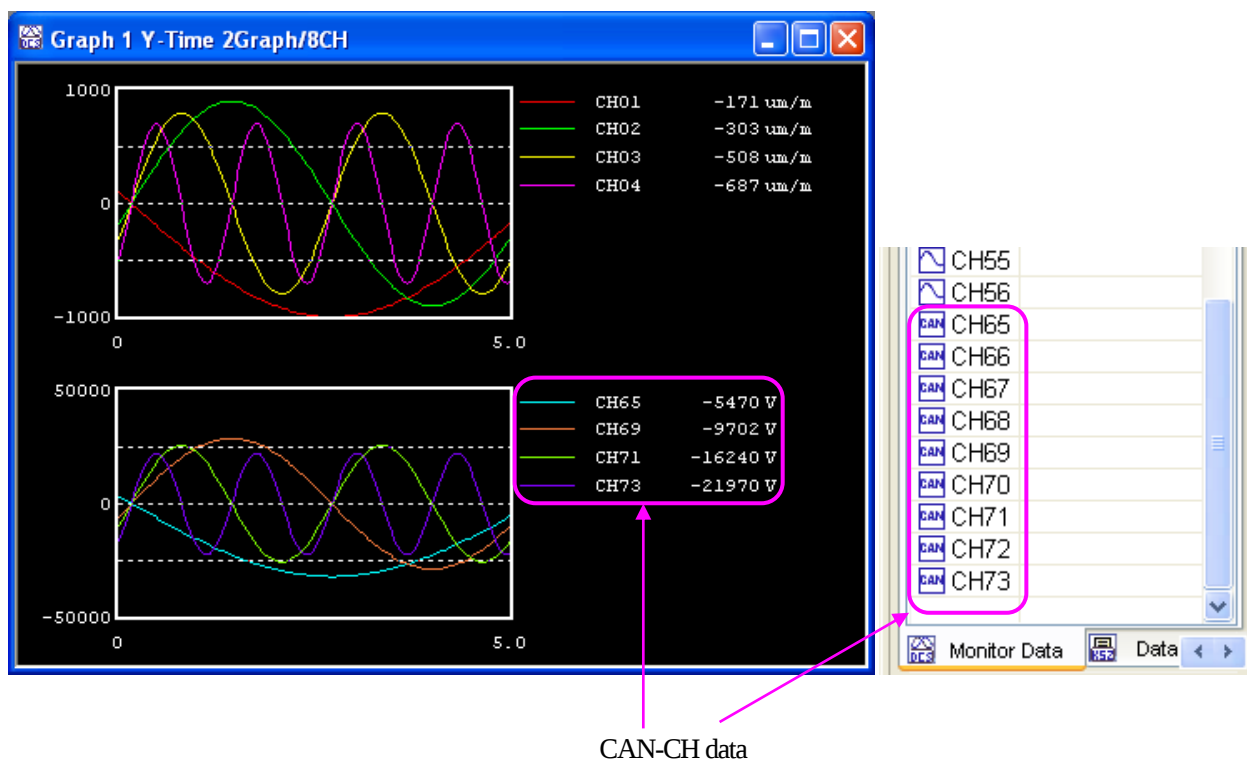
As same as the general CH data, CAN-CH data can be displayed on graph or numeric window.

NOTE

- The sampling frequency shall be maximum 10 kHz for recording the CAN data.
- The EDX-3000A/B can display only data in Float range on graph and numeric window.
If the CAN data exceeds the Float range, no correct data is displayed.

Float range

-3.4028E+38 to -1.1755E-38, 0 or 1.1755E-38 to 3.4028E+38



■ CAN data Frame

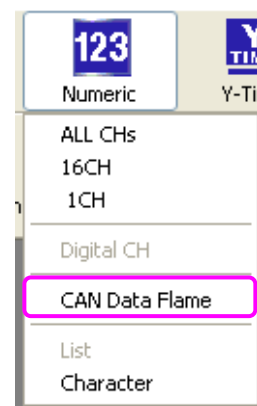
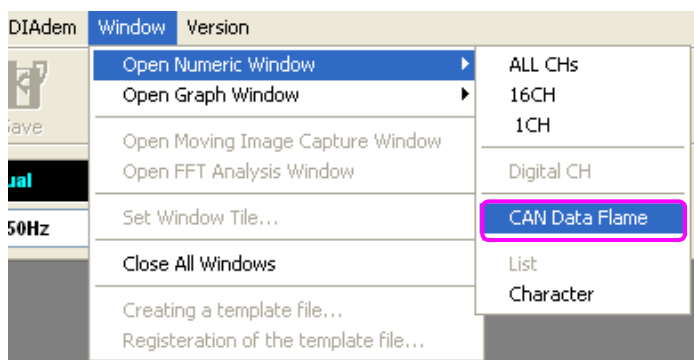
Select CAN Data Frame and all data in the CAN data frame is displayed in hexadecimal numbers (8 bytes).

Numeric 1 CAN Data Flame									
Disp ID	CAN-ID Name	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
1		0A	86	90	01	4A	47	40	6E
2		E7	CF	FF	FF	98	ED	FF	FF
3		23	9A	9A	46	32	9F	B1	C5
4		A8	DD	25	C7	65	74	D5	40

■ How to operate

Open the CAN Data Frame dialog box by either of the following.

- Click the **Window** – **Open Numeric Window** – **CAN Data Frame**.
- Click the **Numeric** icon from the toolbar.

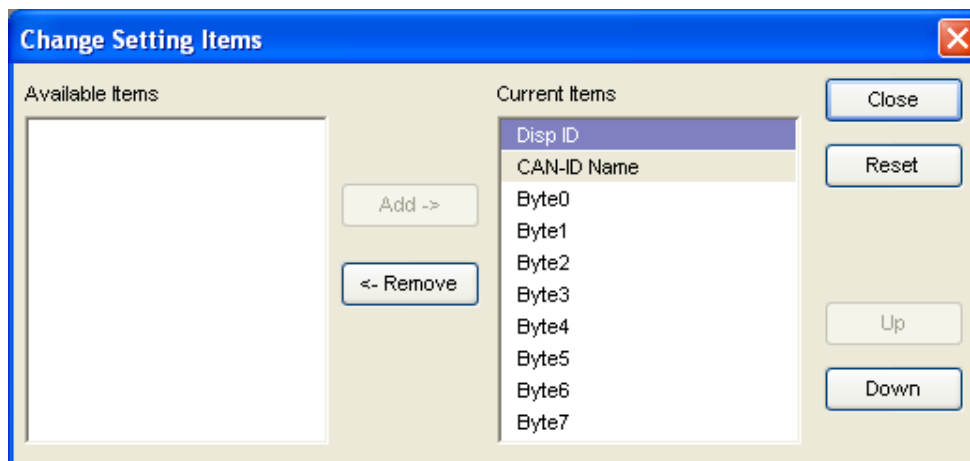


■ Change Setting Items

Open the **Change Setting Items** dialog box with any of the following operations.

- Click the **View** – **Set Display Condition...**.
- Right-click the window to display the pop-up menu.
Click the **Set Display Condition...** on the pop-up menu.
- Click the **Disp Condition** icon from the toolbar.
- Double-click the window.

Setting items displayed on the **Set CH Condition** dialog box are added or removed.



8. LOADING TEDS INFORMATION

The EDX-3000A/B can load TEDS (Transducer Electronic Data Sheet) sensor information and automatically set the most appropriate range, CAL coefficient, unit, etc.

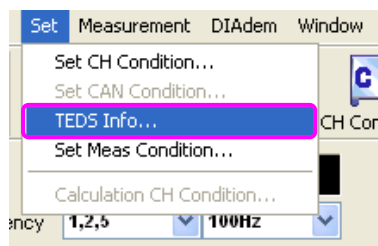
However, it should be noted that the EDX-3000A/B cannot load all the TEDS sensor information.

The following table shows conditioner cards that can load the TEDS sensor and template IDs of loading available TEDS sensor.

Conditioner Card Type	Template ID	Sensor Type
CDV-40B (-F)	30	Voltage output sensor
	33	Strain gage sensor
DPM-42A (-F)	33	Strain gage sensor
CCA-40A (-F)	0	Piezoelectronic accelerometer
	24	Piezoelectronic accelerometer
	25	Piezoelectronic accelerometer

Open the **TEDS Information** dialog box by either of the following, load the TEDS information and set CH conditions.

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



A screenshot of the 'TEDS Information' dialog box. The dialog has a title bar 'TEDS Information' and a close button. Inside, there's a section 'Auto Set Items' with checkboxes for 'Range(Meas Range)', 'Low Pass Filter', 'CAL Coefficient', and 'Unit', all of which are checked. Below this is a large table with columns: CH, Conditioner Card, Set ON/OFF, Result, Mode, Range, Meas Range, Low Pass Filter, CAL Coefficient, Unit, and User I. The table contains data for 24 channels, all using the 'CDV-40B-F' conditioner card. The 'Set ON/OFF' column has green checkmarks for all channels. The 'Result' column has '***' for all channels. The 'Mode' column has 'Strain' for all channels. The 'Range' column has '1kum/m' for all channels. The 'Meas Range' column has '-1000 - 1000 um/m' for all channels. The 'Low Pass Filter' column has '1kHz' for all channels. The 'CAL Coefficient' column has '1.000000' for all channels. The 'Unit' column has 'um/m' for all channels. The 'User I' column is empty. At the bottom of the dialog, there are buttons: 'Load TEDS Info...', 'Details of Sensor Info...', 'Save User Data...', and 'Close'.

CH	Conditioner Card	Set ON/OFF	Result	Mode	Range	Meas Range	Low Pass Filter	CAL Coefficient	Unit	User I
01	CDV-40B-F	☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
02		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
03		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
04		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
05		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
06		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
07		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
08		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
09		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
10		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
11		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
12		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
13		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
14		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
15		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
16		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
17		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
18		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
19		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
20		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
21		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
22		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
23		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	
24		☒	***	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.000000	um/m	

8-1 TEDS INFORMATION LOADING ITEMS

This section describes details of setting items for loading the TEDS sensor information.

8-1-1 Setting CH for Loading TEDS Information

After loading the TEDS information, put a check mark to allow or release the check mark to prohibit the settings of the target CH conditions such as mode, range, unit, low pass filter, CAL coefficient, etc.

With check mark: Sets the loaded TEDS information to the CH conditions.

Without check mark: Currently set CH conditions are not changed.

CH	Conditioner Card	Set ON/OFF
01		☒
02		☒
03		☒
04		☒
05		☒
06		☒
07		☒
08		☒
09		☒

MEMO

- Loading the TEDS information is available for all CHs regardless of check marks in the **Set ON/OFF** column.
- After loading the TEDS information, items of which CH condition are automatically set are only items with check mark in the **Set ON/OFF** column as well as with check mark in the **Auto Set Items** column.
If either of the above two has check mark, CH conditions are not changed.

8-1-2 Auto Set Items for Loading TEDS Information

After loading the TEDS information, select items to be set in the CH conditions by putting check mark.

Auto Set Items can be changed before and after loading the TEDS information.

In addition, regardless of check marks in the **Auto Set Items** column, loaded results of the TEDS information are displayed.

TEDS Information		
Auto Set Items		
Range(Meas Range)	☒	
Low Pass Filter	☒	
CAL Coefficient	☒	
Unit	☒	

NOTE

ON/OFF setting of the **Auto Set Items** is set together for all CHs and not available for every CH.

■ Range (Meas Range)

Set whether to allow (with check mark) or prohibit (without check mark) the change in **Mode** and **Range (Meas Range)** by loading the TEDS information.

MEMO

- **Mode** and **Range** values are automatically calculated from sensor type and rated capacity.
- **Meas Range** is displayed with maximum measurement available value calculated from mode, range, and CAL coefficient. When deciding the **Range**, see the **Meas Range** for reference.
- For sensors with rated capacity not stated on the TEDS information, the Range is set to its maximum value.
Example) For a CCA-40A connected piezoelectronic accelerometer, since the rated capacity is not stated on the TEDS information, the **Range** is set to its maximum range.

■ Low Pass Filter

Set whether to allow (with check mark) or prohibit (without check mark) the change in Low Pass Filter by loading the TEDS information.

MEMO

Low Pass Filter is automatically set only when the TEDS sensor is connected to the CDV-40B or DPM-42A. Note that when conditioner cards with anti-aliasing filters (CDV-40B-F, DPM-42A-F, and CCA-40A-F) are used and sampling frequency is set to 100 Hz or more, the low pass filter is set to **Auto**. For TEDS sensors connected to conditioner card other than the above, no low pass filter is set.

■ CAL Coefficient

Set whether to allow (with check mark) or prohibit (without check mark) the change in CAL Coefficient by loading the TEDS information.

NOTE

After loading the TEDS information, only **CAL Coefficient** is automatically set and the offset is not allowed to change the value.
Therefore, if the Mode or Range (Meas Range) is changed after loading the TEDS information, check the offset value.

■ Unit

Set whether to allow (with check mark) or prohibit (without check mark) the change in **Unit** by loading the TEDS information.

MEMO

- When other than available units that can be set in the EDX-3000A/B are stated in the TEDS information, the unit “mm” is used.
- If “Pa” unit is stated in the TEDS information, it is converted into “kPa” or “MPa” according to rated capacity.
- For the CCA-40A, the unit “m/s²” is used.

■ CH Name

Set whether to allow (with check mark) or prohibit (without check mark) the change in **CH Name** by loading the TEDS information.

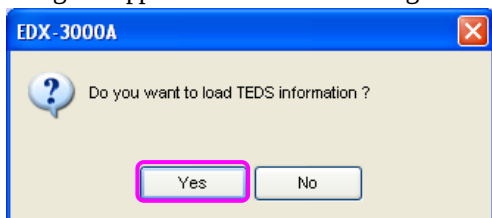
The **CH Name** is taken from the User data in TEDS sensor of Manufacture ID = 58 (KYOWA ELECTRONIC INSTRUMENTS CO., LTD).

8-2 LOADING TEDS INFORMATION

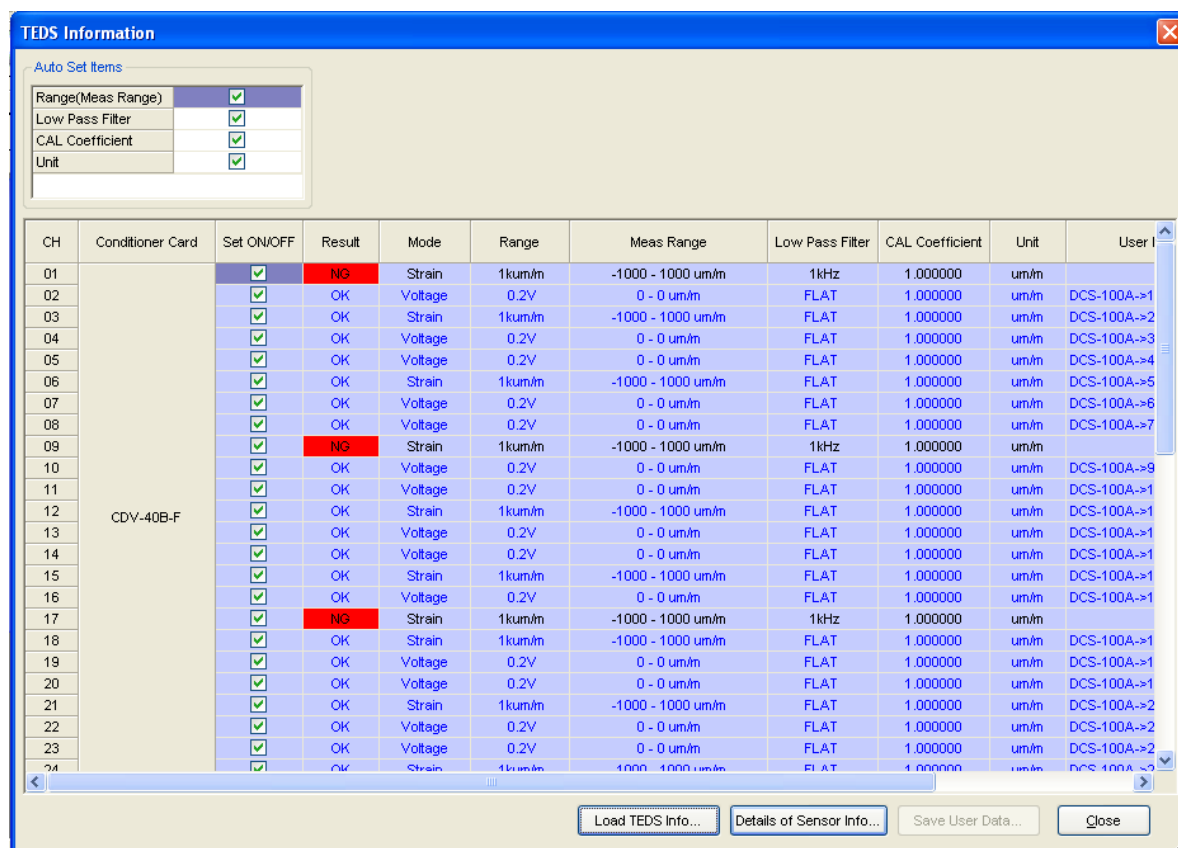
Loading the TEDS sensor information is applied for loading information of all CHs regardless of items preset in **Set ON/OFF** or **Auto Set Items**.

■How to operate

- 1) Click the **Load TEDS Info** button.
- 2) A dialog box appears to confirm the loading of TEDS information. Click the **Yes** button and load the TEDS information.



- 3) After completing the loading of TEDS information, the following window appears with **OK** or **NG** (Error) on **Result** column.



■ Window Display Color

Window display colors of **Set ON/OFF**, **Result**, **Auto Set Items** column shall be as follows.

Display Color	Background	Set ON/OFF	Result	Auto Set Items	Remarks
Blue	White	ON	OK	ON	Display colors are set on the Set CH Condition dialog box. Note: When Range (Meas Range) is changed, background color becomes yellow.
Black	White	OFF	***	ON/OFF	
Black	Red	ON	Error	ON/OFF	

8-2-1 Setting Range (Meas Range)

After loading the TEDS information, the setting **Range (Meas Range)** can be automatically set.

MEMO

Changing the measuring range is available only for channels satisfying the following conditions.

- **Result** column in **TEDS Information** dialog box is **OK**.
- Check mark in **Set ON/OFF** column.
- Check mark in **Range (Meas Range)** menu of **Auto Set Items**.
- Values in **Range** and **Meas Range** are displayed in blue.

For changing the **Range** and **Meas Range**, set with the same operations as that of the CH conditions.

Select and set the target value from list boxes.

Meas Range relevant to range as well as **Range** relevant to Meas Range are automatically changed.

CH	Conditioner Card	Set ON/OFF	Result	Mode	Range	Meas Range	Low Pass Filter	CAL Co
01		☒	NG	Strain	1kum/m	-1000 - 1000 um/m	1kHz	1.00
02		☒	OK	Voltage	0.2V	0 - 0 um/m	FLAT	1.00
03		☒	OK	Strain	5kum/m	-5000 - 5000 um/m	FLAT	1.00
04		☒	OK	Voltage	0.2V	-500 - 500 um/m	FLAT	1.00
05		☒	OK	Voltage	0.2V	-1000 - 1000 um/m	FLAT	1.00
06		☒	OK	Strain	1kum/m	-2000 - 2000 um/m	FLAT	1.00
07		☒	OK	Voltage	0.2V	-5000 - 5000 um/m	FLAT	1.00
08		☒	OK	Voltage	0.2V	-10000 - 10000 um/m	FLAT	1.00
09		☒	NG	Strain	1kum/m	-20000 - 20000 um/m	1kHz	1.00
10		☒	OK	Voltage	0.2V	-50000 - 50000 um/m	FLAT	1.00
11		☒	OK	Voltage	0.2V	0 - 0 um/m	FLAT	1.00

MEMO

After loading the TEDS information, change available item is **Range (Meas Range)** only.

After changing the **Range**, background color becomes yellow.

Note that changing **Mode**, **Unit**, **Low Pass Filter**, **CAL Coefficient**, **CH Name**, etc. are not available on this dialog box.

To change the above items, change above items on **Set CH Condition** dialog box.

8-2-2 Displaying Details of TEDS Sensor

TEDS sensor information of the selected CH is displayed in details.

MEMO

- The **Details of Sensor Info** button becomes valid only when the TEDS information is correctly loaded.
- After loading the TEDS information, although the loading resulted in NG, the **Details of Sensor Info** button may become valid.

In this case, it is considered that TEDS sensor is not connected to a conditioner card that is compatible to the TEDS sensor.

Therefore, check the TEDS sensor with NG appears in the **Result** column and with valid **Details of Sensor Info** button.

- For details of items displayed with the **Details of Sensor Info** button, contact TEDS sensor manufacture.

■ How to operate

Click the **Details of Sensor Info** button and the following **Details of Sensor Information** dialog box appears.

TEDS Properties	Values
CH No.	03
Unique Registration Number	0x0123456789ABCDF1
Manufacture ID	48
Model Number	2002
Version Letter	C
Version Number	3
Serial Number	2
Template ID	33
Physical Measurand	m/m
Minimum physical value	-300.0000
Maximum physical value	300.0000
Transducer Electrical Signal Type	Bridge Sensor
Minimum electrical output [V/V]	-4.00000E-3
Maximum electrical output [V/V]	4.00000E-3
Mapping Method	Linear
Bridge Type	FULL
Bridge element impedance [Ohm]	700.0000
Response Time [sec]	2.00000E-5
Excitation level, nominal [V]	2.000000
Excitation level, min [V]	0.1000000
Excitation level, max [V]	1.900000
Calibration Date	2005/05/30
Calibration Initials	Hot
Calibration Period [days]	5
Measurement location ID	2
User Data1	DCS-100A->2
User Data2	EDX-100A,123456

<- Prev CH Next CH -> Close

<Prev CH button

Sensor detailed information of the previous CH.

Next CH> button

Sensor detailed information of the next CH.

Close button

Close the **Details of Sensor Information** dialog box.

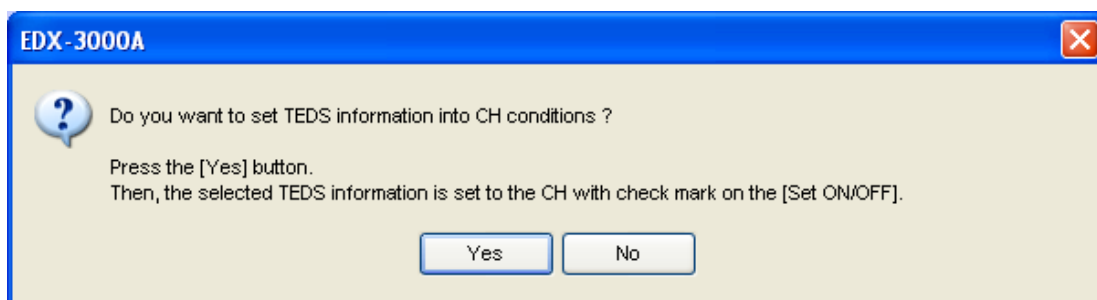
8-3 SETTING TO CH CONDITION

After loading the TEDS information and after closing the **TEDS Information** dialog box, various items are set on the **Set CH Condition** dialog box such as Set ON/OFF to ON, Result to OK, and Auto Set Items to ON (Items displayed in blue).
(For confirming the changed items by loading the TEDS information, open the **Set CH Condition** dialog box.)

■ How to operate

Click the **Close** button and the following message appears.

Click the **Yes** button.



9. REAL-TIME PROCESSING

9-1 RECORDING MOVING IMAGE WITH WEB CAM

The EDX-3000A/B can monitor and record moving image data (maximum resolution: 640×480 , maximum frame rate: 30- fps) from a webcam and measured data at the same time.

The recorded moving image data is saved in different file (extension: AVI) from the measured data.

After the measurement is finished, it is capable of reproducing the moving image data synchronized with graph waveform.

Capable of saving the testing scene as a memo to the moving image data.

9-1-1 Restrictions

- The EDX-3000A/B can monitor and record the moving image data as follows.

Resolution	Maximum 640×480
Frame Rate	Maximum 30 fps

- When recording moving image, the measured data and moving image data recording cannot be started at the same time.
Time lag between the recording start time of the measured data and moving image data is maximum 1 second.
- Only the moving image data is recorded in the AVI file and no voice data and no stop motion data are saved in the AVI file.
- The EDX-3000A/B can record the moving image data with the Control mode set to **Online** and Synchronous operation set to **Standalone** and **Synchronous master**.
(See “3-2-1 Synchronous Operation” and “3-2-2 Control Mode.”)
- Meas mode that can record moving image data is **Manual** and **Manual (Set Record Data)** only.
The EDX-3000A/B cannot record the moving image data with other than Manual mode.
(See “5-2 MEAS MODE”.)

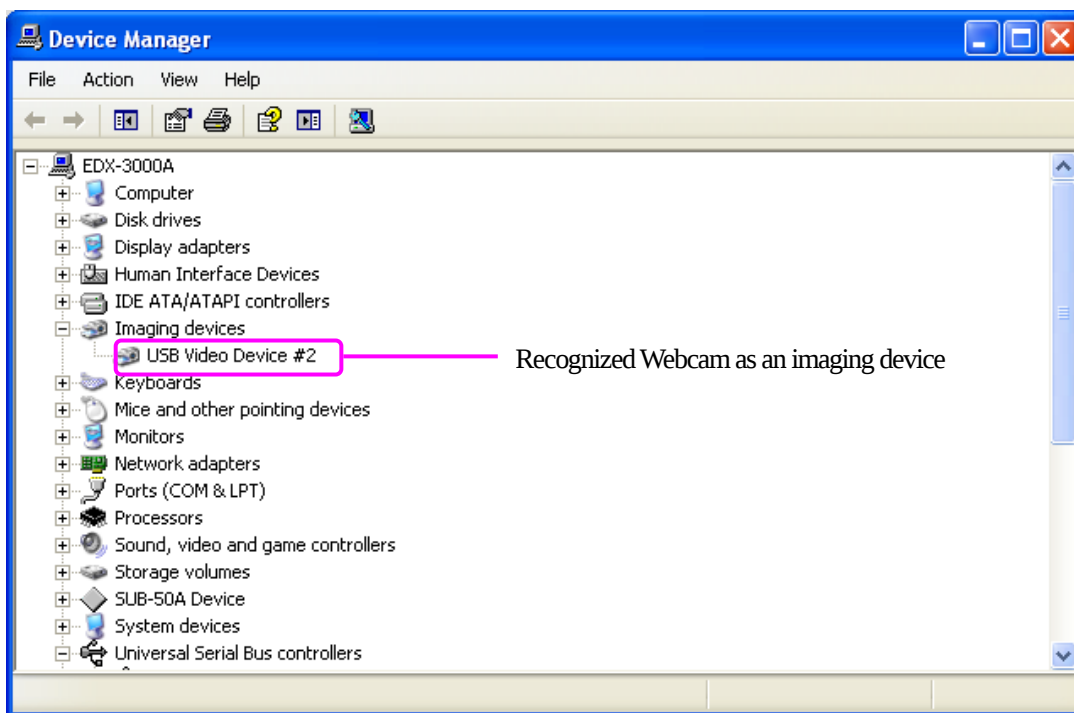
NOTE

Even when the **Meas Mode** is **Manual** or **Manual (Set Record Data)**, recording cannot be paused by any pausing operation during recording data.

- Available sampling frequency for data recording is MAX. 10 kHz.
In addition, the EDX-3000A/B can record the moving image data when the sampling clock is external clock.
(See “5-2 MEAS MODE.”)

9-1-2 Preparation for Webcam

- When recording moving image with the EDX-3000A/B, use the Webcam that the OS recognizes it as an imaging device.
Capable of checking whether the connected Webcam to the PC is recognized as the imaging device by checking the **Imaging devices** item in the **Device Manager** dialog box.
Click the **Start** button - **Control Panel** - **System** - **Hardware** - **Device Manager** and check the inside of the **Imaging devices** item on the **Device Manager** dialog box. (See the following figure.)



- When selecting the Webcam for recording moving image, for USB interface, select the USB video class (UVC) compatible Webcam or Direct X compatible Webcam.
For IEEE 1394 interface, select the Direct X compatible Webcam.
- When connecting the Webcam to the EDX-3000A/B, be sure to connect only 1 Webcam.
Or, the EDX-3000A/B cannot record moving image correctly.

MEMO

The USB video class (UVC) compatible Webcam uses a standard driver of the EDX-3000A/B.

Therefore, no Webcam driver installed is necessary.

Only by inserting the Webcam to the USB connector of the EDX-3000A/B, the standard driver is automatically installed and the Webcam can be used.

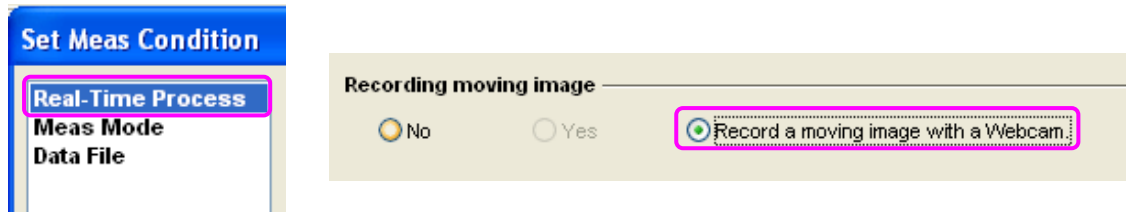
However, for the USB video class (UVC) compatible Webcam with dedicated driver, it is recommended to install the driver.

9-1-3 Operation Method of Recording Moving Image

1) Open the **Set Meas Condition** dialog box with any of the following operations.

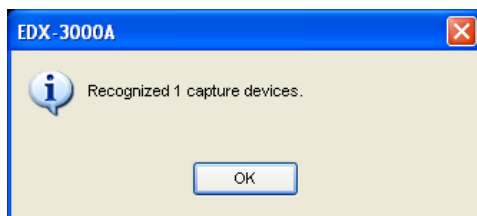
- Click the **Set** – **Set Meas Condition...**.
- Click the **Meas Condition** icon from the toolbar.

2) Click the **Real-Time Process** on the **Set Meas Condition** dialog box, click the **Record a moving image with a Webcam** in the **Recording moving image** and click the **OK** button to close the **Set Meas Condition** dialog box.



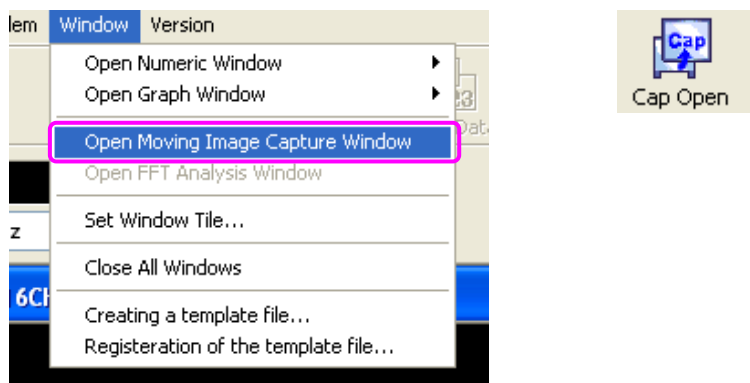
3) Connect the Webcam to the EDX-3000A/B.

After recognizing the Webcam, the following message appears.



4) The EDX-3000A/B recognizes the Webcam and the following **Window** – **Open Moving Image Capture Window** and **CAP Open** icon on the toolbar become valid.

Click the **Window** – **Open Moving Image Capture Window** or **CAP Open** icon from the toolbar.



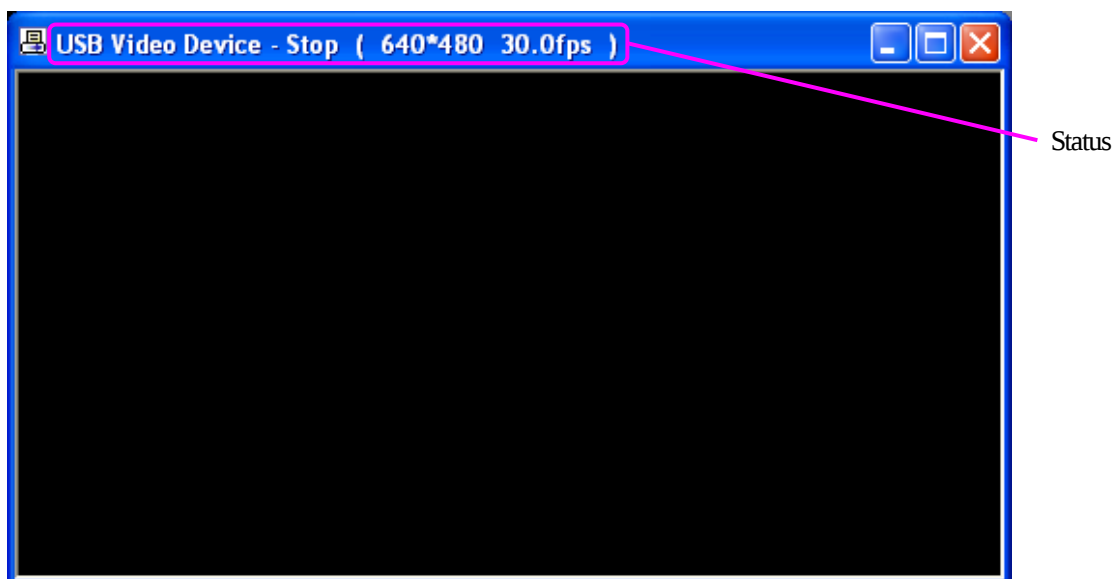
NOTE

Capable of displaying 1 Moving Image Capture window per 1 Webcam.

5) The following **Moving Image Capture** window appears.

Moving images from the Webcam appears on the **Moving Image Capture** window.

On the title bar of the **Moving Image Capture** window, a device name of the Webcam, a status indicating the action state of the recording moving image and setting conditions (resolution and frame rate) are displayed.

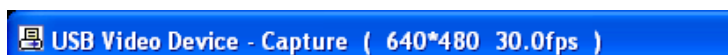


Display of the status varies with the action state of the recording moving image.

“Preview”: Monitoring the moving images from the Webcam on the **Moving Image Capture** window. Elapsed time since the preview was started is displayed next to the status display. (After the preview is started, the elapsed time is reset every 1 minute.)



“Capture”: Monitoring the moving image from the Webcam on the **Moving Image Capture** window and saving the picture images from the webcam as the moving image data to a file.



“Stop”: Stopping the monitoring.

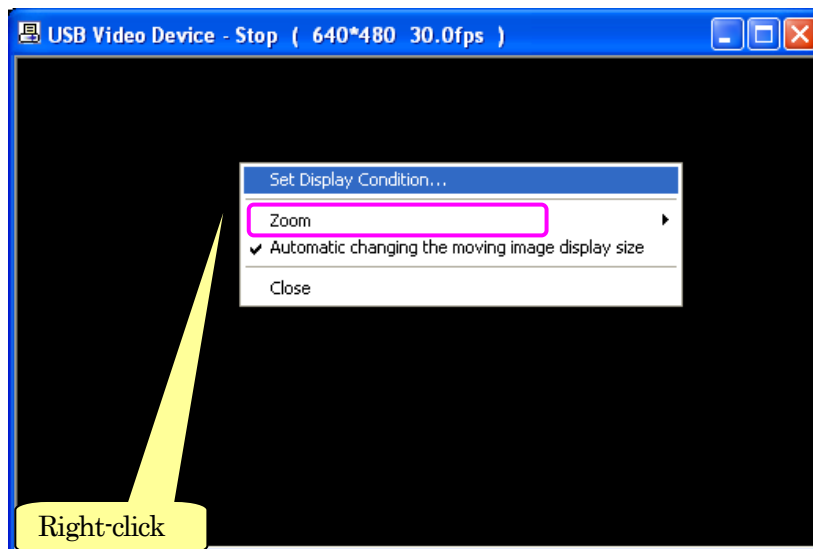


6) Activate the target moving image capture window and open the **Properties** dialog box by either of the following operation.

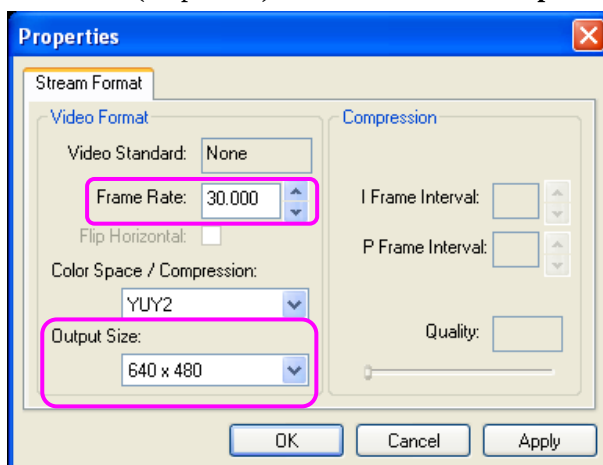
- Click the **View** – **Set Display Condition...**.
- Click the **Disp Condition** icon from the toolbar.



- Right-click the **Moving Image Capture** window to display the pop-up menu.
Click the **Set Display Condition...**.



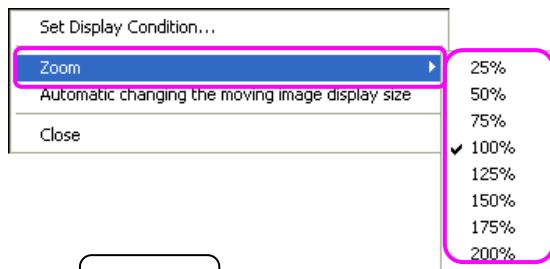
7) Set the resolution (Output Size) and Frame rate on the **Properties** dialog box.



MEMO

Available Resolution (Output Size) and Frame Rate varies every Webcam.
Refer to the Webcam Instruction Manual and set the properties.

Point to the **Zoom** on the pop-up menu and check the target display size of the moving image as follows.

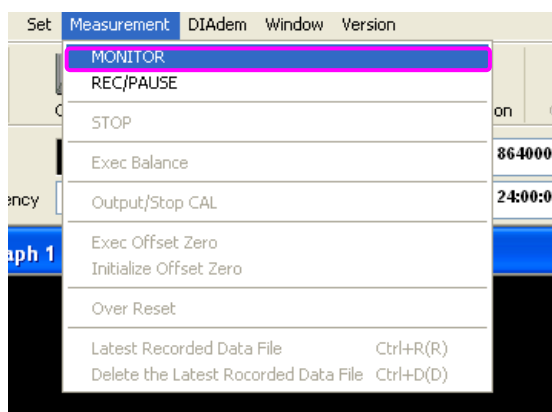


MEMO

- Capable of changing the display size of the moving image even during preview or capture.
- If the display size of the moving image is changed, the Output Size of the actual recording moving image data is not changed. To set the **Output Size** of the recording moving image data, click the **Set Display Condition...** on the pop-up menu to display the **Properties** dialog box.

8) Starts monitoring data with any of the following operations.

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

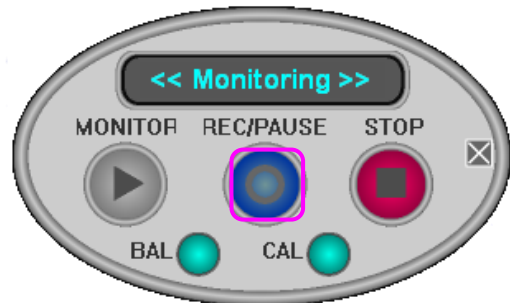
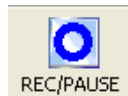
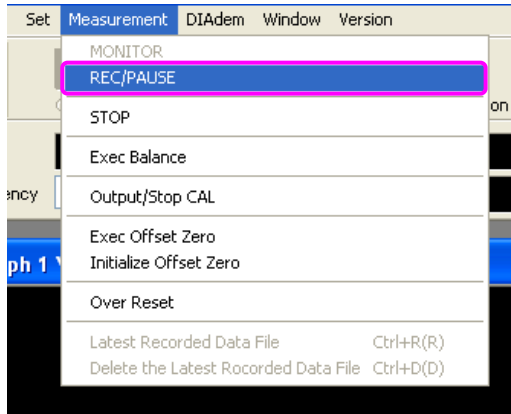


9) Measurement starts, the measured data is monitored on the numerical window or graph window and the moving image from the Webcam is monitored on the **Moving Image Capture** window synchronized with the measuring action.



10) Starts recording data with any of the following operations.

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



11) Recording starts, the measured data is saved in the data file (Extension: KS2) and the moving image from the Webcam is saved in the following moving image file (Extension: AVI) as the moving image data synchronized with the measuring action.

Moving image file name: Data file name +_001. AVI

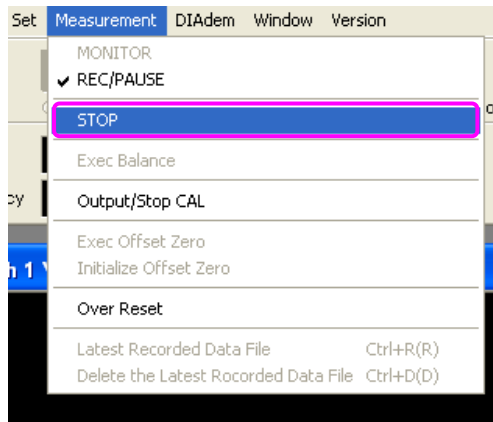
[Example] Measuring data save file name: TEST0000.KS2 file.

The moving image file name becomes TEST0000_001.AVI.

Moving image save folder: Same folder as the data file of the measured data.

12) The EDX-3000A/B stops data recording and becomes monitoring state with any of the following operations.
(Automatically ends when the number of recording data/CH is satisfied.)

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



13) Recording stops and the EDX-3000A/B stops saving the moving image data.

NOTE

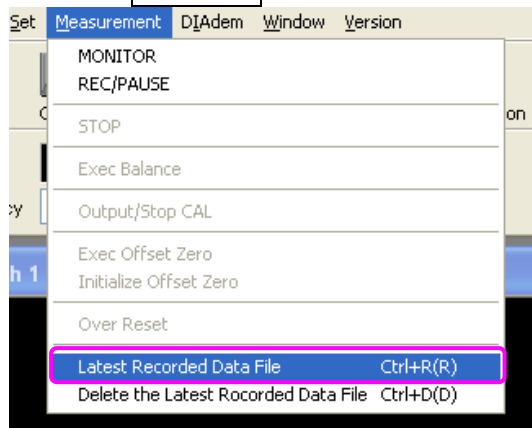
Recording cannot be paused by any pausing operation during recording data.

9-1-4 Operation Method of Reproducing Moving Image

9-1-4-1 Moving Image Reproducing Window

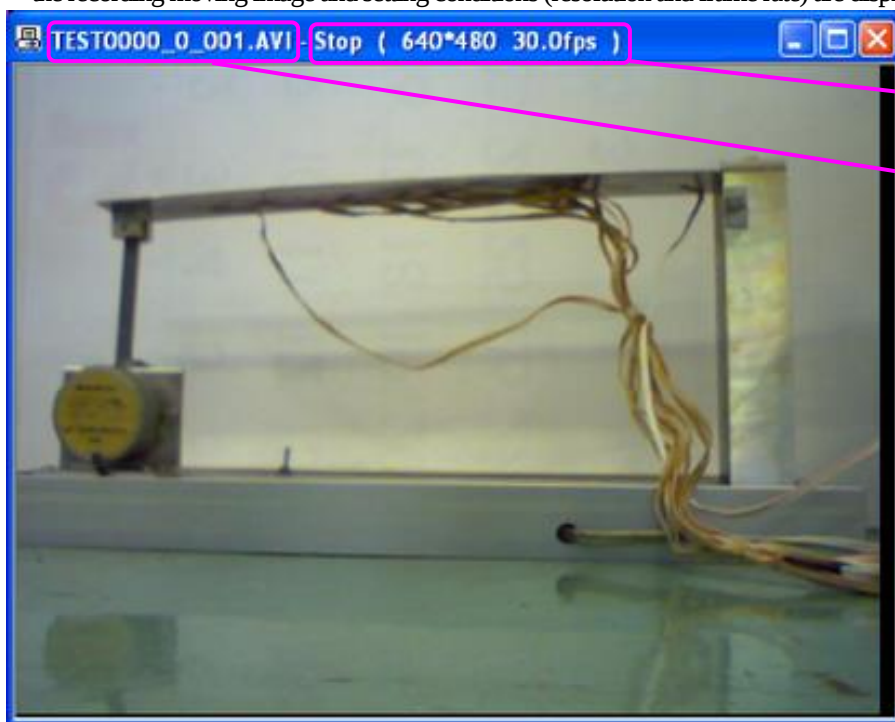
1) After the measurement, activate the **Moving Image Capture** window with either of the following operation with the EDX-3000A/B stopped.

- Click the **Measurement** – **Latest Recorded Data File**.
- Click the **Check Data** icon from the toolbar.



2) The following **Moving Image Reproduce** window appears.

On the title bar of the **Moving Image Capture** window, a device name of the Webcam, a status indicating the action state of the recording moving image and setting conditions (resolution and frame rate) are displayed.



Status

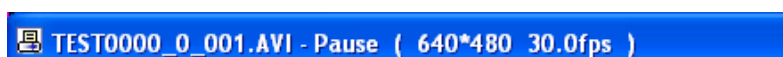
Moving Image File Name

The display of the status varies with the action state of the reproducing moving image as follows.

“Play”: Playing the selected moving image file on the **Moving Image Reproduce** window.



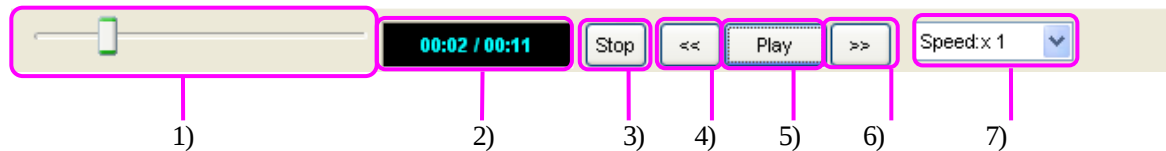
“Pause”: Pausing during playing the moving image file.



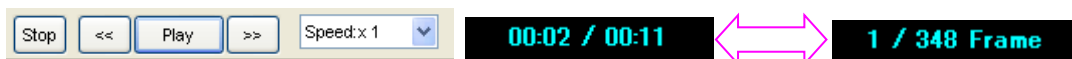
“Stop”: Stopping the reproducing.



- 3) At the same time when the **Moving Image Reproduce** window appears, the following Moving Image Reproduce Operation bar appears at the bottom of the main window.

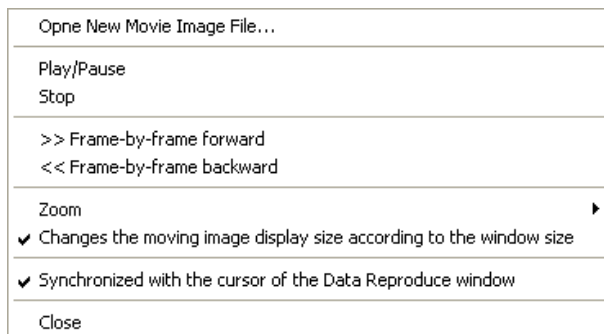


- | | |
|-----------------------------|---|
| 1) Slider | Displays the current display position.
By dragging the knob of the slider with a mouse, the display frame can be changed. |
| 2) Current display position | Displays the current display frame time and total time of the moving image file.
By double clicking this Current display position, the display can be changed from the current display position to current display frame No. and the total number of frames of the moving image files. |



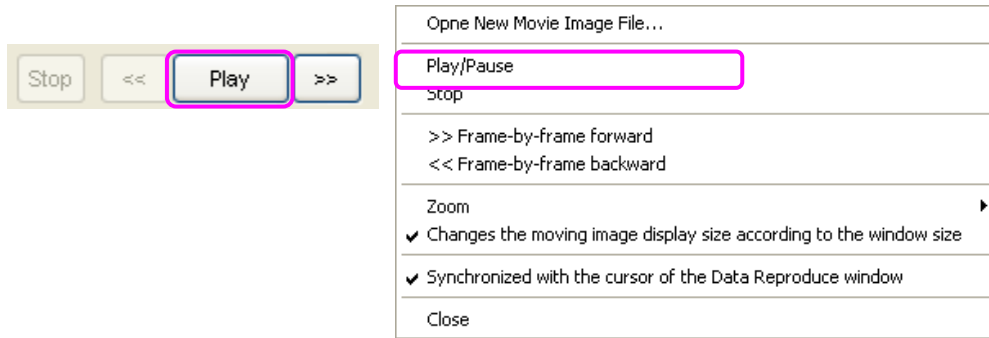
- | | |
|-------------------------------------|---|
| 3) Stop button | Stop the Moving Image Reproduce window. |
| 4) << button | Move backward the current display frame for 1 frame. |
| 5) Play/Pause button | Play or pause the Moving Image Reproduce window. |
| 6) >> button | Move forward the current display frame for 1 frame. |
| 7) Reproduce speed changing control | Changes the moving image reproduce speed.
($\times 1/20$, $\times 1/10$, $\times 1/5$, $\times 1/2$, $\times 1$, $\times 2$, $\times 5$, $\times 10$, $\times 20$) |

Right-click the **Moving Image Reproduce** window and the following pop-up menu appears.



- | | |
|---|--|
| 1) Open New Movie Image File... | Used for changing the target moving image file on the Moving Image Reproduce window. Select the Open New Movie Image File... , the Open Movie Image File window appears again. Select the target moving image file. |
| 2) Play/Pause | Play or pause the Moving Image Reproduce window. |
| 3) Stop | Stop the Moving Image Reproduce window. |
| 4) >> Frame-by-frame forward | Move forward the current display frame for 1 frame. |
| 5) << Frame-by-frame backward | Move backward the current display frame for 1 frame. |
| 6) Zoom | Select the moving image display size of the Moving Image Reproduce window (25%, 50%, 75%, 100%, 125%, 150%, 175%, 200%) |
| 7) Changes the moving image display size according to the window size | Automatically changes the moving image display size according to the current window size. |
| 8) Synchronized with the cursor of the Data Reproduce window | Put a checkmark when displaying the display frame of the Moving Image Reproduce window synchronized with the cursor of the Data Reproduce window. |

- 4) Click the **Play** button on the Moving Image Reproduce Operation bar or click the **Play/Pause** on the pop-up menu.
The moving image is reproduced on the **Moving Image Reproduce** window.



- 5) During reproducing the moving image, the **Play** button on the Moving Image Reproduce Operation bar changes to the **Pause** button.



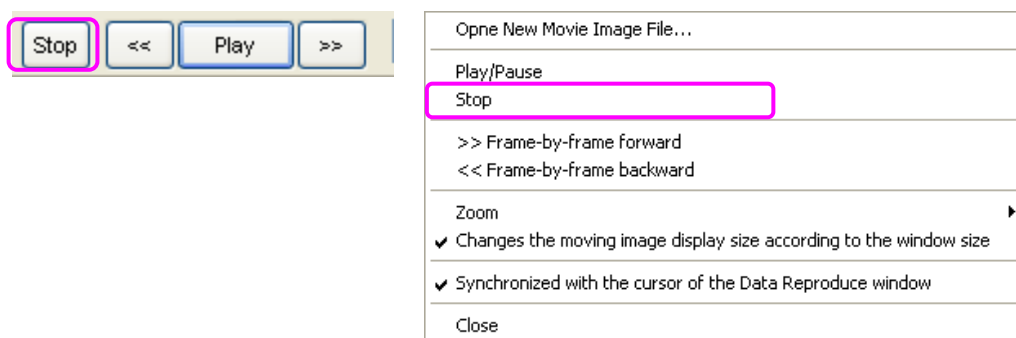
The knob of the slider moves with the display frame and the current display frame time is displayed on the Moving Image Reproduce Operation bar.

In the following figure, the knob of the slider is at the 2 seconds position.



- 7) When reproducing the moving image on the **Moving Image Reproducing** window is finished, the status becomes **Pause** as follows.

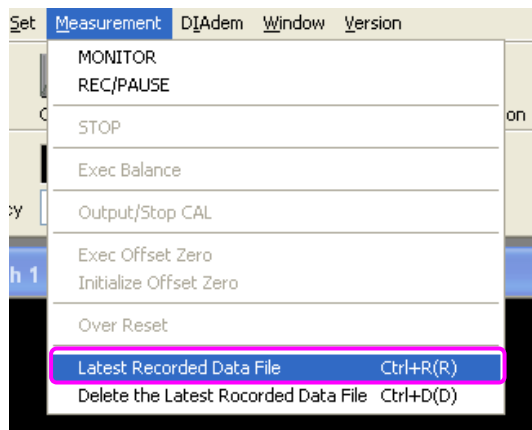
- 8) For reproducing the moving image again, click the **Stop** button on the Moving Image Reproduce Operation bar or click the **Stop** menu on the pop-up menu and change the status display to **Stop** of item 3).



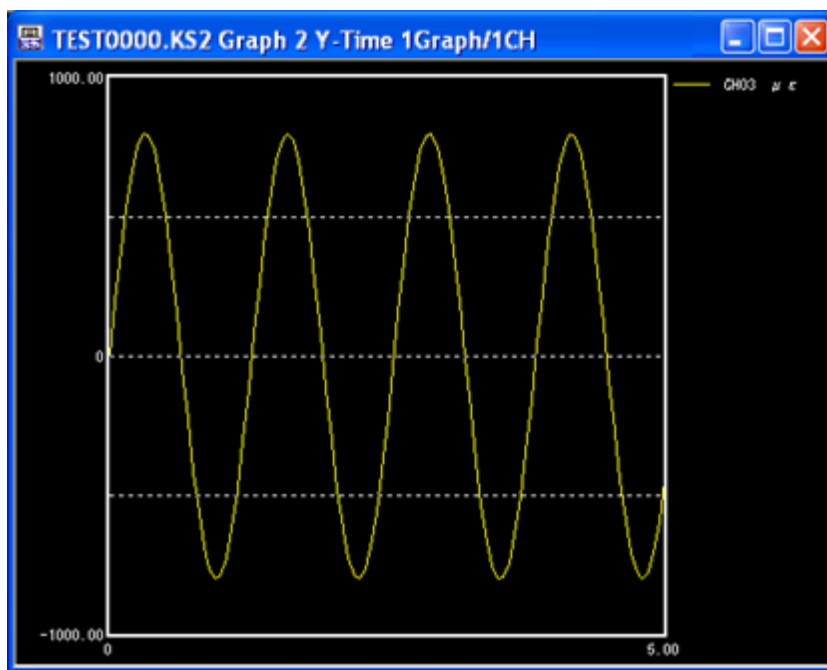
9-1-4-2 Synchronizing Data Reproduce window and Moving Image Reproduce window

1) After the measurement, activate the **Moving Image Capture** window with either of the following operation with the EDX-3000A/B stopped.

- Click the **Measurement** – **Latest Recorded Data File**.
- Click the **Check Data** icon on the toolbar.

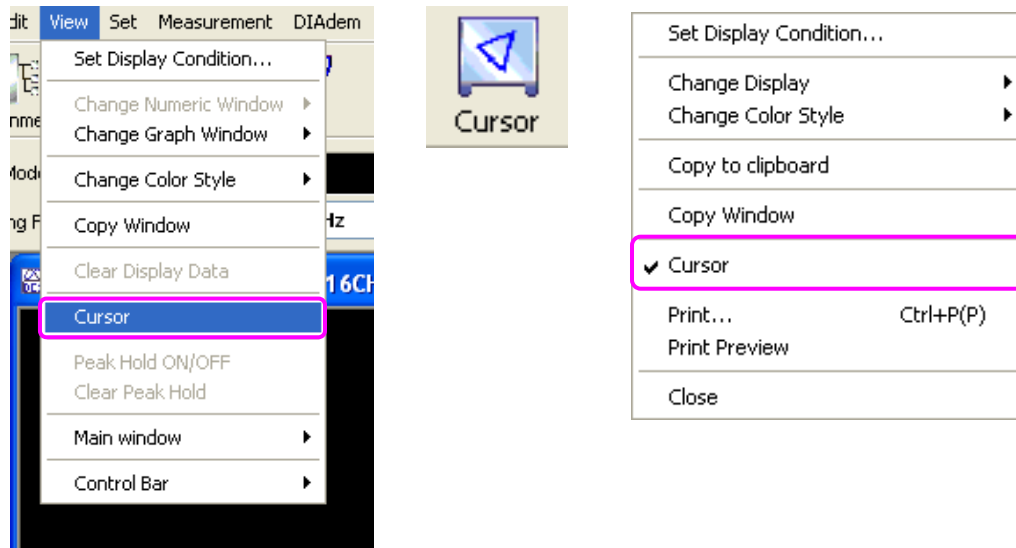


2) The following moving image reproducing window appears.

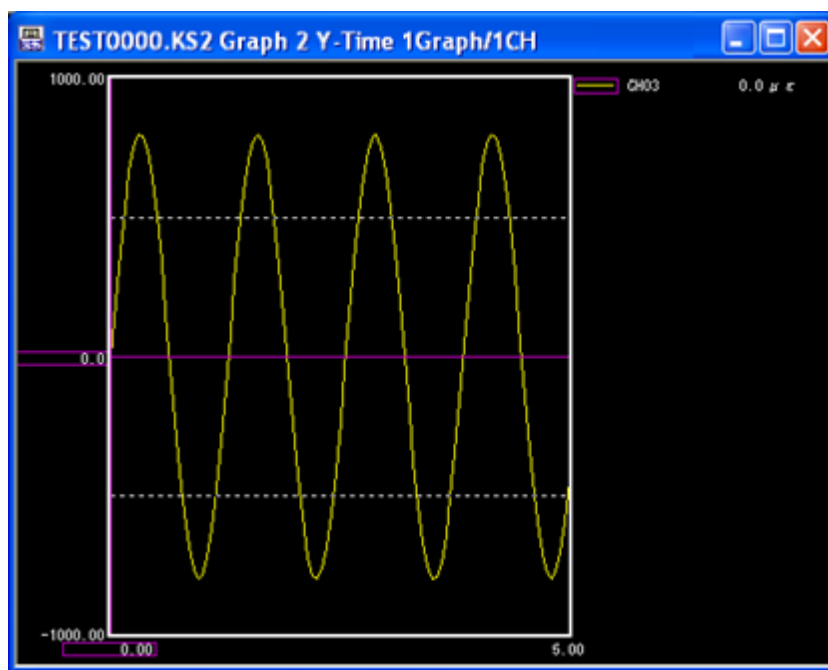


3) Displays the cursor with the following operations.

- Click the **View** – **Cursor**.
- Click the **Cursor** icon from the toolbar.
- Right-click on the moving image reproducing data file and the pop-up menu appears.
Click the **Cursor** to display the cursor.

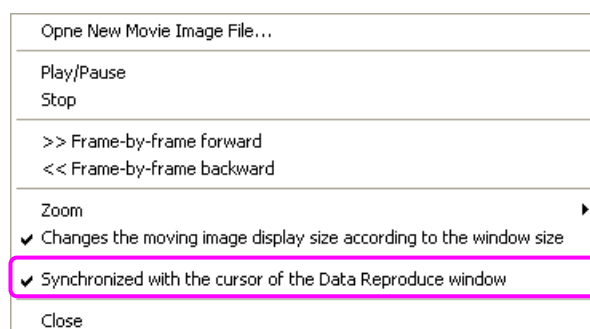


The cursor appears on the graph as follows.

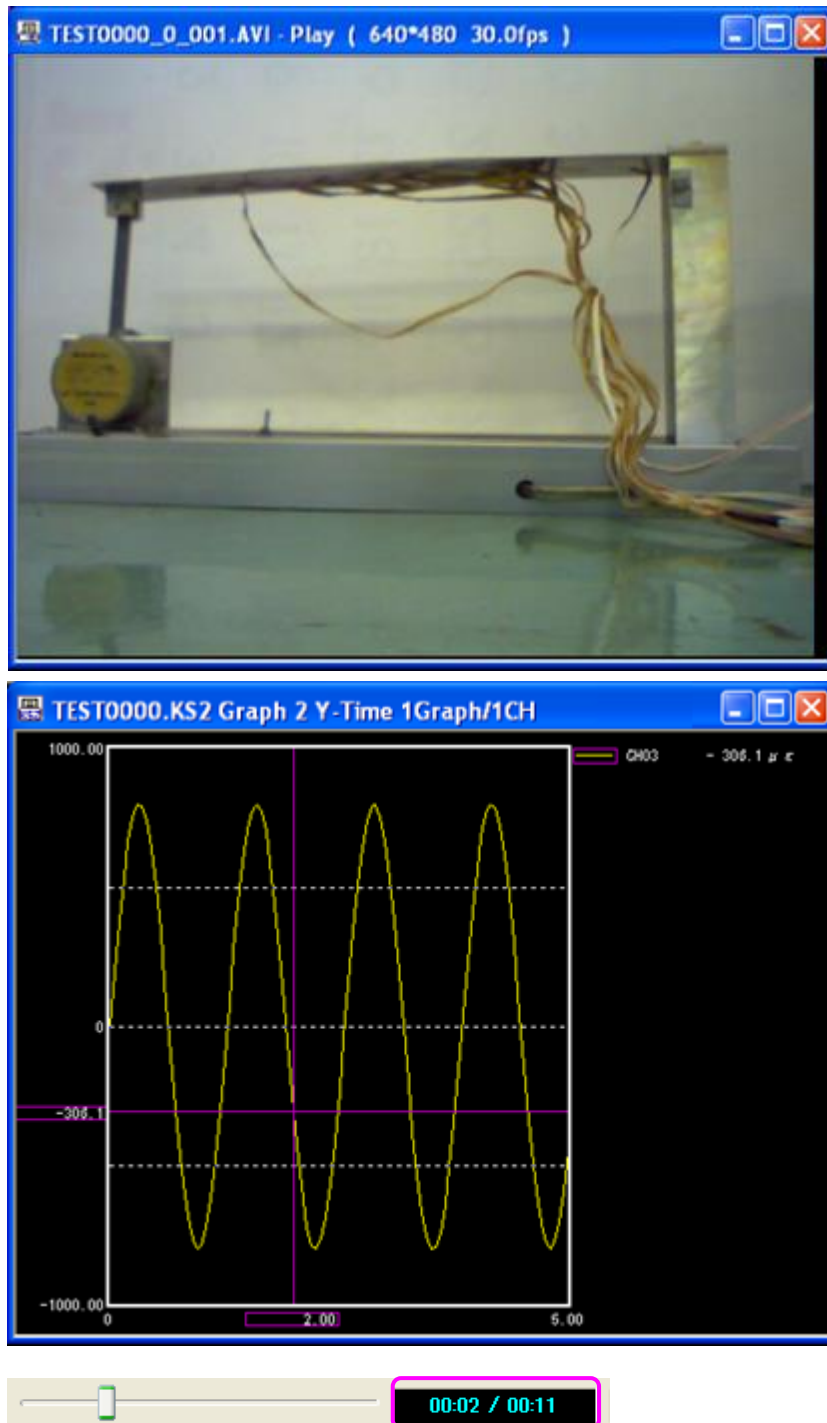


4) Right-click on the moving image reproducing data file and the pop-up menu appears.

Click the **Synchronized with the cursor of the Data Reproduce window**.



- 5) Click the **Play** button on the Moving Image Reproduce Operation or click the **Play/Pause** on the pop-up menu.
The moving image is reproduced on the **Moving Image Reproduce** window and synchronized with it, the cursor on the **Data Reproduce** window moves.
In the following figure, the knob of the slider is at the 2 seconds position.



9-2 ARITHMETIC PROCESSING

9-2-1 Restrictions

- The arithmetic operation is available when the Synchronous operation is set to **Standalone**.
Any control mode is available. (See “3-2-1 Synchronous Operation” and “3-2-2 Control Mode.”)
- Available Meas Mode for arithmetic procession is **Manual**, **Manual (Set Record Data)**, and **Interval**.
(See “5-2 MEAS MODE.”)

NOTE

Even when the Meas Mode is **Manual** or **Manual (Set Record Data)**, recording cannot be paused by any pausing operation during recording data.

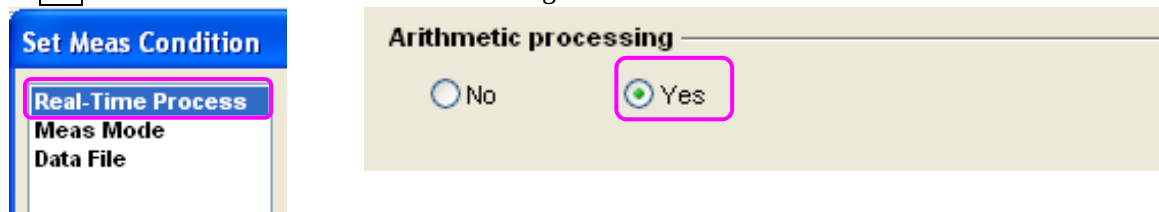
- Available sampling frequency for arithmetic procession is MAX. 10 kHz.
In addition, the EDX-3000A/B can operate arithmetic procession when the sampling clock is external clock.
(See “5-2 MEAS MODE.”)

9-2-2 How to Display the Set Meas Condition Dialog Box

1) Open the **Set Meas Condition** dialog box with either of the following operations.

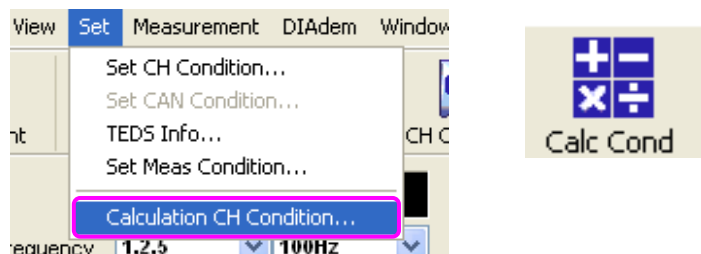
- Click the **Set** – **Set Meas Condition...**.
- Click the **Meas Condition** icon from the toolbar.

2) Click the **Real-Time Process** on the **Set Meas Condition** dialog box, click the **Yes** in the **Arithmetic processing** and click the **OK** button to close the **Set Meas Condition** dialog box.



3) Open the **Set Calculation Condition** dialog with either of the following operations.

- Click the **Set** – **Calculation CH Condition...**.
- Click the **Calc Cond** icon from the toolbar.



4) The **Set Calculation Condition** dialog appears.

9-2-3 Filter Processing

Click the **Filter condition** tab on the **Set Calculation Condition** dialog box and set the filtering conditions.

This section describes how to set filter procession, integral procession and differential procession of the measured data of analog channels and how to set moving average procession of the measured data of all channels.

Click the **Filter condition** tab on the **Set Calculation Condition** dialog box.

Set Calculation Condition (Number of Analog Calculation CHs : 0)

Filter condition | Arithmetic operation

CH	High Pass Filter	Low Pass Filter	Differential	Integral calculus	Unit	Deci Digits	CH Name
01	FLAT	FLAT	None	None	um/m	0 (*****)	
02	FLAT	FLAT	None	None	um/m	0 (*****)	
03	FLAT	FLAT	None	None	um/m	0 (*****)	
04	FLAT	FLAT	None	None	um/m	0 (*****)	
09	FLAT	FLAT	None	None	degC	Auto	
10	FLAT	FLAT	None	None	degC	Auto	
11	FLAT	FLAT	None	None	degC	Auto	
12	FLAT	FLAT	None	None	degC	Auto	
13	FLAT	FLAT	None	None	degC	Auto	
14	FLAT	FLAT	None	None	degC	Auto	
15	FLAT	FLAT	None	None	degC	Auto	

High Pass Filter (-pole)

Low Pass Filter (-pole)

The number of moving average data/CH (0 : none, 2 - 500)

☐ The recorded data is saved in a CSV format file.
The number of recorded data/CH 1 fixed.

☐ Differential processing.

☐ Integral processing.

Print button

Print out the displaying filtering conditions.

Print Preview... button

Displays the print image of the displaying filtering conditions.

Change Setting Items... button

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

Load condition... button

Load the pre-saved calculation condition file (extension: DFL).

Save condition... button

Save the current calculation conditions as the calculation condition file (extension: DFL).

OK button

Determine the set contents and close the **Set Calculation Condition** dialog box.

Cancel button

Cancel the set contents and close the **Set Calculation Condition** dialog box.

9-2-3-1 Setting Processing Conditions (For analog CH)

This section describes how to set the processing conditions of the analog CH.

■ High Pass Filter

Set the low pass filter of the analog CH.

Select the desired value from the following or directly input the desired value.

“FLAT”, “0.1 Hz”, “0.2 Hz”, “0.5 Hz”, “1.0 Hz”, “2.0 Hz”, “5.0 Hz”, “10.0 Hz”

■ Low Pass Filter

Set the low pass filter of the analog CH.

Select the desired value from the following or directly input the desired value.

“FLAT”, “10.0 Hz”, “20.0 Hz”, “50.0 Hz”, “100.0 Hz”, “200.0 Hz”, “500.0 Hz”, “1000.0 Hz”

■ Differential

Select the number of differential times of the analog CH.

“None”, “1”, “2”

■ Integral

Select the number of integral times of the analog CH.

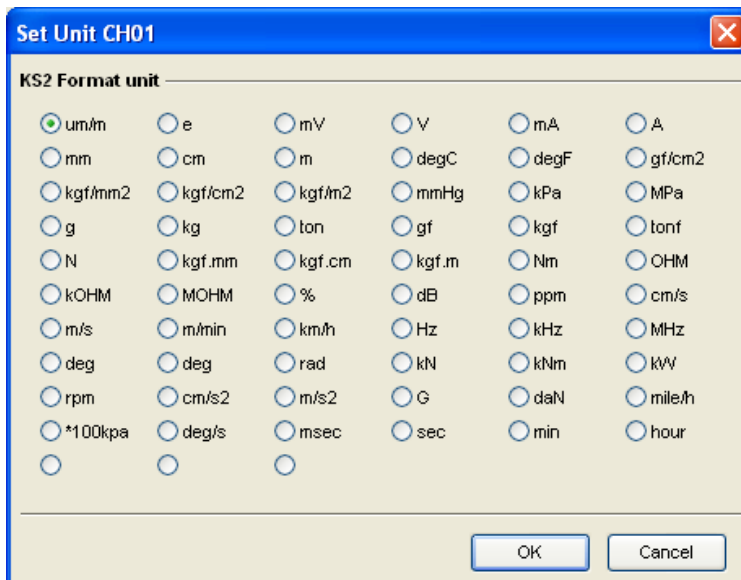
“None”, “1”, “2”

■ Unit

Set engineering unit according to the processed analog CH.

Double click the target CH or press the **SPACE** key to display the **Set Unit** dialog box.

Select the relevant unit from the unit list.



■ Deci Digit

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

If **Auto** is selected, numeric value is automatically set to be in 5 numbers without sign.

■ CH Name

Set the CH name within 40 characters.

After the analog channels are processed, the processed CH numbers are displayed in blue as follows.

CH
01
02
03
04
05
06
07
08

9-2-3-2 Setting Processing Conditions (For all channels)

This section describes how to set the processing conditions of all channels.

■ High-pass filter (-pole) and low-pass filter (-pole)

High Pass Filter (-pole)	None	▼
Low Pass Filter (-pole)	None	▼

Select the target high pass and low pass filters of all analog channels.

“None”, “2-pole”, “3-pole”, “4-pole”

If the **None** is selected, the **High Pass Filter** and **Low Pass Filter** columns of analog channels become valid.

The measured data is filtered based on the settings of **High Pass Filter** and **Low Pass Filter** columns.

■ The number of moving average data/CH and CSV format

The number of moving average data/CH	2	▲▼	(0 : none, 2 - 500)
☒ The recorded data is saved in a CSV format file.			
The number of recorded data/CH 1 fixed.			

- Set the number of moving average data of all channels.

If the number of moving average data/CH is set 2 or more, the EDX-3000A/B conducts simple moving average (SMA) with the preset number of moving average data as the latest number of data.

After conducting the moving average, the processed measured data (averaging value data) is saved in the CSV format file.

- Set whether to save (ON) or not save (OFF) the data in the CSV format.

If you put a checkmark to the box next to the **The recorded data is saved in a CSV format file. The number of recorded data/CH 1 fixed.**

The averaging value data is added and saved to one CSV format file every time the recording starts.

The CSV format file name that saves the averaging value data is based on “5-8 SETTING DATA FILE” and determined as follows.

CSV format file name: File nameFile No..CSV

NOTE

The measured data is saved in the CSV format with the Meas Mode set to **Manual** and **Interval**.

■ Differential processing and integral processing.

☐ Differential processing.

☐ Integral processing.

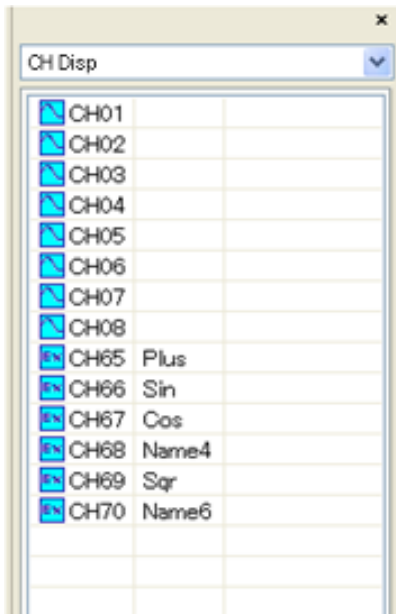
Put a check mark to the box next to the **Differential processing**.

The **Differential** column of analog channels become valid and select the target number for differential processing.

Put a checkmark to the box next to the **Integral processing**.

The **Integral** column of analog channels become valid and select the target number for integral processing.

After processing the channels, the icons of the processed channels on the CH Display Bar are displayed in blue.



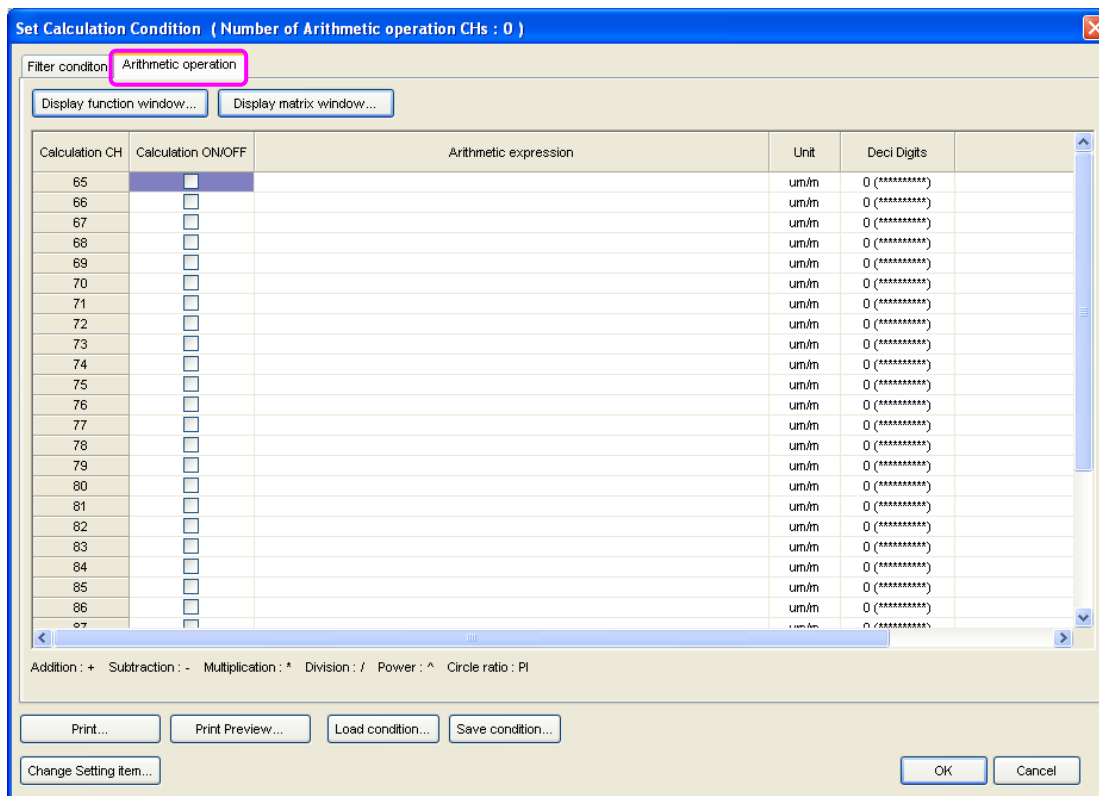
9-2-4 Arithmetic Operations

By setting the result data of the preset arithmetic expressions as calculation CH data, it is capable of monitoring and recording the result data and measured data at the same time.

Capable of setting maximum 32 calculation channels.

The calculation CH data and measured data is saved in the same file.

Click the **Arithmetic operation** tab on the **Set Calculation Condition** dialog box.



Print button

Print out the displaying arithmetic operation conditions.

Print Preview... button

Display the print image of the displaying arithmetic operation conditions.

Change Setting Items... button

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

Display function window... button

Display the **Calculation Function** dialog box describing the selectable calculation function to the arithmetic expressions.

Using the **Calculation Function** dialog box enables you to input the calculation functions easily.

Display matrix window... button

Display the **Matrix** dialog box.

Using the **Matrix** dialog box enables you to input determinants easily.

Load condition... button

Load the pre-saved calculation condition file (extension: DCO).

Save condition... button

Save the current calculation conditions as the calculation condition file (extension: DCO).

OK button

Determine the set contents and close the **Set Calculation Condition** dialog box.

Cancel button

Cancel the set contents and close the **Set Calculation Condition** dialog box.

9-2-4-1 SETTING CALCULATION CH CONDITIONS

■ Calculation CH

Displays the Calculation CH.

■ Calculation ON/OFF

Put a check mark on the calculation target CH box.

The checked calculation channels become valid. After measuring the measurement channels, automatically calculates the checked calculation channels (calculation of the arithmetic expressions).

Be sure to input the Arithmetic expressions to the checked calculation target channels.

■ Arithmetic expression

Input Arithmetic Expression within 200 characters.

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

Input the desired arithmetic expression.

Arithmetic expression
CH01+CH02
SIN(CH05)
COS((CH02+CH03)*0.5)
CH05
CH07/1000

- The usable expression to the **Arithmetic expression** is arithmetic expression using such as Measurement CH, Calculation CH, Operator, and Calculation function.

(See the following table.)

Available CH No.	Measurement CH or calculation CH
Operator +, -, *, /, ^, (,)	+ : Addition — : Subtraction * : Multiplication / : Division ^ : Power Parenthesis () : Specify calculation priority
Calculation Function	■ See “9-2-4-2 Calculation Function.”

- Place the cursor to the target arithmetic expression and press the **DEL** key to clear it.

- Sample of the arithmetic expression

Example 1: CH 02 - (CH 01 + CH 03)/2

Subtract the average value of the measurement CH 01 data and CH 03 data from the measurement CH 02 data.

Example 2: CH 02 * 2/2.05 + 500

After compensating the gage factor to the measurement CH 02 data obtained from the strain gage with gage factor 2.05, add 500 (μm/m).

(For gage factor compensation, coefficient setting function of converting engineering value is more easy to use.)

- When the entered arithmetic expressions are incorrect, they are displayed in red as follows.

In the following example, when the measurement channels are from CH 01 to CH 08, the incorrect arithmetic expressions are displayed in red. That is because in the arithmetic expression of the calculation CH 65, “CH 80” is incorrect CH No., in the arithmetic expression of the calculation CH 67, “)” is needed, and in the arithmetic expression of the calculation CH 69, no arithmetic expression is entered.

Calculation CH	Calculation ON/OFF	Arithmetic expression
65	☐	CH01+CH80
66	☐	SIN(CH05)
67	☐	COS((CH02+CH03)*0.5
68	☐	CH05
69	☐	
70	☐	CH07/1000

NOTE

When using the calculation channels in the Arithmetic expression, use the calculation channels (source CH) having small CH No. than that of the destination CH.

After measuring the measurement channels, the arithmetic expressions of the checked calculation channels are calculated in due order from the small CH No. as follows.

(Following CH 17, CH 19, and CH 21 are calculation channels.)

Example CH 17: 2500

CH 19: (CH 01 + CH 05 + CH 08) / 3 + CH 17

CH 21: CH 04 + CH 19

← Use the CH 17 result.

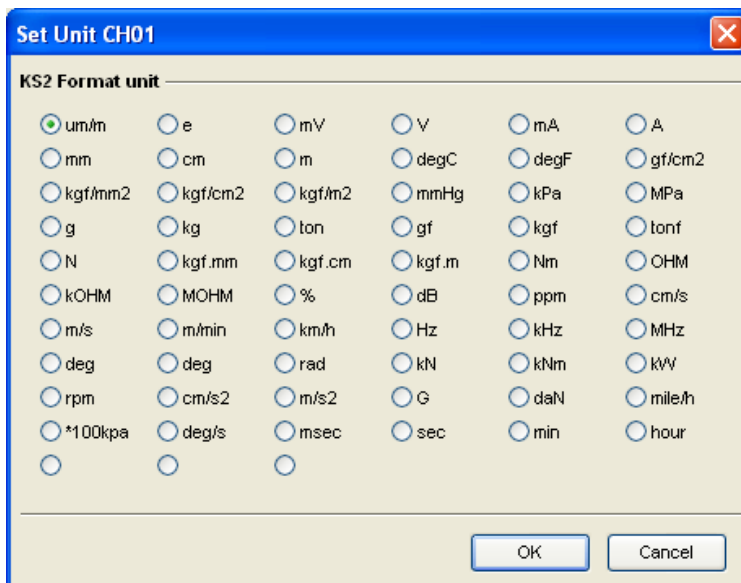
← use the CH 19 result.

■ Unit

Set unit according to calculation result.

Double click the target CH or press the **SPACE** key to display the **Set Unit** dialog box.

Select the relevant unit from the unit list.



■ Deci Digits

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

If **Auto** is selected, numeric value is automatically set to be in 5 numbers without sign.

■ CH Name

Input CH Name within 40 characters.

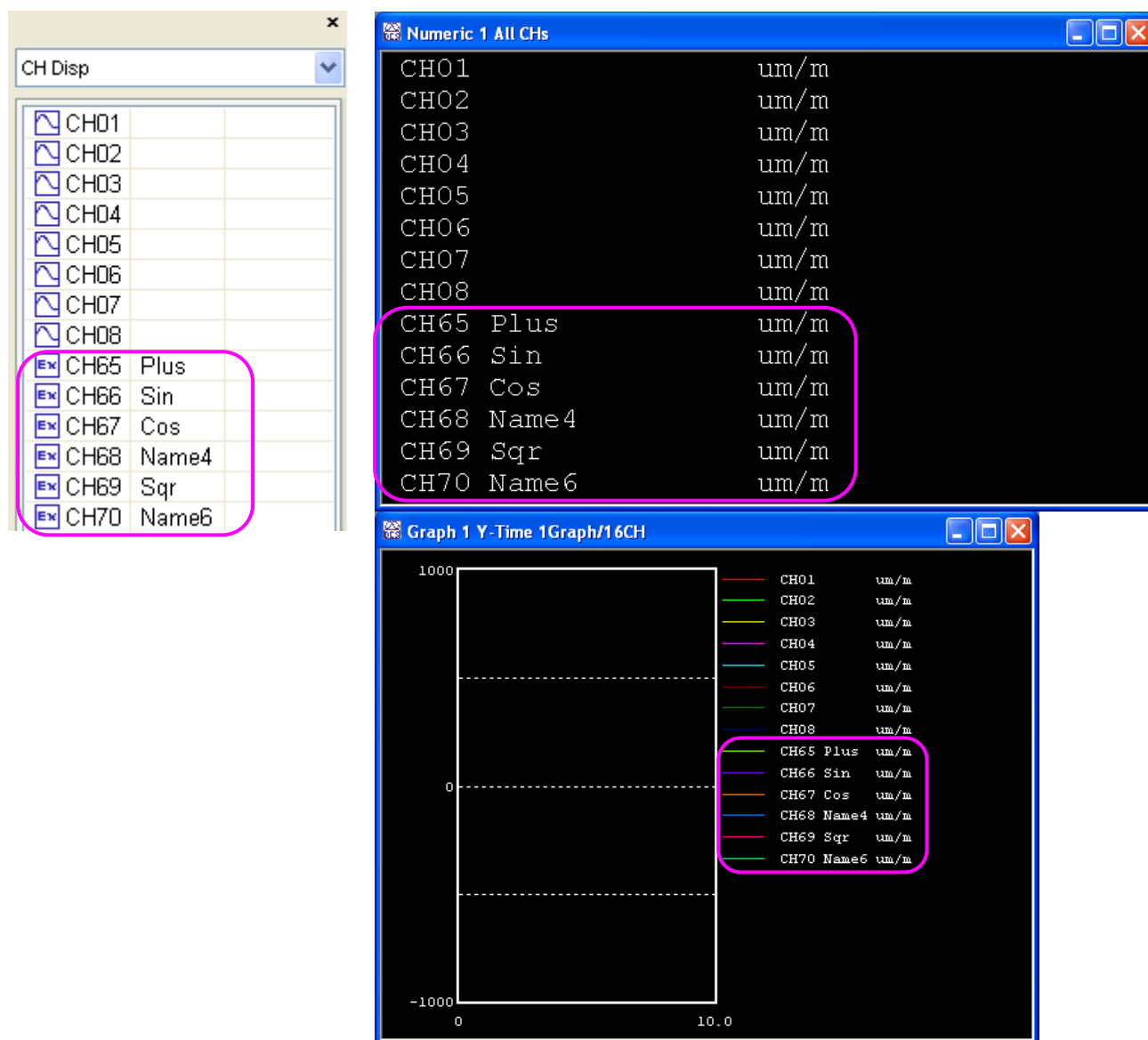
Double-click the target calculation CH or press the **SPACE** key to be in input available state.

Input desired comment character string.

Place the cursor to the target CH Name and press the **DEL** key to clear it.

After setting the items, click the **OK** button and close the **Set Calculation Condition** dialog box.

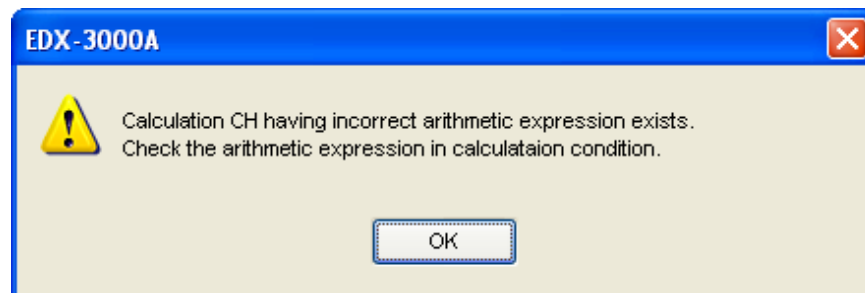
Calculation channels are added to the CH Display Bar on the main window. Then, calculation channels can be displayed on the numerical window and graph.



NOTE

When the incorrect arithmetic expressions exist in the checked **Calculation CH** and if the **OK** button is clicked, the following message appears.

Correct the incorrect arithmetic expressions.



9-2-4-2 Calculation Function

Setting available mathematical functions are described as follows.

- **Square Root Function** **SQR (nn)**

Obtain square root of the specified argument.

Ex.) SQR (A10) When the argument is 8.78, the calculation result shall be 2.9631.

- **Absolute Function** **ABS (nn)**

Obtain absolute value of the specified argument.

Ex.) ABS (A10) When the argument is -8.78, the calculation result shall be 8.78.

- **Comparison Function** **MAX (nn,nn)**

Compare the specified 2 arguments and obtain the larger value.

Ex.) MAX (A10, A12) When the respective arguments are 8.78 and 5.06, the calculation result shall be 8.78.

- **Comparison Function** **MIN (nn,nn)**

Compare the specified 2 arguments and obtain the smaller value.

Ex.) MIN (A10, A12) When the respective arguments are 8.78 and 5.06, the calculation results shall be 5.06.

- **SIN Function** **SIN (nn)**

Obtain sine of the specified argument. The angle is in radian.

Ex.) SIN (A10) When the argument is 8.78, the calculation result shall be 0.60102.

- **COS Function** **COS (nn)**

Obtain cosine of the specified argument. Angle is in radian..

Ex.) COS (A10) When the argument is 8.78, the calculation result shall be -0.79923.

- **TAN Function** **TAN (nn)**

Obtain tangent of the specified argument. Angle is in radian.

Ex.) TAN (A10) When the argument is 8.78, the calculation result shall be -0.75200.

- **ASIN Function** **ASIN (nn)**

Obtain arcsine of the specified argument. Angle is in radian.

If the argument is -1, set arcsine as -1, when more than +1, set +1.

Ex.) ASIN (A10) When the argument is 0.5, the calculation result shall be 0.52360.

- **ACOS Function** **ACOS (nn)**

Obtain arccosine of the specified argument. Angle is in radian.

If the argument is -1, set arccosine as -1, when more than +1, set +1.

Ex.) ACOS (A10) When the argument is 0.5, the calculation result shall be 1.0472.

- **ATAN Function** **ATAN (nn)**

Obtain arctangent of the specified argument. Angle is in radian.

Ex.) ATAN (A10) When the argument is 0.5, the calculation result shall be 0.46365.

- **LOG Function (Common Logarithm)** **LOG (nn)**

Obtain common logarithm of the specified argument.

Ex.) LOG (A10) When the argument is 8.78, the calculation result shall be 0.94349.

- **LN Function (Natural Logarithm)** **LN (nn)**

Obtain natural logarithm of the specified argument.

Ex.) LN (A10) When the argument is 8.78, the calculation result shall be 2.1725.

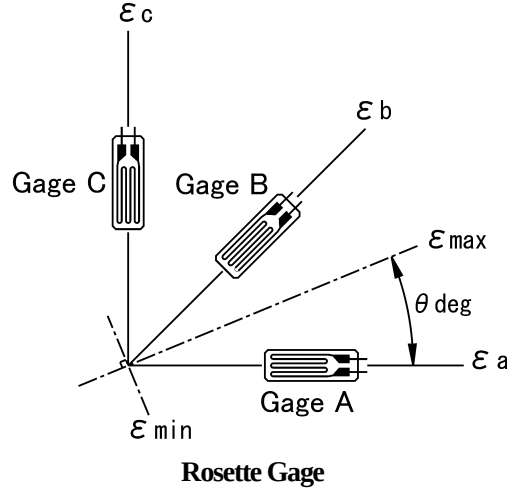
- **EXP Function (Exponent)** **EXP (nn)**

Obtain the exponent (e^x) of the specified argument.

Ex.) EXP (A10) When the argument is 8.78, the calculation result shall be 6502.9.

Rosette function is an analytical function using 3-axis rosette gage.

Three strain gages denoted by A, B, and C are located as shown in the following figure.



where, arguments εa, εb, εc denote CH Nos.,

E denotes Young's modulus (unit: $\times 10^6$),

v denotes Poisson's ratio.

● **Maximum Principal Strain Function HMX (εa, εb, εc)**

Obtain the maximum principal strain from the specified 3-CH measured data.

Ex.) HMX (A 10, A 11, A 12)

When each of the calculation object channel data items are A10: 671 $\mu\epsilon$, A11: 740 $\mu\epsilon$, and A12: 914 $\mu\epsilon$, the calculation result shall be 924.86 $\mu\epsilon$.

Expression

$$\epsilon_{\max} = \frac{1}{2} \left[\epsilon_a + \epsilon_c + \sqrt{2 \left\{ (\epsilon_a - \epsilon_b)^2 + (\epsilon_b - \epsilon_c)^2 \right\}} \right]$$

● **Minimum Principal Strain Function HMN (εa, εb, εc)**

Obtain the minimum principal strain from the specified 3-CH measured data.

Ex.) HMN (A 10, A 11, A 12)

When each of the calculation object channel data items are A 10: 671 $\mu\epsilon$, A 11: 740 $\mu\epsilon$, and A 12: 914 $\mu\epsilon$, the calculation result shall be 660.14 $\mu\epsilon$.

Expression

$$\epsilon_{\min} = \frac{1}{2} \left[\epsilon_a + \epsilon_c - \sqrt{2 \left\{ (\epsilon_a - \epsilon_b)^2 + (\epsilon_b - \epsilon_c)^2 \right\}} \right]$$

● **Maximum Sheering Strain Function HSM (εa, εb, εc)**

Obtain the maximum sheering strain from the specified 3-CH measured data.

Ex.) HSM (A 10, A 11, A 12)

When each of the calculation object channel data items are A 10: 671 $\mu\epsilon$, A 11: 740 $\mu\epsilon$, and A 12: 914 $\mu\epsilon$, the calculation result shall be 264.71 $\mu\epsilon$.

Expression

$$\gamma_{\max} = \sqrt{2 \left\{ (\epsilon_a - \epsilon_b)^2 + (\epsilon_b - \epsilon_c)^2 \right\}}$$

● **Maximum Principal Stress Function** SMX (εa, εb, εc, E, ν)

Obtain the maximum principal stress from the specified 3-CH measured data.

Ex.) SMX (A 10, A 11, A 12, 0.205, 0.3)

When each of the calculation object channel data items are A 10: 671 με, A 11: 740 με, A 12: 914 με, Young's modulus: 205 GPa (Input to an arithmetic expression 0.205), and Poisson's ratio: 0.3, calculation result shall be 252.96 MPa.

Expression

$$\sigma_{\max} = \frac{E}{2(1-\nu^2)} \left[(1+\nu)(\varepsilon_a + \varepsilon_c) + (1-\nu) \times \sqrt{2\{(\varepsilon_a - \varepsilon_b)^2 + (\varepsilon_b - \varepsilon_c)^2\}} \right]$$

● **Minimum Principal Stress Function** SMN (εa, εb, εc, E, ν)

Obtain the minimum principal stress from the specified 3-CH measured data.

Ex.) SMN (A 10, A 11, A 12, 0.205, 0.3)

When each of the calculation object channel data items are A 10: 671 με, A 11: 740 με, A 12: 914 με, Young's modulus: 205 GPa (Input to an arithmetic expression 0.205), Poisson's ratio: 0.3, the calculation result shall be 211.22 MPa.

Expression

$$\sigma_{\min} = \frac{E}{2(1-\nu^2)} \left[(1+\nu)(\varepsilon_a + \varepsilon_c) - (1-\nu) \times \sqrt{2\{(\varepsilon_a - \varepsilon_b)^2 + (\varepsilon_b - \varepsilon_c)^2\}} \right]$$

● **Maximum Shearing Stress Function** SSM (εa, εb, εc, E, ν)

Obtain the maximum shearing stress from the specified 3-CH measured data.

Ex.) SSM (A 10, A 11, A 12, 0.205, 0.3)

When each of the calculation object channel data items are A 10: 671 με, A 11: 740 με, A 12: 914 με, Young's modulus: 205 GPa (Input to an arithmetic expression 0.205), Poisson's ratio: 0.3, the calculation result shall be 20.872 MPa.

Expression

$$\tau_{\max} = \frac{E}{2(1+\nu)} \times \sqrt{2\{(\varepsilon_a - \varepsilon_b)^2 + (\varepsilon_b - \varepsilon_c)^2\}}$$

● **Principal Strain Direction Function** DEG (εa, εb, εc)

Obtain direction of the principal strain from the specified 3-CH measured data.

Set angle of gage A direction to 0 ° (Degree). When strain amount of gages A and C is εa < εc, the angle shall be gage A and minimum principal strain. (Emin).

Ex.) DEG (A 10, A 11, A 12)

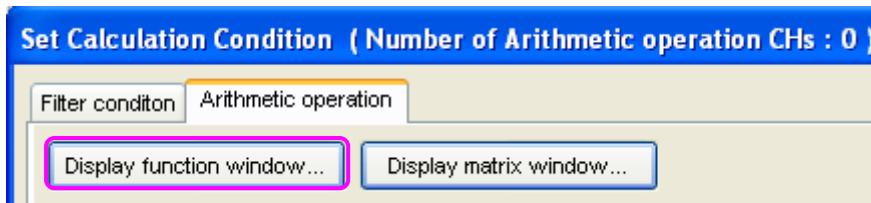
When each of the calculation object channel data items are A 10: 671 με, A 11: 740 με, A 12: 914 με, the calculation result shall be 11.685° (Degree).

Expression

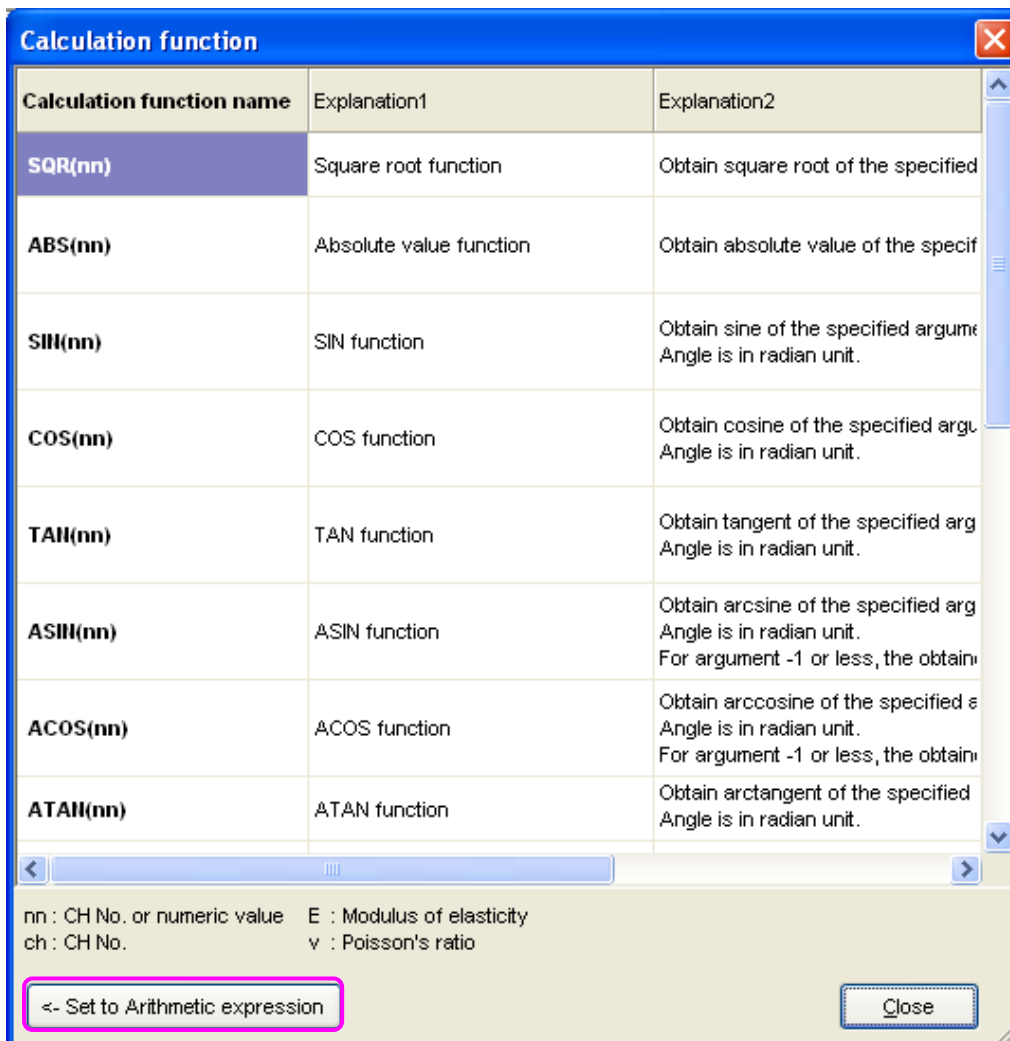
$$\theta = \frac{1}{2} \tan^{-1} \left[\frac{2\varepsilon_b - \varepsilon_a - \varepsilon_c}{\varepsilon_a - \varepsilon_c} \right]$$

9-2-4-3 Calculation Function Dialog Box

Click the **Display function window...** button and the following **Calculation function** dialog box appears.



By pressing the **<-Set to Arithmetic expression** button on the **Calculation function** dialog box, the target calculation function is set to the **Arithmetic expression** on the **Set Calculation Condition** dialog box.



An example for setting the SIN function to the arithmetic expressions of the calculation CH 71 to CH 74 on the **Set Calculation Condition** dialog box is shown below.

- 1) On the **Set Calculation Condition** dialog box. Select the **Arithmetic expression** items of the calculation CH 71 to CH 74, then select the SIN on the **Calculation function** dialog box and click the **<-Set to Arithmetic expression** button on the **Calculation function** dialog box.

Calculation CH	Calculation ON/OFF	Arithmetic expression
65	☐	
66	☐	
67	☐	
68	☐	
69	☐	
70	☐	
71	☐	
72	☐	
73	☐	
74	☐	
75	☐	

Calculation function

Calculation function name	Explanation1	Explanation2
SQR(nn)	Square root function	Obtain square root of the specified
ABS(nn)	Absolute value function	Obtain absolute value of the specif
SIN(nn)	SIN function	Obtain sine of the specified argum Angle is in radian unit.
COS(nn)	COS function	Obtain cosine of the specified argu Angle is in radian unit.
TAN(nn)	TAN function	Obtain tangent of the specified arg Angle is in radian unit.
ASIN(nn)	ASIN function	Obtain arcsine of the specified arg Angle is in radian unit. For argument -1 or less, the obtain
ACOS(nn)	ACOS function	Obtain arccosine of the specified s Angle is in radian unit. For argument -1 or less, the obtain
ATAN(nn)	ATAN function	Obtain arctangent of the specified Angle is in radian unit.

nn : CH No. or numeric value

E : Modulus of elasticity

ch : CH No.

v : Poisson's ratio

<- Set to Arithmetic expression

Close

- 2) The SIN function is set to the Arithmetic expression items of calculation CH 71 to CH 74.

Calculation CH	Calculation ON/OFF	Arithmetic expression
65	☐	
66	☐	
67	☐	
68	☐	
69	☐	
70	☐	SIN(nn)
71	☐	SIN(nn)
72	☐	SIN(nn)
73	☐	SIN(nn)
74	☐	SIN(nn)
75	☐	

MEMO

Select the **Arithmetic expression** item where the arithmetic expressions are already entered and if the **<-Set to Arithmetic expression** button is clicked, the selected calculated function is added to the arithmetic expression in the **Arithmetic expression** item.

For instance, after the 2) in the above, select the arithmetic expression of the calculation CH 71 on the **Set Calculation Condition** dialog box, click the **Display function window** button and select the COS function.

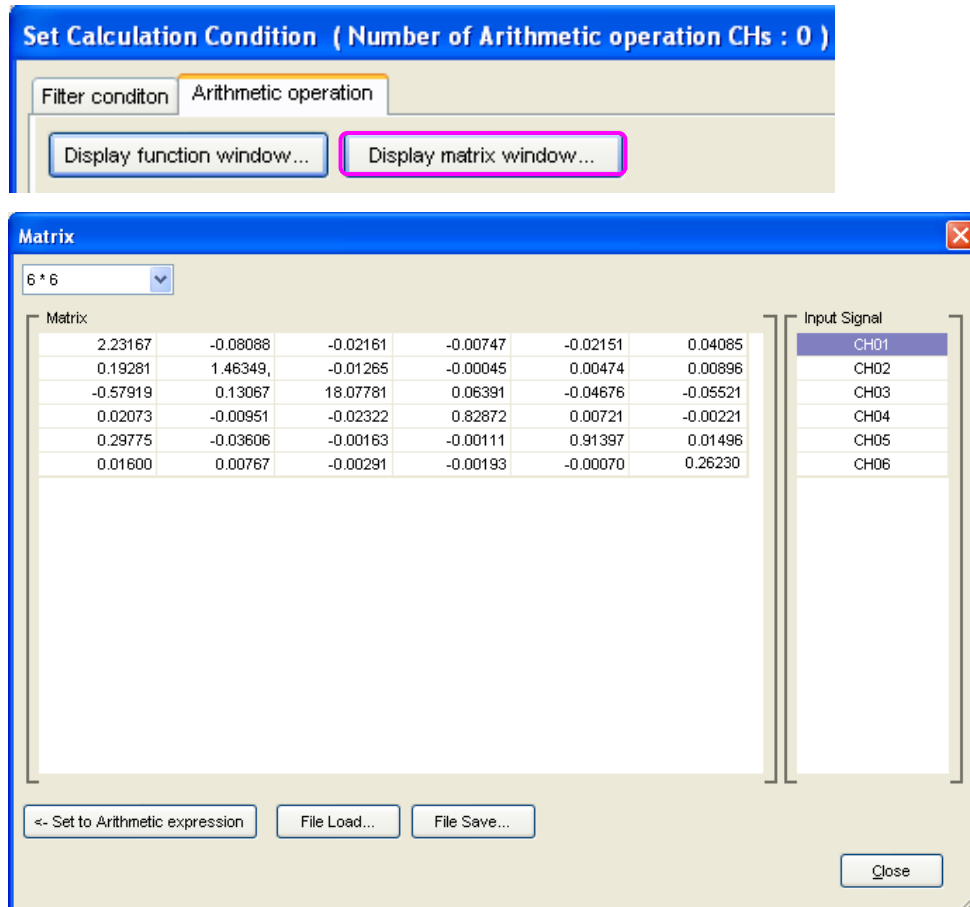
The arithmetic expression of the CH 71 becomes "SIN (nn) + COS (nn)."

(See the following dialog box.)

Calculation CH	Calculation ON/OFF	Arithmetic expression
65	☐	
66	☐	
67	☐	
68	☐	
69	☐	
70	☐	SIN(NN)+COS(NN)
71	☐	SIN(nn)
72	☐	SIN(nn)
73	☐	SIN(nn)
74	☐	SIN(nn)
75	☐	

9-2-4-4 Matrix Dialog Box

Click the **Display matrix window...** button and the following **Matrix** dialog box appears.



<-Set to Arithmetic expression button

Set the determinant of current set conditions to the arithmetic expressions on the **Set Calculation Condition** dialog box.

File Load... button

Load the pre-saved matrix condition file.

(The matrix condition file is CSV format file.)

File Save... button

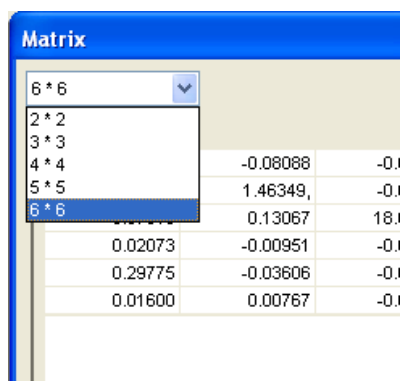
Save the current set conditions as a matrix condition file to the PC.

Close button

Determine the setting contents and close the dialog box.

■ Matrix type

Matrix type is selectable from “2 × 2”, “3 × 3”, “4 × 4”, “5 × 5”, “6 × 6.”



■ Matrix

Input matrix component within 20 characters.

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

Input desired matrix component.

Matrix					
2.23167	-0.08088	-0.02161	-0.00747	-0.02151	0.04085
0.19281	1.46349	-0.01265	-0.00045	0.00474	0.00896
-0.57919	0.13067	18.07781	0.06391	-0.04676	-0.05521
0.02073	-0.00951	-0.02322	0.82872	0.00721	-0.00221
0.29775	-0.03606	-0.00163	-0.00111	0.91397	0.01496
0.01600	0.00767	-0.00291	-0.00193	-0.00070	0.26230

Place the cursor to the target **Arithmetic expression** and press the **DEL** key to clear it.

■ Input Signal

Select the measurement CH or calculation CH used for components of the input signal.

Input Signal	
CH01	
CH02	
CH03	
CH04	
CH05	
CH06	

Determinant (6×6) is set to the arithmetic expression on the **Set Calculation Condition** dialog box as follows.

Matrix						Input Signal					
a ₁₁	a ₁₂	a ₁₃	a ₁₄	a ₁₅	a ₁₆	ch ₁					
a ₂₁	a ₂₂	a ₂₃	a ₂₄	a ₂₅	a ₂₆	ch ₂					
a ₃₁	a ₃₂	a ₃₃	a ₃₄	a ₃₅	a ₃₆	ch ₃					
a ₄₁	a ₄₂	a ₄₃	a ₄₄	a ₄₅	a ₄₆	ch ₄					
a ₅₁	a ₅₂	a ₅₃	a ₅₄	a ₅₅	a ₅₆	ch ₅					
a ₆₁	a ₆₂	a ₆₃	a ₆₄	a ₆₅	a ₆₆	ch ₆					

$$CH_1 = a_{11} \times ch_1 + a_{12} \times ch_2 + a_{13} \times ch_3 + a_{14} \times ch_4 + a_{15} \times ch_5 + a_{16} \times ch_6$$

$$CH_2 = a_{21} \times ch_1 + a_{22} \times ch_2 + a_{23} \times ch_3 + a_{24} \times ch_4 + a_{25} \times ch_5 + a_{26} \times ch_6$$

$$CH_3 = a_{31} \times ch_1 + a_{32} \times ch_2 + a_{33} \times ch_3 + a_{34} \times ch_4 + a_{35} \times ch_5 + a_{36} \times ch_6$$

$$CH_4 = a_{41} \times ch_1 + a_{42} \times ch_2 + a_{43} \times ch_3 + a_{44} \times ch_4 + a_{45} \times ch_5 + a_{46} \times ch_6$$

$$CH_5 = a_{51} \times ch_1 + a_{52} \times ch_2 + a_{53} \times ch_3 + a_{54} \times ch_4 + a_{55} \times ch_5 + a_{56} \times ch_6$$

$$CH_6 = a_{61} \times ch_1 + a_{62} \times ch_2 + a_{63} \times ch_3 + a_{64} \times ch_4 + a_{65} \times ch_5 + a_{66} \times ch_6$$

a_m: Matrix component of the matrix condition

ch_n: Measurement CH or calculation CH used for components of the input signal

CH_n: Calculation CH where determinants of the matrix conditions are set.

(n: 1 to 6)

An example for setting the determination (6×6) to the arithmetic expressions of the calculation CH 71 to CH 76 on the **Set Calculation Condition** dialog box is shown below.

- 1) Set the **Matrix** and **Input Signal** on the **Matrix** dialog box.
- 2) Select the **Arithmetic expression** items of calculation CH 71 to CH 76 on the **Set Calculation Condition** dialog box and click the **<-Set to Arithmetic expression** button.

演算CH	演算 ON/OFF	演算式
65	☐	
66	☐	
67	☐	
68	☐	
69	☐	
70	☐	
71	☐	
72	☐	
73	☐	
74	☐	
75	☐	
76	☐	
77	☐	

Matrix

6 * 6

Matrix

2.23167	-0.08088	-C
0.19281	1.46349	-C
-0.57919	0.13067	1E
0.02073	-0.00951	-C
0.29775	-0.03606	-C
0.01600	0.00767	-C

Input Signal

CH01
CH02
CH03
CH04
CH05
CH06

<- Set to Arithmetic expression

File Load...

File Save...

Close

- 3) Determinations are set to the calculation CH 71 to CH 76.

Calculation CH	Calculation ON/OFF	Arithmetic expression
65	☐	
66	☐	
67	☐	
68	☐	
69	☐	
70	☐	
71	☐	2.23167*CH01-0.08088*CH02-0.02161*CH03-0.00747*CH04-0.02151*CH05+0.040
72	☐	0.19281*CH01+1.46349*CH02-0.01265*CH03-0.00045*CH04+0.00474*CH05+0.00
73	☐	-0.57919*CH01+0.13067*CH02+18.07781*CH03+0.06391*CH04-0.04676*CH05-0.0
74	☐	0.02073*CH01-0.00951*CH02-0.02322*CH03+0.82872*CH04+0.00721*CH05-0.00
75	☐	0.29775*CH01-0.03606*CH02-0.00163*CH03-0.00111*CH04+0.91397*CH05+0.01
76	☐	0.01600*CH01+0.00767*CH02-0.00291*CH03-0.00193*CH04-0.00070*CH05+0.26
77	☐	

MEMO

Select the Arithmetic expression item where the arithmetic expressions are already entered and if the **<-Set to Arithmetic expression** button is clicked, the selected determinant is overwritten to the arithmetic expression in the **Arithmetic Expression** item.

■ File format of matrix condition

File format of matrix condition is described as follows.

2.23167, -0.08088, -0.02161, -0.00747, -0.02151, 0.04085
0.19281, 1.46349, -0.01265, -0.00045, 0.00474, 0.00896
-0.57919, 0.13067, 18.07781, 0.06391, -0.04676, -0.05521
0.02073, -0.00951, -0.02322, 0.82872, 0.00721, -0.00221
0.29775, -0.03606, -0.00163, -0.00111, 0.91397, 0.01496
0.01600, 0.00767, -0.00291, -0.00193, -0.00070, 0.26230

} Matrix component

9-2-5 Setting Windows Functions

■ Print

Click the **Print** button and the following **Print** dialog box appears.

Click the **Print** button on the **Print** dialog box and print the calculation conditions.

■ Print Preview

Click the **Print Preview** button and the print preview dialog box appears.

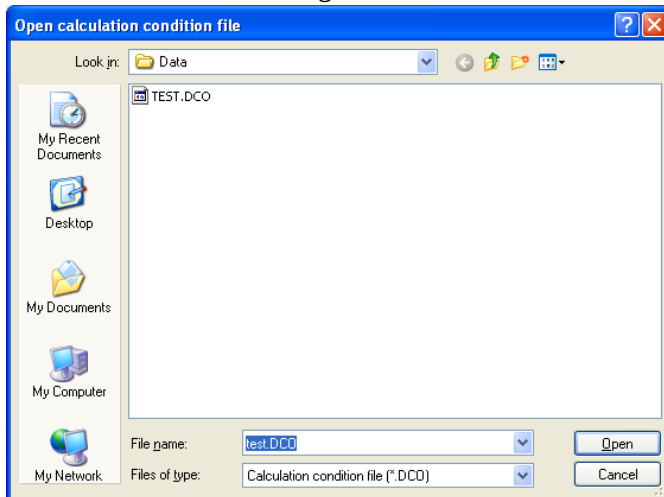
For printing, click the **Print** button and print the calculation conditions.

■ Load Condition

Loads the pre-saved calculation condition file and sets the calculation CH conditions on the **Set Calculation Condition** dialog box.

Click the **Load condition** button and the following **Open calculation condition file** dialog box appears.

Click the target calculation condition file, press the **Open** button, and load the calculation condition from the selected calculation condition file for setting.

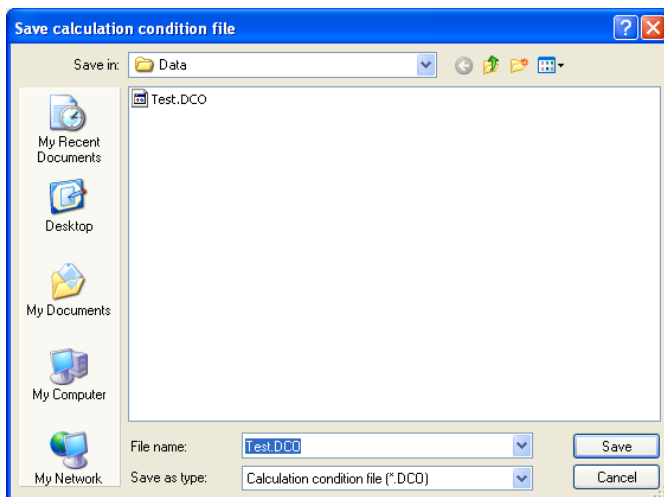


■ Save Condition

Save the calculation CH conditions on the current **Set Calculation Condition** dialog box as a calculation condition file.

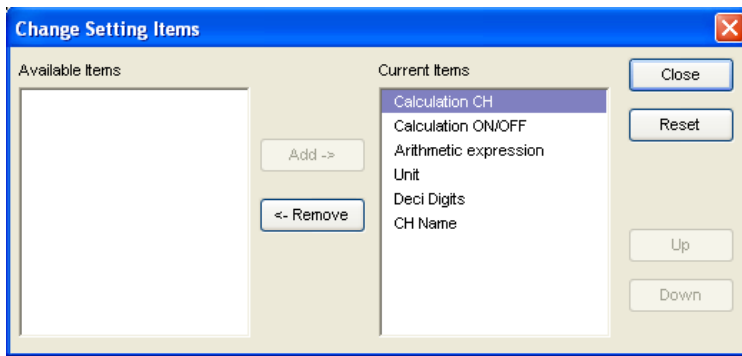
Click the **Save condition** button and the following **Save calculation condition file** dialog box appears.

Input the file name, click the **Save** button and save the calculation CH conditions on the current **Set Calculation Condition** dialog box as a calculation condition file.



■ Change Setting Items

Click the **Change Setting Items...** button and the following **Change Setting Items** dialog box appears.
Setting items on the dialog box are added, removed, or sorted.



Add-> button

<-Remove button

Close button

Reset button

Up/Down button

Items currently not on the dialog box is added to the **Set Calculation Condition** dialog box.

Items currently displayed on the dialog box is removed from the **Set Calculation Condition** dialog box.

Determines the setting contents and close the dialog box.

Reset the setting items to the default state.

Sort the current setting items.

Select the target setting items and click the **Up** or **Down** button.

9-3 AVERAGING PROCESSION

If the measured data is averaged, the EDX-3000A/B measures data with higher sampling frequency than the preset sampling frequency.

The averaging value data obtained from the actual measured data is set as the measured data.

9-3-1 Restrictions

- The averaging procession is available when Synchronous operation is set to **Standalone**.
Any control mode is available. (See “3-2-1 Synchronous Operation” and “3-2-2 Control Mode.”)
- Available sampling frequency for the averaging procession is MAX. 10 kHz.
In addition, the EDX-3000A/B cannot operate averaging procession when the sampling frequency is external clock.
(See “5-2 MEAS MODE.”)

9-4 FFT ANALYSIS

9-4-1 Restrictions

- The FFT analysis procession is available when Control mode is set to **Offline**.
Any control mode is available. (See “3-2-1 Synchronous Operation” and “3-2-2 Control Mode.”)
- Available sampling frequency for the FFT analysis procession is MAX. 10 kHz.
(See “5-2 MEAS MODE.”)

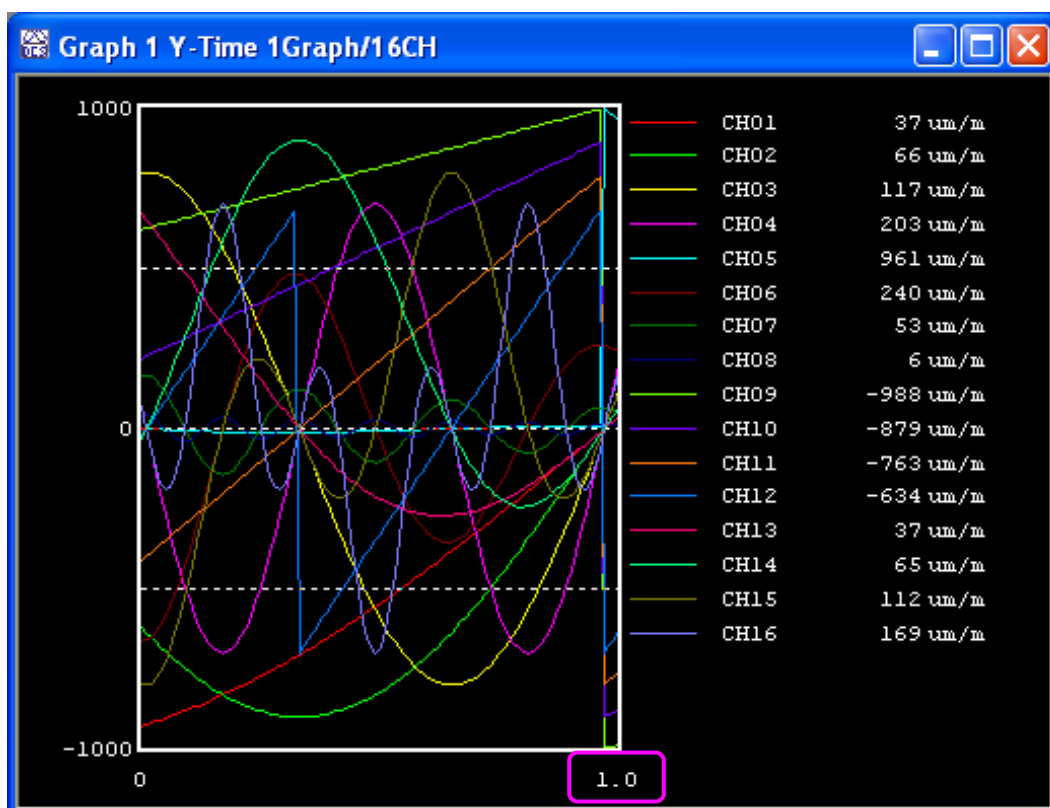
10 OTHERS

10-1 RESTRICTIONS ON SCALE VALUE OF GRAPH

When displaying Y-Time graph window, the maximum value of the X-axis varies with sampling frequency and the number of measuring channels.

The maximum value of the X-axis is 50000 data.

Sampling Frequency	Set Value (sec)
200 kHz	0.1
100 kHz	0.1
50 kHz	0.1
20 kHz	0.1
10 kHz	5
5 kHz	10
2 kHz	25
1 kHz	50
•	•
•	•
•	•
5 Hz	10000
2 Hz	25000
1 Hz	50000



10-2 SAVING AND LOADING MEASURING CONDITION FILE

This section describes how to load and save the measuring condition file.

10-2-1 Saving Measuring Condition File with Name

Saves the current measuring conditions as a Measuring Condition File (extension: E3T).

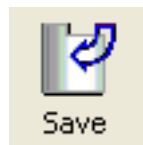
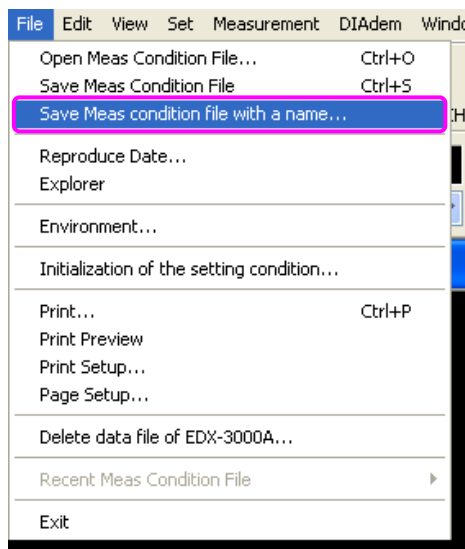
The measuring conditions can be set by loading the saved Measuring Condition File to measure data with the same conditions again.

The measuring conditions include CH conditions, measuring conditions, and display conditions of window.

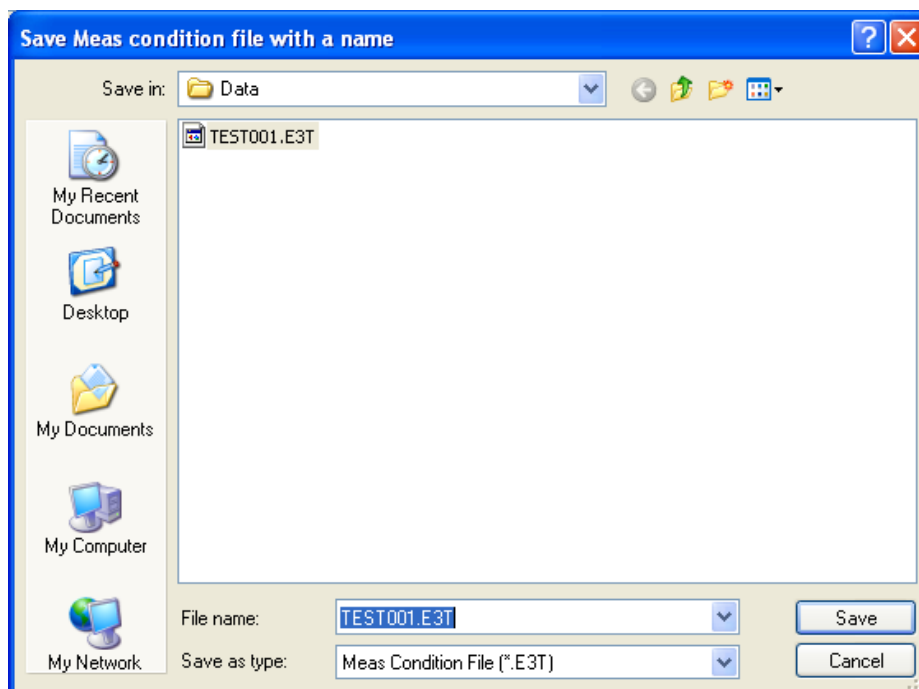
■ How to operate

1) Open the **Save Meas condition file with a name** dialog box with either operation.

- Click the **File** - **Save Meas condition file with a name...**.
- Click the **Save** icon from the toolbar.



2) Input the save folder destination, input a file name and press the **Save** button.



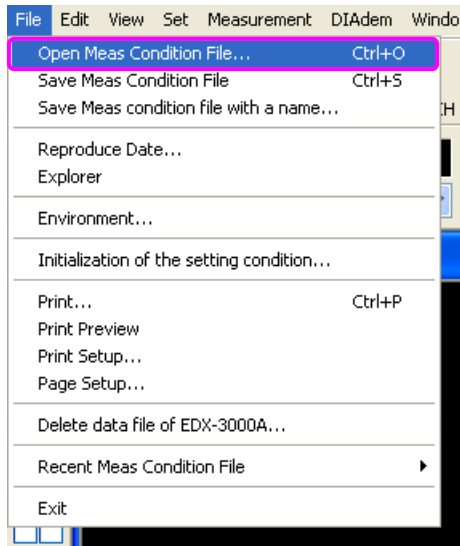
10-2-2 Opening Measuring Condition File

Load the pre-saved measuring condition file (extension: E3T).

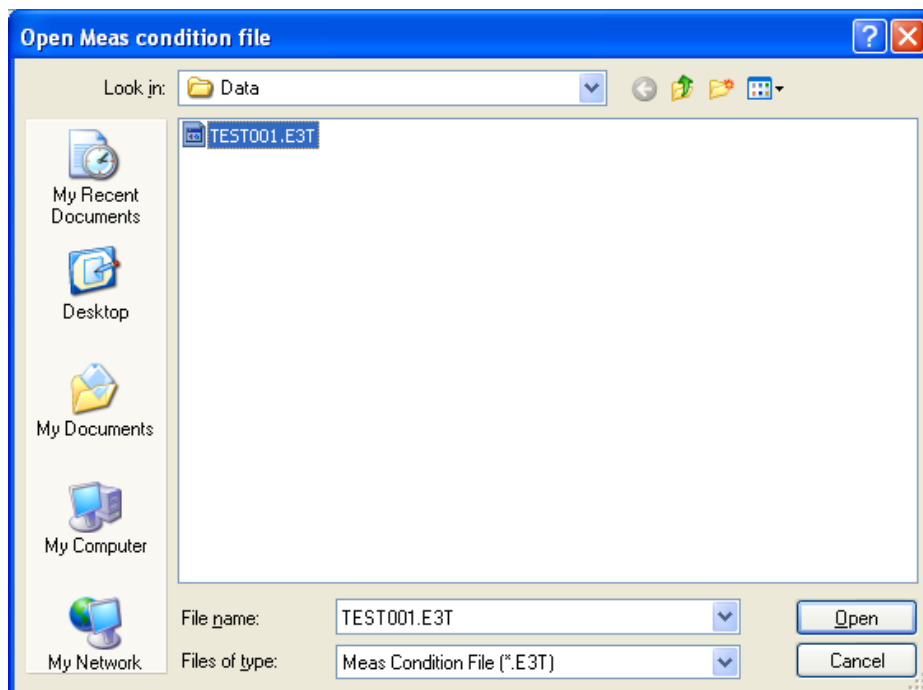
■ How to operate

1) Open the **Open Meas condition file** dialog box with either of the following.

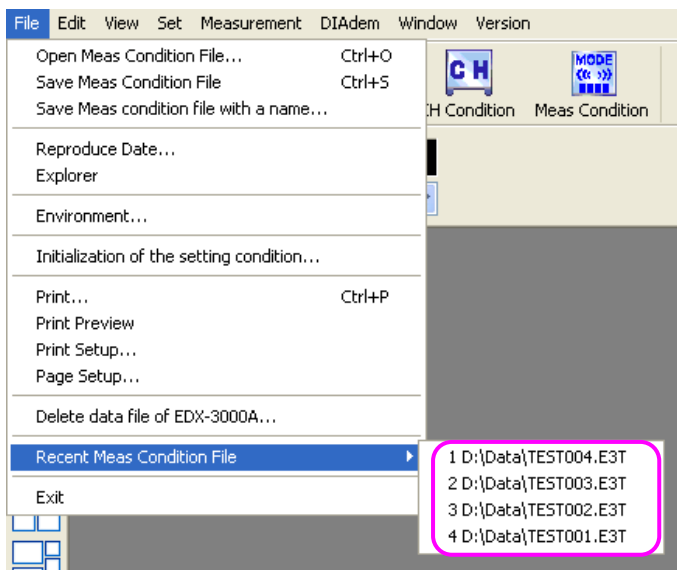
- Click the **File** – **Open Meas Condition File...**
- Click the **Open** icon from the toolbar.



2) Click the target file on the **Open Meas condition file** dialog box and click the **Open** button.



If the desired file is recent file, click the **File** and select from **Recent Meas Condition File**.

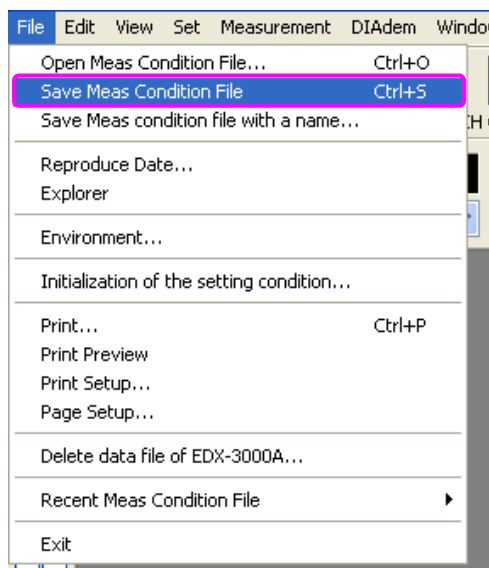


10-2-3 Saving Measuring Condition File

Overwrite and save the current measuring conditions to the measuring condition file (extension: E3T).

■ How to operate

Click the **File** — **Save Meas Condition File**.



If the current measuring conditions are not yet saved, the **Save Meas Condition file with a name** dialog box appears. Input the save folder destination, input a file name and click the **Save** button.

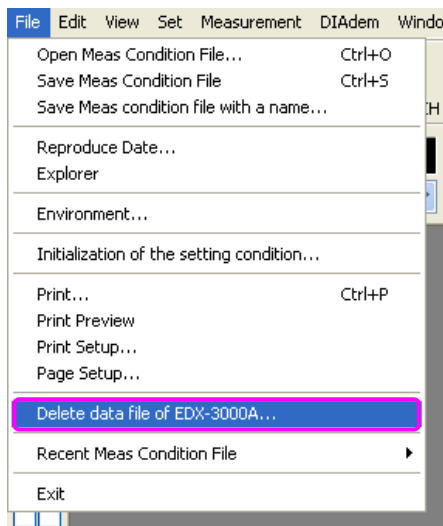
10-3 DELETING DATA FILE

This section describes how to delete a data file saved in the internal disk of the EDX-3000A/B.

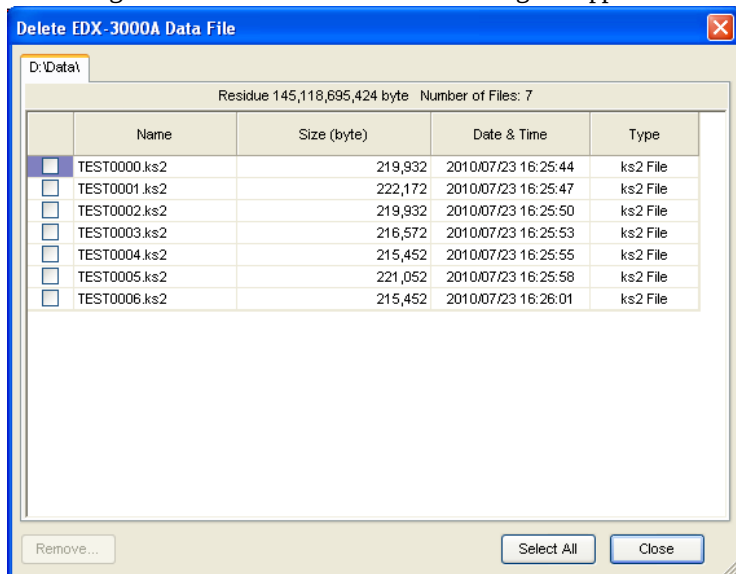
■ How to operate

1) Operate either of the following.

- Click the **File** — **Delete data file of EDX-3000A/B...**
- Click the **Delete** icon from the toolbar.

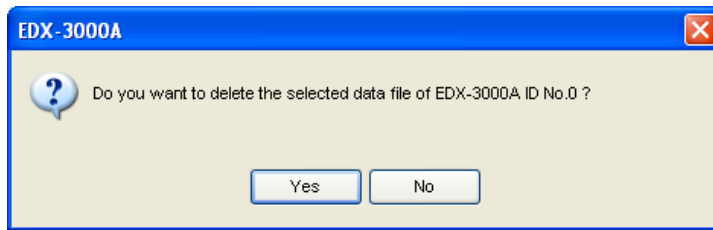


2) The following **Delete EDX-3000A/B Data File** dialog box appears.



Name	Displays data file name.
	Put a checkmark for deleting.
Size (byte)	Size of data file.
Data & Time	Data and time of the data file.
Remove... button	Delete the checked data file.
Select All button	Put checkmarks to all data files.
Close button	Close the Delete EDX-3000A/B Data File dialog box.

- 3) Put a check mark in the box of the target file for deleting and click the **Remove...** button.
- 4) The following message appears to confirm the deleting of the desired file.
If it is OK, press the **Yes** button for deleting.



10-4 REPEATED RECORDING OF MANUAL MEASUREMENT

The EDX-3000A/B can record data repeatedly by setting a **Repeat Times** when Meas Mode is set to **Manual (Set Record Data)**.

A data file in long-term recording can be saved at every preset number of data (or at every preset time) by using the repeated recording function of manual measurement.

■ Conditions

- Meas Mode is **Manual (Set Record Data)** only.
- During recording data, recording cannot be paused (click the **Measurement** – **REC/PAUSE(R)** or **REC/PAUSE** icon.)

■ How to operate

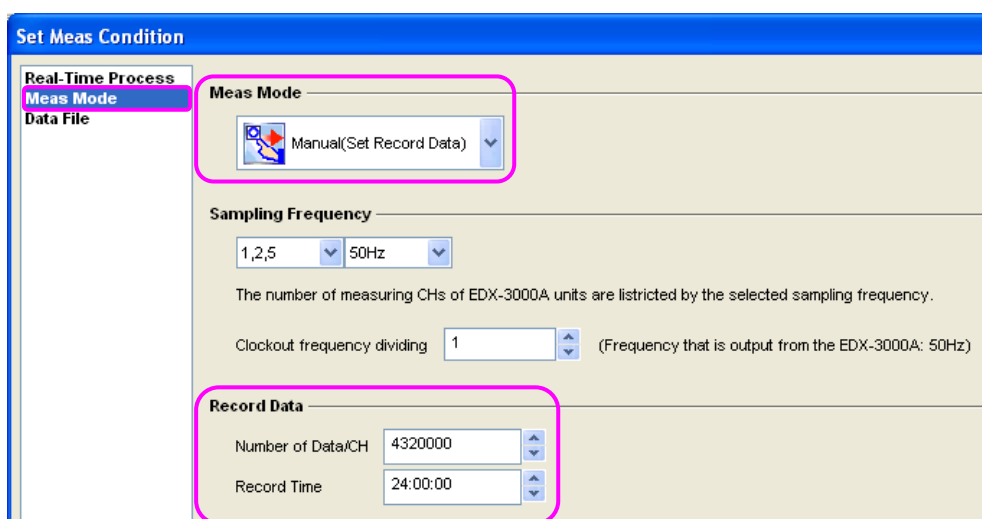
1) Open the **Set Meas Condition** dialog box with either of the following.

- Click the **Set** – **Set Meas Condition**...
- Click the **Meas Condition** icon from the toolbar.

2) Select the target **Meas Mode** on the **Set Meas Condition** dialog box.

Select the **Manual (Set Record Data)** and set the items in **Record Data**.

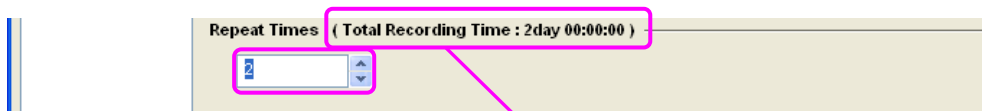
The number of recorded data (recording data time) that is saved in one data file is determined by setting the items in **Record Data**.



3) Then, set the target repeat times (setting range: 1 to 9999).

The number of file saving for saving the preset number of recorded data (in recording data time) that is set in the **Repeat Times** is determined by setting the repeat times.

If 2 or larger number is set as **Repeat Times**, the **Total Recording Time** appears next to the **Repeat Times**.



Total recording time

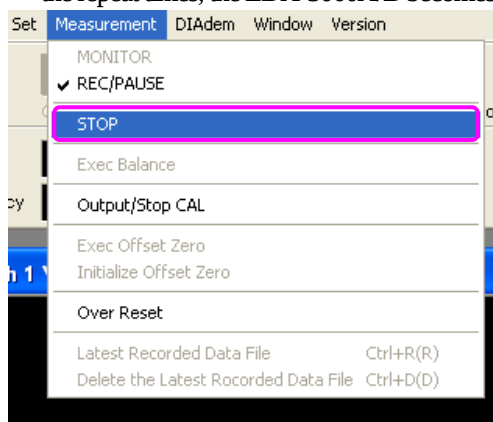
2 day = Recording time 24:00:00 × 2 (repeat times)

- 4) Starts recording with the above Meas Mode. The EDX-3000A/B records data as follows.
 (Suppose the recording start time at 8:00, data file name : DATA, and file No.: 0000.)

1st day Recording start time	8:00	}	The measured data is saved in the data file: DATA0000_M0000.KS2
2nd day	8:00		
3rd day Recording end time	8:00	}	The measured data is saved in the data file: DATA0000_M0001.KS2

After finishing recording for the number of repeat times, the EDX-3000A/B becomes monitoring state.

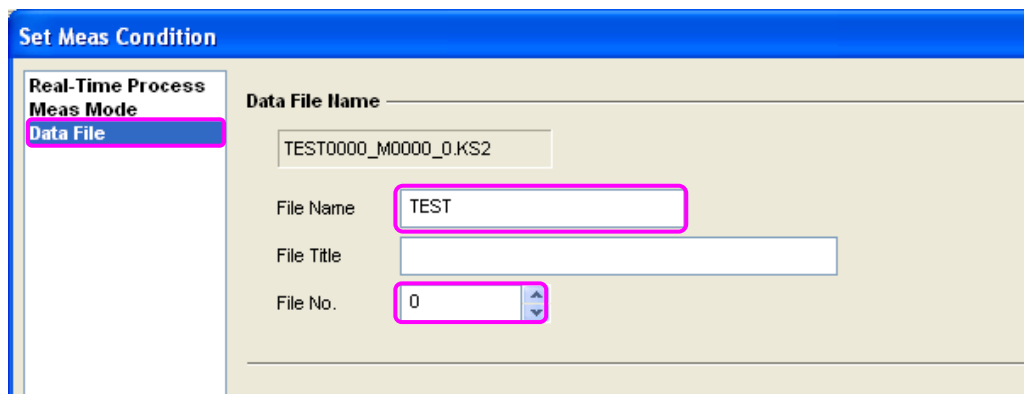
In addition, if the recording is stopped by clicking the **Measurement** – **REC/PAUSE** or **STOP** key before satisfying the repeat times, the EDX-3000A/B becomes monitoring state.



■ Data File Name

The data file name is determined with the items in the **Data File Name** (following figure) and **Repeat Times** on the **Set Meas Condition** dialog box as follows.

- For the repeat times: 1
 Data file name: **File name** **File No.** . KS2
- For the repeat times : 2 to 9999
 Data file name: **File name** **File No.** _M **Repeat No. when recording data** . KS2



11. WINDOW

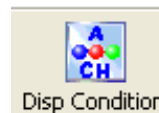
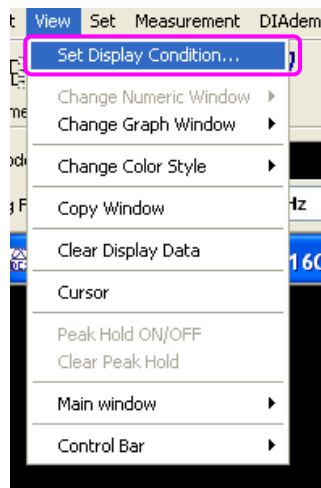
This Chapter describes types of window and window display condition.

11-1 DISPLAYING DISPLAY CONDITION SETTING DIALOG BOX

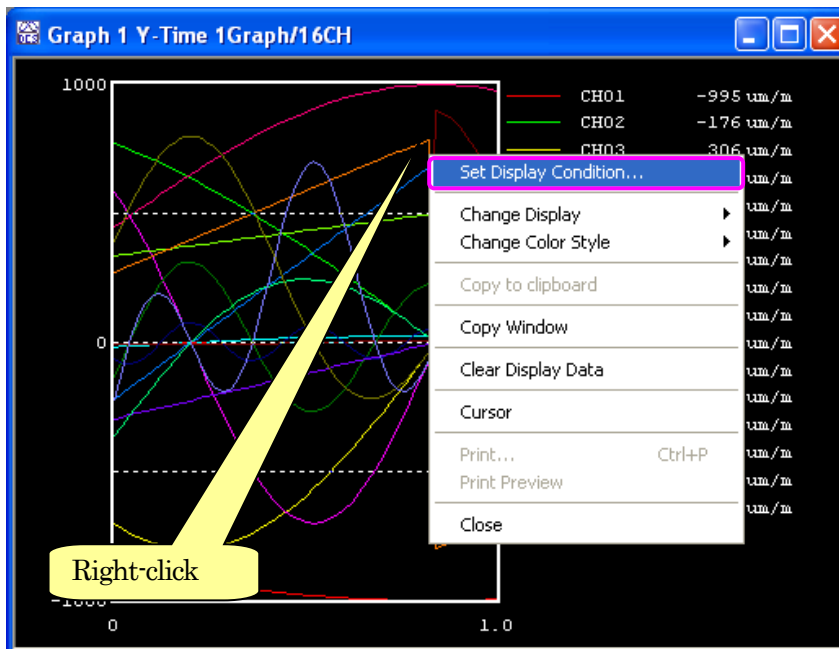
1) Activate the target window.

2) Operate any of the following.

- Click the **View** – **Set Display Condition...**.
- Click the **Disp Condition** icon from the toolbar.



- Right-click the window to display the pop-up menu.
Click the **Set Display Condition...** on the pop-up menu.



- Double-click the window.

11-2 NUMERIC VALUE WINDOW

11-2-1 CH Data

The CH data is numerically displayed.

The number of display channels on the numeric value window is selected from all channels, 16 channels and 1 channel.

Open the Numeric Window by either of the following.

Click the **Window** – **Monitor Data Window** – **Open Numeric Window**.

Click the **Numeric** icon from the toolbar.

- 1 channel
- 16 channels
- All channels

11-2-2 Digital CH

11-2-3 CAN Data Frame

11-2-4 List

11-2-5 Information

11-3 GRAPH WINDOW

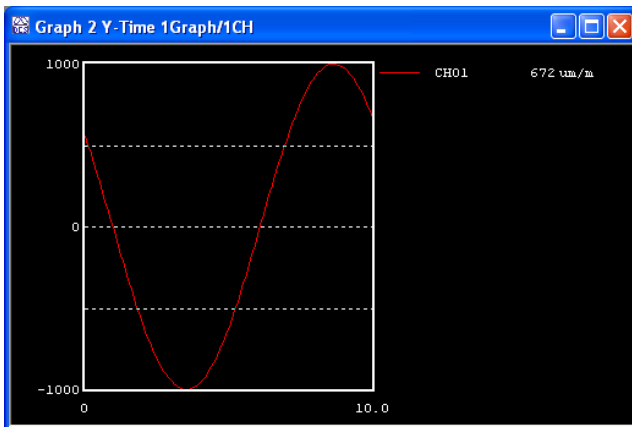
11-3-1 Y-Time Graph

Y-Time graph is a graph with X-axis representing time axis (sec) and Y-axis representing channel data.

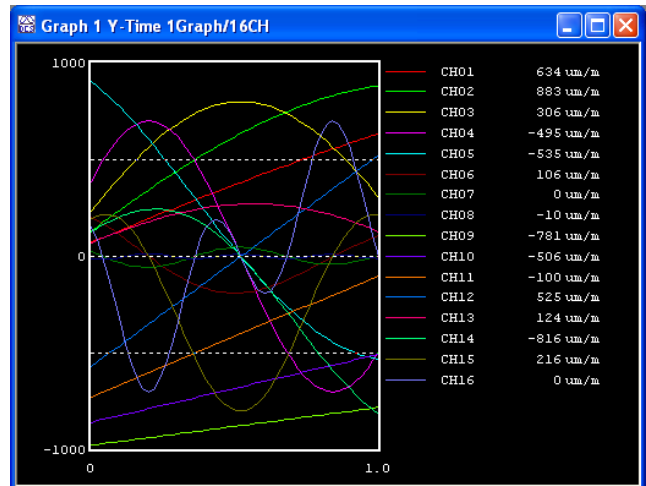
The number of display graph is as follows.

1 graph/1 CH, 16 channels, 16 channels (DIV), all channels, 2 graphs/8 channels, 3 graphs/5 channels, 4 graphs/4 channels

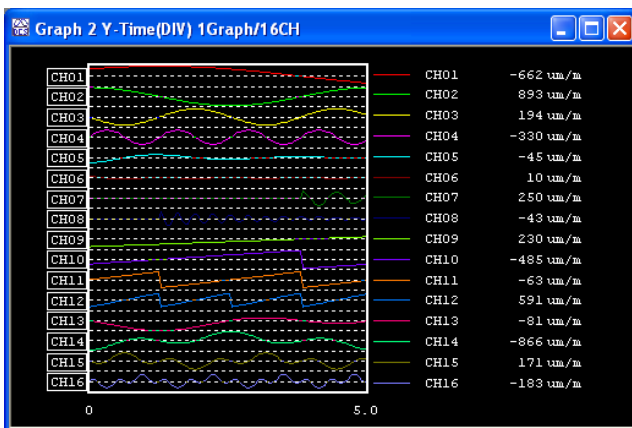
■ 1 Graph/CH



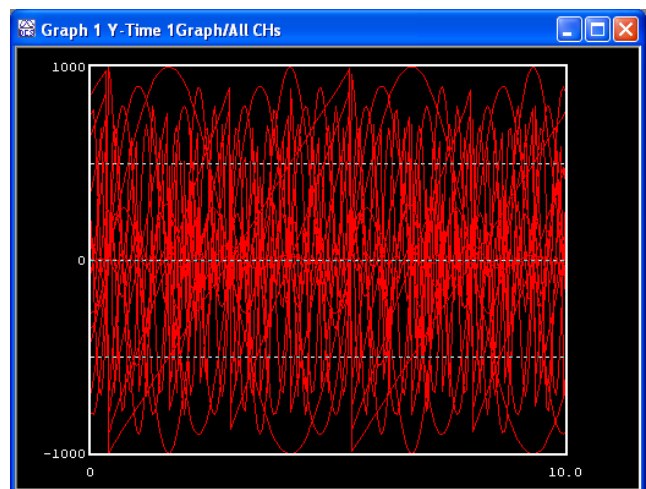
■ 1 Graph/16 channels



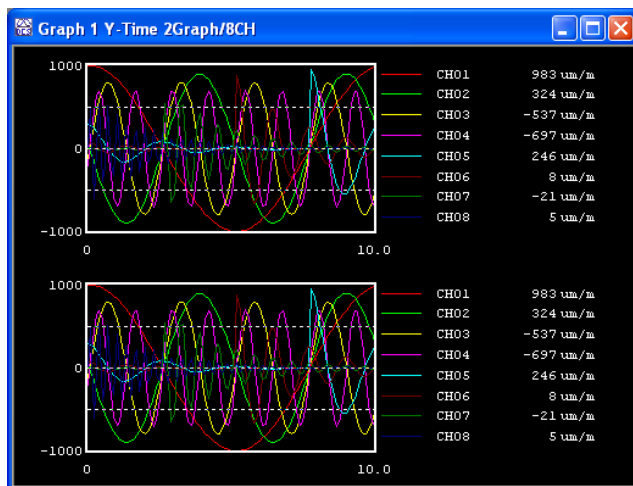
■ 1 Graph/16 channels (DIV)



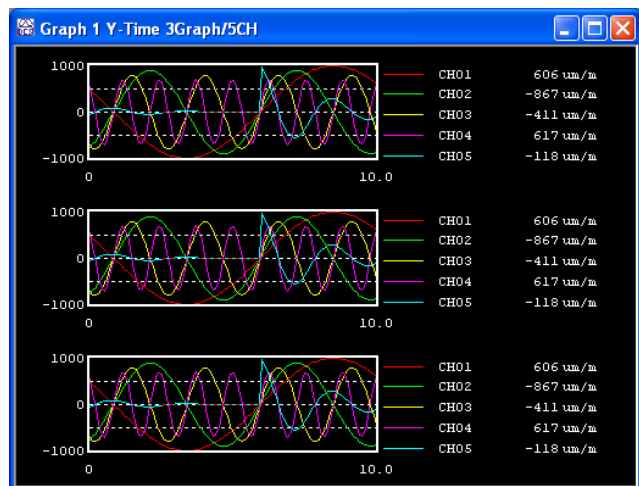
■ 1 Graph/All channels



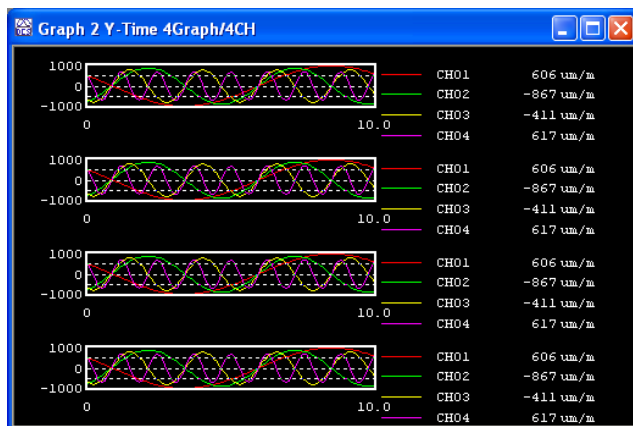
■ 2 Graphs/8 channels



■ 3 Graphs/5 channels



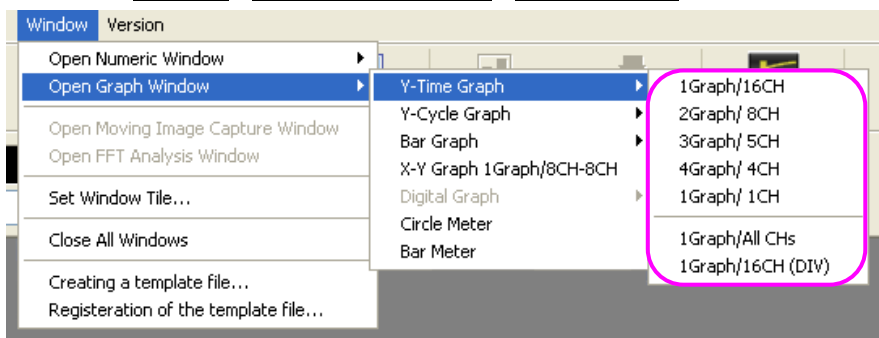
■ 4 Graphs/4 channels



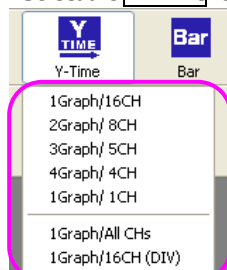
11-3-1-1 How to Display

Open the Y-Time Graph window by either of the following.

- Click the **Window** – **Open Graph Window** – **Y-Time Graph**.



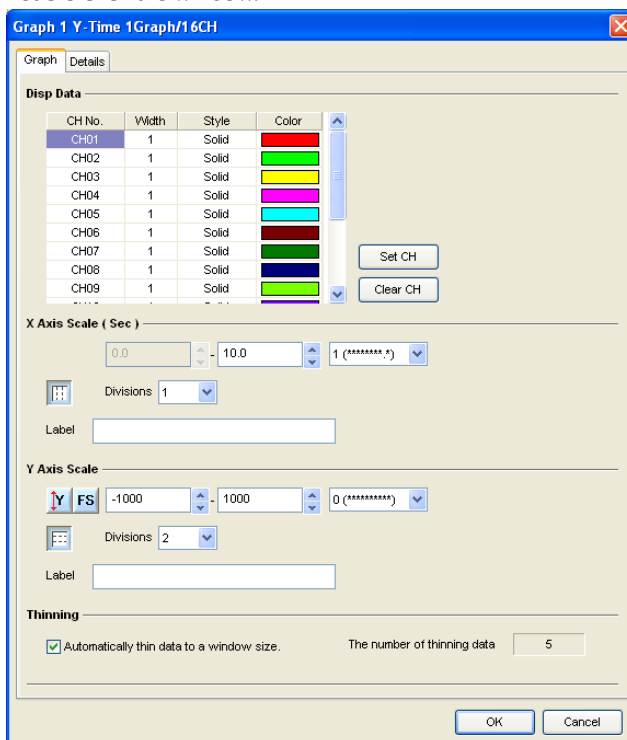
- Select the **Y-Time** icon from the toolbar.



11-3-1-2 Setting Display Condition

Open the **Set Display Condition** dialog box by any of the following to set the graph display conditions.

- Click the **View** – **Set Display Condition**.
- Right-click the window to display the pop-up menu.
Select the **Set Display Condition** from the pop-up menu.
- Select the **Display Condition icon** from the toolbar.
- Double-click the window.



Graph 1 Y-Time 1Graph/16CH

Graph Details

Disp Data

CH No.	Width	Style	Color
CH01	1	Solid	Red
CH02	1	Solid	Green
CH03	1	Solid	Yellow
CH04	1	Solid	Magenta
CH05	1	Solid	Cyan
CH06	1	Solid	Brown
CH07	1	Solid	Dark Blue
CH08	1	Solid	Dark Green
CH09	1	Solid	Light Green

Set CH Clear CH

X Axis Scale (Sec)

0.0 10.0 1 (******)

Divisions 1

Label

Y Axis Scale

FS -1000 1000 0 (******)

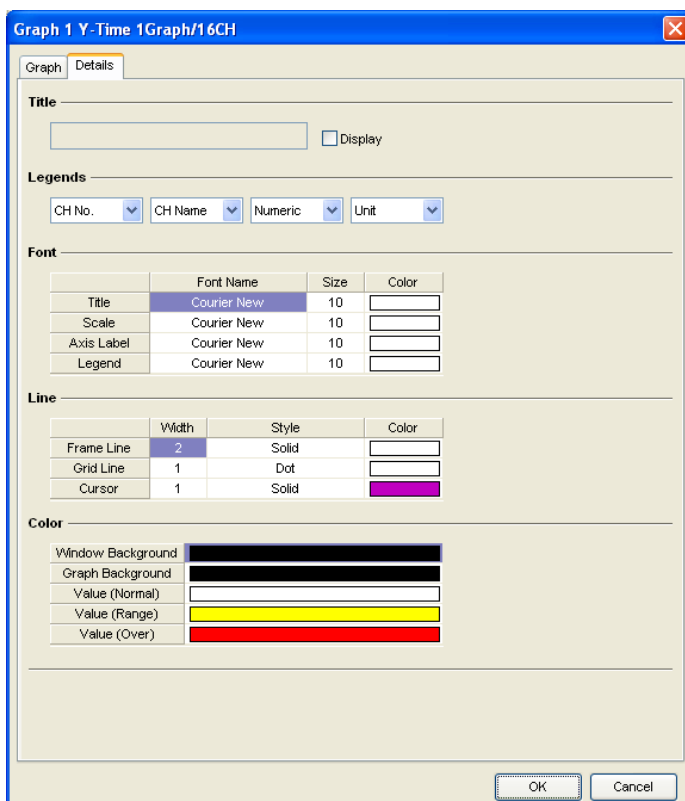
Divisions 2

Label

Thinning

☒ Automatically thin data to a window size. The number of thinning data 5

OK Cancel



Graph 1 Y-Time 1Graph/16CH

Graph Details

Title

Display

Legends

CH No. CH Name Numeric Unit

Font

	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	
Legend	Courier New	10	

Line

	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	
Cursor	1	Solid	Magenta

Color

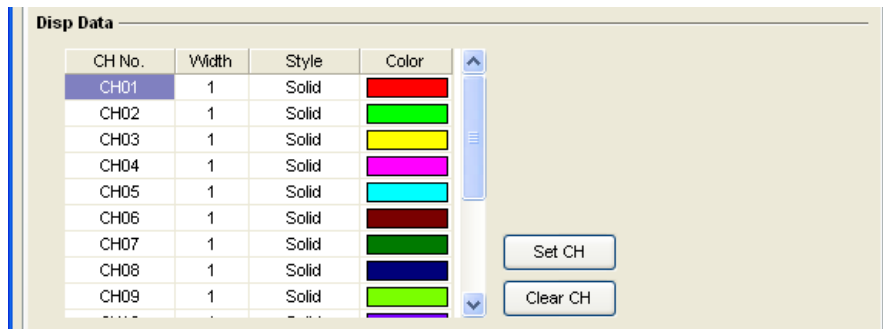
Window Background	
Graph Background	
Value (Normal)	
Value (Range)	Yellow
Value (Over)	Red

OK Cancel

■ Setting display data

Sets the target channels, width, style, and color.

(The following figure is a setting window for displaying 16 channels.)



CH No. Select the target CH No. from the list for displaying on the graph.

Select “— — —” for CH not displayed.

Width Select the line width (1 to 3).

When the line style is selected other than Solid, the line width is fixed to 1.

Style Select the line style.

(Solid, Dash, Dot, Dash Dot, Dash Dot Dot)

Color Select the line color.

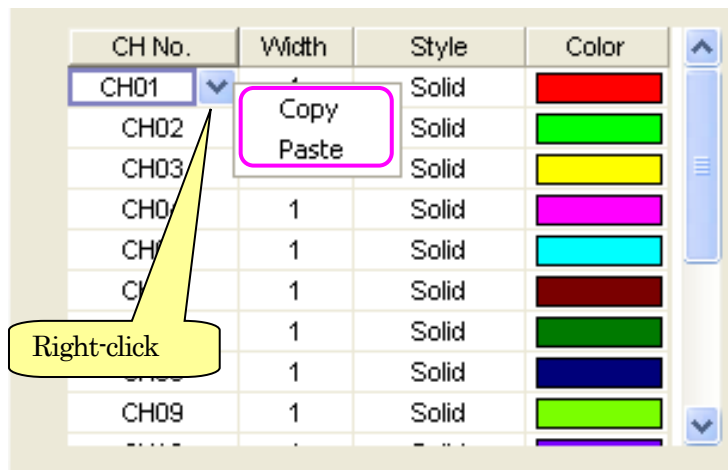
Double-click the target item, the **Color** dialog box appears. Select the desired color on the Color dialog box.

Click the **Set CH** button and the CH numbers are automatically set.

Click the **Clear CH** button and the all CH numbers become “— — —.”

- Items can be set by copying and pasting the target item from the pop-up menu.

Right-click the target item to display the pop-up menu.



■ 1 Graph/16 channels (DIV)

For setting 1 Graph/16 channels (DIV) graph, in addition to the target channels, width, style, color, set Y-axis scale of every channel and "0" position of every channel.

Disp Data

Width	Style	Color	Y Scale	Disp Position
1	Solid	Red	1000	01
1	Solid	Green	1000	03
1	Solid	Yellow	1000	05
1	Solid	Magenta	1000	07
1	Solid	Cyan	1000	08
1	Solid	Dark Red	1000	08
1	Solid	Dark Green	1000	08
1	Solid	Dark Blue	1000	08

Y Axis Scale

Divisions: 8

Y Axis Scale

Set the Y-axis scale of channels.

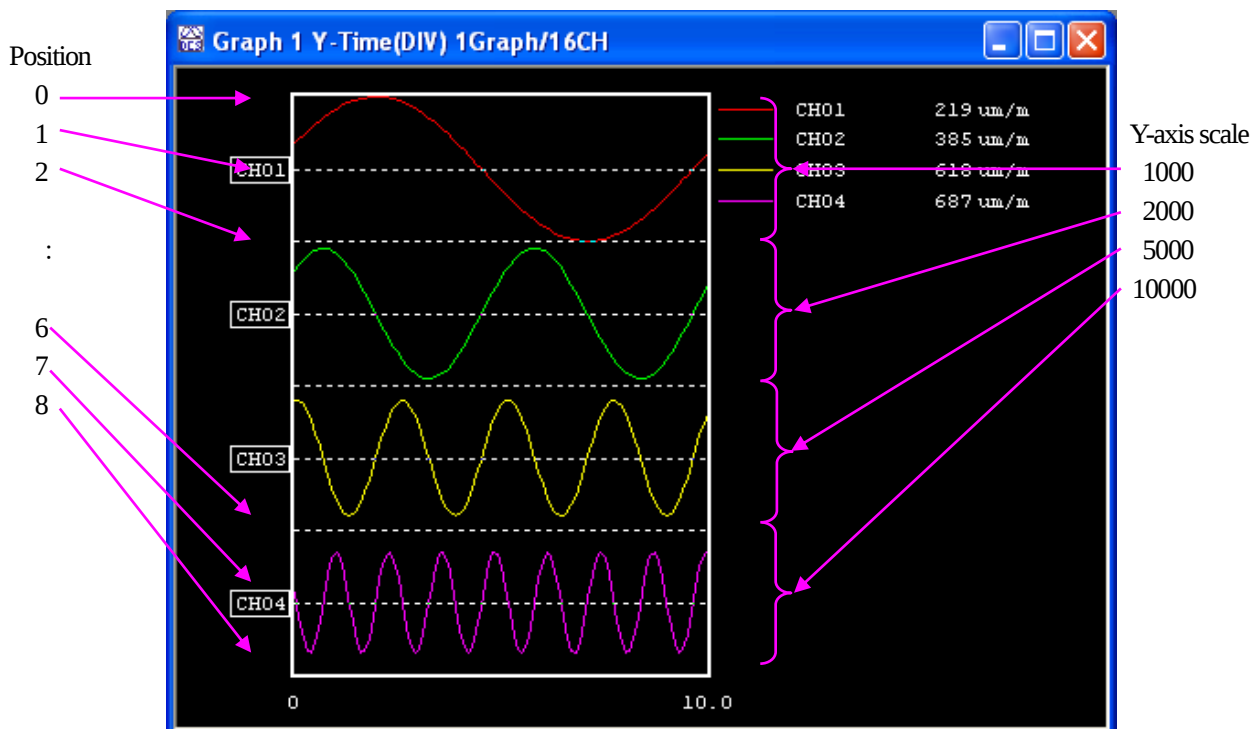
The Y-axis scale is displayed as scales between grids on the graph.

Position

Select the 0-point position of channels from list.

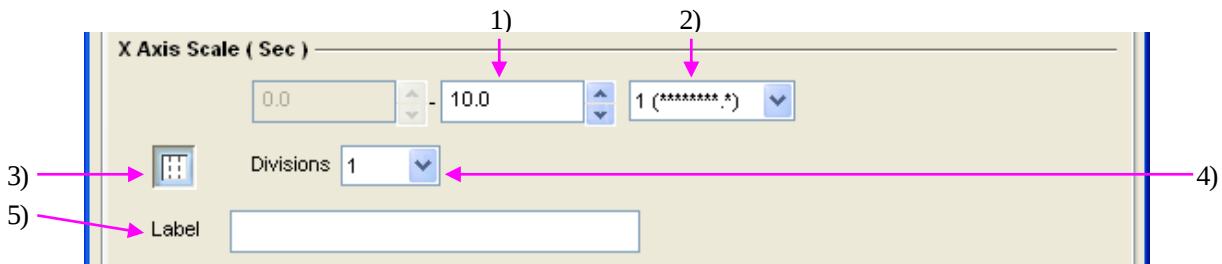
Setting range: 0 to divisions of Y-axis scale.

- 1 Graph/16 channels (DIV) graph with the above setting shall be displayed as follows.



■ Setting X-axis scale (sec)

Set various display conditions for X-axis such as scale value (time: sec), **Divisions** (the number of graph divisions), the number of digits below decimal point of scale value, show/hide the grid line, and Label characters.

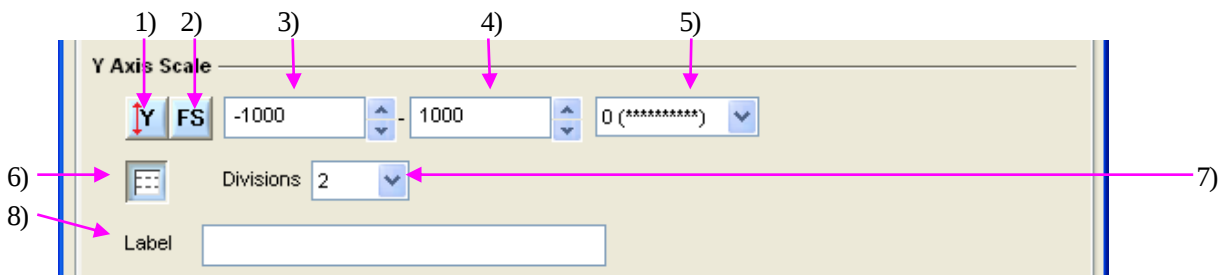


- | | |
|--|--|
| 1) X-axis scale | Set the X-axis scale. |
| 2) The number of digits below decimal point of scale value | Select the number of digits below decimal point from the list. |
| 3) Grid line | Show or hide the grid line. |
| 4) Divisions | Used for dividing the graph. |
| 5) Label | Set the number of graph divisions. |
| | Input a Label within 40 characters. |

- For setting scale, click the spin button to set the X-axis scale value with nice round numeric values (1, 2, and 5 steps).

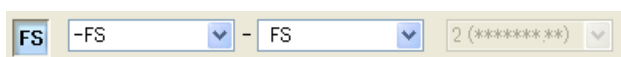
■ Setting Y-axis

Set various display conditions for Y axis such as scale value (CH data), Divisions (the number of graph divisions), the number of digits below decimal point of scale value, show/hide the grid line, and Label characters.



- | | |
|--|---|
| 1) Auto scale | Select ON/OFF of the Y-axis auto scale. |
| | Click the Y icon to automatically set the X-axis scale value with nice round numeric value (1, 2, and 5 steps) according to the CH data. |
| 2) Full Scale | Select ON/OFF of the Y-axis full scale. |
| | Click the FS icon, the Y-axis scale changes to $\pm$ FS and the CH data is displayed in full scale value of channels. |
| 3) Y-axis scale | Set the minimum value of the Y-axis scale. |
| 4) Y-axis scale | Set the maximum scale of the Y-axis scale. |
| 5) The number of digits below decimal point of scale value | Select the number of digits below decimal point of the Y-axis from the list. |
| 6) Grid line | Show or hide the grid line. |
| | Used for dividing the graph. |
| 7) Divisions | Set the number of graph divisions. |
| 8) Label | Input a label within 40 characters. |

- Select the target Y-axis scale from the list when the **FS** icon is ON.
('FS', 'FS/2', 'FS/5', 'FS/10', '0', '-FS/10', '-FS/5', '-FS/2', '-FS')



- For setting scale, click the spin button to set the X-axis scale value with nice round numeric values (1, 2, and 5 steps).

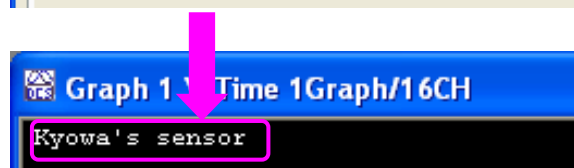
■ Setting title

Input the title within 40 characters.

Input the Title and put a check mark in the box next to the **Display** on the title right side.

Title

Kyowa's sensor ☒ Display



■ Setting legends

Select **Legends** items displayed on the right side of the graph.

Legends

CH No. CH Name Numeric Unit

CH No.	CH Name	Numeric value	Unit
CH01	Sensor#1	371	um/m
CH02	Sensor#2	621	um/m
CH03	Sensor#3	799	um/m
CH04	Sensor#4	69	um/m

CH No. CH Name Numeric value Unit

For the 1 Graph/16 channels (DIV), select scale value and position.

Legends

CH No. CH Name Numeric Unit Scale#Posit

CH No.	CH Name	Numeric values	Unit	Scale: Position
CH01	Sensor#1	-86	um/m	1000:01
CH02	Sensor#2	154	um/m	1000:03
CH03	Sensor#3	270	um/m	1000:05
CH04	Sensor#4	444	um/m	1000:07

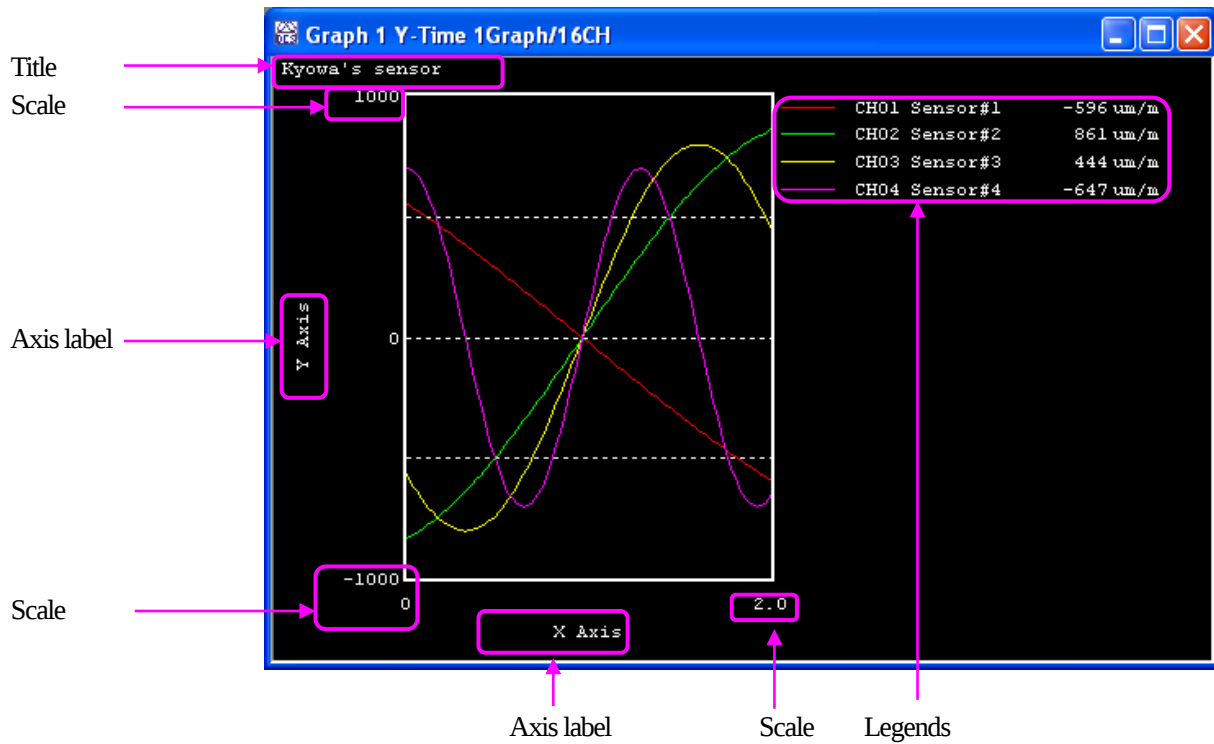
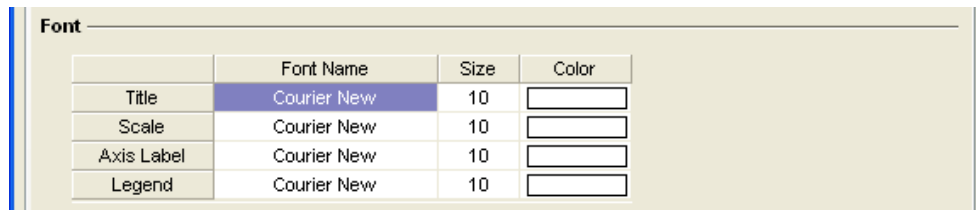
CH No. CH Name Numeric values Unit Scale: Position

■ Setting font

Set Font Name, Size, and Color.

For setting font color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

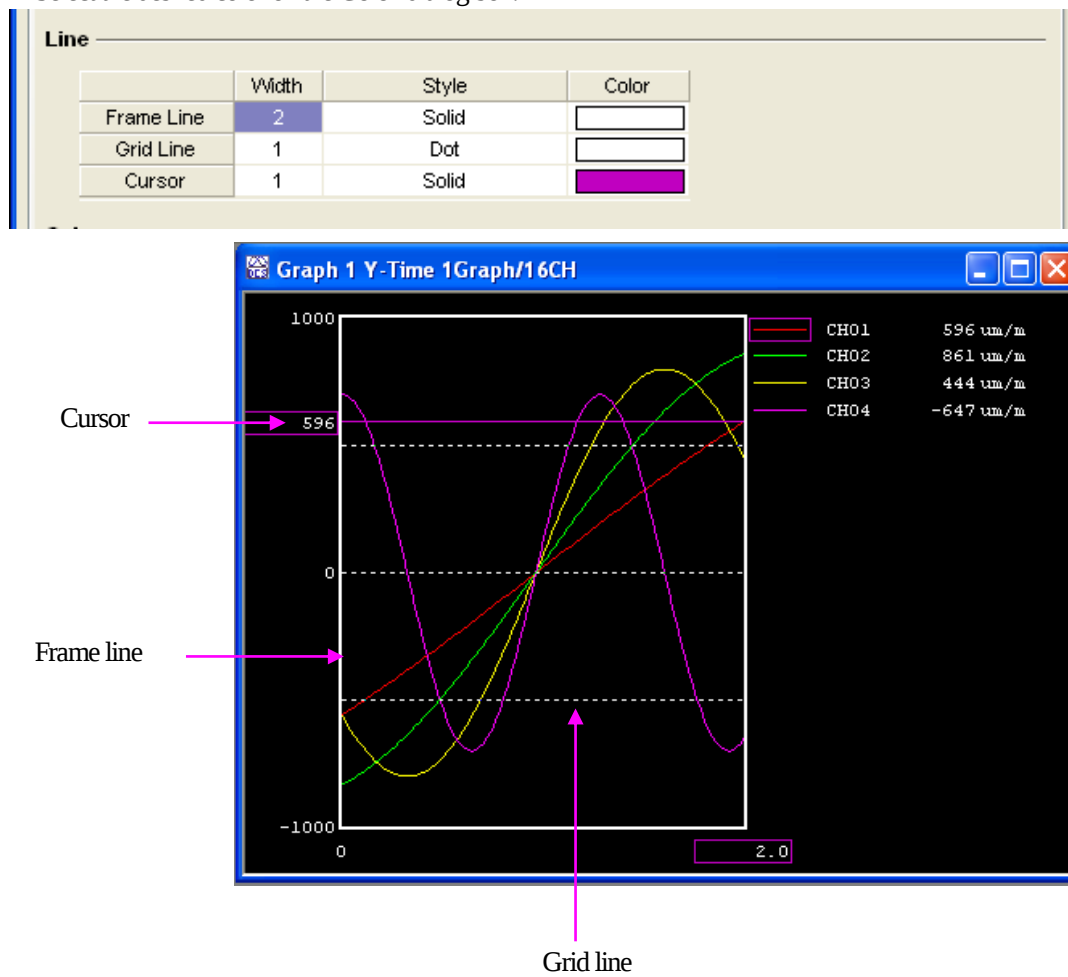


■ Setting line

Set width, style and color of lines.

For setting line color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.



■ Setting color

Set the background color of window and graph, and set the color of numeric values.

For setting color, double-click the target item, the **Color** dialog box appears.

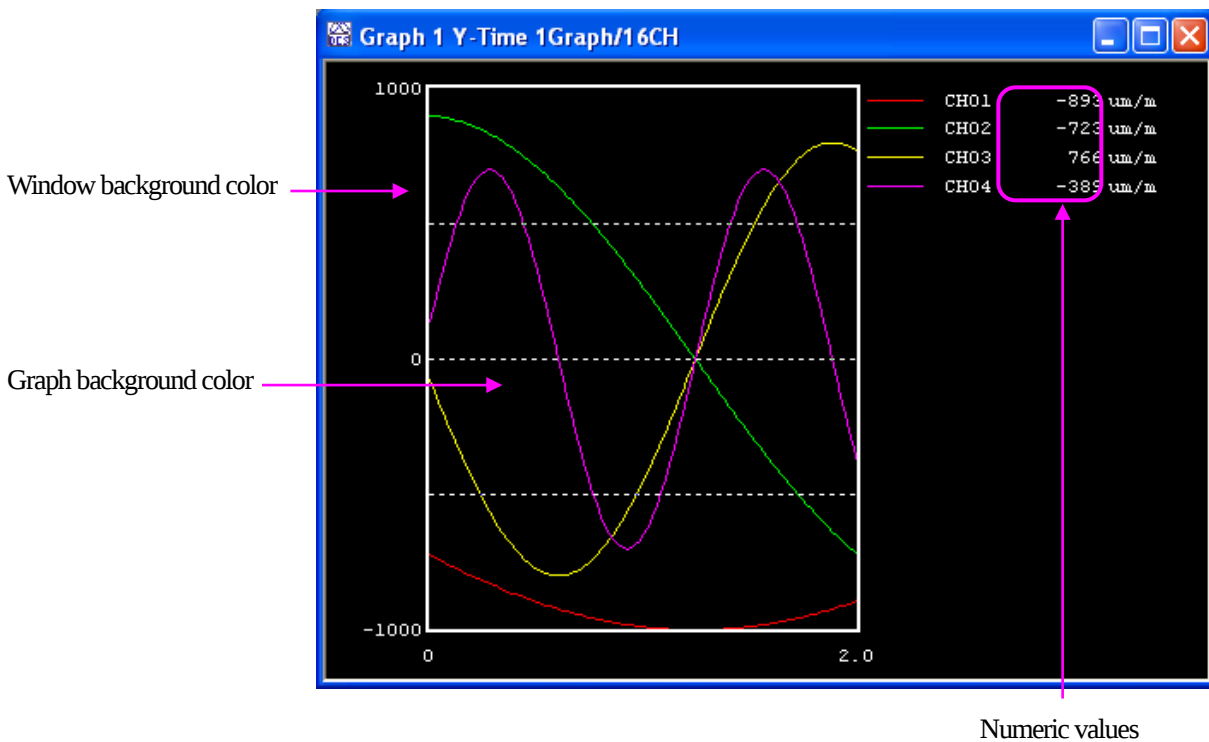
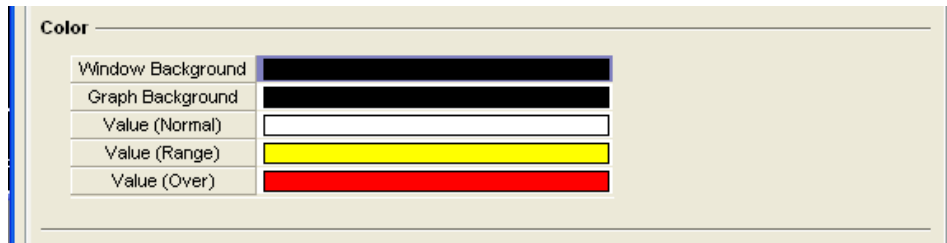
Select the desired color on the **Color** dialog box.

Colors of numerical values can be set as follows.

Normal: Color of measured value within the setting range.

Range: Color of measured value that exceeds the measuring range but not satisfying the $\pm$ full scale value.

Over: Color of measured value at the $\pm$ full scale value.



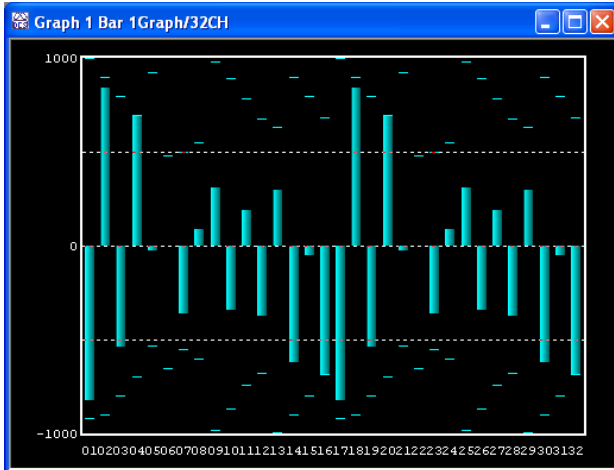
11-3-2 Bar Graph

Bar graph is a graph with monitor data displayed in a bar display and maximum 32 channels can be displayed.

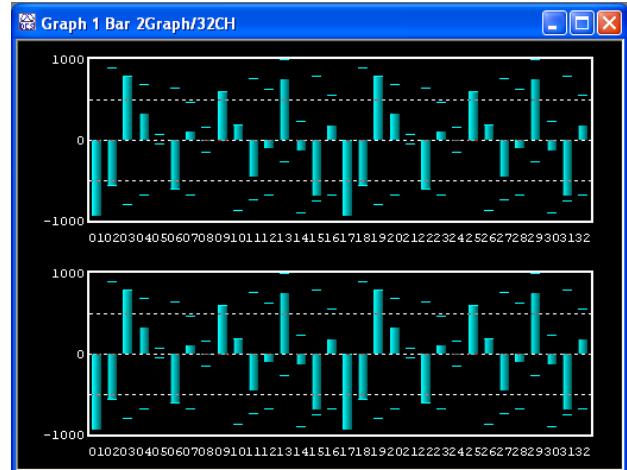
The number of graphs is selected from 1 Graph/32 channels, 2 Graphs/32 channels, 3 Graphs/32 channels, and 4 Graphs/32 channels.

Whether to show or hide the peak hold can be selected.

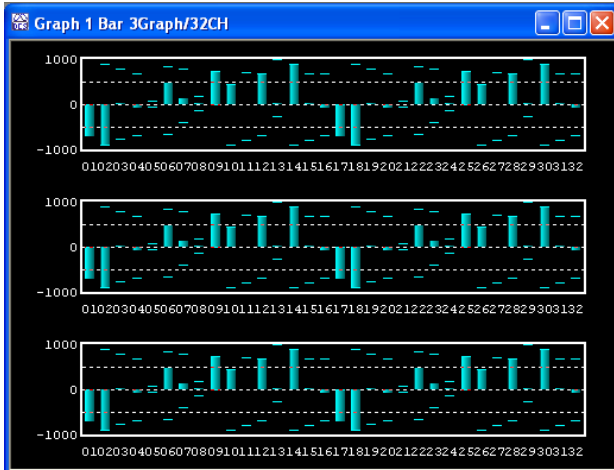
■ 1 Graph/32 channels



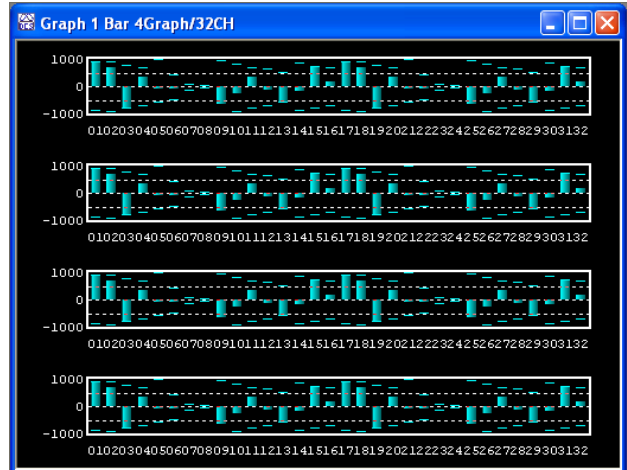
■ 2 Graphs/32 channels



■ 3 Graphs/32 channels



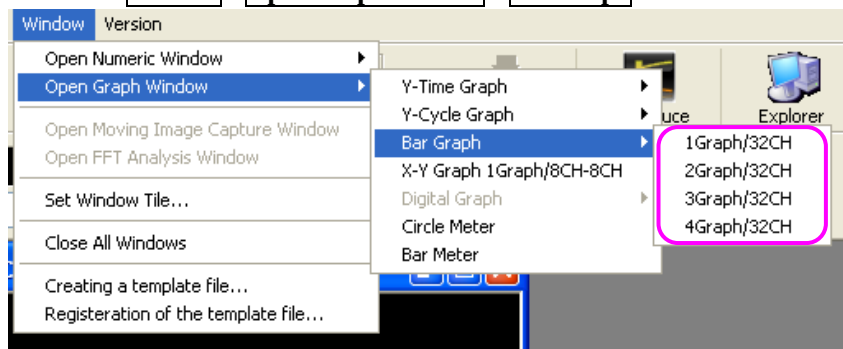
■ 4 Graphs/32 channels



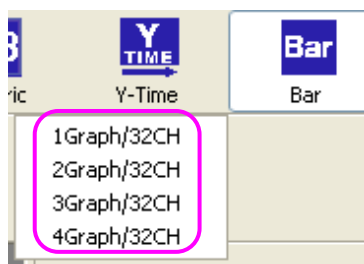
11-3-2-1 How to Display

Open the Bar Graph dialog box by either of the following.

- Click the **Window** – **Open Graph Window** – **Bar Graph**.



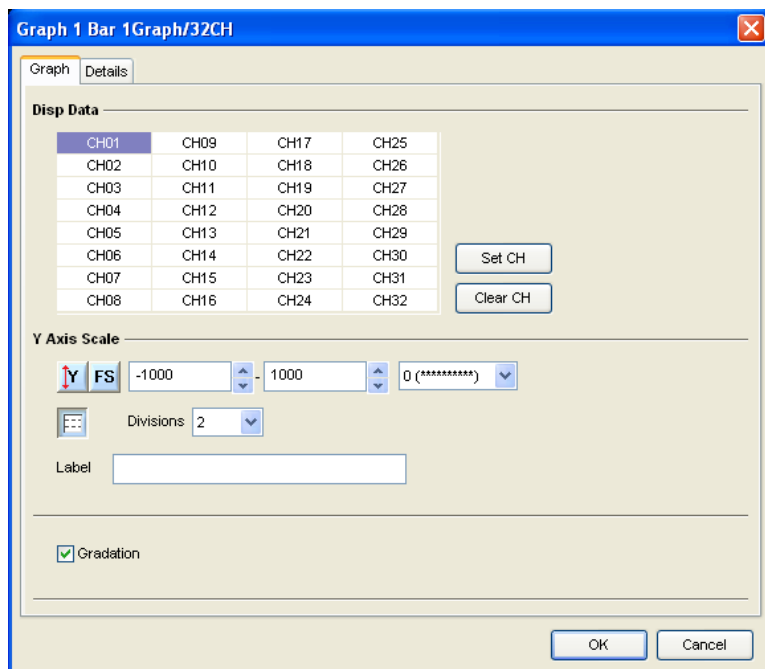
- Click the **Bar** icon from the toolbar.



11-3-2-2 Setting Display Condition

Open the **Set Display Condition** dialog box by any of the following.

- Click the **View** – **Set Display Condition**.
- Right-click the window to display the pop-up menu.
Click the **Set Display Condition** from the pop-up menu.
- Click the **Didplay Condition** icon from the toolbar.
- Double click the window.



Graph 1 Bar 1Graph/32CH

Graph Details

Disp Data

CH01	CH09	CH17	CH25
CH02	CH10	CH18	CH26
CH03	CH11	CH19	CH27
CH04	CH12	CH20	CH28
CH05	CH13	CH21	CH29
CH06	CH14	CH22	CH30
CH07	CH15	CH23	CH31
CH08	CH16	CH24	CH32

Set CH
Clear CH

Y Axis Scale

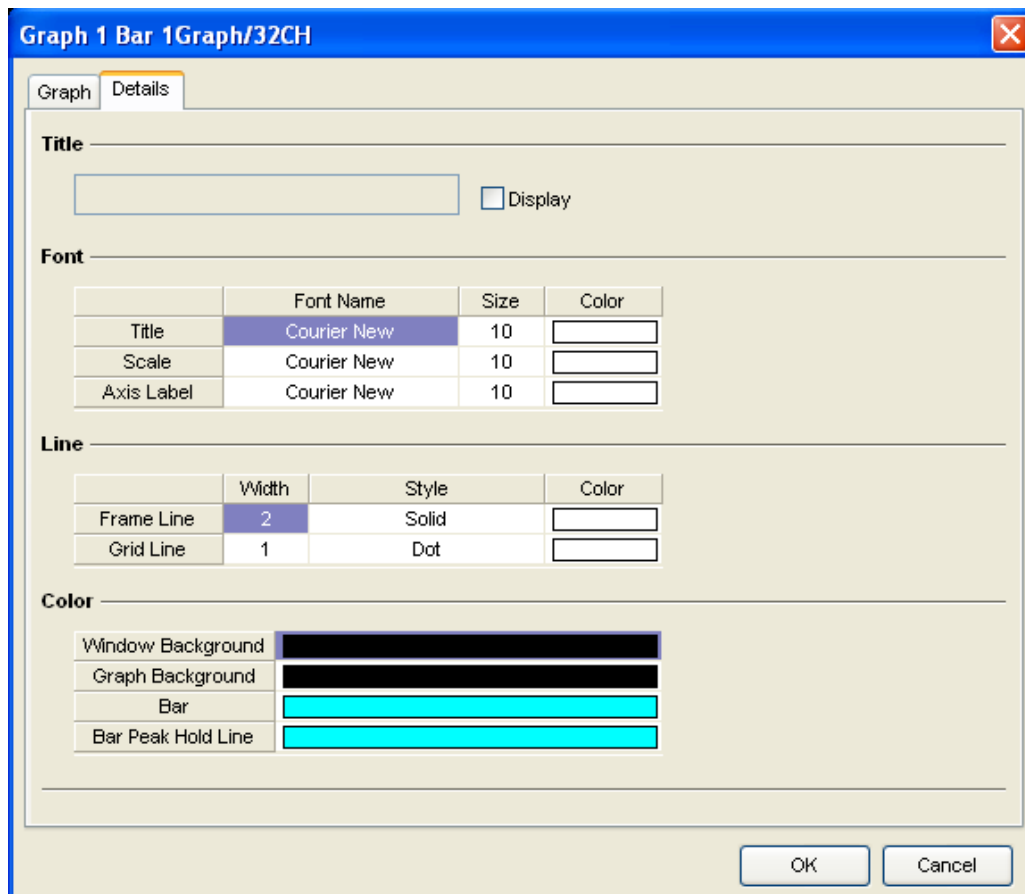
Y FS -1000 - 1000 0 (*****)

Divisions 2

Label

☒ Gradation

OK Cancel



Graph 1 Bar 1Graph/32CH

Graph Details

Title

☐ Display

Font

	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	

Line

	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	

Color

Window Background	
Graph Background	
Bar	
Bar Peak Hold Line	

OK Cancel

■ Setting display data

Set the target channels for displaying on the graph.

Select “— —” for CH not displayed.

Disp Data

CH01	CH09	CH17	CH25
CH02	CH10	CH18	CH26
CH03	CH11	CH19	CH27
CH04	CH12	CH20	CH28
CH05	CH13	CH21	CH29
CH06	CH14	CH22	CH30
CH07	CH15	CH23	CH31
CH08	CH16	CH24	CH32

Set CH

Clear CH

- Items can be set by copying and pasting the target item from the pop-up menu.

Right-click the target item to display the pop-up menu.

Disp Data

CH01	CH09	CH17	CH25
CH02	CH10	CH18	CH26
CH03	CH11	CH19	CH27
CH04	CH12	CH20	CH28
CH05	CH13	CH21	CH29
CH06	CH14	CH22	CH30
CH07	CH15	CH23	CH31
CH08	CH16	CH24	CH32

Set CH

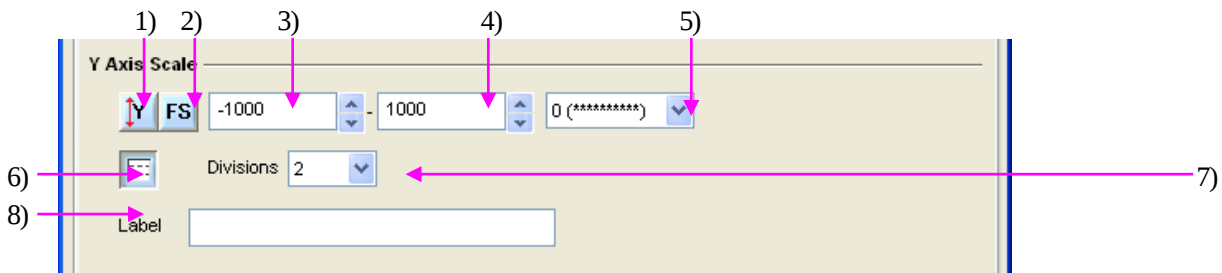
Clear CH

Right-click

Copy
Paste

■ Setting Y-axis

Set various display conditions for Y axis such as scale value (CH data), Divisions (the number of graph divisions), the number of digits below decimal point of scale value, show/hide the grid line, and Label characters.



1) Auto scale

Select ON/OFF of the Y-axis auto scale.

Click the **Y** icon to automatically set the X-axis scale value with nice round numeric value (1, 2, and 5 steps) according to the CH data.

2) Full Scale

Select ON/OFF of the Y-axis full scale.

Click the **FS** icon, the Y-axis scale changes to $\pm$ FS and the CH data is displayed in full scale value of channels.

3) Y-axis scale

Set the minimum value of the Y-axis scale.

4) Y-axis scale

Set the maximum scale of the Y-axis scale.

5) The number of digits below decimal point of scale value

Select the number of digits below decimal point of the Y-axis from the list.

6) Grid line

Show or hide the grid line.

Used for dividing the graph.

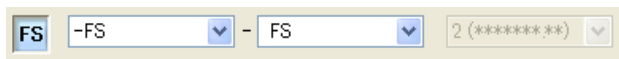
7) Divisions

Set the number of graph divisions.

8) Label

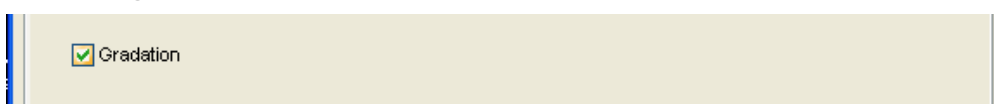
Input a label within 40 characters.

- Select the target Y-axis scale from the list when the **FS** icon is ON.
("FS", "FS/2", "FS/5", "FS/10", "0", "-FS/10", "-FS/5", "-FS/2", "-FS")

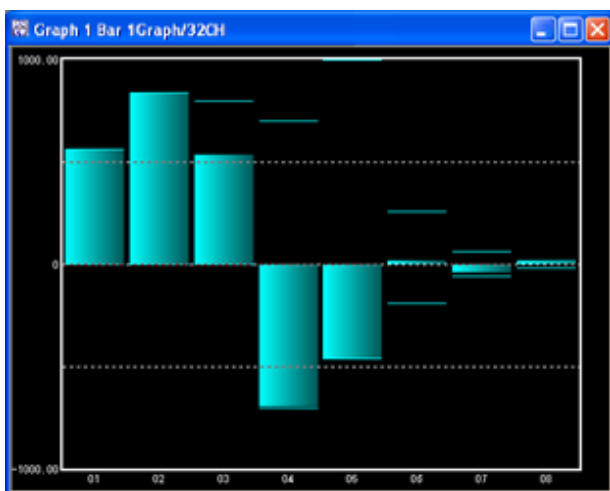


- For setting scale, click the spin button to set the X-axis scale value with nice round numeric values (1, 2, and 5 steps).

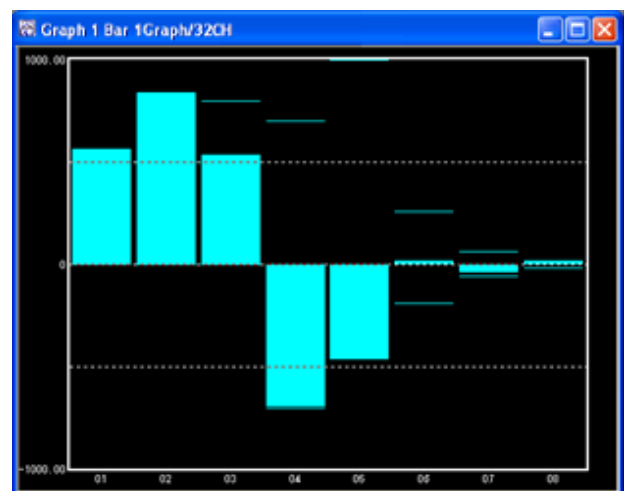
■ Other settings



Put a checkmark to the box next to the **Gradation** to display gradation graphs.



Gradation graph

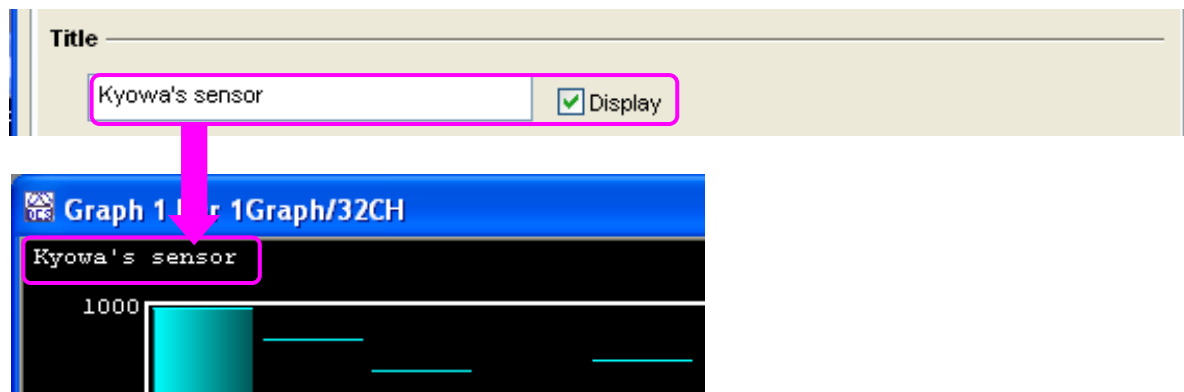


Normal graph

■ Setting title

Input the title within 40 characters.

Input the Title and put a check mark in the Display box on the title right side.

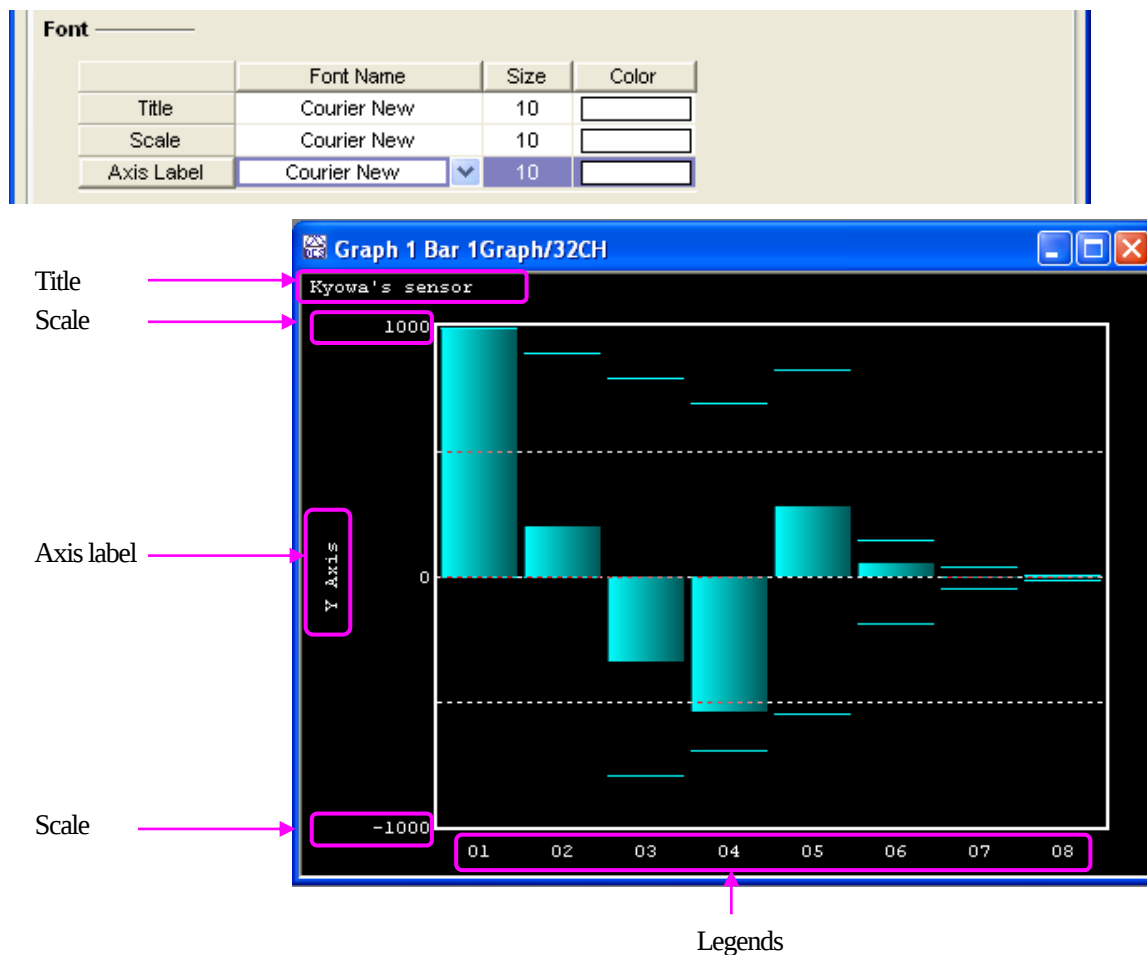


■ Setting font

Set Font Name, Size, and Color.

For setting font color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.



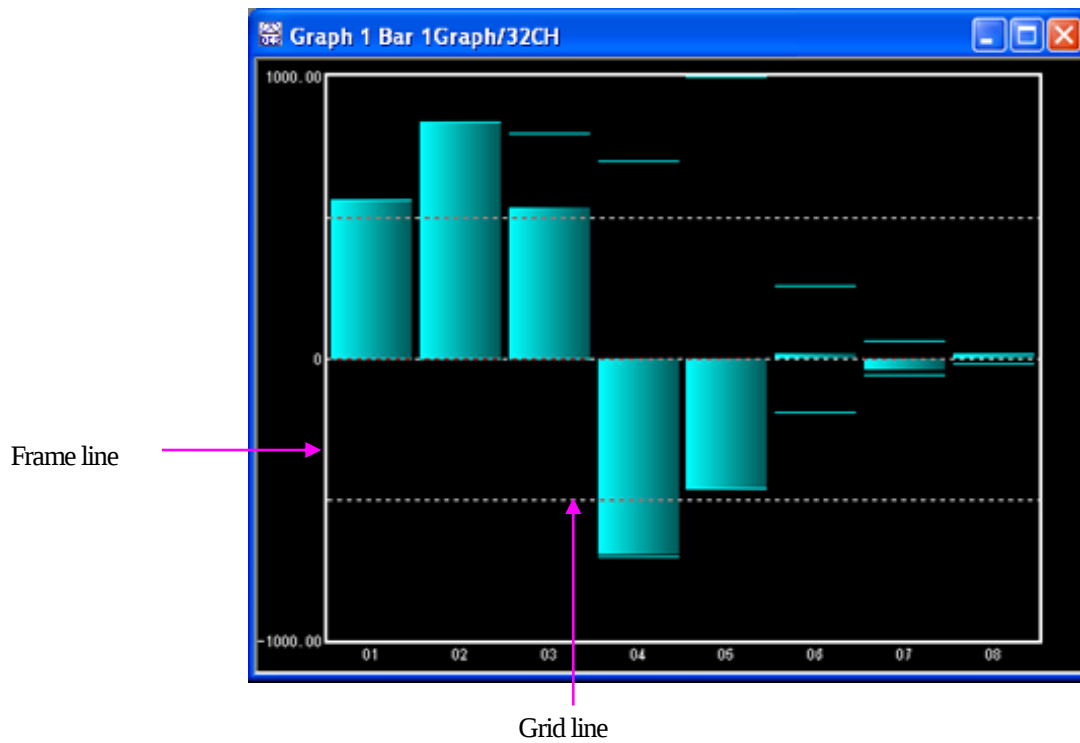
■ Setting line

Set width, style and color of lines.

For setting line color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Line			
	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	

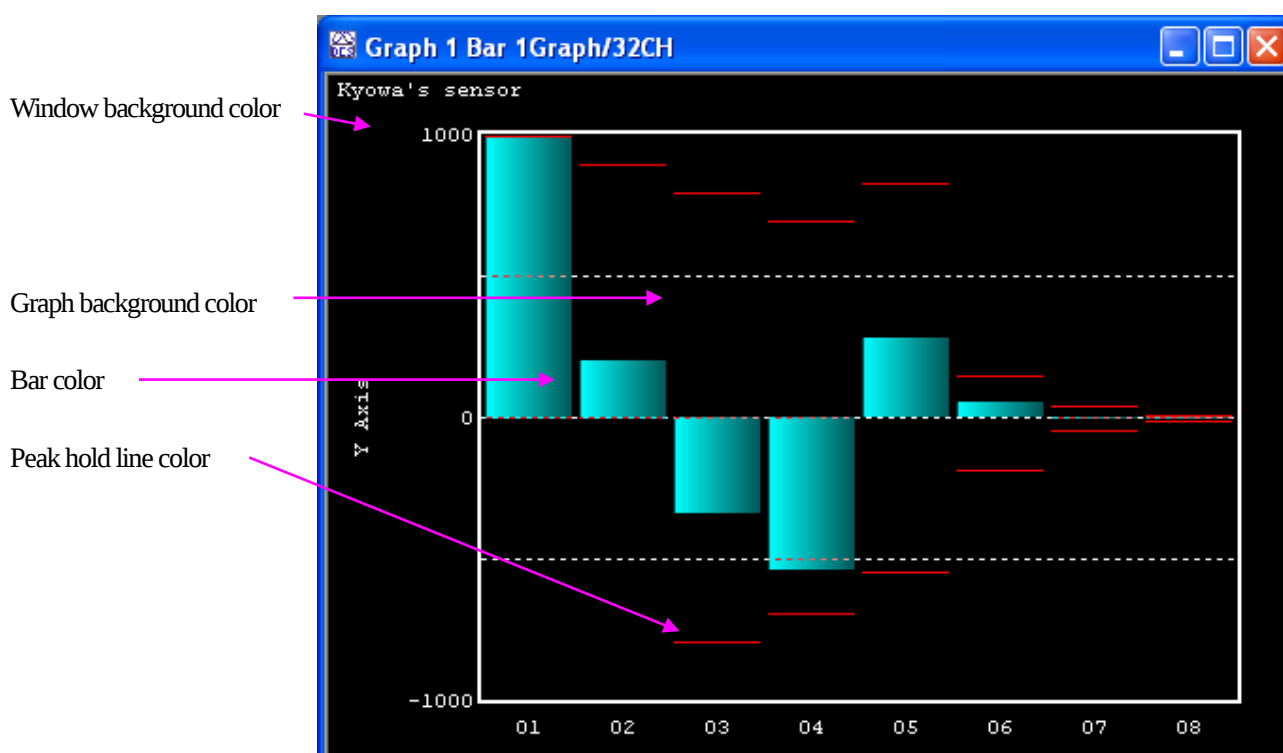


■ Setting color

Set the background color of window and graph, and set the color of bar and bar peak hold line.

For setting color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.



11-3-2-3 Peak Hold

Maximum and minimum values of the CH data are held (peak hold) and lines corresponding to each of the CH peak values are shown.

The maximum and minimum values are called the Peak Hold Values and the lines are called the Peak Hold Line.

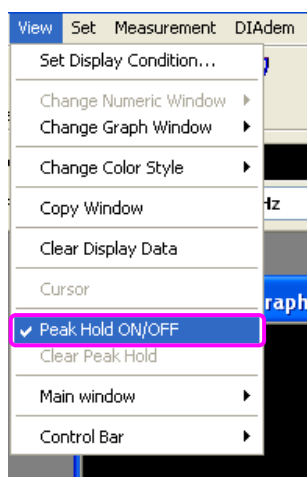
The peak value is held until the monitor stops.

■ How to operate

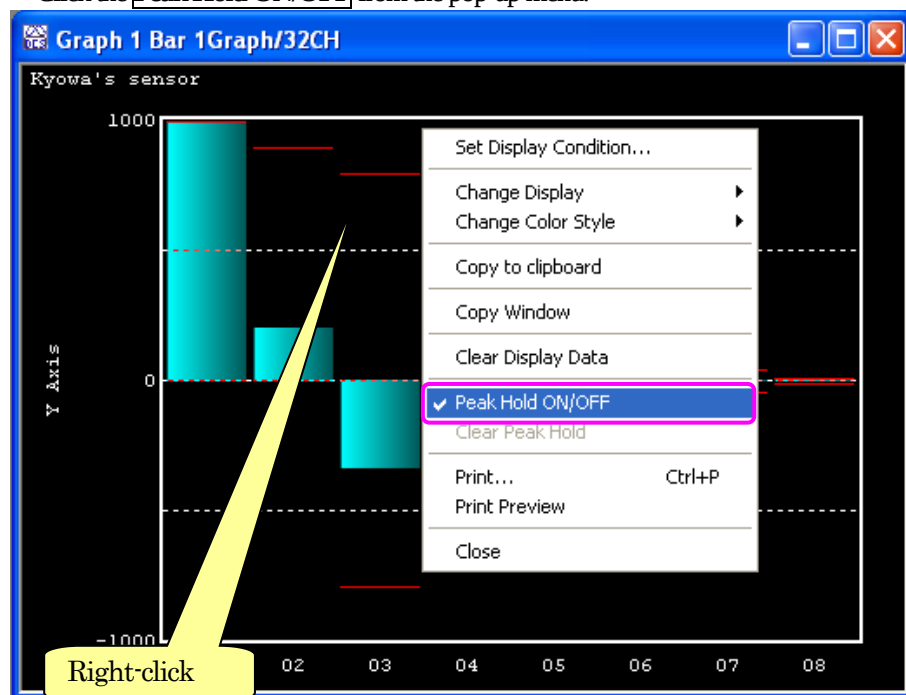
[Peak Hold ON/OFF]

Show or hide the peak hold by any of the following.

- Click the **View** – **Peak Hold ON/OFF**.



- Right-click the window to display the pop-up menu.
Click the **Peak Hold ON/OFF** from the pop-up menu.



- Click the **Peak Hold** icon from the tool bar.

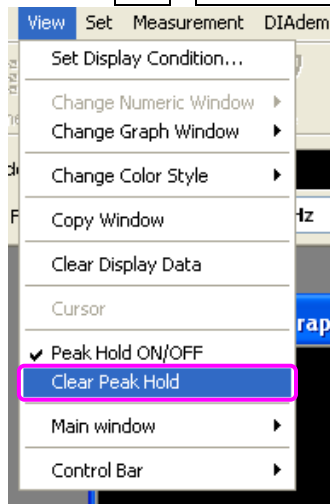


■ How to operate

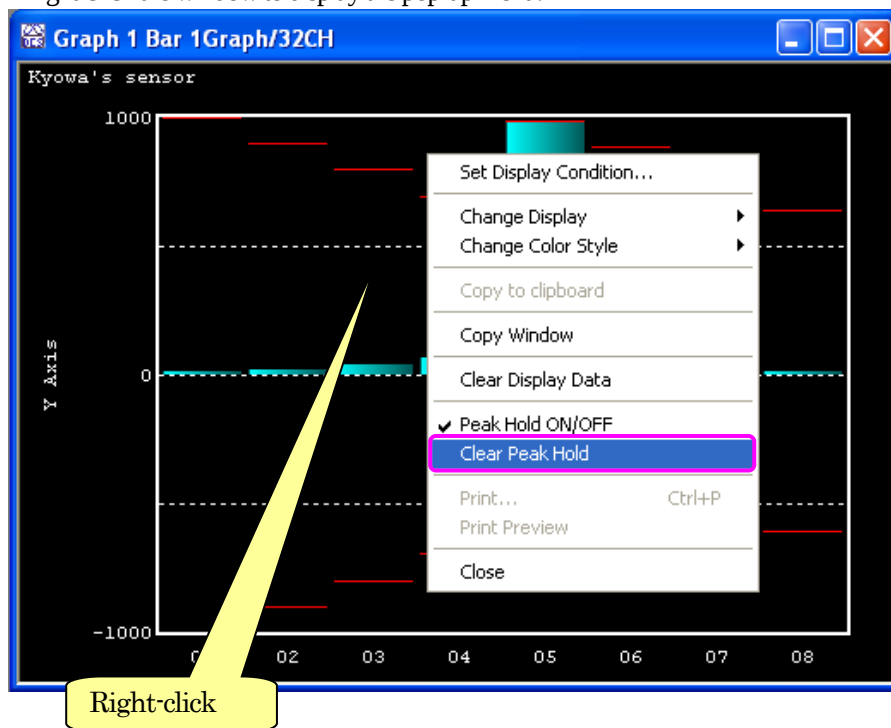
[Clear Peak Hold]

Initialize the peak hold value to default by any of the following.

- Click the **View** – **Clear Peak Hold**.



- Right-click the window to display the pop-up menu.



- Click the **Clear Peak** icon from the toolbar.

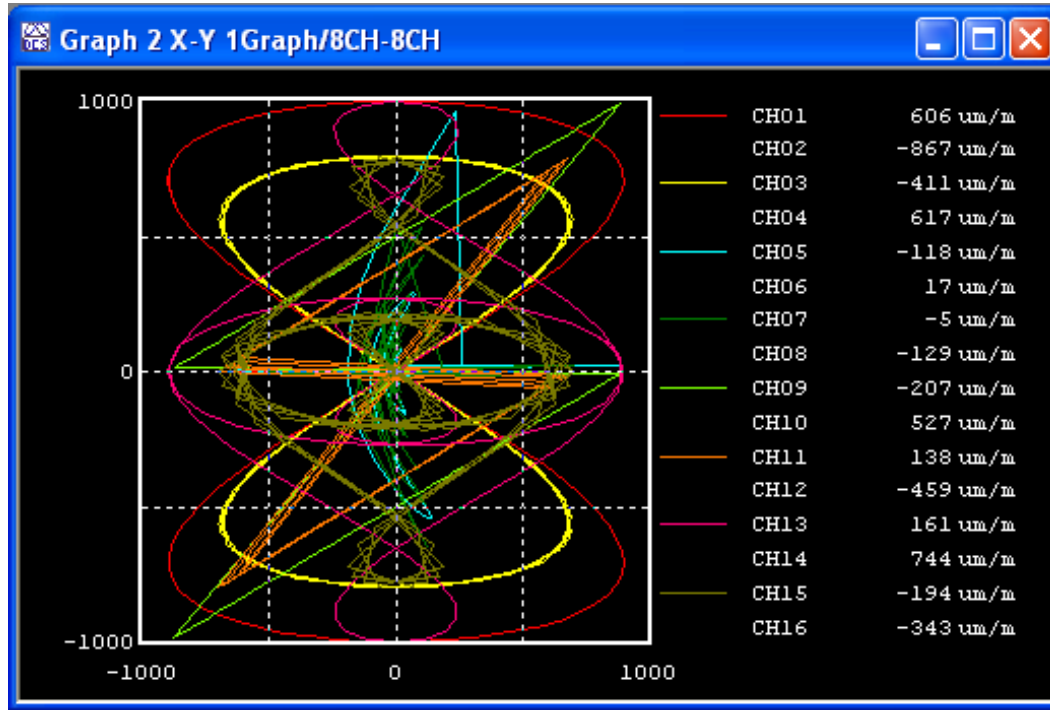


11-3-3 X-Y Graph

X-Y graph is a relative graph that displays X-axis and Y-axis with the CH data.

Suppose the 1 channel of X-axis and 1 channel of Y-axis consist 1 unit, the X-Y graph can superimpose maximum 8 graphs.

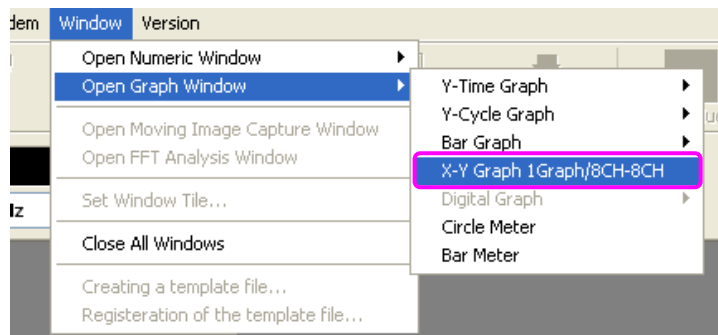
■X-Y Graph 1 Graph/8 channels – 8 channels



11-3-3-1 How to Display

Open the X-Y graph window by either of the following,

- Click the **Window** – **Open Graph Window** – **X-Y Graph 1 Graph/8 CH - 8 CH**.



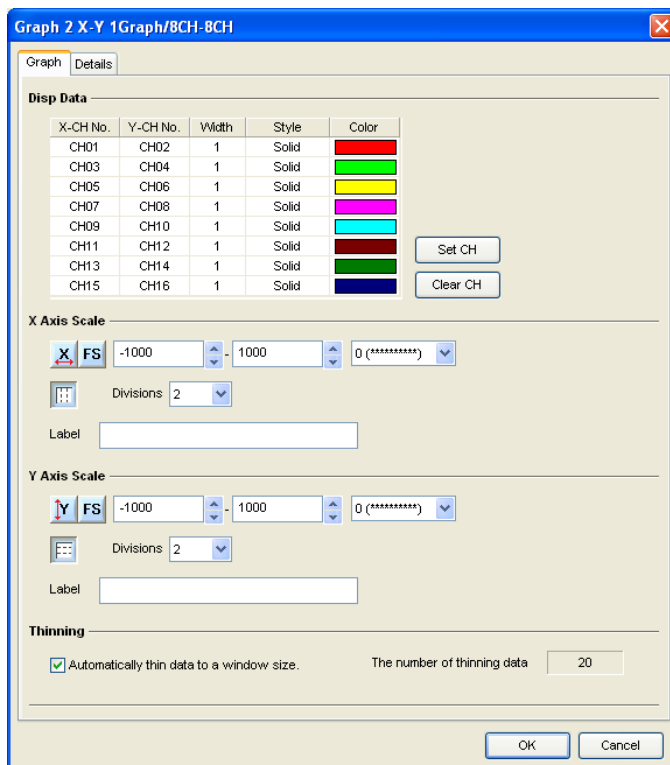
- Click the **X-Y** icon from the toolbar.



11-3-3-2 Setting Display Condition

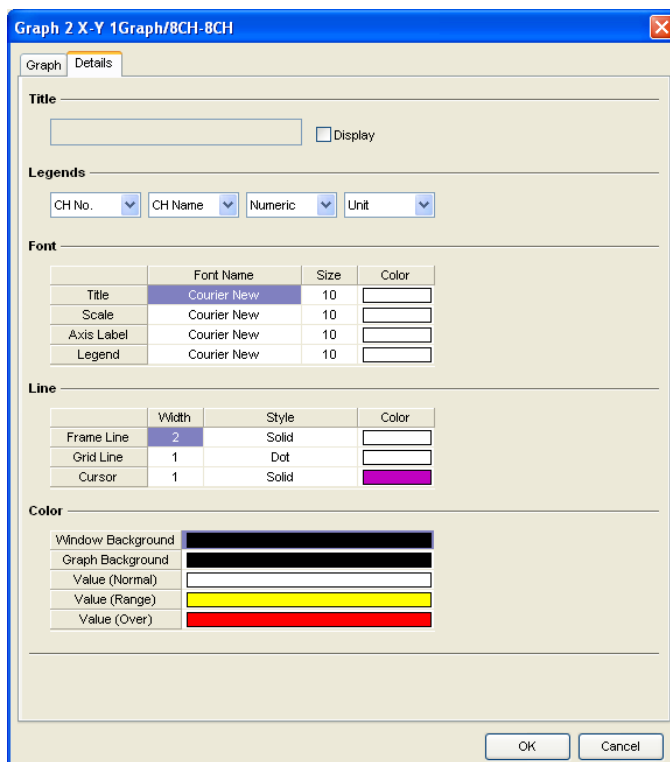
Open the **Set Display Condition** dialog box by any of the following.

- Click the **View** – **Set Display Condition**.
- Right-click the window to display the pop-up menu.
Click the **Set Display Condition** from the pop-up menu.
- Click the **Display Condition** icon from the toolbar.
- Double click the window.



The dialog box is titled "Graph 2 X-Y 1Graph/8CH-8CH". It has two tabs: "Graph" and "Details". The "Disp Data" tab is active. It contains a table with columns: X-CH No., Y-CH No., Width, Style, and Color. The table lists 16 channels (CH01 to CH16) with Width set to 1 and Style set to Solid. The Color column shows various colors: Red, Green, Yellow, Cyan, Magenta, Blue, and Black. To the right of the table are two buttons: "Set CH" and "Clear CH". Below the table are sections for "X Axis Scale" and "Y Axis Scale". Each section has a "FS" button, a range of -1000 to 1000, a "Divisions" dropdown set to 2, and a "Label" text box. At the bottom, there is a "Thinning" section with a checked box "Automatically thin data to a window size." and a "The number of thinning data" dropdown set to 20. "OK" and "Cancel" buttons are at the bottom right.

X-CH No.	Y-CH No.	Width	Style	Color
CH01	CH02	1	Solid	Red
CH03	CH04	1	Solid	Green
CH05	CH06	1	Solid	Yellow
CH07	CH08	1	Solid	Cyan
CH09	CH10	1	Solid	Magenta
CH11	CH12	1	Solid	Blue
CH13	CH14	1	Solid	Black
CH15	CH16	1	Solid	Black



The dialog box is titled "Graph 2 X-Y 1Graph/8CH-8CH". It has two tabs: "Graph" and "Details". The "Details" tab is active. It contains a "Title" section with a text box and a "Display" checkbox. Below is a "Legends" section with four dropdown menus: "CH No.", "CH Name", "Numeric", and "Unit". The "Font" section has a table with columns: Font Name, Size, and Color. The table lists fonts for Title, Scale, Axis Label, and Legend, all set to Courier New and size 10. The "Line" section has a table with columns: Width, Style, and Color. The table lists line styles for Frame Line (Width 2, Solid), Grid Line (Width 1, Dot), and Cursor (Width 1, Solid). The "Color" section has a table with columns: Window Background, Graph Background, Value (Normal), Value (Range), and Value (Over). The table lists colors for each: Window Background (Black), Graph Background (Black), Value (Normal) (White), Value (Range) (Yellow), and Value (Over) (Red). "OK" and "Cancel" buttons are at the bottom right.

Font Name	Size	Color
Title	Courier New	10
Scale	Courier New	10
Axis Label	Courier New	10
Legend	Courier New	10

Width	Style	Color
Frame Line	2	Solid
Grid Line	1	Dot
Cursor	1	Solid

Window Background	Graph Background	Value (Normal)	Value (Range)	Value (Over)
Black	Black	White	Yellow	Red

■ Setting display data

Sets the target channels, width, style, and color.

X-CH No.	Y-CH No.	Width	Style	Color
CH01	CH02	1	Solid	Red
CH03	CH04	1	Solid	Green
CH05	CH06	1	Solid	Yellow
CH07	CH08	1	Solid	Magenta
CH09	CH10	1	Solid	Cyan
CH11	CH12	1	Solid	Brown
CH13	CH14	1	Solid	Dark Green
CH15	CH16	1	Solid	Dark Blue

X-CH No.

Select the target CH No. of X-axis from the list for displaying on the graph.

Select “— — —” for CH not displayed.

Y-CH No.

Select the target CH No. of Y-axis from the list for displaying on the graph.

Select “— — —” for CH not displayed.

Width

Select the line width (1 to 3).

When the line style is selected other than Solid, the line width is fixed to 1.

Style

Select the line style.

(Solid, Dash, Dot, Dash Dot, Dash Dot Dot)

Color

Select the line color.

Double-click the target item, the **Color** dialog box appears. Select the desired color on the Color dialog box.

Click the **Set CH** button and the CH numbers are automatically set.

Click the **Clear CH** button and the all CH numbers become “— — —.”

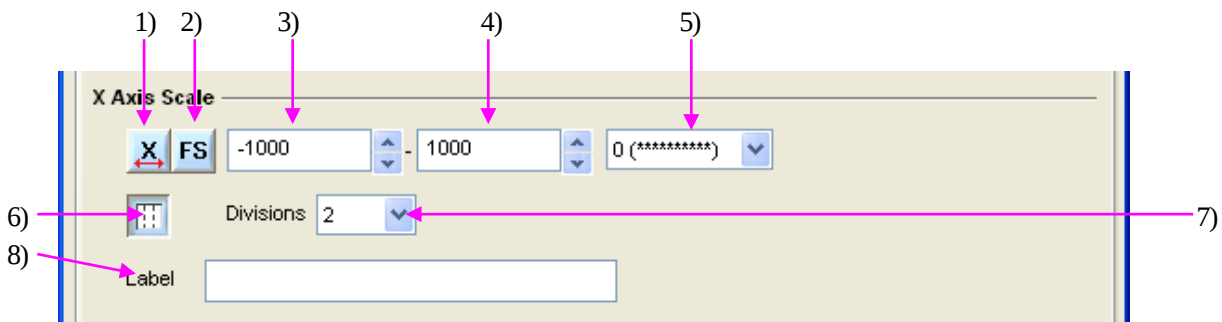
- Items can be set by copying and pasting the target item from the pop-up menu.

Right-click the target item to display the pop-up menu.

X-CH No.	Y-CH No.	Width	Style	Color
CH01	CH02	1	Solid	Red
CH03	CH04	1	Solid	Green
CH05	CH06	1	Solid	Yellow
CH07	CH08	1	Solid	Magenta
CH09	CH10	1	Solid	Cyan
CH11	CH12	1	Solid	Brown
CH13	CH14	1	Solid	Dark Green
CH15	CH16	1	Solid	Dark Blue

■Setting X-axis

Set various display conditions for X axis such as scale value (CH data), Divisions (the number of graph divisions), the number of digits below decimal point of scale value, show/hide the grid line, and Label characters.



1) Auto scale

Select ON/OFF of the X-axis auto scale.

Click the **X** icon to automatically set the X-axis scale value with nice round numeric value (1, 2, and 5 steps) according to the CH data.

2) Full Scale

Select ON/OFF of the X-axis full scale.

Click the **FS** icon, the X-axis scale changes to $\pm$ FS and the CH data is displayed in full scale value of channels.

3) X-axis scale

Set the minimum value of the Y-axis scale.

4) X-axis scale

Set the maximum scale of the Y-axis scale.

5) The number of digits below decimal point of scale value

Select the number of digits below decimal point of the X-axis from the list.

6) Grid line

Show or hide the grid line.

Used for dividing the graph.

7) Divisions

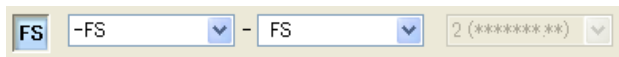
Set the number of graph divisions.

8) Label

Input a label within 40 characters.

- Select the target X-axis scale from the list when the **FS** icon is ON.

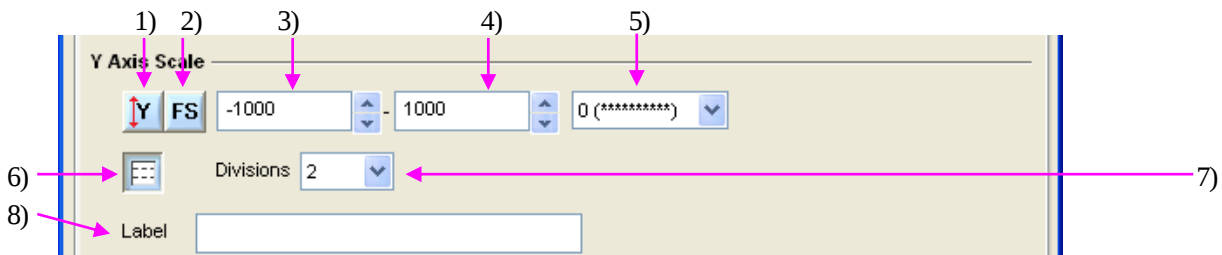
("FS", "FS/2", "FS/5", "FS/10", "0", "-FS/10", "-FS/5", "-FS/2", "-FS")



- For setting scale, click the spin button to set the X-axis scale value with nice round numeric values (1, 2, and 5 steps).

■ Setting Y-axis

Set various display conditions for Y-axis such as scale value (CH data), Divisions (the number of graph divisions), the number of digits below decimal point of scale value, show/hide the grid line, and Label characters.



1) Auto scale

Select ON/OFF of the Y-axis auto scale.

Click the **Y** icon to automatically set the X-axis scale value with nice round numeric value (1, 2, and 5 steps) according to the CH data.

2) Full Scale

Select ON/OFF of the Y-axis full scale.

Click the **FS** icon, the Y-axis scale changes to $\pm$ FS and the CH data is displayed in full scale value of channels.

3) Y-axis scale

Set the minimum value of the Y-axis scale.

4) Y-axis scale

Set the maximum scale of the Y-axis scale.

5) The number of digits below decimal point of scale value

Select the number of digits below decimal point of the Y-axis from the list.

6) Grid line

Show or hide the grid line.

Used for dividing the graph.

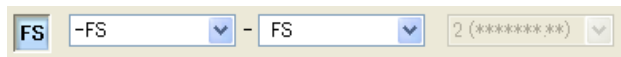
7) Divisions

Set the number of graph divisions.

8) Label

Input a label within 40 characters.

- Select the target Y-axis scale from the list when the **FS** icon is ON.
("FS", "FS/2", "FS/5", "FS/10", "0", "-FS/10", "-FS/5", "-FS/2", "-FS")

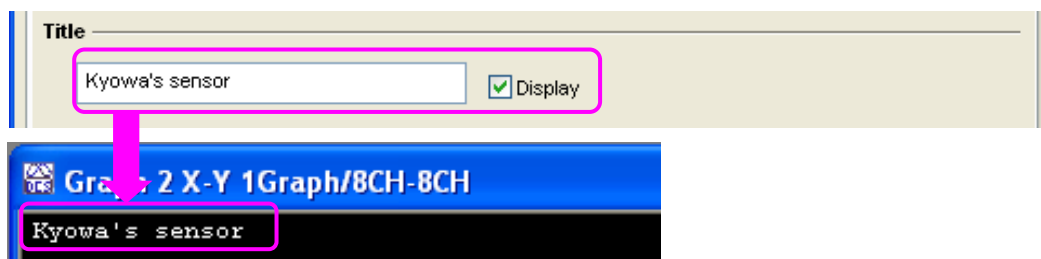


- For setting scale, click the spin button to set the X-axis scale value with nice round numeric values (1, 2, and 5 steps).

■ Setting title

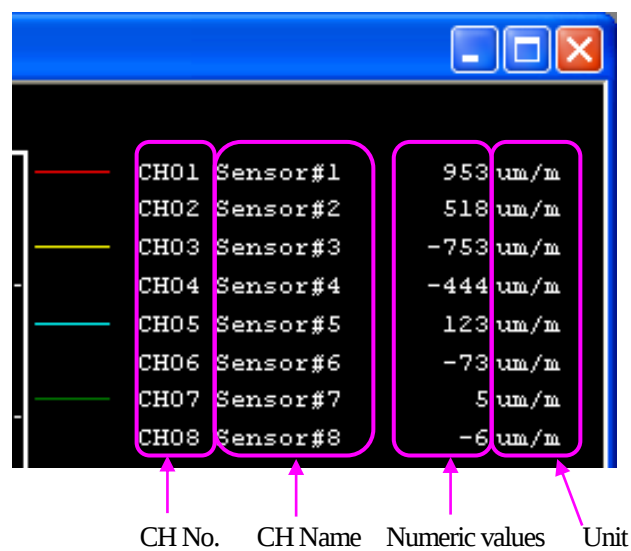
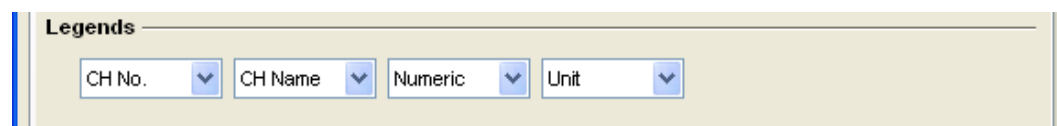
Input the title within 40 characters.

Input the Title and put a check mark to the box next to the **Display** on the title right side.



■ Setting legends

Select Legend items displayed on the right side of the graph.



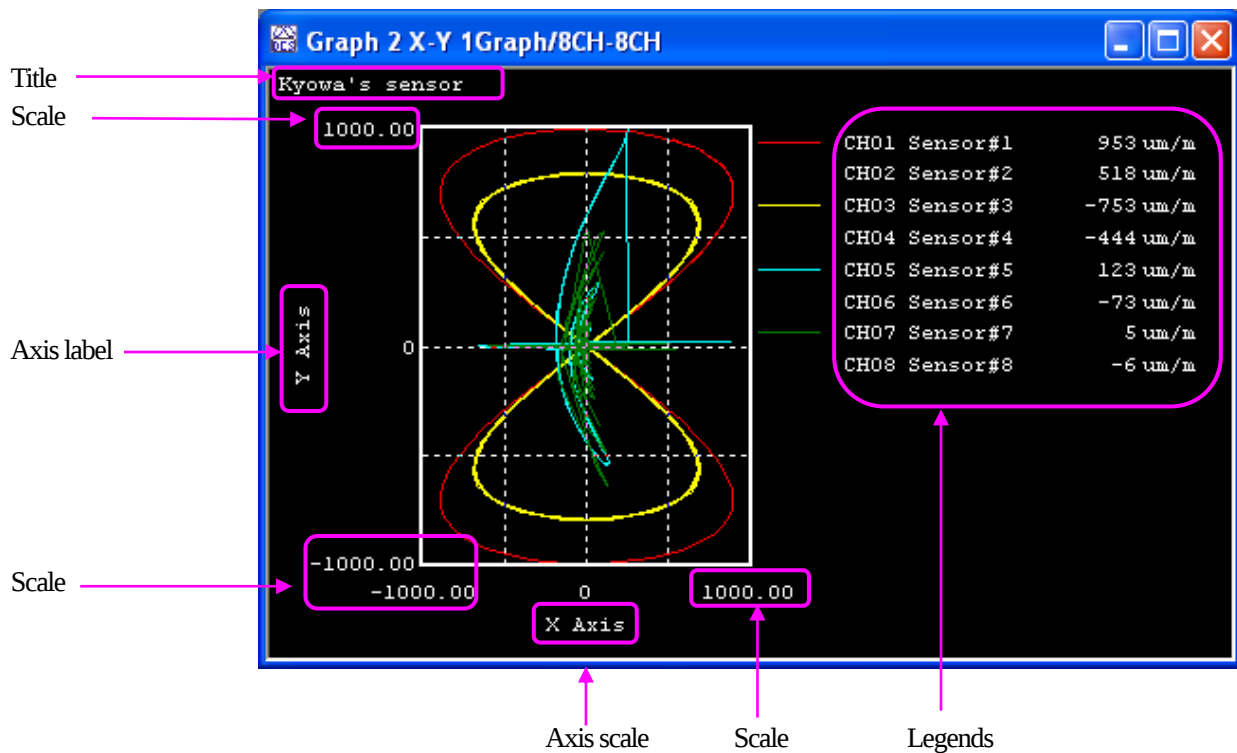
■ Setting font

Set Font Name, Size, and Color.

For setting font color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Font			
	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	
Legend	Courier New	10	



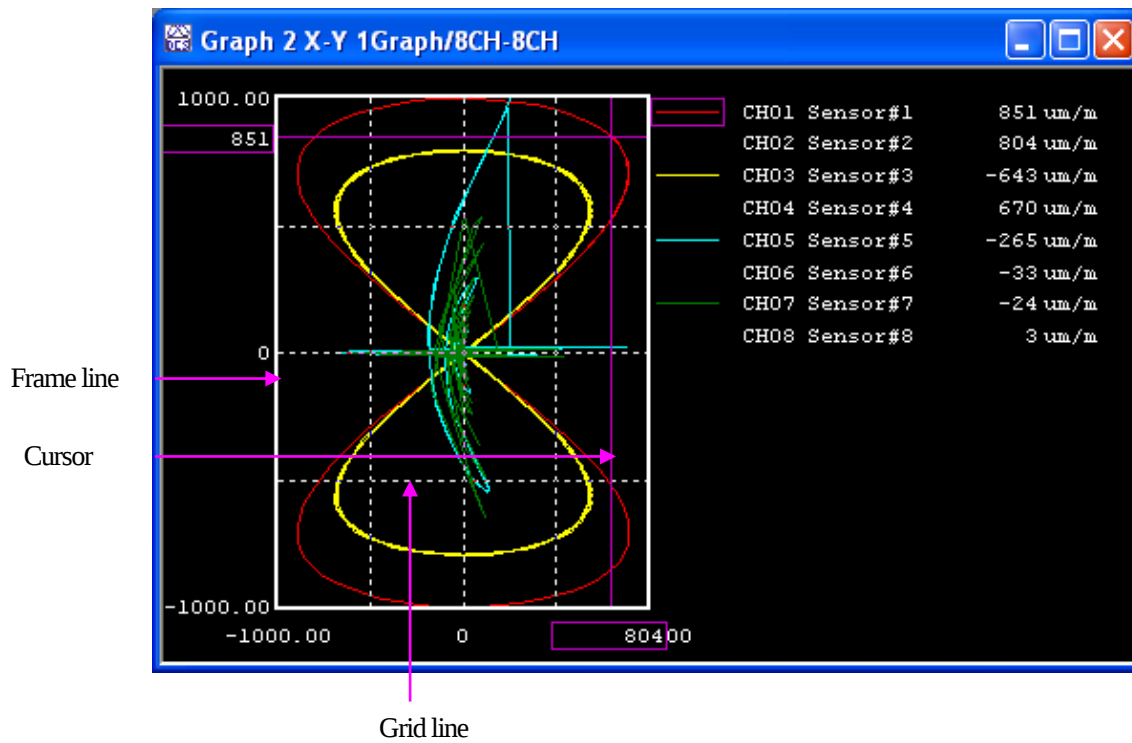
■ Setting line

Set width, style and color of lines.

For setting line color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Line			
	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	
Cursor	1	Solid	

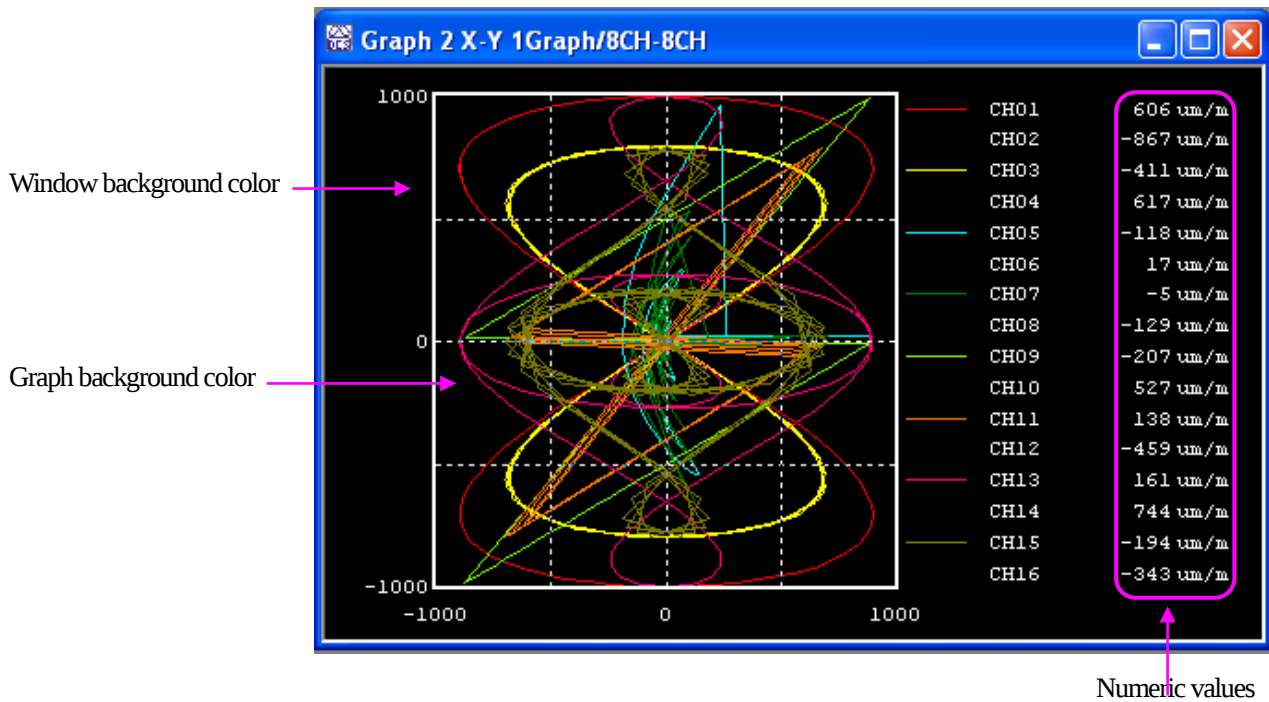
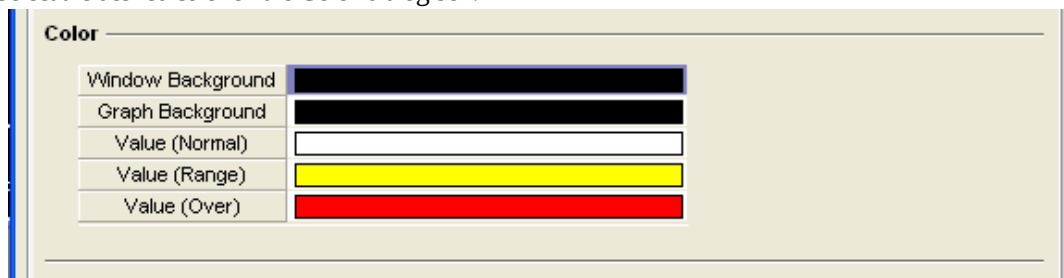


■ Setting color

Set the background color of window, graph, and numeric values.

For setting color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

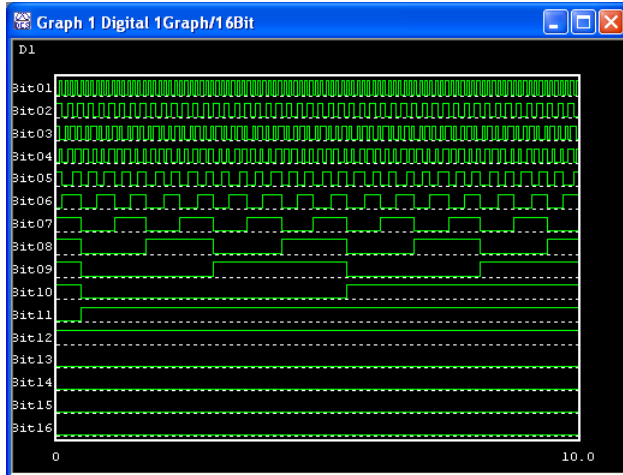


11-3-4 Digital Graph

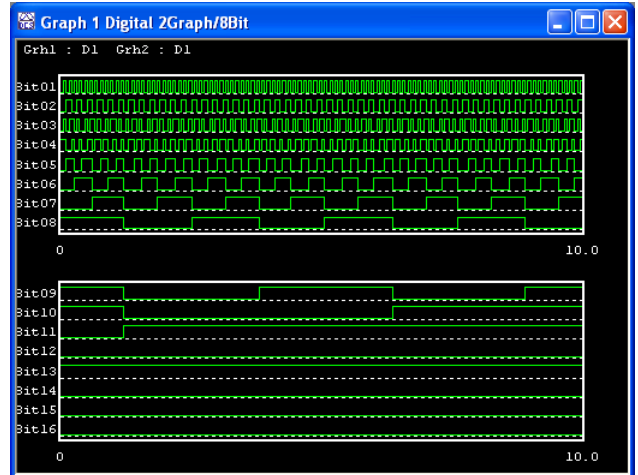
Digital graph is a graph that displays digital CH data in bits.

Select the number of display graphs from 1 Graph/16 bits, 2 Graphs/8 bits, 3 Graphs/5 bits, 4 Graphs/4 bits.

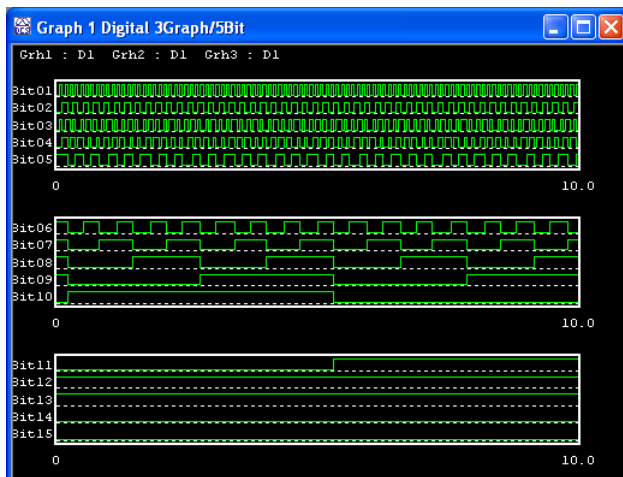
■ 1 Graph/16 Bits



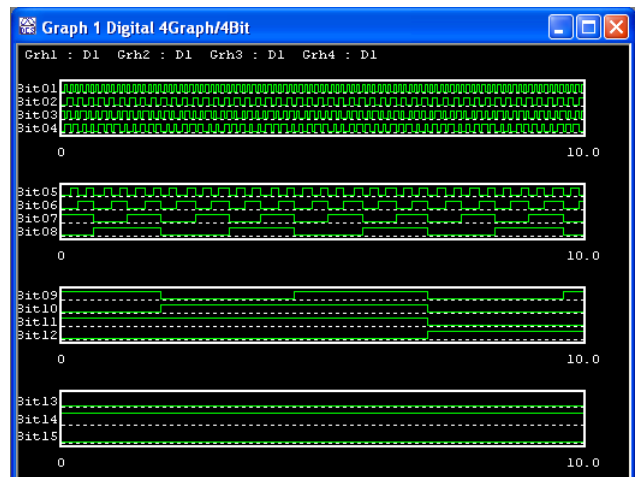
■ 2 Graphs/8 Bits



■ 3 Graphs/5 Bits



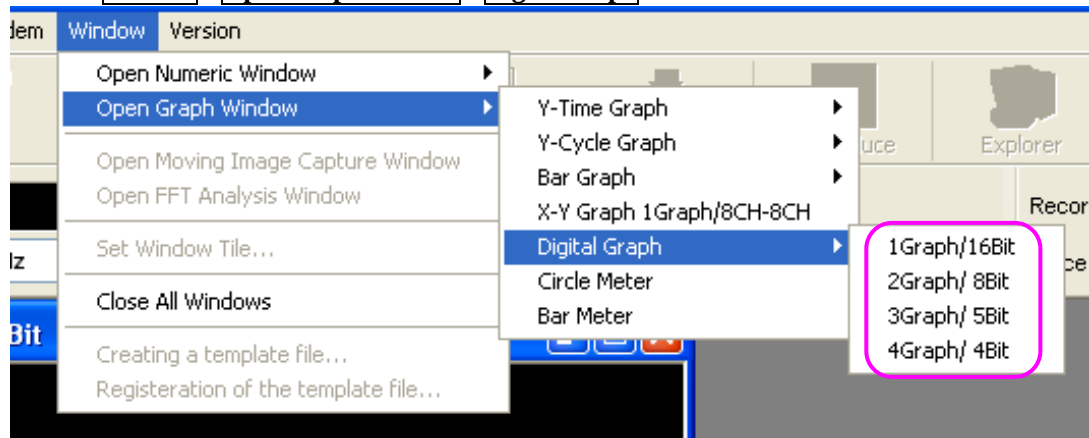
■ 4 Graphs/4 Bits



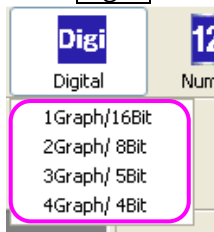
11-3-4-1 How to Display

Open the **Digital Window** from either of the following.

- Click the **Window** – **Open Graph Window** – **Digital Graph**.



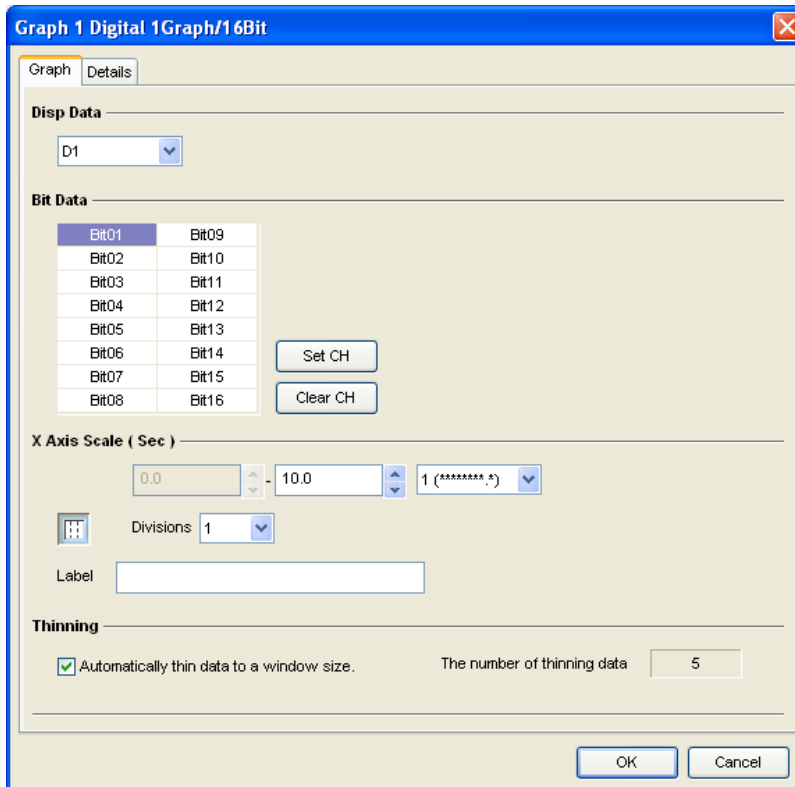
- Click the **Digital** icon from the toolbar.



11-3-4-2 Setting Measuring Conditions

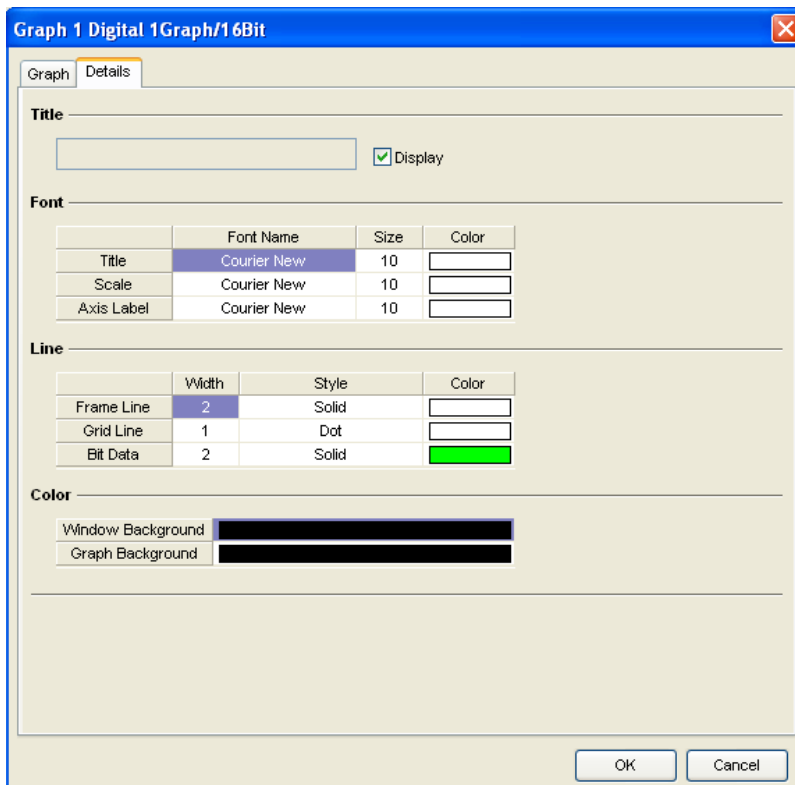
Open the **Set Display Condition** dialog box by the following.

- Click the **View** – **Set Display Condition**.
- Right-click the window to display the pop-up menu.
Click the **Set Display Condition** from the pop-up menu.
- Click the **Display Condition** icon from the toolbar.
- Double click the window.



The dialog box is titled "Graph 1 Digital 1Graph/16Bit". It has two tabs: "Graph" and "Details". The "Disp Data" section contains a dropdown menu with "D1" selected. The "Bit Data" section contains a table with 16 bits (Bit01 to Bit16) and two buttons: "Set CH" and "Clear CH". The "X Axis Scale (Sec)" section contains a text box with "0.0", a spinner box with "10.0", a dropdown menu with "1 (***** s)", a "Divisions" dropdown menu with "1", and a "Label" text box. The "Thinning" section contains a checked checkbox "Automatically thin data to a window size." and a text box "The number of thinning data" with "5". At the bottom are "OK" and "Cancel" buttons.

Bit01	Bit09
Bit02	Bit10
Bit03	Bit11
Bit04	Bit12
Bit05	Bit13
Bit06	Bit14
Bit07	Bit15
Bit08	Bit16



The dialog box is titled "Graph 1 Digital 1Graph/16Bit". It has two tabs: "Graph" and "Details". The "Title" section contains a text box and a checked checkbox "Display". The "Font" section contains a table with 4 columns: "Font Name", "Size", and "Color". The "Line" section contains a table with 4 columns: "Width", "Style", and "Color". The "Color" section contains two color pickers: "Window Background" and "Graph Background". At the bottom are "OK" and "Cancel" buttons.

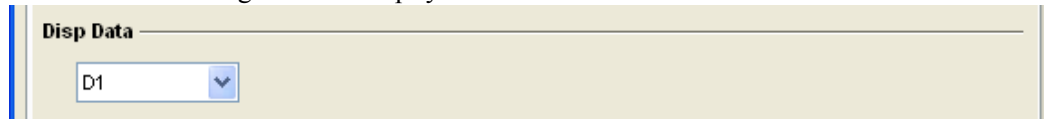
	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	

	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	
Bit Data	2	Solid	

■ Setting display data

Set the target digital channels for displaying on the graph from the list.

Select “— — —” for digital CH not displayed.



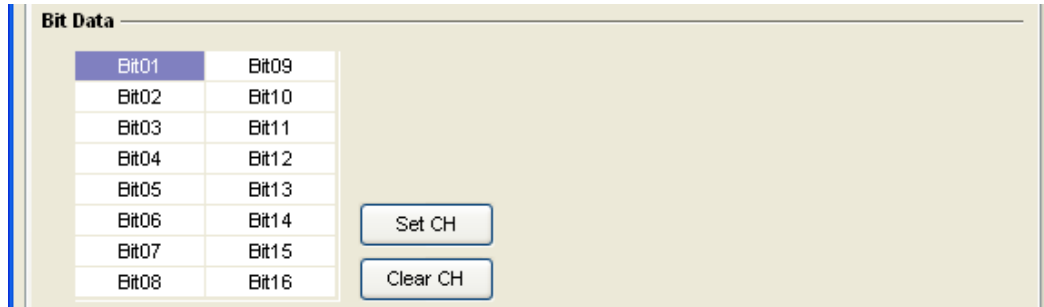
■ Setting bit data

Set the target bit for displaying on the graph from the list.

D** is low ** bit.

(Example)

D 01: Low 01 bit

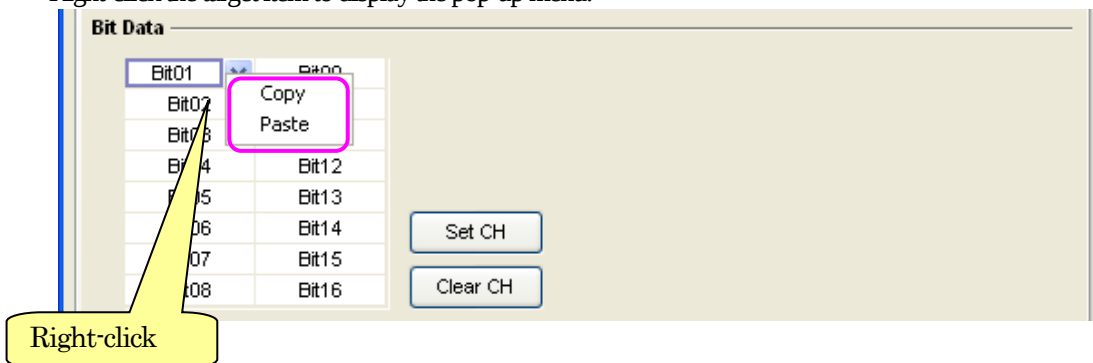


Click the **Set CH** button and the bit data is automatically set.

Click the **Clear CH** button and the all bit data becomes “— — —.”

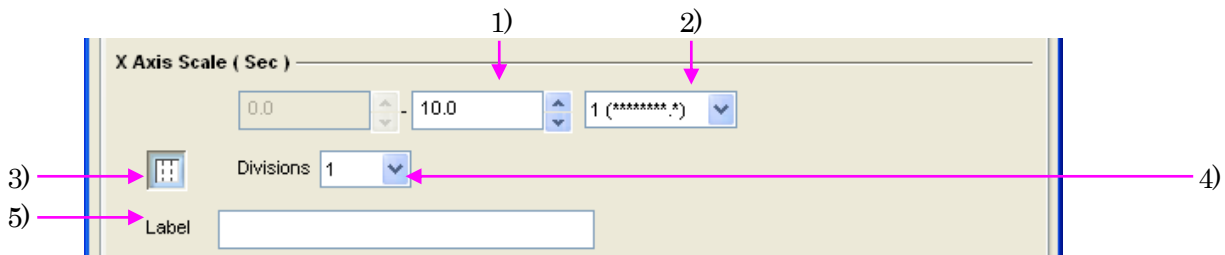
- Items can be set by copying and pasting the target item from the pop-up menu.

Right-click the target item to display the pop-up menu.



■ Setting X-axis scale (sec)

Set various display conditions for X-axis such as scale value (time: sec), **Divisions** (the number of graph divisions), the number of digits below decimal point of scale value, show/hide the grid line, and Label characters.

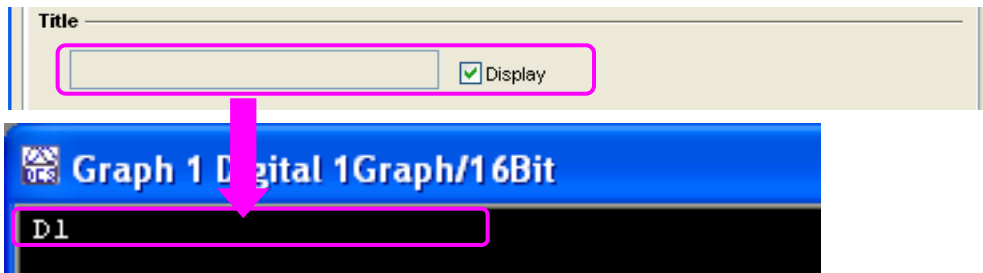


- | | |
|--|---|
| 1) X-axis scale | Set the maximum value of X-axis scale. |
| 2) The number of digits below decimal point of scale value | Select the number of digits below decimal point from the list for X-axis scale. |
| 3) Grid line | Show or hide the grid line. |
| 4) Divisions | Used for dividing the graph. |
| 5) Label | Set the number of graph divisions. |
| | Input a Label within 40 characters. |

- For setting scale, click the spin button to set the X-axis scale value with nice round numeric values (1, 2, and 5 steps).

■ Setting title

Put a check mark in a box next to the **Display**, the current setting digital CH No. appears on the title.
The title cannot be changed.



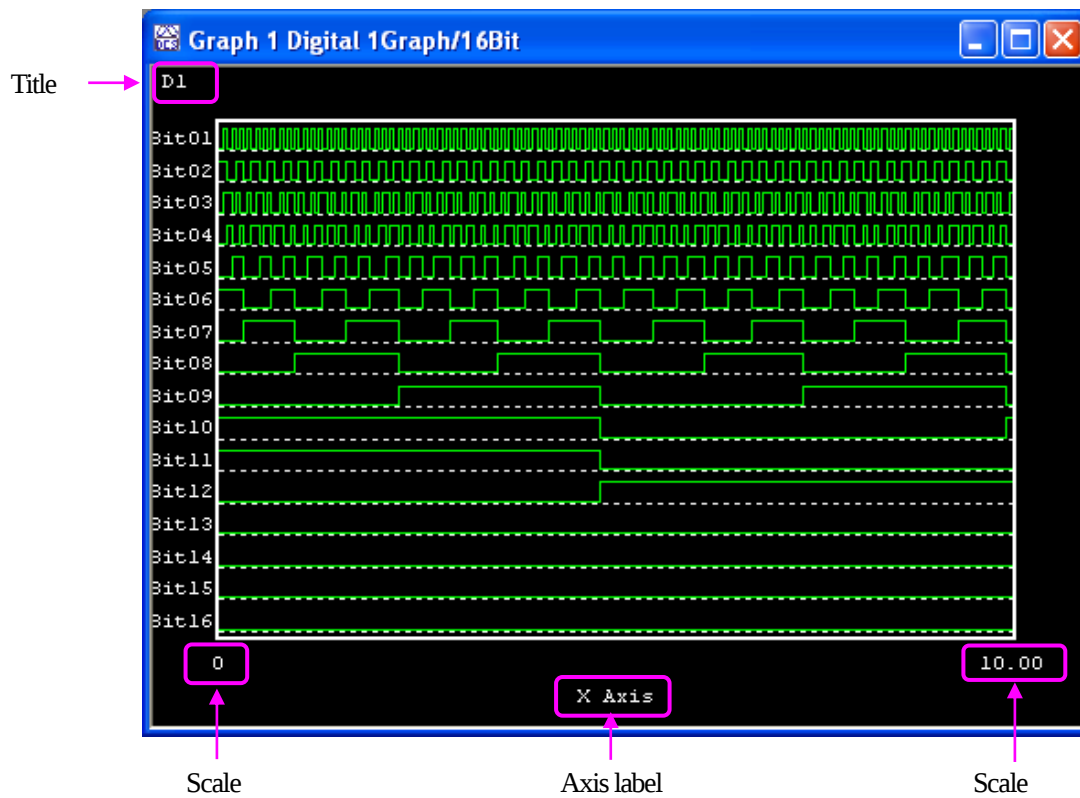
■ Setting font

Set Font Name, Size, and Color.

For setting font color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Font			
	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	
Legend	Courier New	10	



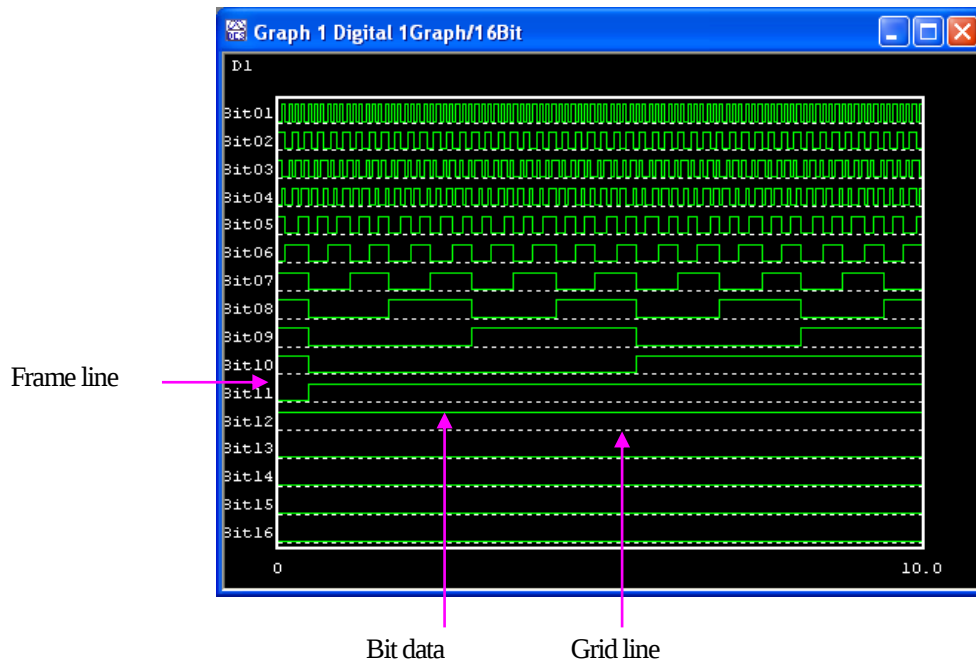
■ Setting line

Set width, style and color of lines.

For setting line color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Line			
	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	
Bit Data	2	Solid	

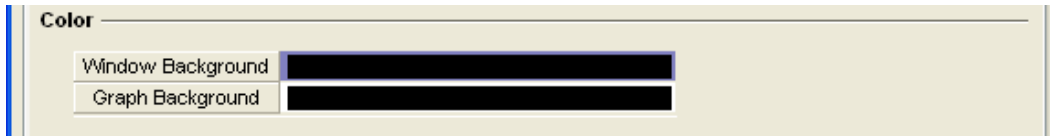


■ Setting color

Set the background color of window, graph, and graphs.

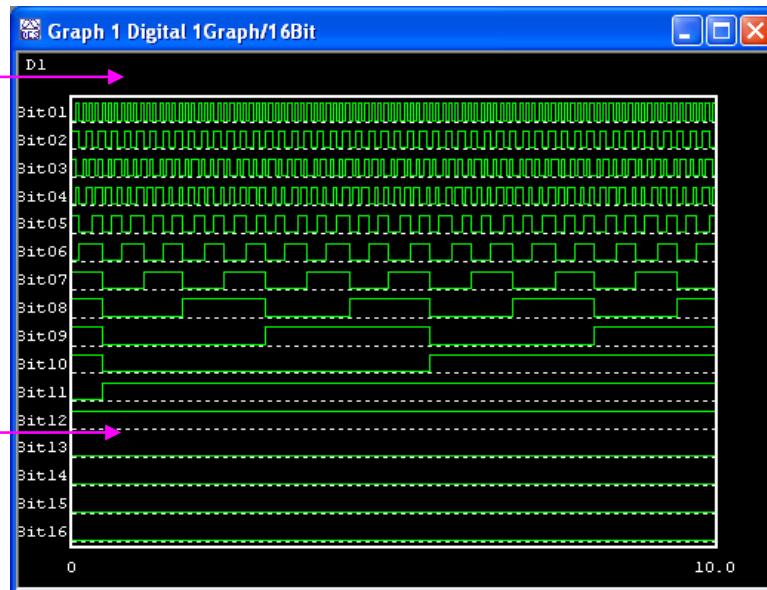
For setting color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.



Window background color

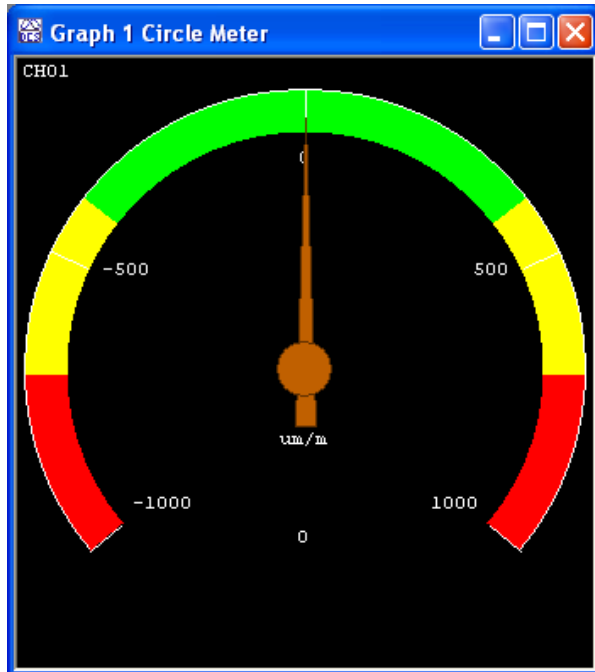
Graph background color



11-3-5 Circle Meter

Circle meter is a graph that displays CH data on a circle meter.
The number of display CH is 1.

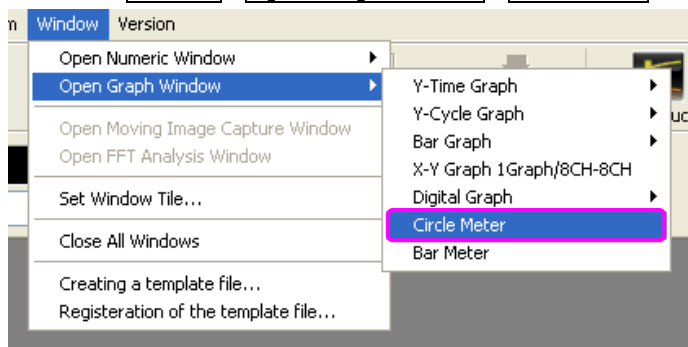
■ Circle Meter



11-3-5-1 How to Display

Open the **Circle Meter** window by either of the following.

- Click the **Window** – **Open Graph Window** – **Circle Meter**.



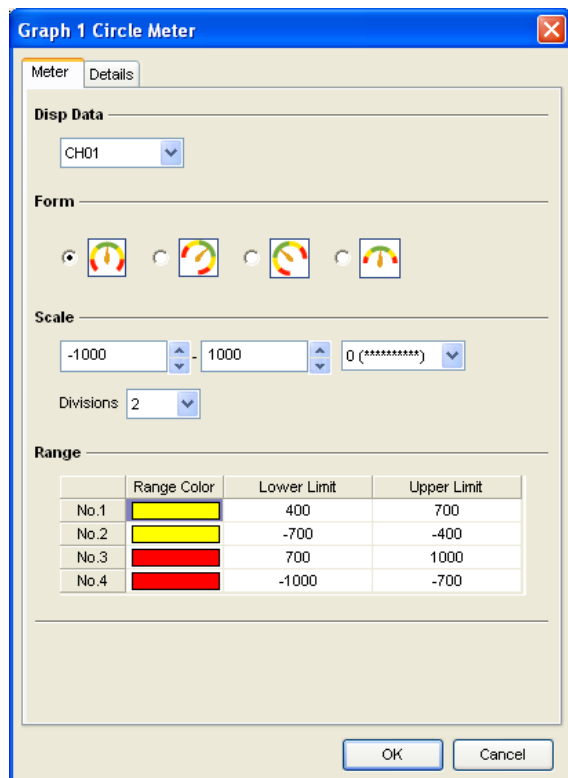
- Click the **Circle Meter** icon from the toolbar.



11-3-5-2 Setting Display Conditions

Open the **Set Display Condition** dialog box from any of the following.

- Click the **View** – **Set Display Condition**.
- Right-click the window to display the pop-up menu.
Click the **Set Display Condition** from the pop-up menu.
- Click the **Display Condition** icon from the toolbar.
- Double-click the window.



Graph 1 Circle Meter

Meter Details

Disp Data

CH01

Form

Four circular meter icons are shown, each with a different needle position and color scheme.

Scale

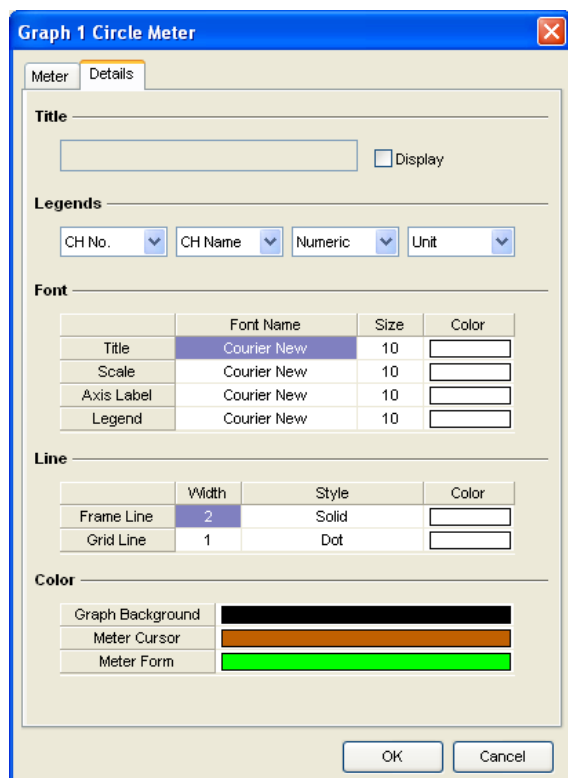
-1000 - 1000 0 (*****)

Divisions 2

Range

	Range Color	Lower Limit	Upper Limit
No.1	Yellow	400	700
No.2	Yellow	-700	-400
No.3	Red	700	1000
No.4	Red	-1000	-700

OK Cancel



Graph 1 Circle Meter

Meter Details

Title

Display

Legends

CH No. CH Name Numeric Unit

Font

	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	
Legend	Courier New	10	

Line

	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	

Color

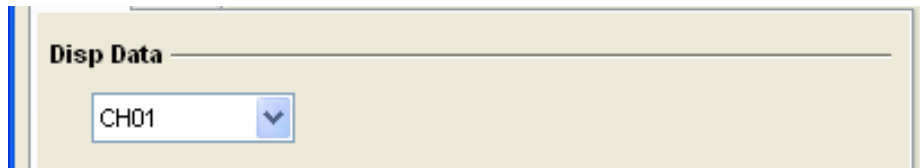
Graph Background Meter Cursor Meter Form

OK Cancel

■ Setting display data

Set the target channels from the list.

Select “— ———” for digital CH not displayed.



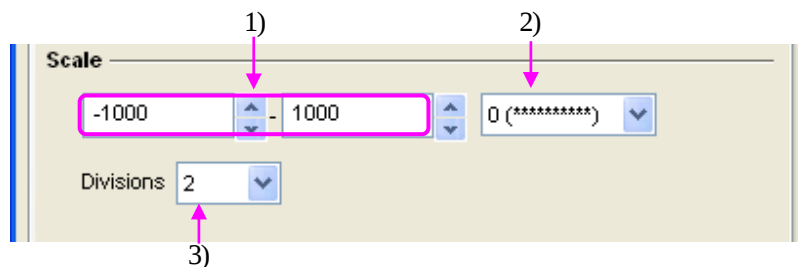
■ Setting Circle Meter Type

Select the meter type from the “Normal”, “Zero Horizontal”, “Zero Vertical”, and “Semicircle.”



■ Setting Scale

Set scale value, Divisions (the number of meter divisions), the number of digits below decimal point of scale value.



1) Scale

Set the maximum value and minimum value of the scale.

2) Deci Digits

Select the number of digits below decimal point of scale value.

3) Divisions

Set the number of graph divisions.

- For setting scale, click the spin button to set the scale value with nice round numeric values (1, 2, and 5 steps).

■ Setting range

Set the **Range Color** and data range values (**Lower Limit** and **Upper Limit**).

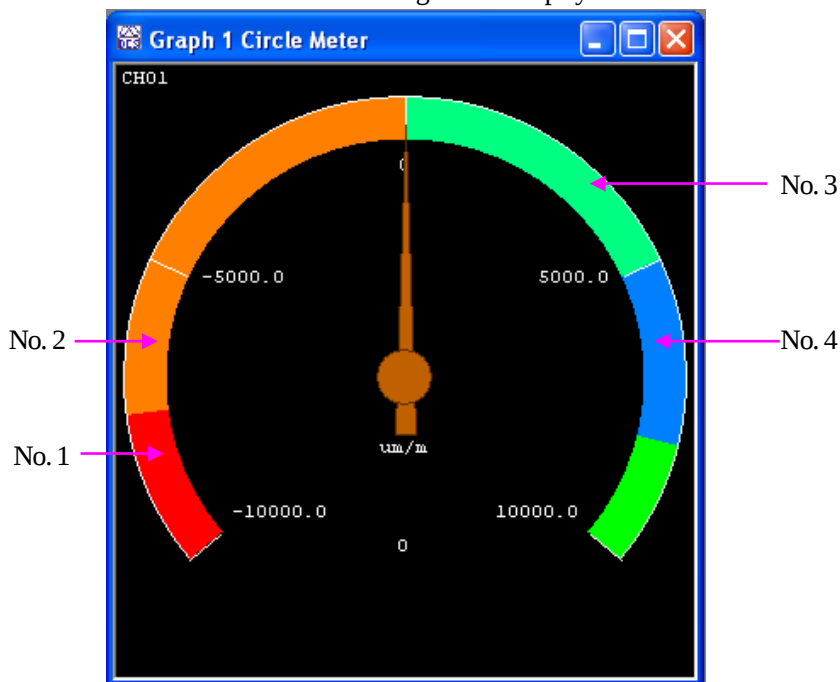
The circle meter is painted in due order from small No. color.

For setting color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Range			
	Range Color	Lower Limit	Upper Limit
No.1		-10000.0	-7500.00
No.2		-7500.00	0.00
No.3		0.00	5000.00
No.4		5000.00	8000.00

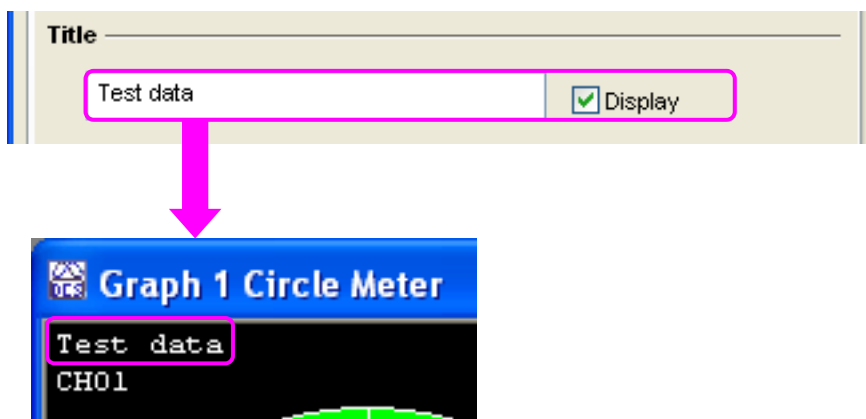
- For setting lower limit and upper limit values, click the spin button to set the values with nice round numeric values (1, 2, and 5 steps).
- The circle meter with the above setting shall be displayed as follows.



■ Setting Title

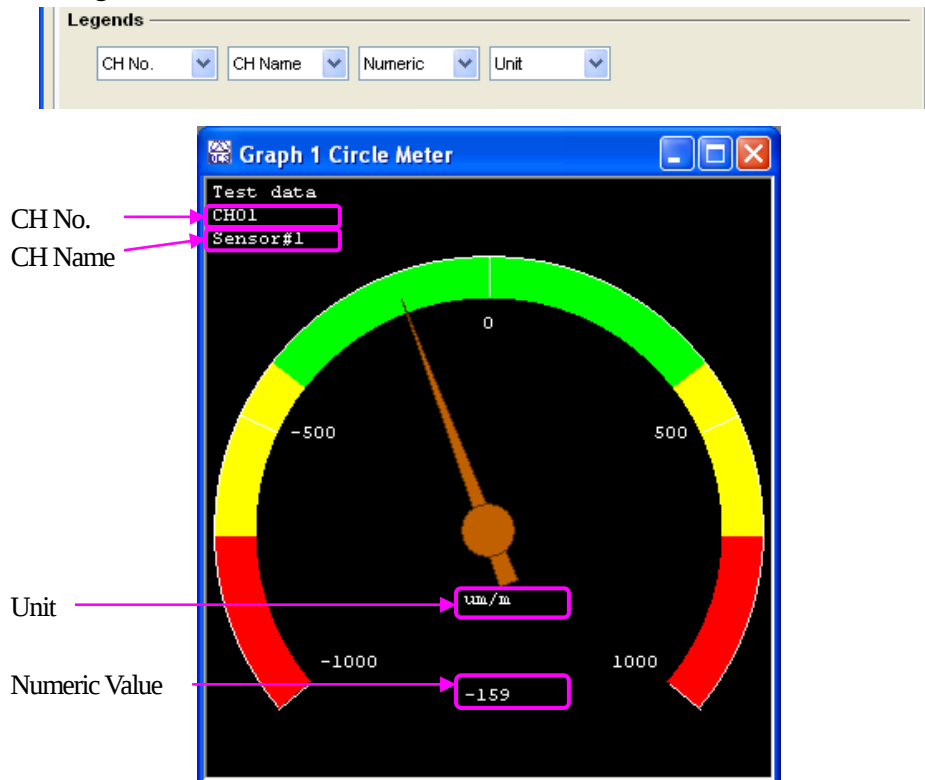
You can input the title of the graph window within 40 characters.

Input a title and put a check mark in the **Display** box on the title right side.



■ Setting Legends

Select legend items on the window.

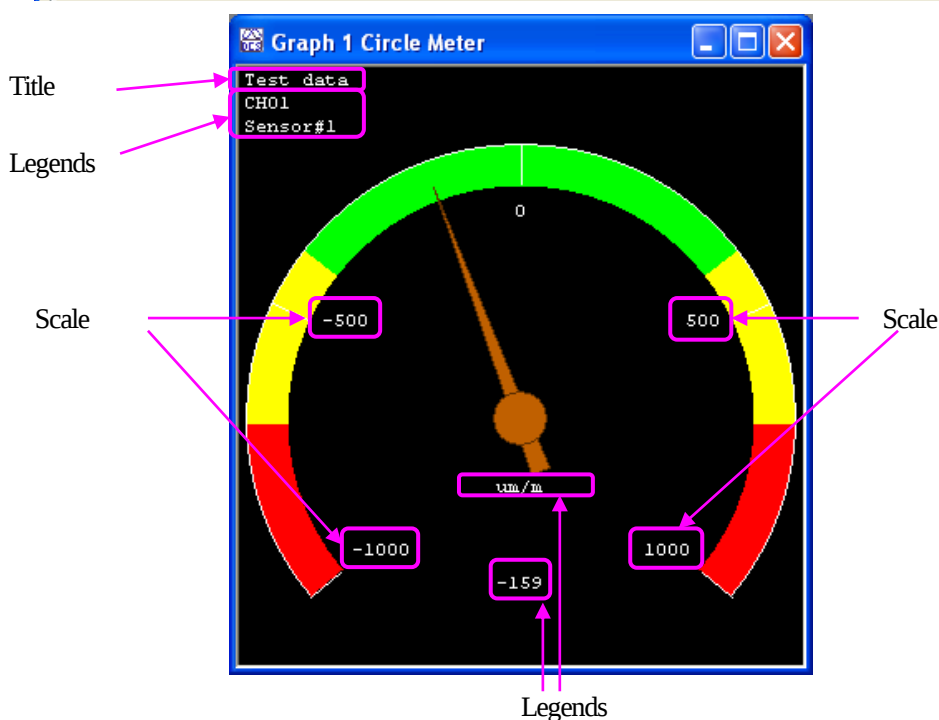
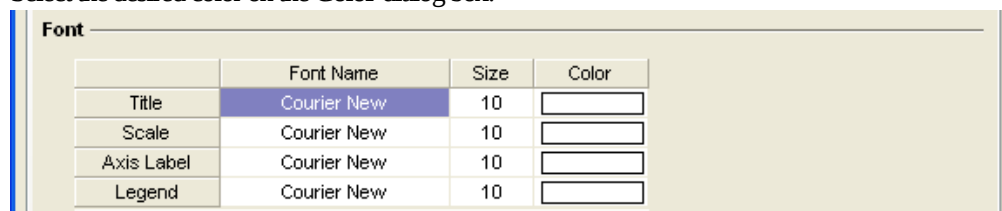


■ Setting font

Set Font Name, Size, and Color.

For setting font color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

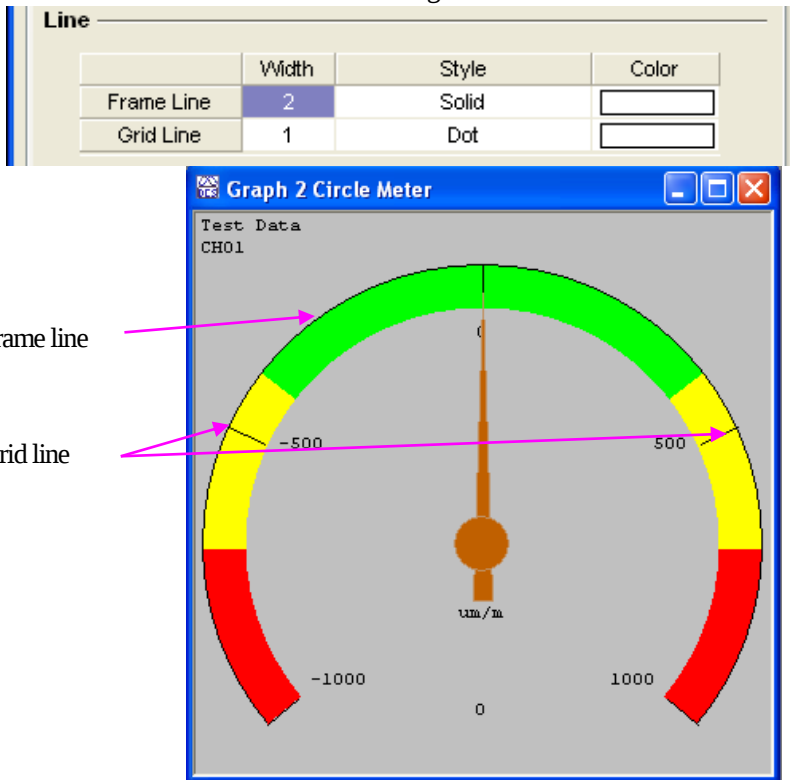


■ Setting line

Set width, style and color of lines.

For setting line color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

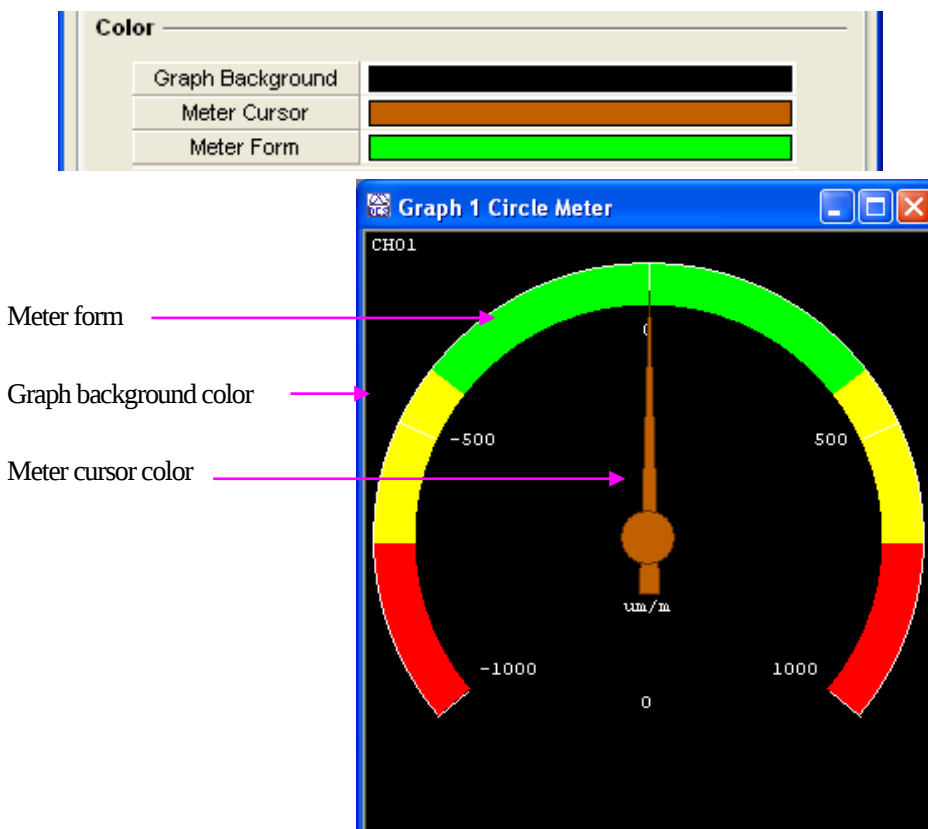


■ Setting color

Set the background color of graph, **Meter Cursor** color and **Meter Form** color.

For setting color, double-click the target item, the **Color** dialog box appears.

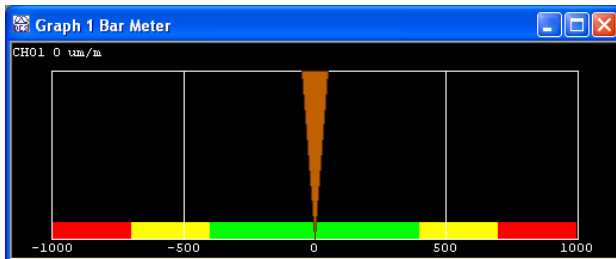
Select the desired color on the **Color** dialog box.



11-3-6 Bar Meter

Bar meter is a graph that displays CH data on a bar meter.
The number of display CH is 1.

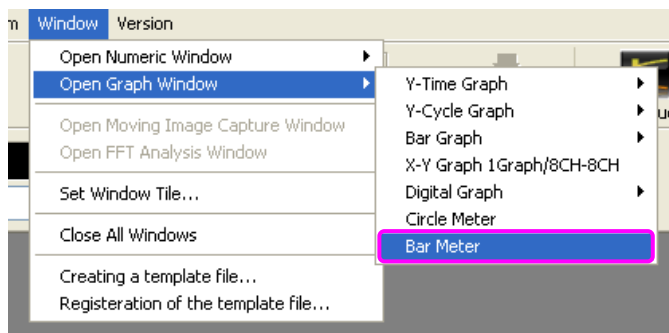
■ Bar Meter



11-3-6-1 How to Display

Open the **Bar Meter** window by either of the following.

- Click the **Window** – **Open Graph Window** – **Bar Meter**.



- Click the **Bar Meter** icon from the toolbar.



11-3-6-2 Setting Display Conditions

Graph 1 Bar Meter

Meter Details

Disp Data

CH01

Form

☒  ☐ 

Scale

-1000 1000 0 (*****)

Divisions 2

Range

	Range Color	Lower Limit	Upper Limit
No.1		400	700
No.2		-700	-400
No.3		700	1000
No.4		-1000	-700

OK Cancel

Graph 1 Bar Meter

Meter Details

Title

☐ Display

Legends

CH No. CH Name Numeric Unit

Font

	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	
Legend	Courier New	10	

Line

	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	

Color

Graph Background 

Meter Cursor 

Meter Form 

OK Cancel

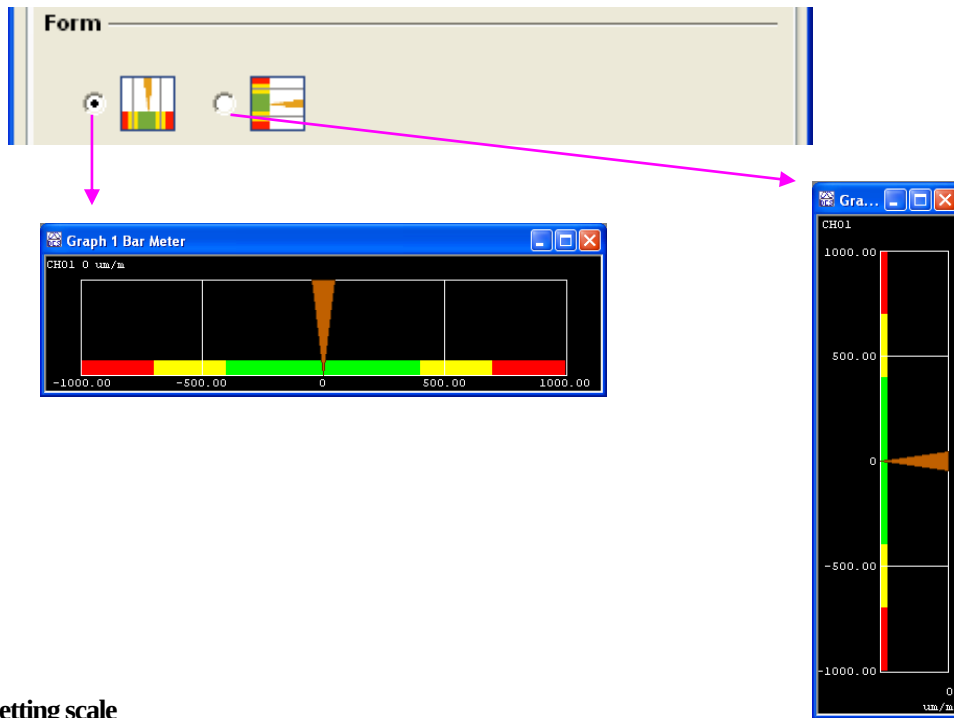
■ Setting display data

Set the target channels from the list.

Select “— ———” for CH not displayed.

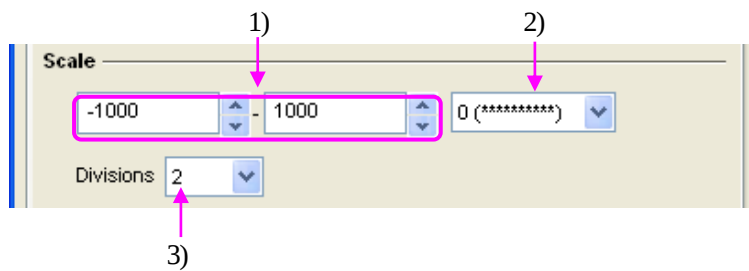
■ Setting form

Select the target form from **Horizontal** and **Vertical**.



■ Setting scale

Set scale value, Divisions (the number of meter divisions), the number of digits below decimal point of scale value.



1) Scale

Set the maximum value and minimum value of the scale.

2) Deci Digits

Select the number of digits below decimal point of scale value.

3) Divisions

Set the number of graph divisions.

- For setting scale, click the spin button to set the scale value with nice round numeric values (1, 2, and 5 steps).

■ Setting range

Set the **Range Color** and data range values (**Lower Limit** and **Upper Limit**).

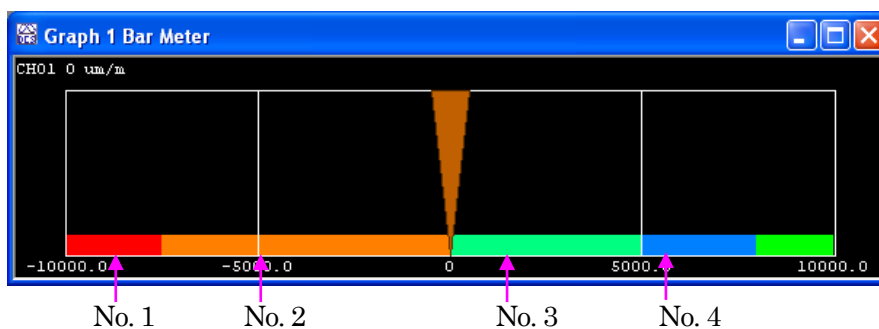
The circle meter is painted in due order from small No. color.

For setting color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Range			
	Range Color	Lower Limit	Upper Limit
No.1		-10000.0	-7500.00
No.2		-7500.00	0.00
No.3		0.00	5000.00
No.4		5000.00	8000.00

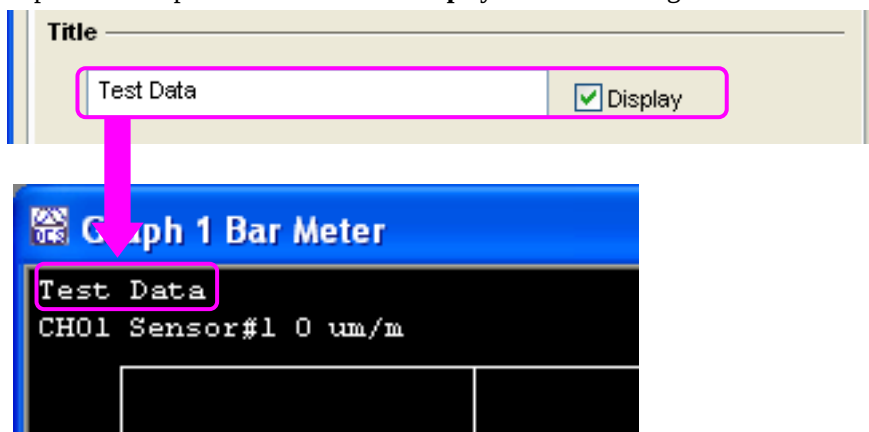
- For setting lower limit and upper limit values, click the spin button to set the values with nice round numeric values (1, 2, and 5 steps).
- The bar meter with the above setting shall be displayed as follows.



■ Setting Title

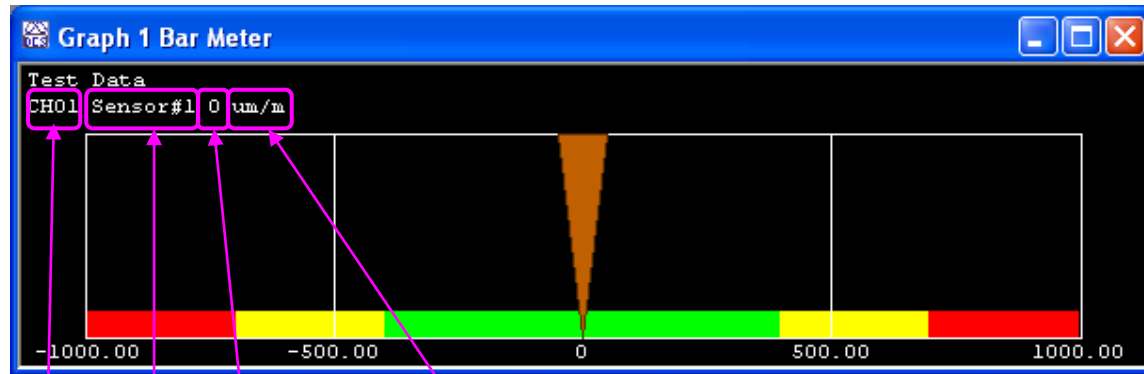
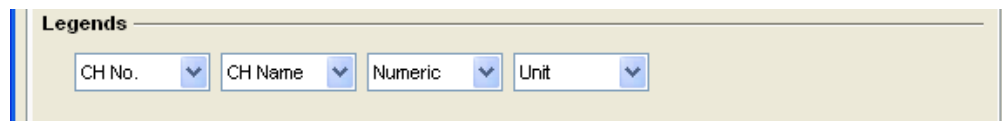
You can input the title of the graph window within 40 characters.

Input a title and put a check mark in the **Display** box on the title right side.



■ Setting Legends

Select legend items on the window.



CH No. CH Name Numeric value Unit

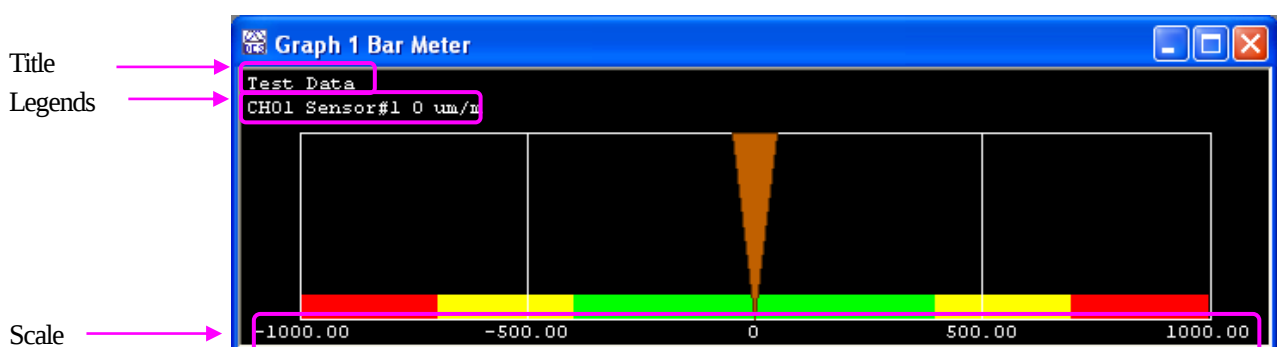
■ Setting font

Set Font Name, Size, and Color.

For setting font color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Font			
	Font Name	Size	Color
Title	Courier New	10	
Scale	Courier New	10	
Axis Label	Courier New	10	
Legend	Courier New	10	



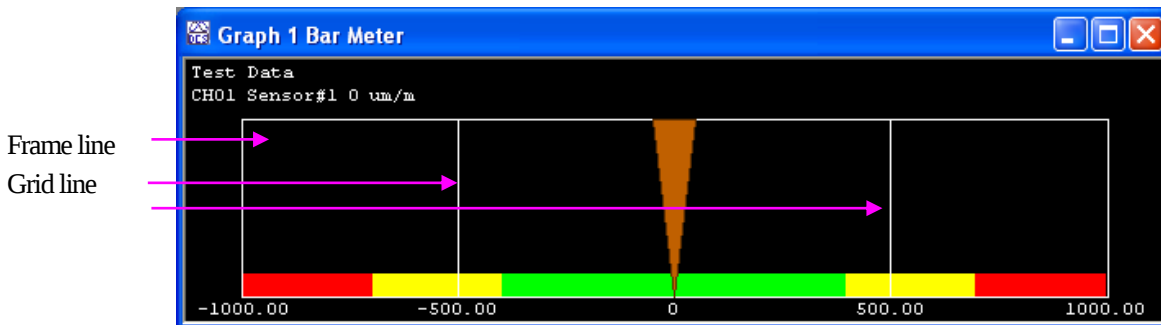
■ Setting line

Set width, style and color of lines.

For setting line color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Line			
	Width	Style	Color
Frame Line	2	Solid	
Grid Line	1	Dot	



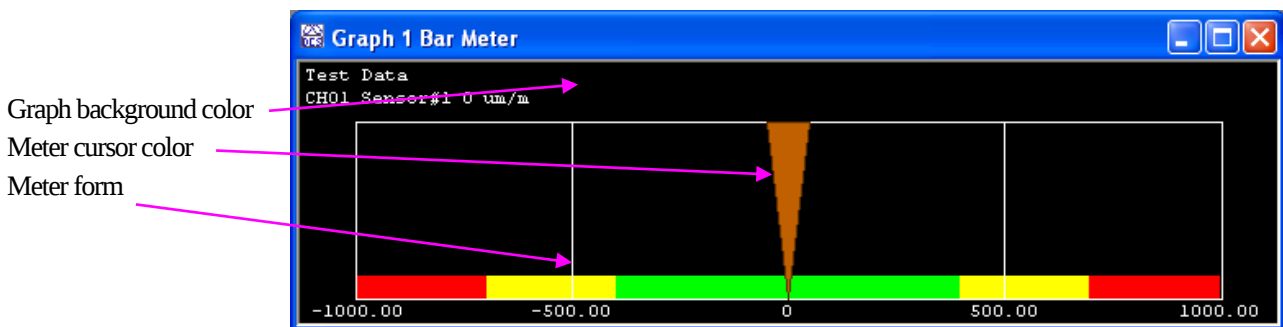
■ Setting color

Set the background color of graph, **Meter Cursor** color and **Meter Form** color.

For setting color, double-click the target item, the **Color** dialog box appears.

Select the desired color on the **Color** dialog box.

Color	
Graph Background	
Meter Cursor	
Meter Form	



11-3-7 Displaying Cursor

Cursor position is displayed on the graph window.

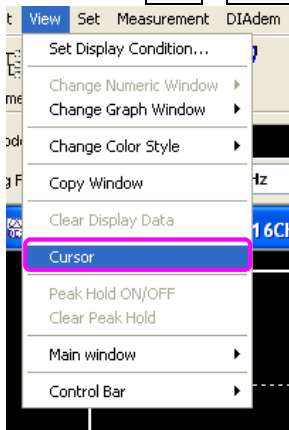
By putting a check mark to the **Cursor**, you can check the peak value of graph since the numeric values of cursor positions appear in the graph window.

■ How to operate

1) Activate the target graph

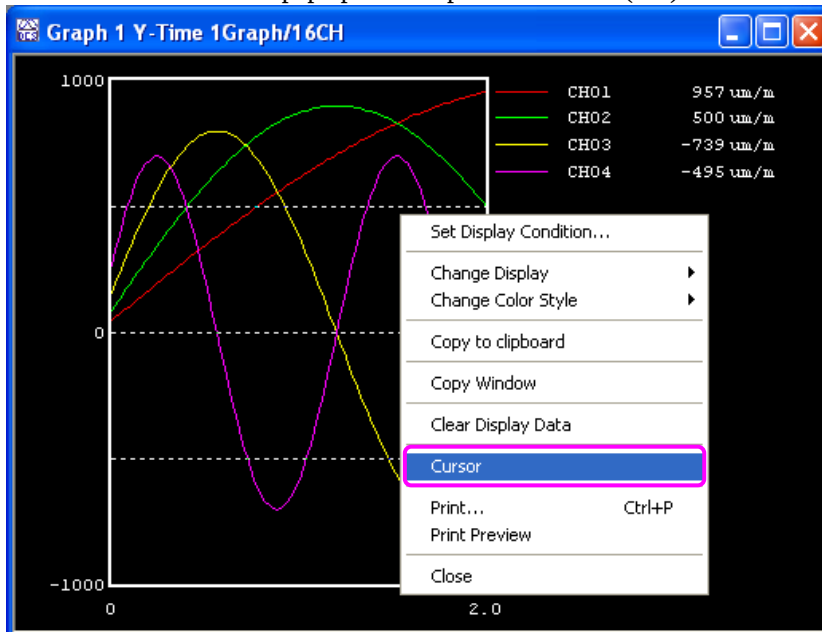
2) display the cursor by either of the following.

- Click the **View** – **Cursor** to put a check mark (ON) or to release a check mark (OFF).



- Right-click the window to display the pop-up menu.

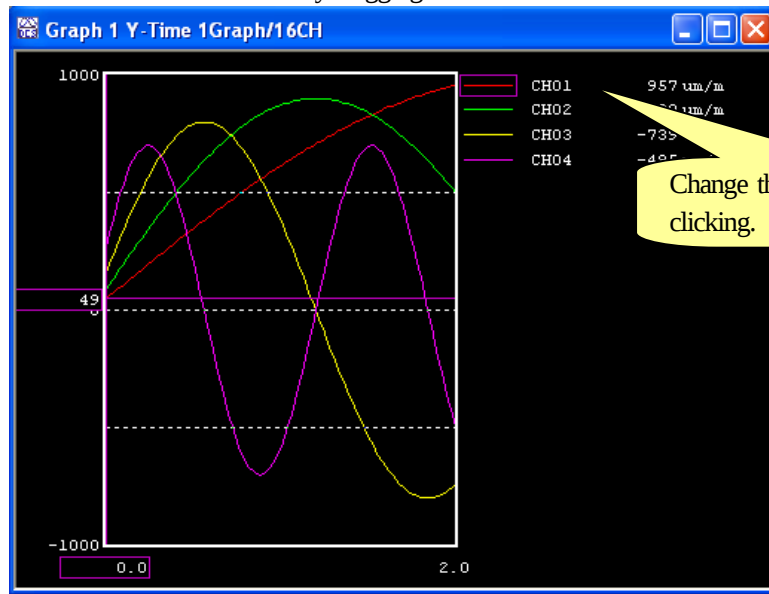
Click the **Cursor** on the pop-up menu to put a check mark (ON) or to release a check mark (OFF).



3) Change the cursor display target CH by pressing the $\uparrow$ or $\downarrow$ key by clicking the legends line.

In addition, while stopping monitoring data, by moving the cursor with $\leftarrow$ or $\rightarrow$ key in the preset data display range, a numeric value before monitor is stopped can be checked.

The cursor movement is available by dragging the mouse.



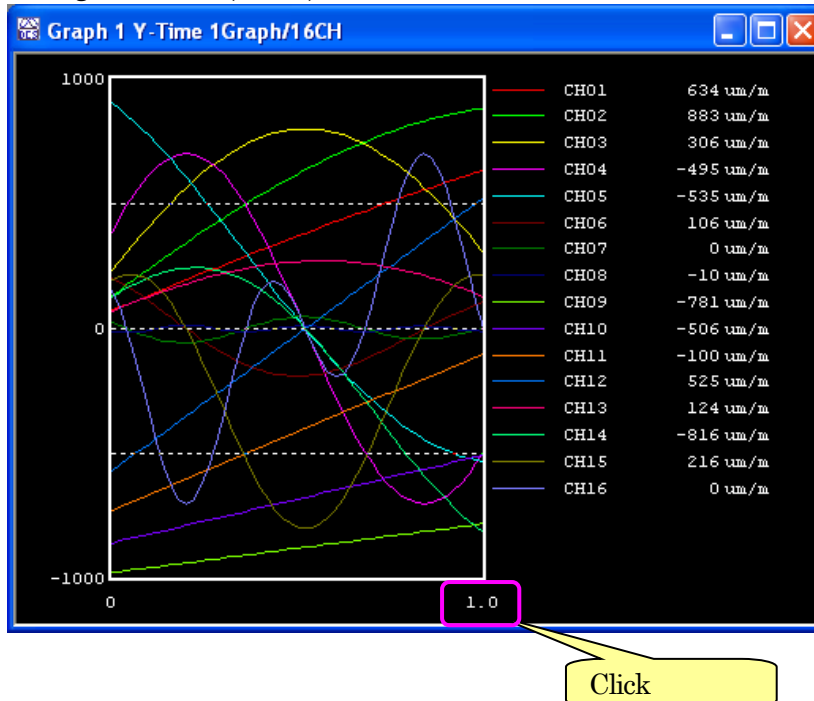
$\uparrow$ and $\downarrow$ key	Set cursor display target CH.
$\leftarrow$ and $\rightarrow$ key	Moves the cursor every one point to right and left.
Shift + $\uparrow$ and Shift + $\downarrow$ key	Moves the cursor 10 points to right and left.
Ctrl + $\leftarrow$ and Ctrl + $\rightarrow$ key	Moves the cursor 100 points to right and left.

11-3-8 Changing Scale Value and Label

Scale values or labels of X- and Y-axes are directly changed on the graph window.

■ How to operate

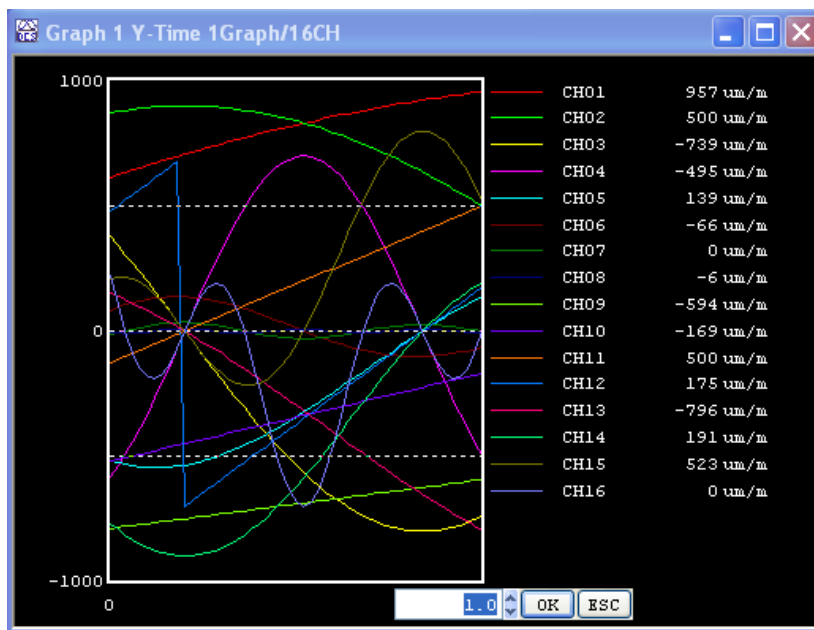
1) Click the target scale value (or label).



2) The window becomes in editing mode.

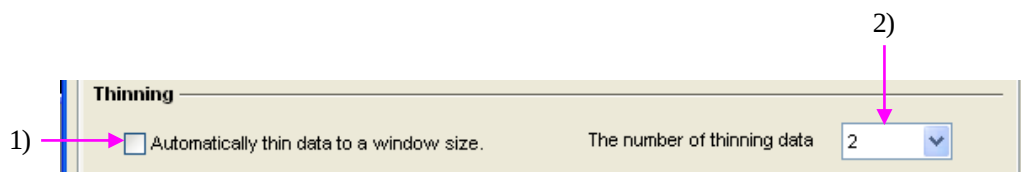
Input the desired value and click the **OK** button.

Click the **ESC** button to cancel the setting.



11-3-9 Setting Thinning Step

Set the number of thinned data that is displayed on the graph window.



1) Automatically thin data to a window size

Automatically defines the number of thinning data based on the sampling frequency or current display size of graph window, and displays the thinned data.

2) The number of thinning data

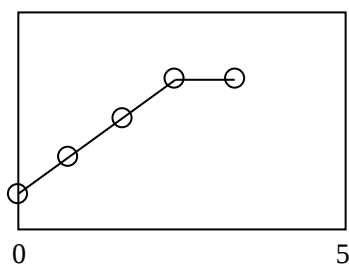
Select the number of thinned data from the list.

("2", "5", "10", "20", "50", "100", "200", "500", "1000")

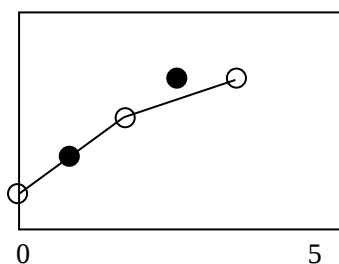
For not thinning data, select "— — —."

- For not thinning data, release a check mark next to the **Automatically thin data to a window size.** and select "— — —."

- Data is thinned out as follows.



Not thinning



The number of thinning data: 2

○: Plotted data
●: Not plotted data

11-4 WINDOW FUNCTIONS

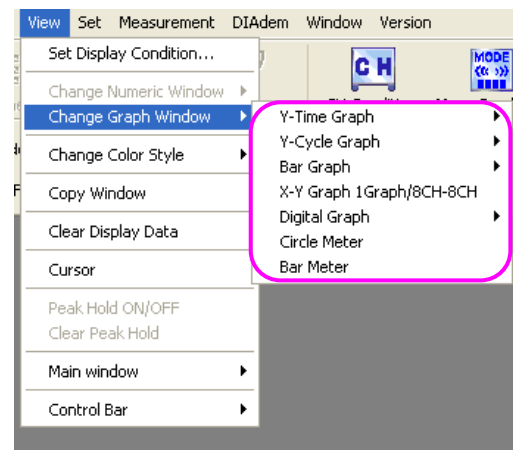
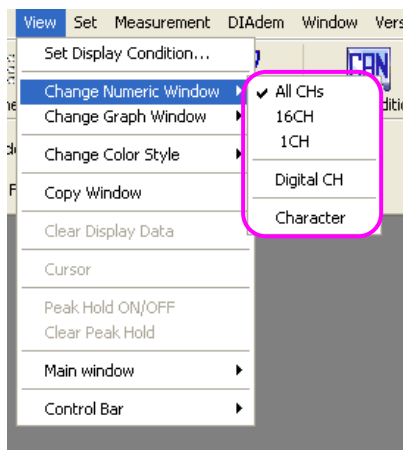
This section describes various functions on window.

11-4-1 Changing Display

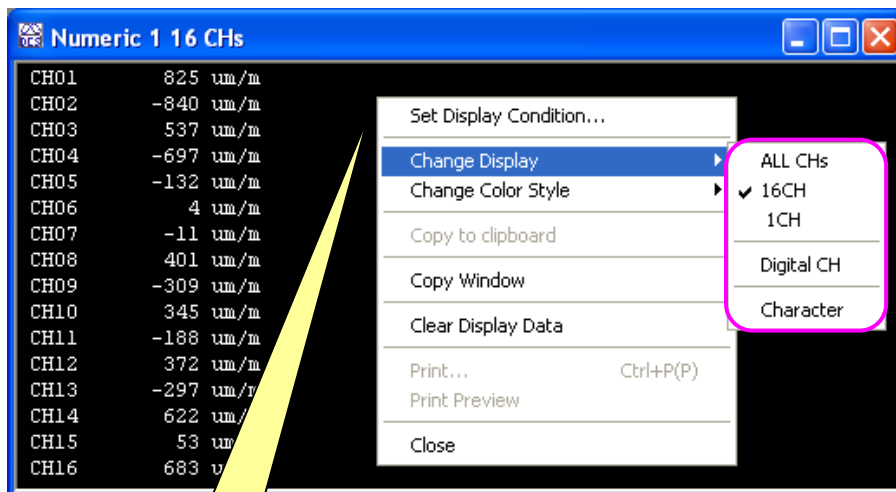
Change the current active window to another type window.

■ How to operate

- 1) Activate the target graph.
- 2) Change the active window with either of the following.
 - Click the **View** – target menu.

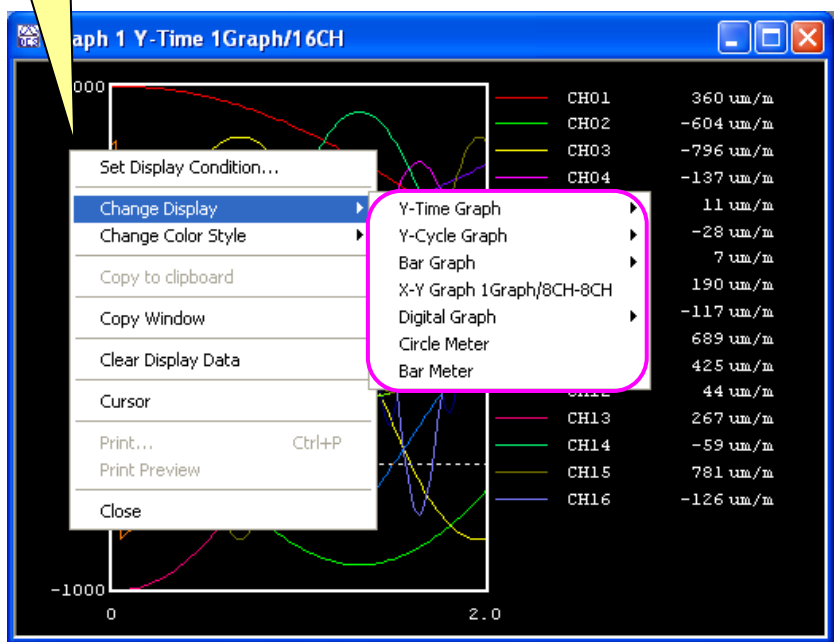


- Right-click on the window to display the pop-up menu.
Click the target menu from the pop-up menu.



Right-click

Right-click



11-4-2 Changing Style Color

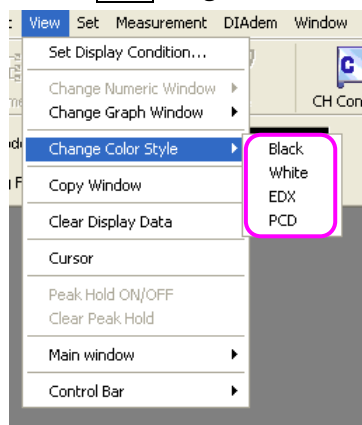
Change the style colors (background color of window, background color of graph, frame color, scale color, and legend color) of current active window.

■ How to operate.

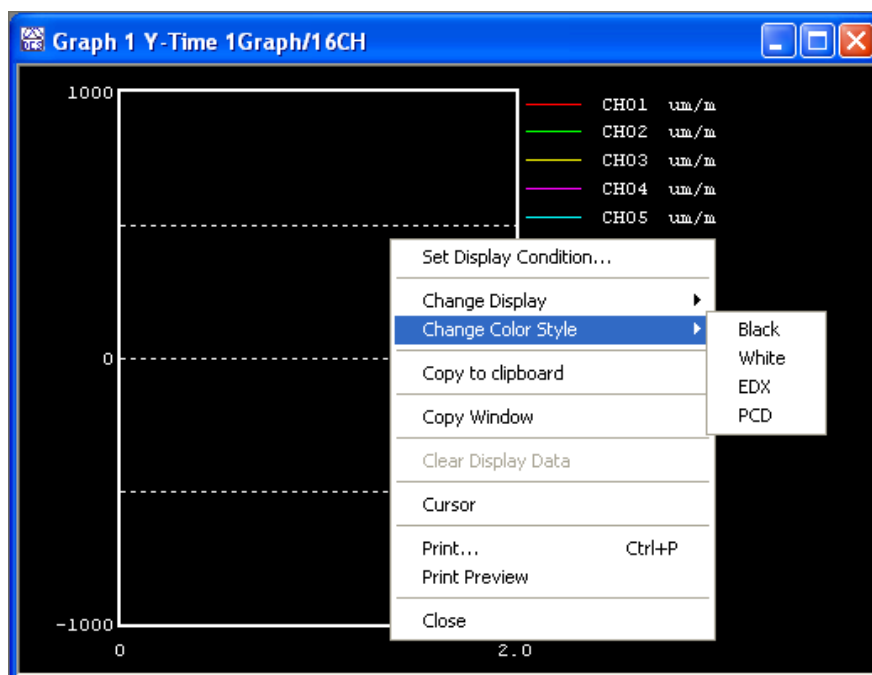
1) Activate the target graph.

2) Change the activate window with either of the following.

- Click the **View** – target menu.



- Right-click on the window to display the pop-up menu.
Click the target menu from the pop-up menu.



11-4-3 Copying Window

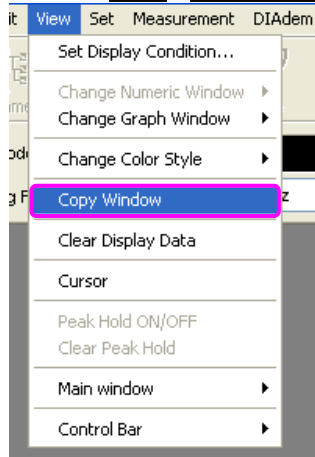
Display conditions of the active window is copied to open the new window.

■ How to operate

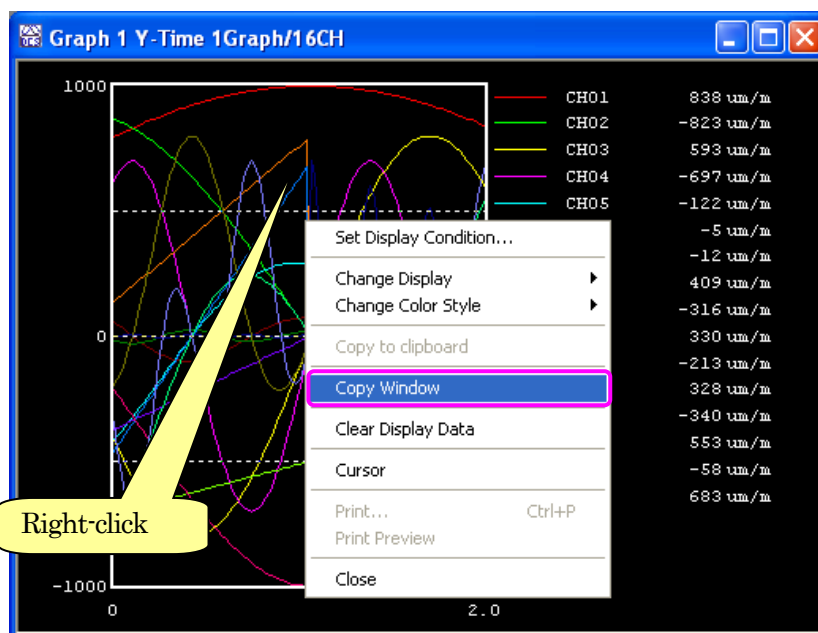
1) Activate the target graph.

2) Change the activate window with either of the following.

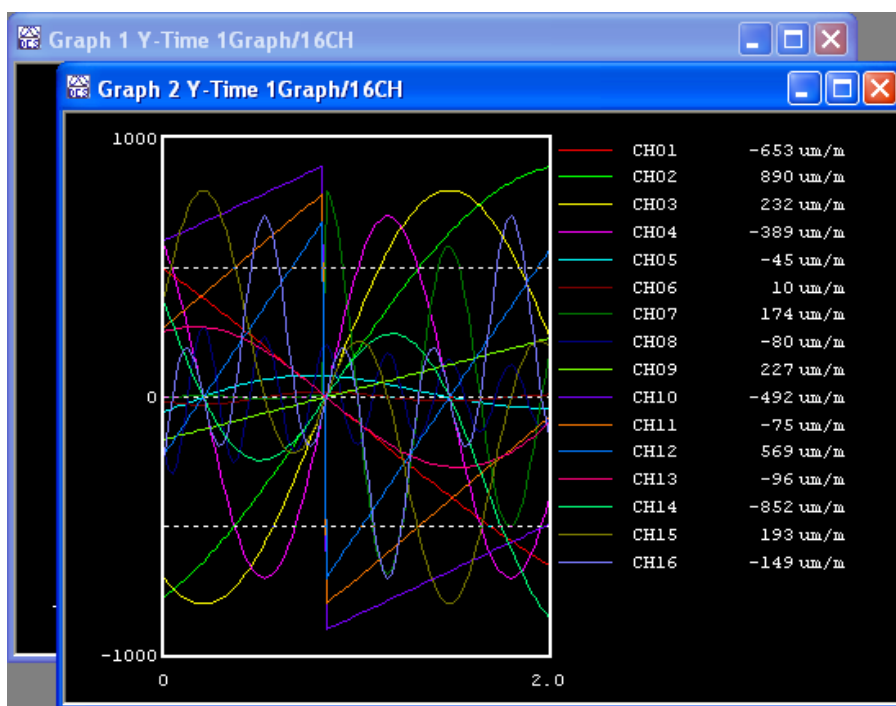
- Click the **View** – **Copy Window**.



- Right-click the window to display the pop-up menu.
Click the target menu from the pop-up menu.



3) New window having same conditions with the copy source window appears.



11-4-4 Clearing Display Data

The CH data displayed on all windows is cleared.

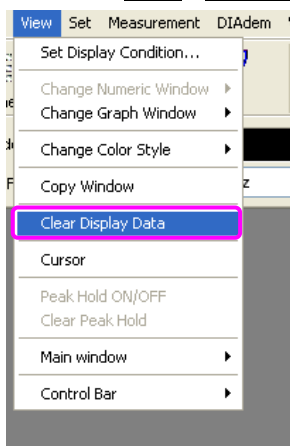
Used for clearing the display of CH data during measurement.

■ How to operate

1) Activate the target graph.

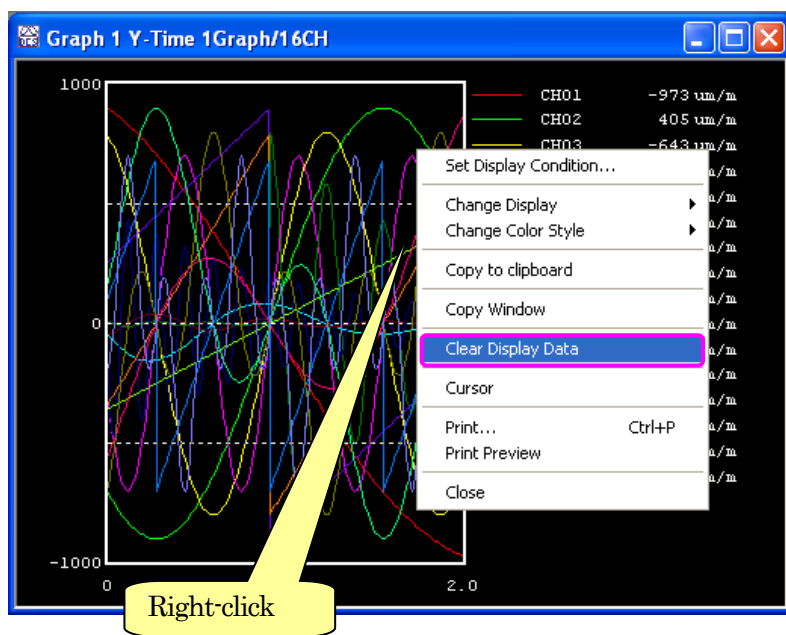
2) Change the active window with either of the following.

- Click the **View** – **Clear Display Data**.

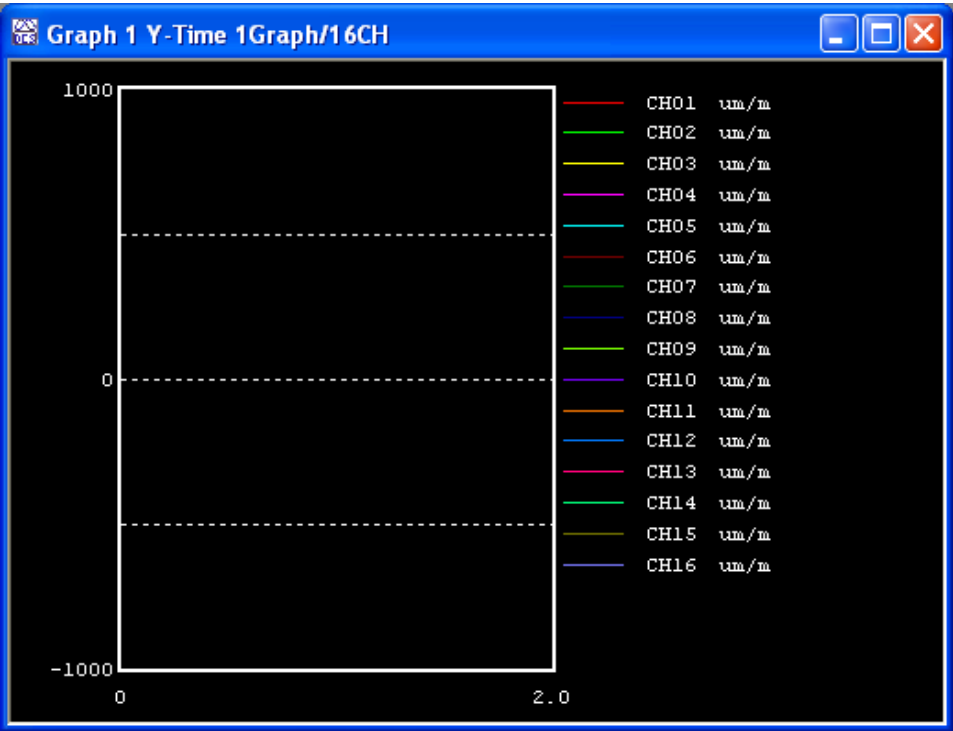


- Right-click the window to display the pop-up menu.

Click the target menu from the pop-up menu.



3) The CH data of all windows is cleared.



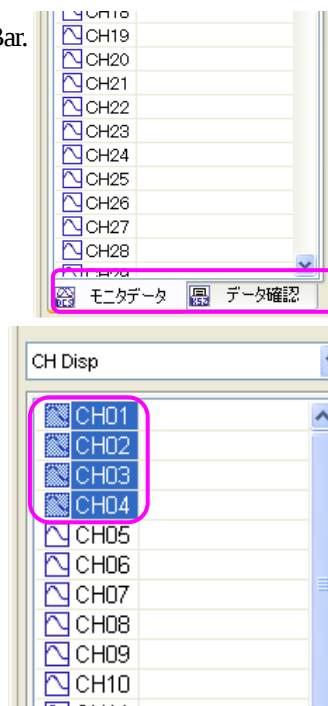
11-4-5 Selecting CH from CH Display Bar

Setting the desired display CH is available by dragging and dropping the mouse on monitor windows (graph, numeric, meter, etc.) or reproduce window with no difficulty.

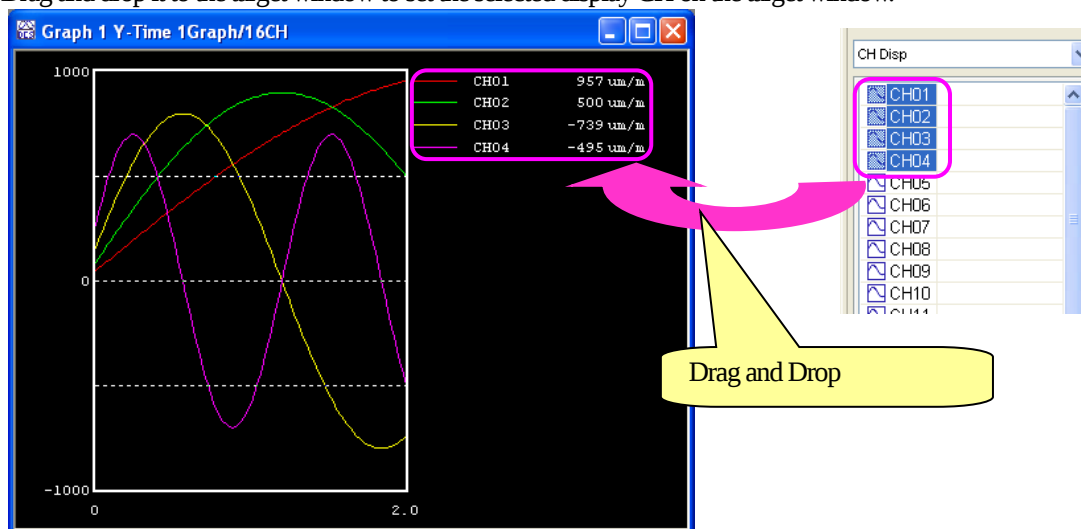
■ How to operate

1) Click the **Monitor Data** tab or **Data check** tab on the CH Display Bar.

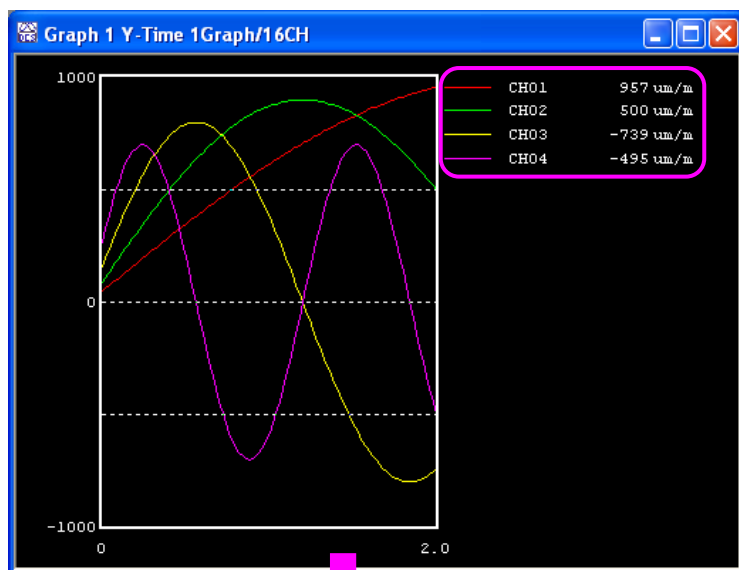
2) Then, left-click the selected display CH numbers.



3) Drag and drop it to the target window to set the selected display CH on the target window.



To delete the display target CH from the window, activate the desired window and click the **Delete** key on the keyboard. Then, the display CH can be deleted starting from the lower level CH.



11-4-6 Checking Data

Immediately after data recording (when monitor is stopped), in order to check the recorded data, the monitor window (window for displaying the measured data) can be easily changed to checking data window (window for displaying the recorded data).

■ How to operate

1) Activate the target window.

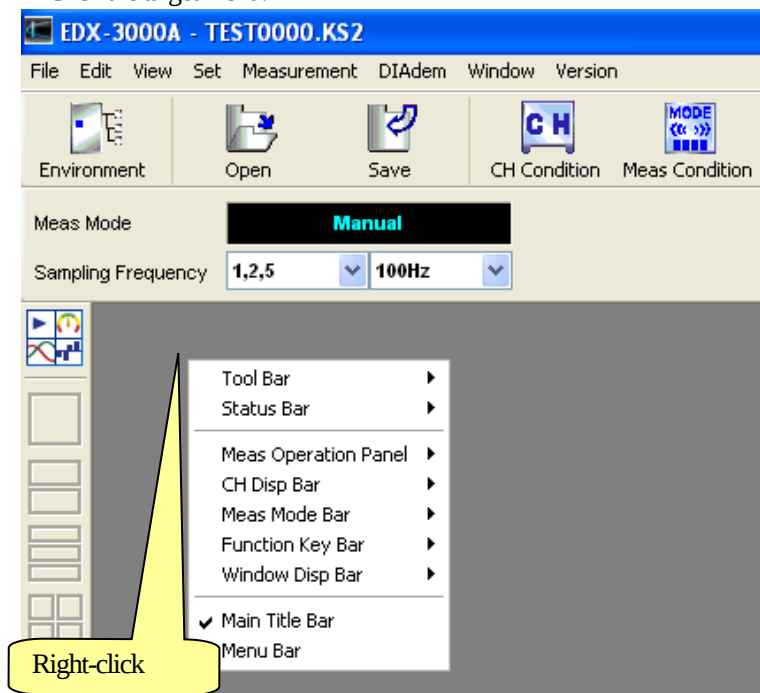
2) Activate monitor window is changed to checking data window by any of the following.

- Click the **Measurement** – **Latest Recorded Data File**.
- Right-click the monitor window - **Latest Recorded Data File**.
- Click the **Check Data** icon from the toolbar.

12 SETTING CONTROL BAR

For setting control bar, operate any of the following.

- Click the **View** – **Control Bar** – target item.
- Right-click the control bar to display the pop-up menu.
Click the target item.
- Right-click the main window to display the pop-up menu.
Click the target menu.



12-1 TOOLBAR

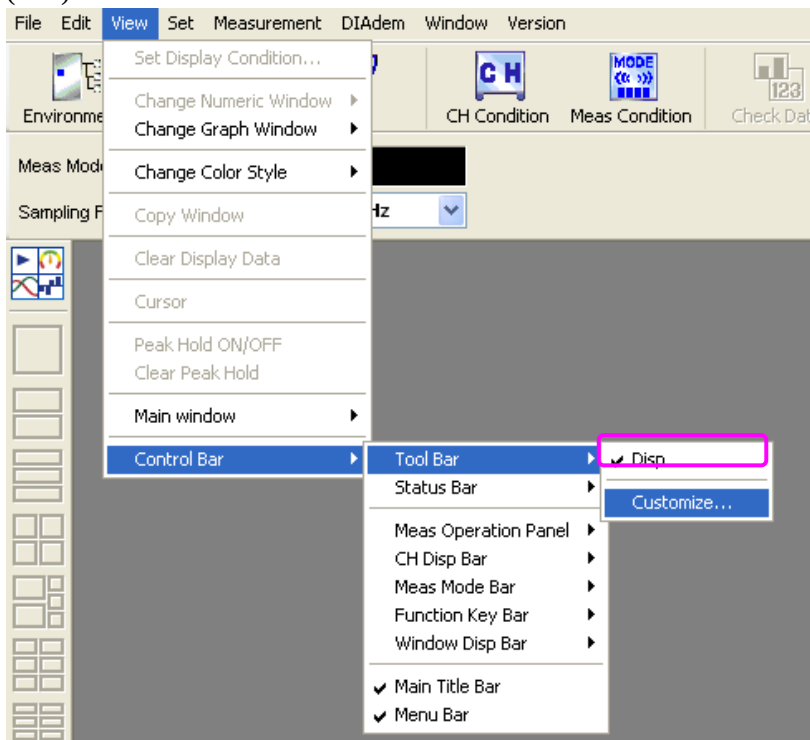
Showing/hiding the toolbar, deleting, adding, sorting icons are described.



■How to operate

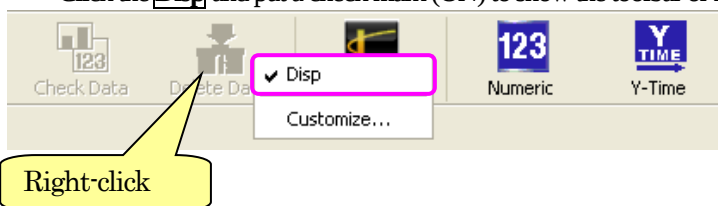
To show or hide the toolbar, operate any of the following.

- Click the **View** – **Control Bar** – **Toolbar** – **Disp** and put a check mark (ON) to show the toolbar or release a check mark (OFF) to hide it.



- Right-click the toolbar to display the pop-up menu.

Click the **Disp** and put a check mark (ON) to show the toolbar or release a check mark (OFF) to hide it.



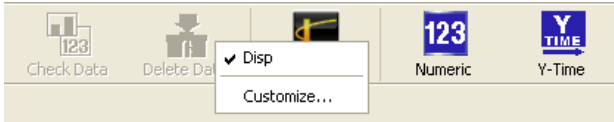
- Right-click the main window to display the pop-up menu.

Click the **Toolbar** – **Disp** and put a check mark (ON) to show the toolbar or release a check mark (OFF) to hide it.

■ How to operate

1) To delete, add, or sort icons, operate any of the following.

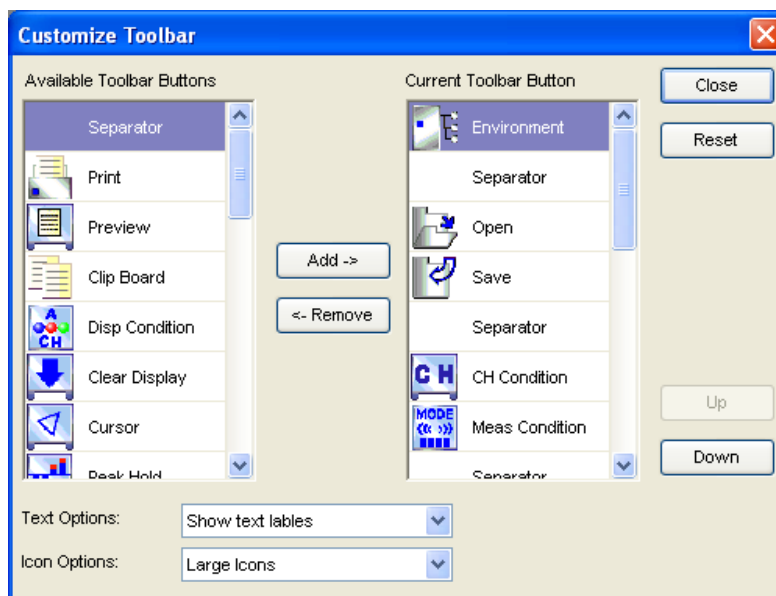
- Click the **View** – **Control Bar** – **Toolbar** – **Customize...**.
- Right-click the toolbar to display the pop-up menu.
Click the **Customize...**.
- Right-click the main window to display the pop-up menu.
Click the **Toolbar** – **Customize...**.



2) The following **Customize Toolbar** dialog box appears.

Select the desired item.

Click the **Add->** button or **<-Remove** button for setting the items.



Add-> button

Items currently not on the window is added on the toolbar.

<-Remove button

Item currently displayed on the window is removed from the toolbar.

Close button

Determines the setting item and closes the window.

Reset button

Reset the toolbar icon to default.

Up button

Select the desired item and sort with the **Up** button.

Down button

Select the desired item and sort with the **Down** button.

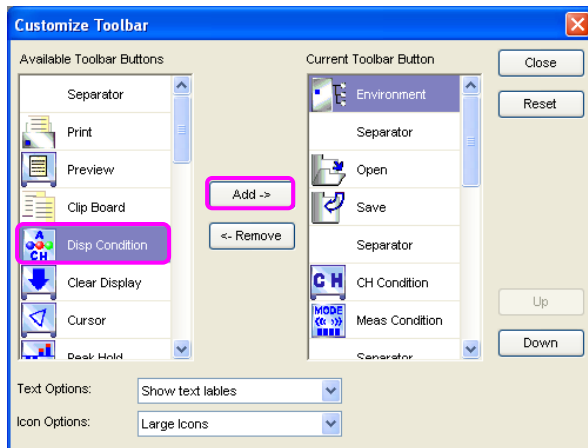
Test options (X) Can select whether to show or hide the button name on the icon.

Icon options (Y) Can select the icon size.

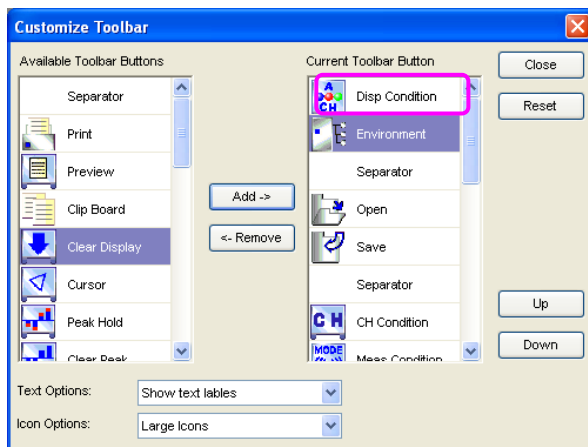
■ Operation example

Description is made with an example when an **Disp Condition** icon is added on the toolbar.

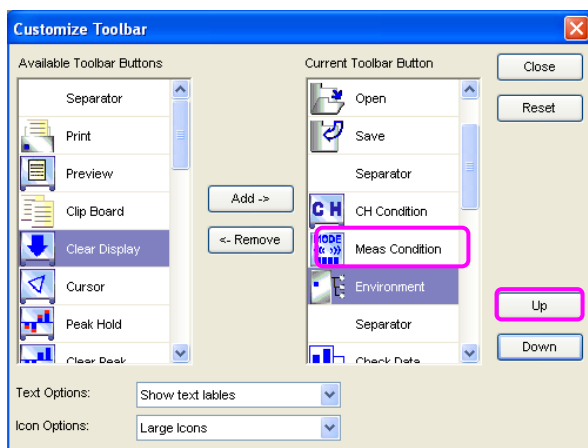
- 1) Click the **Disp Condition** icon on the Available Toolbar Buttons and click the **Add->** button.



- 2) The selected **Disp Condition** icon moves to the Current Toolbar Button.



- 3) Click the **Disp Condition** icon and press the **Down** button for few times to sort it to the under of the **Meas Condition** icon.



- 4) Click the **Close** button to determine the setting.

12-2 STATUS BAR

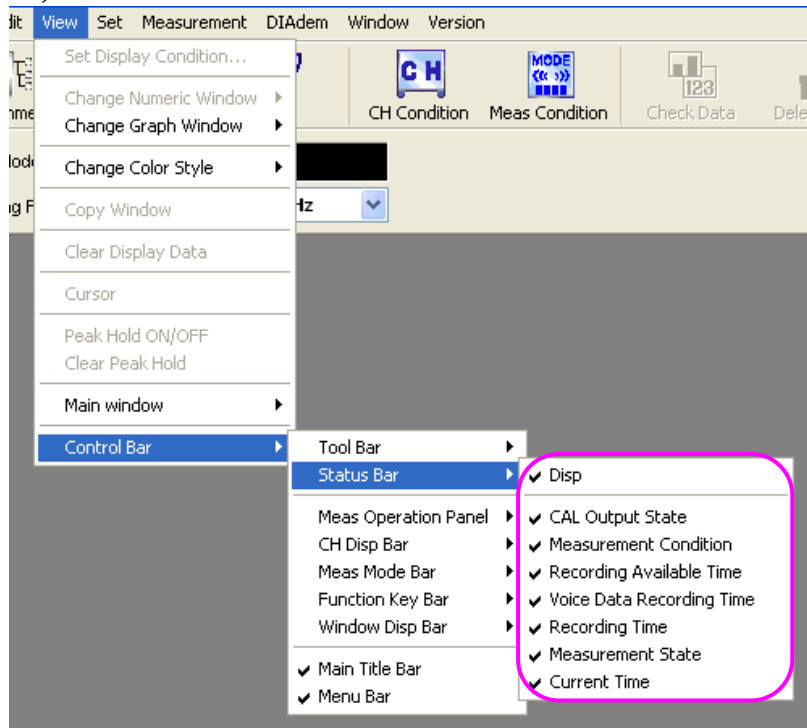
Set whether to show or hide the status bar and various measuring state.



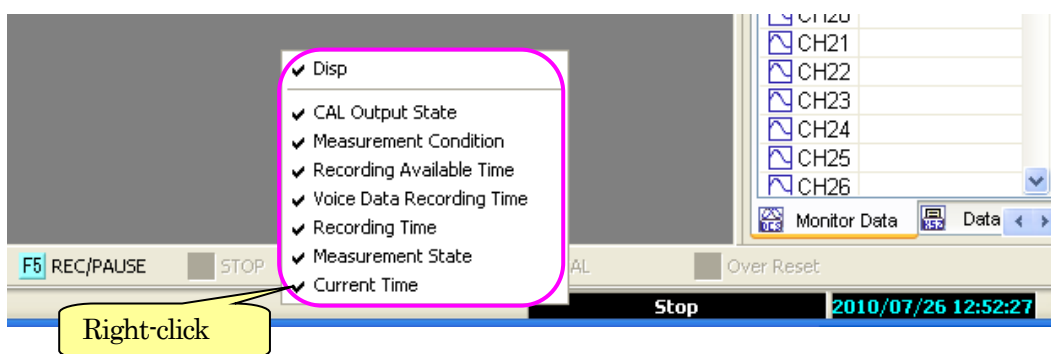
■ How to operate

Operate any of the following.

- Click the **View** – **Control Bar** – **Status Bar** and put a check mark (ON) to display the target status or release a check mark (OFF) to hide it.



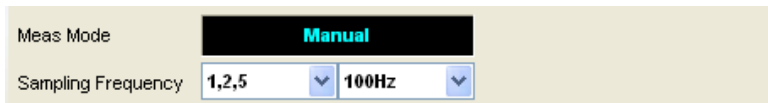
- Right-click the toolbar to display the pop-up menu.
Put a check mark (ON) to display the target status or release a check mark (OFF) to hide it.



- Right-click the main window to display the pop-up menu.
Click the **Status Bar** and put a check mark (ON) to display the target status or release a check mark (OFF) to hide it.

12-3 MEAS MODE BAR

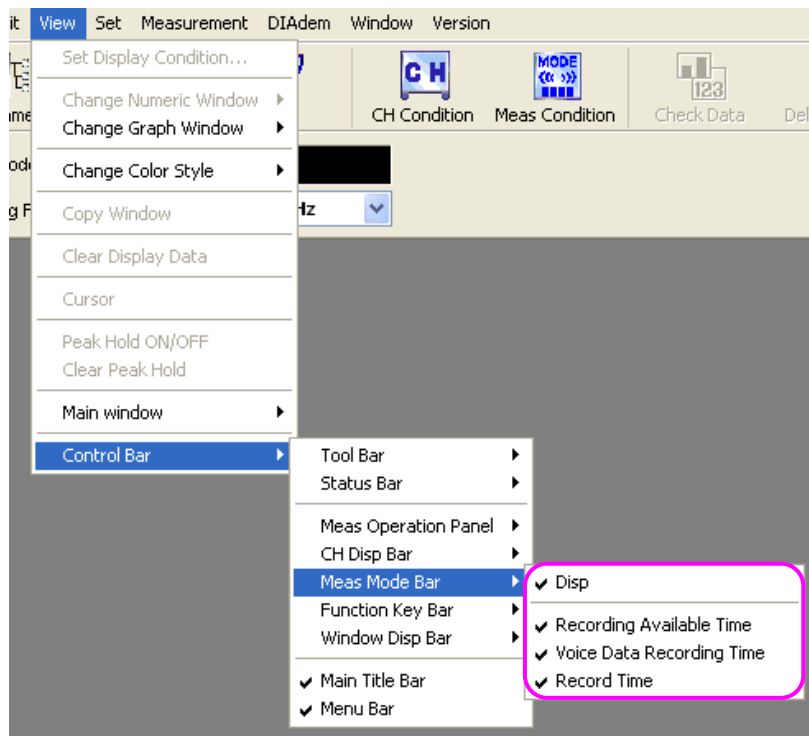
Set whether to show or hide the Meas Mode Bar and various measuring state.



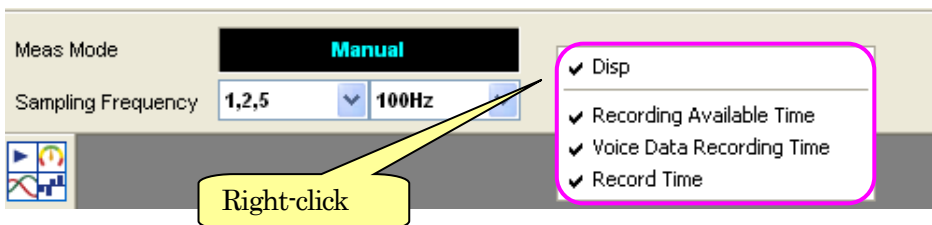
■ How to operate

Operate any of the following.

- Click the **View** – **Control Bar** – **Meas Mode Bar** and put a check mark (ON) to display the target item or release a check mark (OFF) to hide it.



- Right-click the toolbar to display the pop-up menu.
Put a check mark (ON) to display the target item or release a check mark (OFF) to hide it.



- Right-click the main window to display the pop-up menu.
Click the **Meas Mode Bar** and put a check mark (ON) to display the target item or release a check mark (OFF) to hide it.

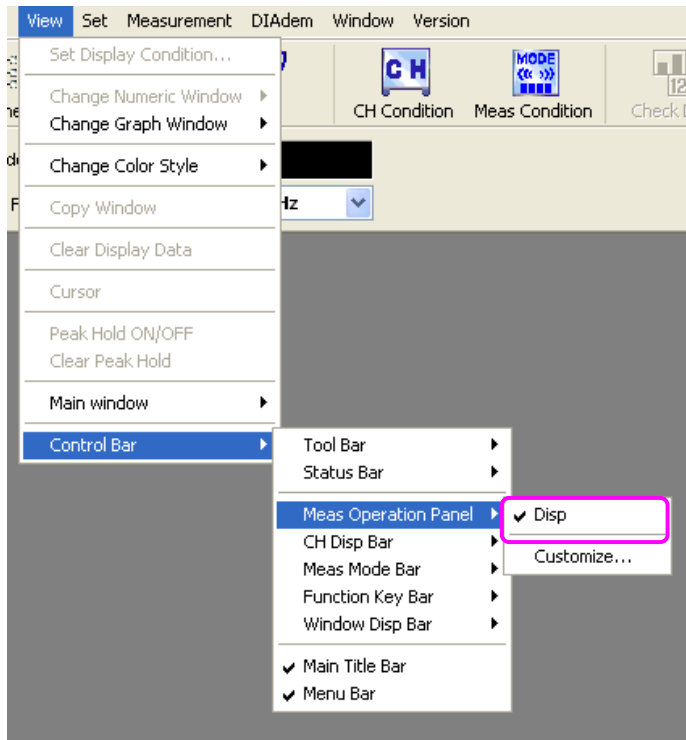
12-4 MEAS OPERATION PANEL

Set whether to show or hide the Meas Operation Panel and set button colors on the Meas Operation Panel.

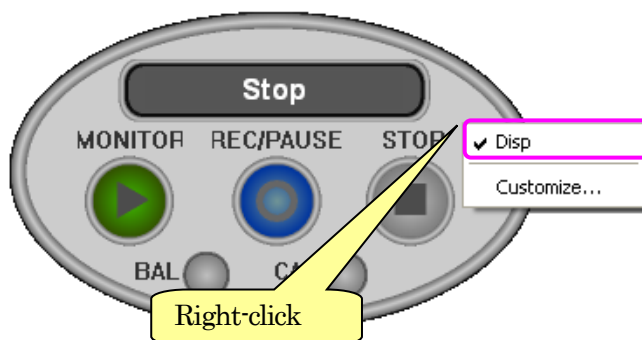
■How to operate

To show or hide the Meas Operation Panel, operate any of the following.

- Click the **View** – **Control Bar** – **Meas Operation Panel** – **Disp** and put a check mark (ON) to show the Meas Operation Panel or release a check mark (OFF) to hide it.



- Right-click the Meas Operation Panel to display the pop-up menu.
Click the **Disp** and put a check mark (ON) to show the Meas Operation Panel or release a check mark (OFF) to hide it.

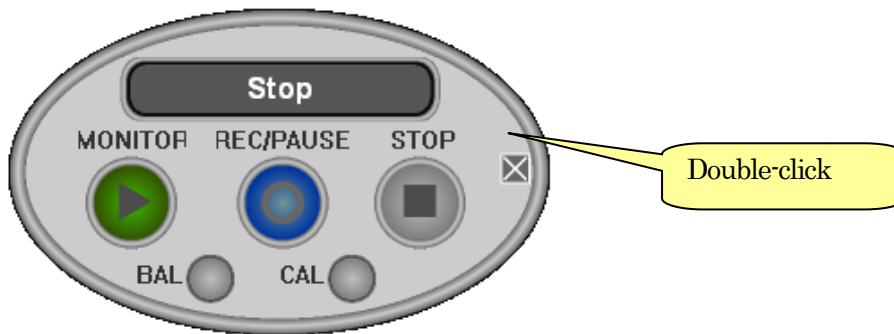


- Right-click the main window to display the pop-up menu.
Click the **Meas Operation Panel** – **Disp** and put a check mark (ON) to show the Meas Operation Panel or release a check mark (OFF) to hide it.

■ How to operate

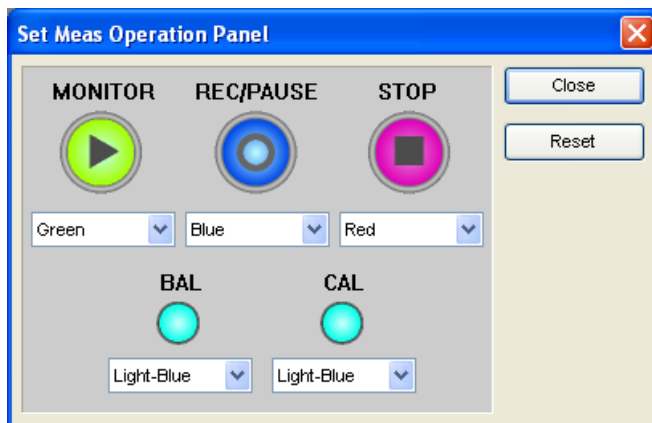
1) To set the button colors on the Meas Operation Panel, operate any of the following.

- Click the **View** – **Control Bar** – **Meas Operation Panel** – **Customize...**.
- Right-click the Meas Operation Panel to display the pop-up menu.
Click the **Customize...**.
- Right-click the main window to display the pop-up menu.
Click the **Meas Operation Panel** – **Customize...**.
- Double-click the Meas Operation Panel.



2) The **Set Meas Operation Panel** dialog box appears.

Set the button colors.



Close button

Determines the setting item and closes the dialog box.

Reset button

Reset the button colors to default.

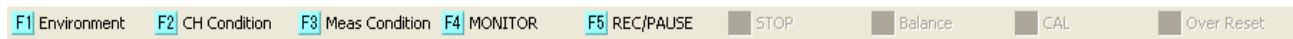
Select the color of **MONITOR**, **REC/PAUSE**, and **STOP** buttons from Green, Blue, or Red.

Select the color of **BAL** and **CAL** buttons from Light-Blue, Orange, or Purple.

3) Click the **Close** button to determine the setting.

12-5 FUNCTION KEY BAR

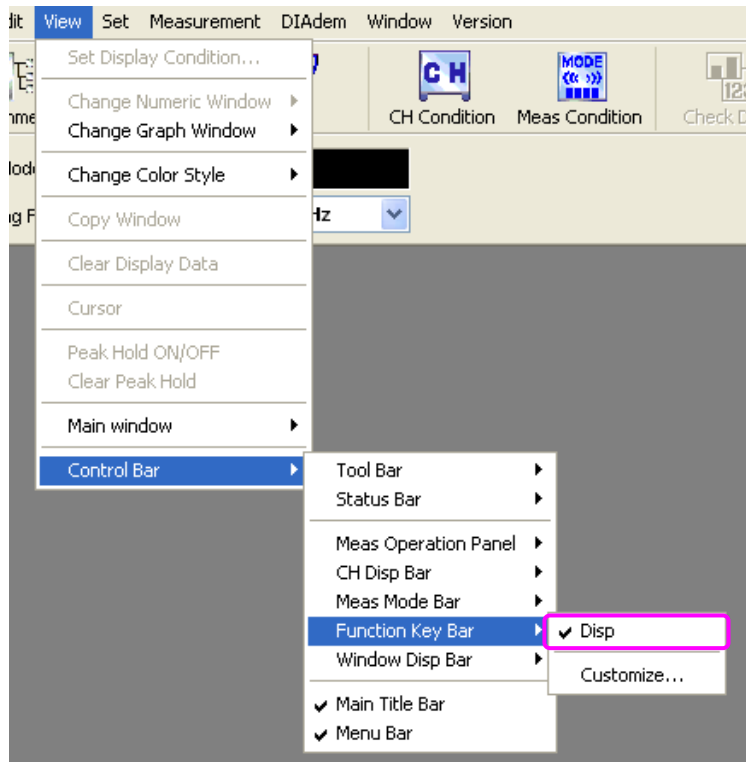
Set whether to show or hide the Function Key Bar and register function keys (F1 to F12).



■How to operate

To show or hide the Function Key Bar, operate any of the following.

- Click the **View** – **Control Bar** – **Function Key Bar** - **Disp** and put a check mark (ON) to show the Function Key Bar or release a check mark (OFF) to hide it.



- Right-click the Function Key Bar to display the pop-up menu.
Click the **Disp** and put a check mark (ON) to show the Function Key Bar or release a check mark (OFF) to hide it.



- Right-click the Function Key bar to display the pop-up menu.
Click the **Function Key Bar** – **Disp** and put a check mark (ON) to show the Function Key Bar or release a check mark (OFF) to hide it.

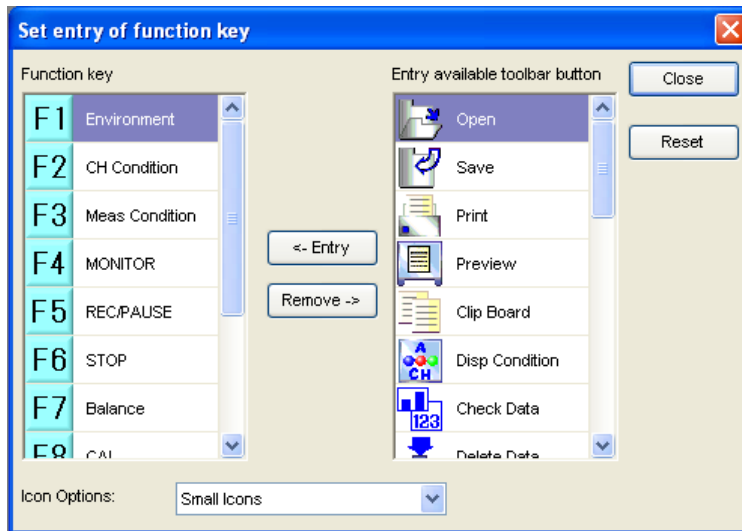
■ How to operate

1) To register the target item to Function Key Bar, operate any of the following.

- Click the **View** – **Control Bar** – **Function Key Bar** – **Customize...**.
- Right-click the Function Key Bar to display the pop-up menu.
Click the **Customize...**.
- Right-click the main window to display the pop-up menu.
Click the **Meas Operation Panel** – **Customize...**.

2) The **Set entry of function key** dialog box appears.

Click the target tool button and click the **<-Entry** or **Remove->** button for setting.



<-Entry button

Register an available toolbar button to the function key.

Remove-> button

Items currently registered on the toolbar is deleted from the function key.

Close button

Determines the setting item and closes the dialog box.

Reset button

Reset the toolbar icon to default.

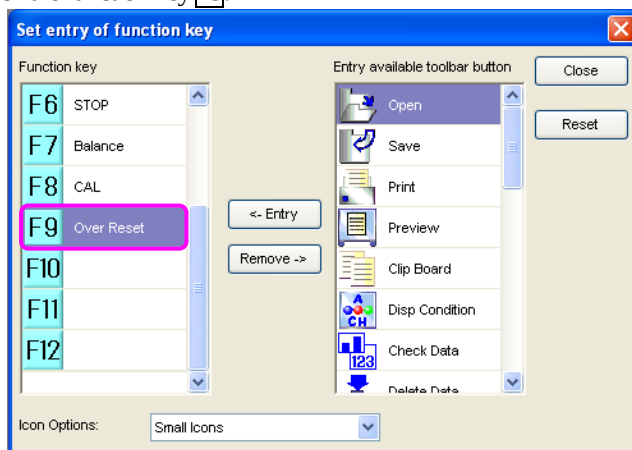
Icon options (Y): Can select the icon size.

3) Click the **Close** button to determine the setting.

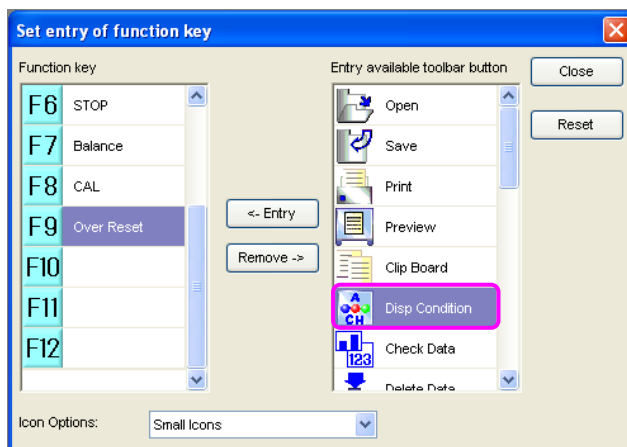
■ Operation Example

Description is made with an example when **Disp Condition** icon is registered to **F9** key.

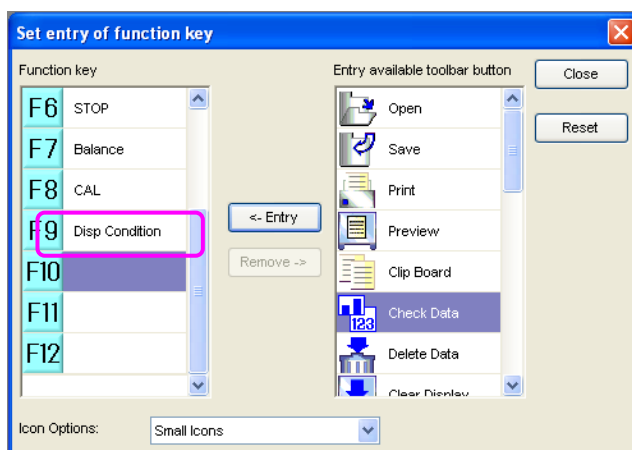
1) Click the function key **F9**.



2) Click the **Disp Condition** icon on the Entry available toolbar button.



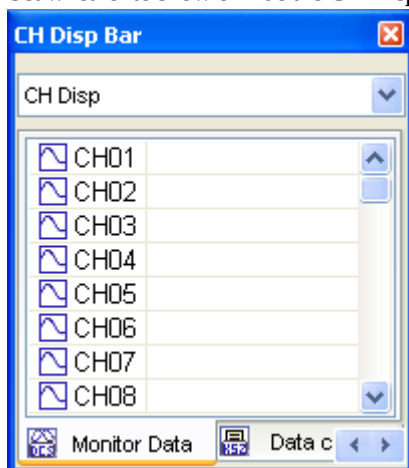
3) Click the **<-Entry** button for registration.



4) Click the **Close** button to determine the setting.

12-6 CH DISPLAY BAR

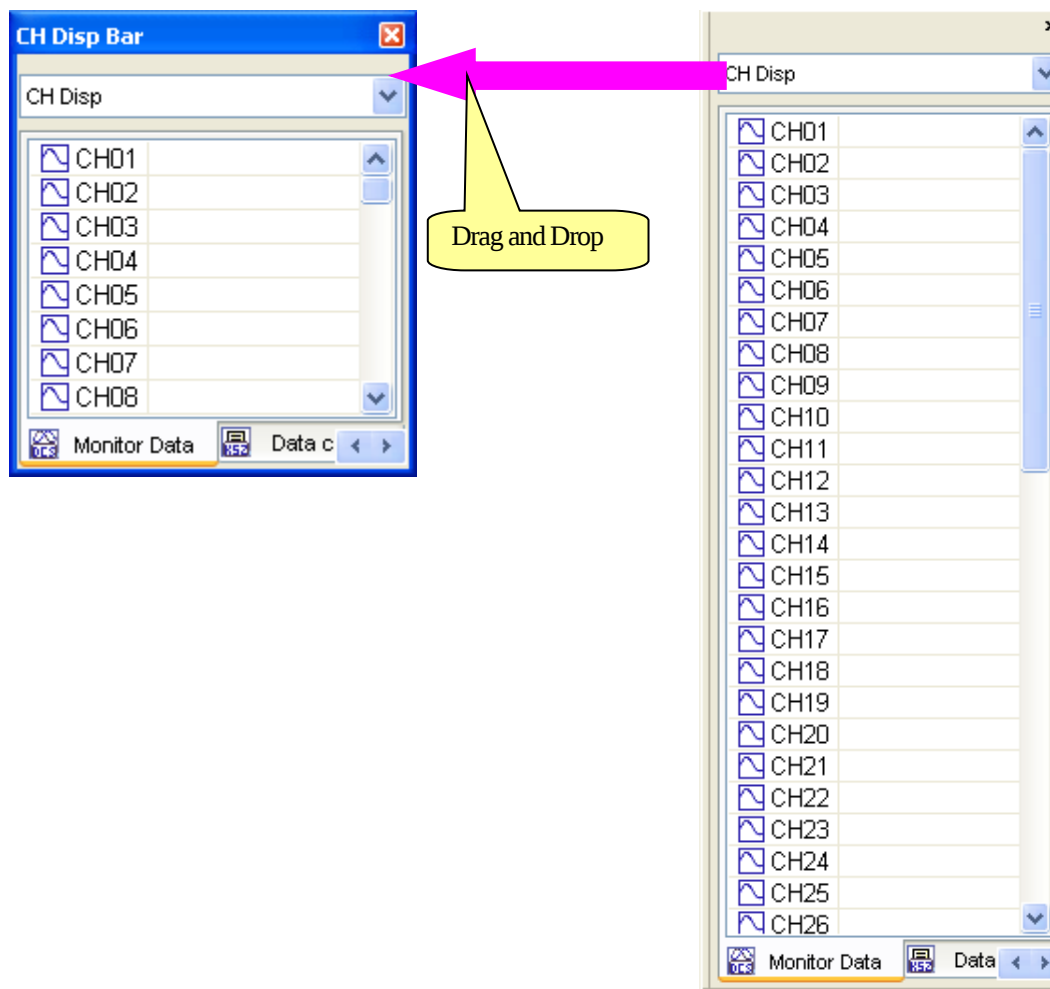
Set whether to show or hide the CH Display Bar and change the style color.



■ How to remove the CH Display Bar

Capable of removing the CH Display Bar from the frame of the main window by dragging.

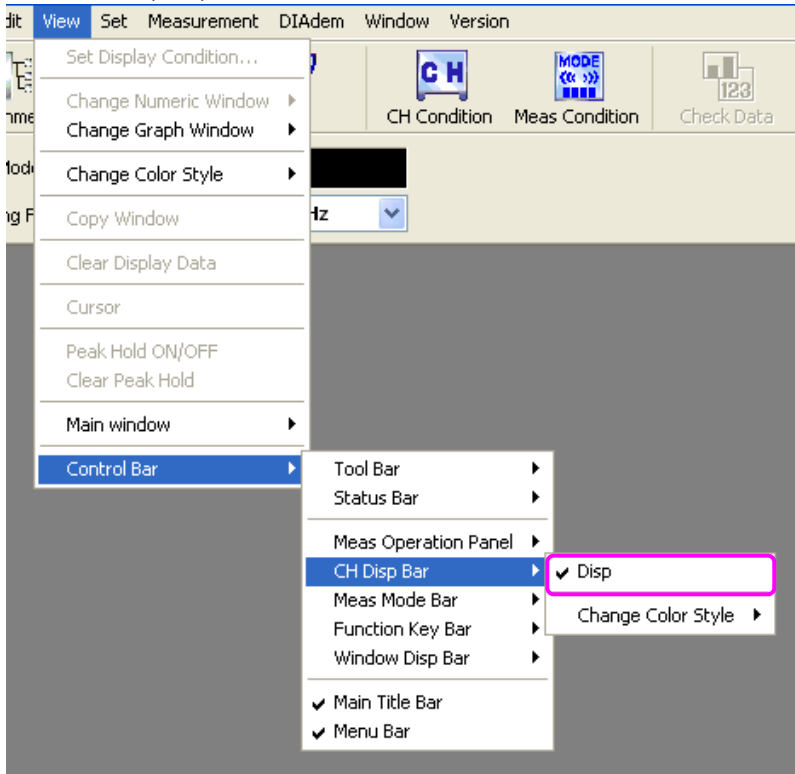
In addition, capable of uniting the CH Display Bar to the frame of the main window.



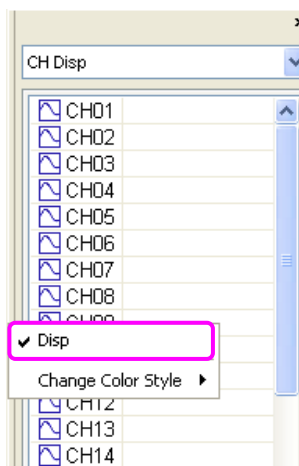
■ How to operate

To show or hide the CH Display Bar, operate any of the following.

- Click the **View** – **Control Bar** – **CH Disp Bar** – **Disp** and put a check mark (ON) to show the CH Display Bar or release a check mark (OFF) to hide it.



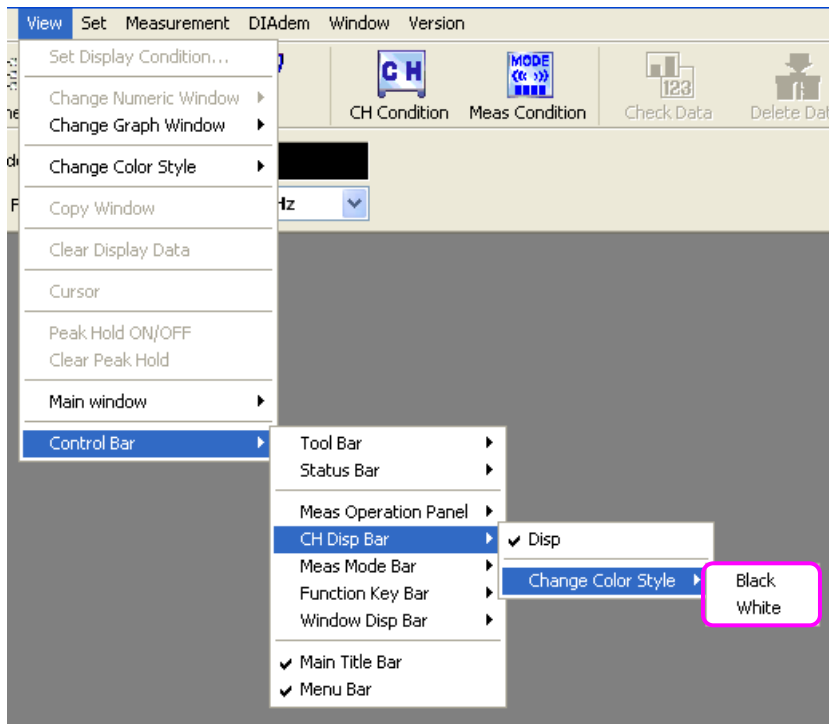
- Right-click the CH Display Bar to display the pop-up menu.
Click the **Disp** and put a check mark (ON) to show the CH Display Bar or release a check mark (OFF) to hide it.



■ How to operate

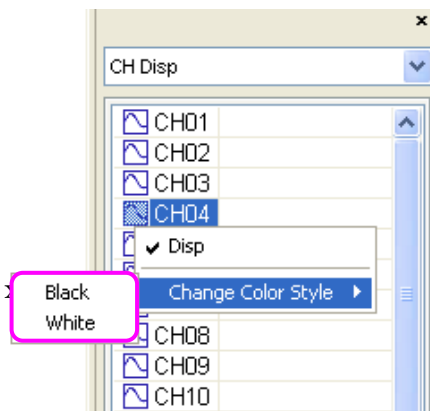
1) To change the style color of the CH Display Bar, operate any of the following.

- Click the **View** – **Control Bar** – **CH Disp Bar** – **Change Color Style** and click the desired color.



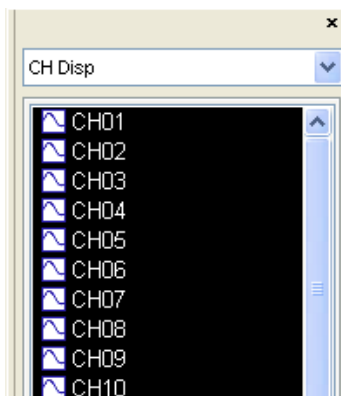
- Right-click the CH Display Bar to display the pop-up menu.

Click the **Change Color Style** and click the desired color.



2) The style color of the CH Display Bar is changed.

(Black is selected in the following.)



12-7 MAIN TITLE BAR

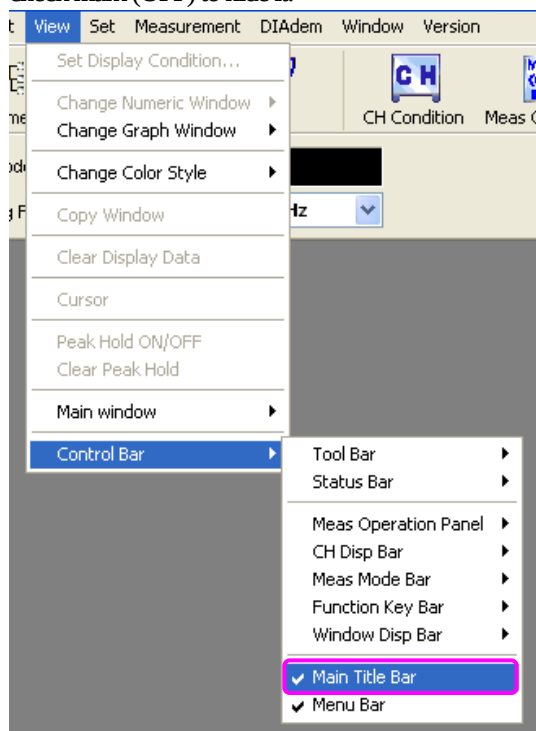
Set whether to show or hide the Main Title Bar.



■ How to operate

To show or hide the Main Title Bar, operate any of the following.

- Click the **View** – **Control Bar** – **Main Title Bar** and put a check mark (ON) to show the Main Title Bar or release a check mark (OFF) to hide it.



- Right-click the main window to display the pop-up menu.
Click the **Main Title Bar** and put a check mark (ON) to show the Main Title Bar or release a check mark (OFF) to hide it.

12-8 MENU BAR

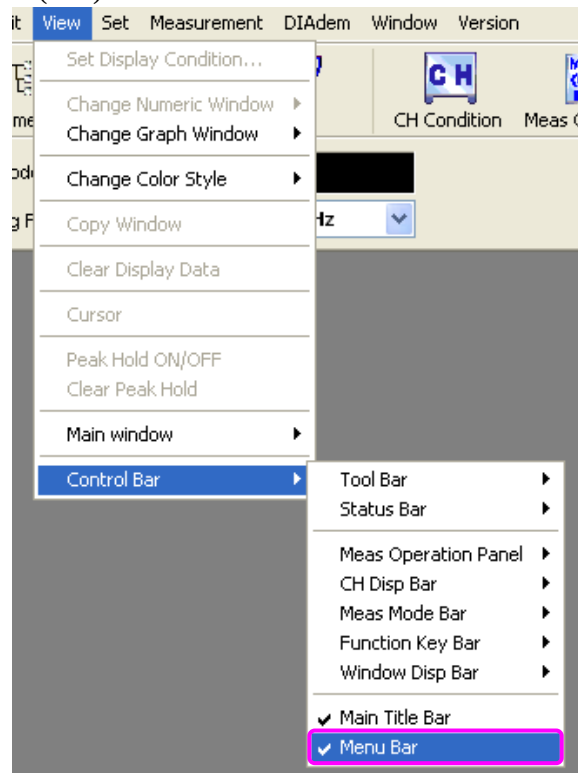
Set whether to show or hide the Menu Bar.

File Edit View Set Measurement DIAdem Window Version

■ How to operate

To show or hide the Menu Bar, operate any of the following.

- Click the **View** – **Control Bar** – **Menu Bar** and put a check mark (ON) to show the Menu Bar or release a check mark (OFF) to hide it.



- Right-click the main window to display the pop-up menu.
Click the **Menu Bar** and put a check mark (ON) to show the Menu Bar or release a check mark (OFF) to hide it.

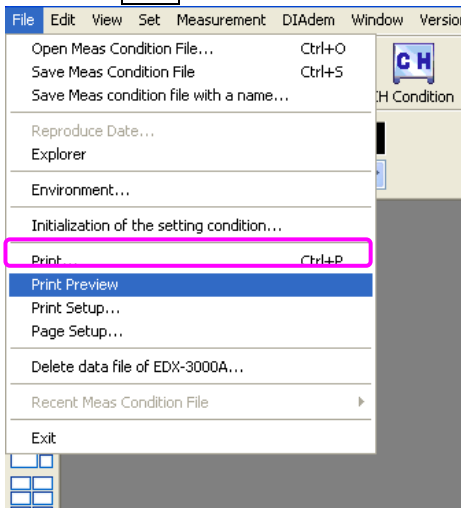
13. PRINTING

13-1 PRINTING

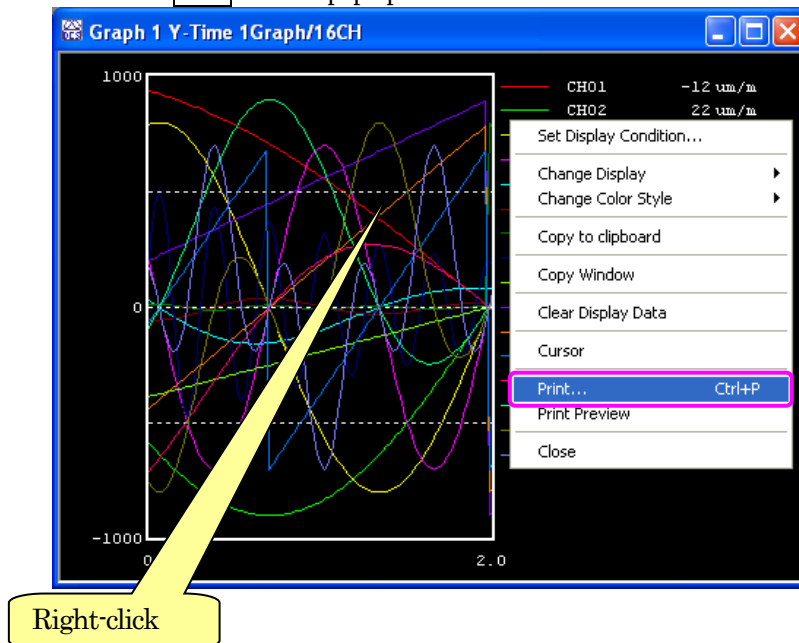
Data on the current window is printed out.

1) Open the **Print** dialog box by any of the following.

- Click the **File** – **Print...**.
- Click the **Print** icon from the toolbar.

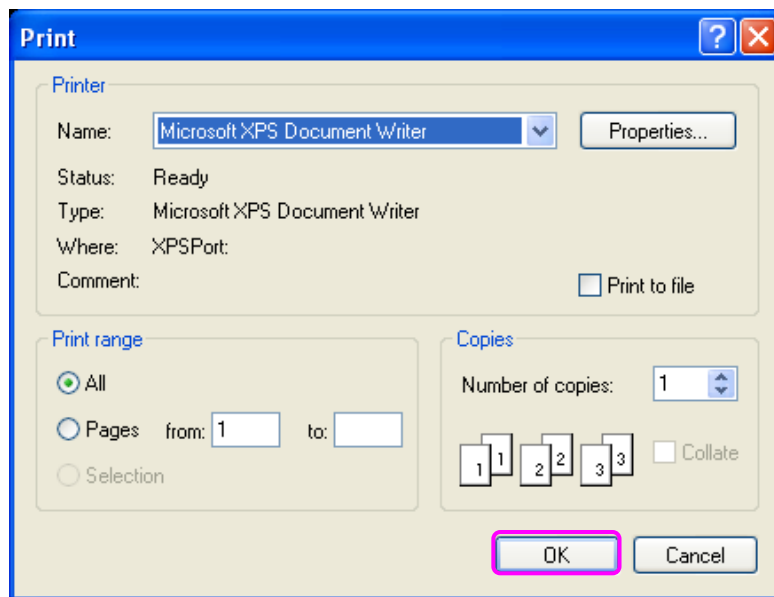


- Right-click the window to display the pop-up menu.
Click the **Print** from the pop-up menu.



- Click the **Print** button from the **Print Preview** dialog box.
- Select and press the **Ctrl** + **P** keys at the same time.

2) The **Print** dialog box appears. Click the **OK** button.

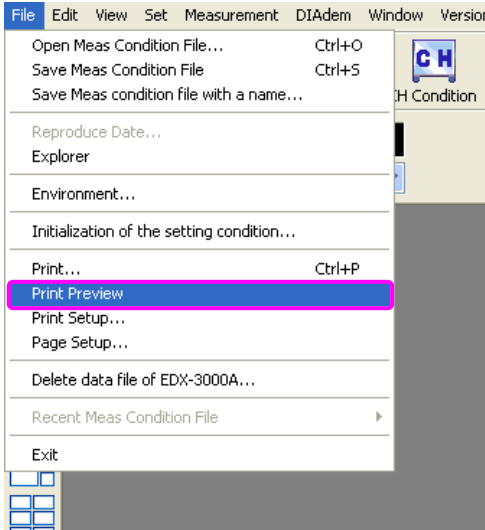


13-2 PRINT PREVIEW

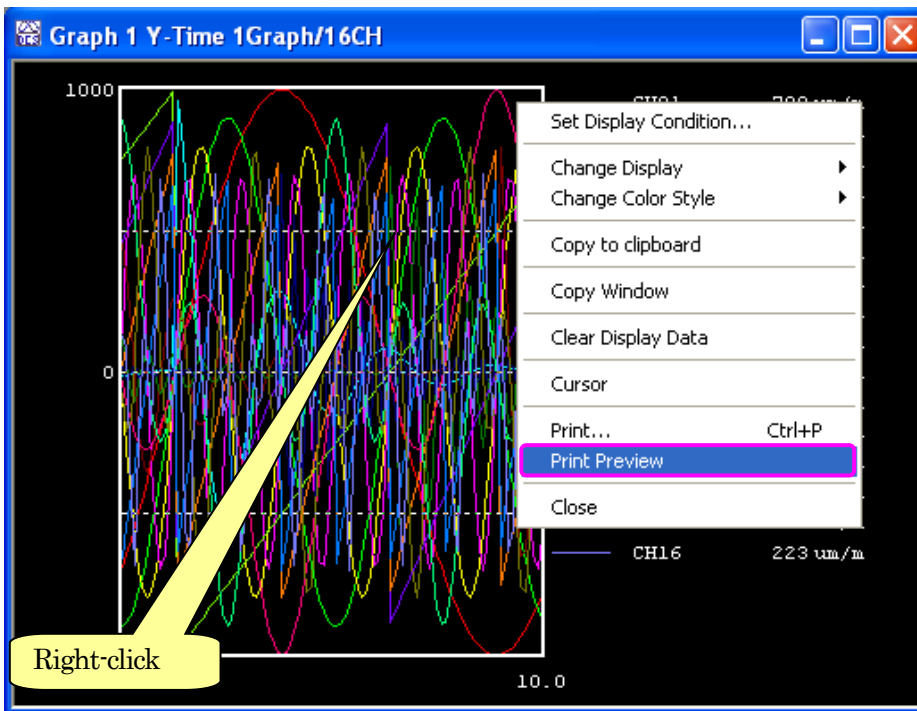
Print image of the current active window is displayed.

1) Open the **Print Preview** dialog box by any of the following.

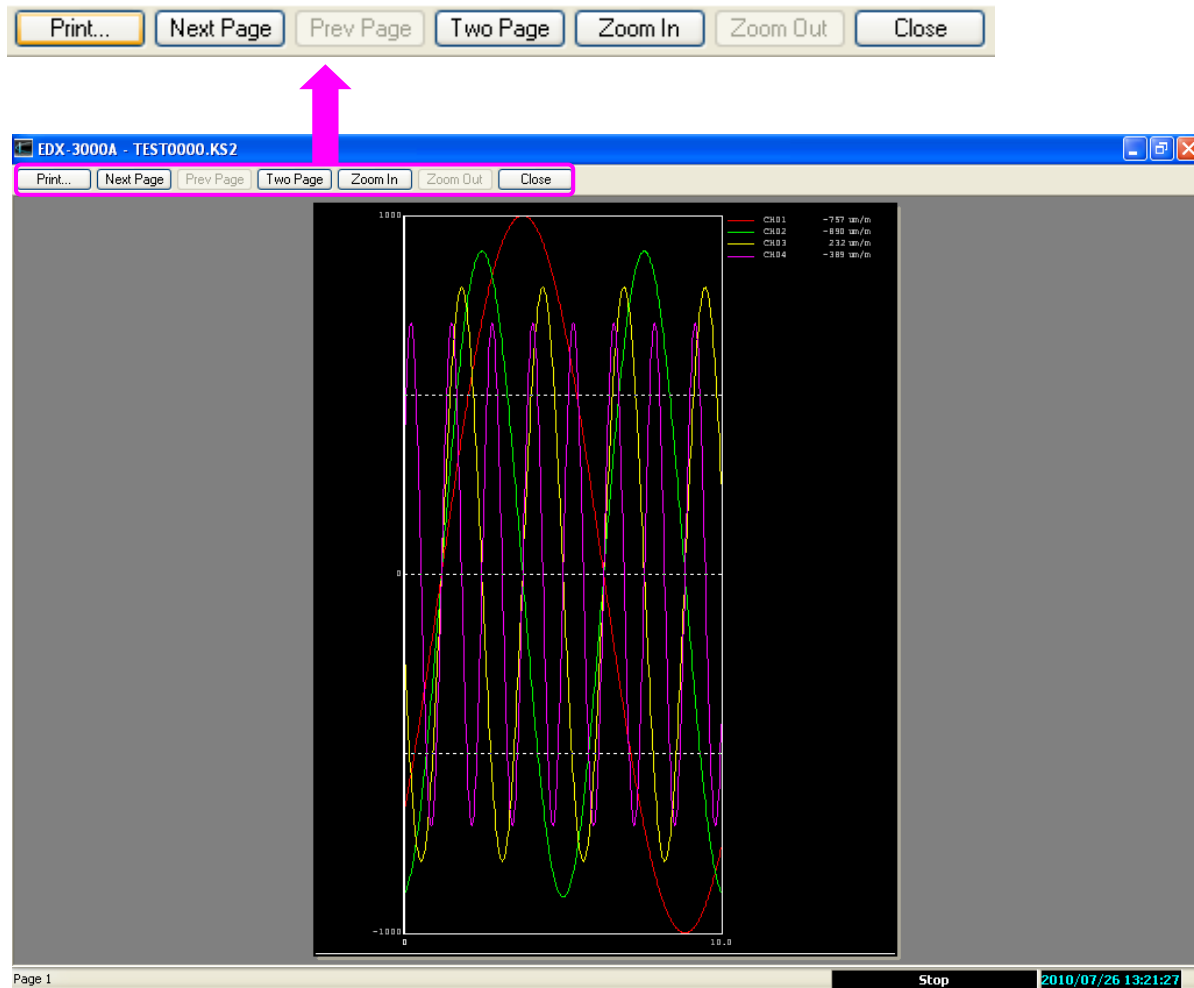
- Click the **File** – **Print Preview**.
- Click the **Preview** icon from the toolbar.



- Right-click the active window to display the pop-up menu.
Click the **Print Preview** from the pop-up menu.



2) The main window changes to **Print Preview** dialog box.



Print button

Opens the **Print** dialog box.

Next Page/**Prev Page** button

When the print out contents ranges in multiple pages, next and previous pages are displayed.

One Page/**Two Page** button

Specifies the number of pages displayed at a time.

Zoom In/**Zoom Out** button

Zooms in/zooms out the display.

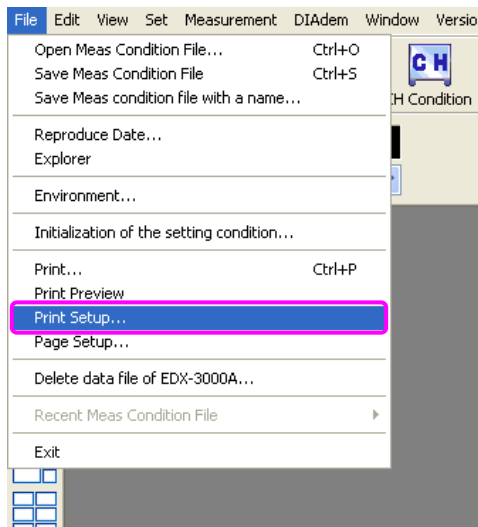
Close button

Closes the **Print Preview** dialog box.

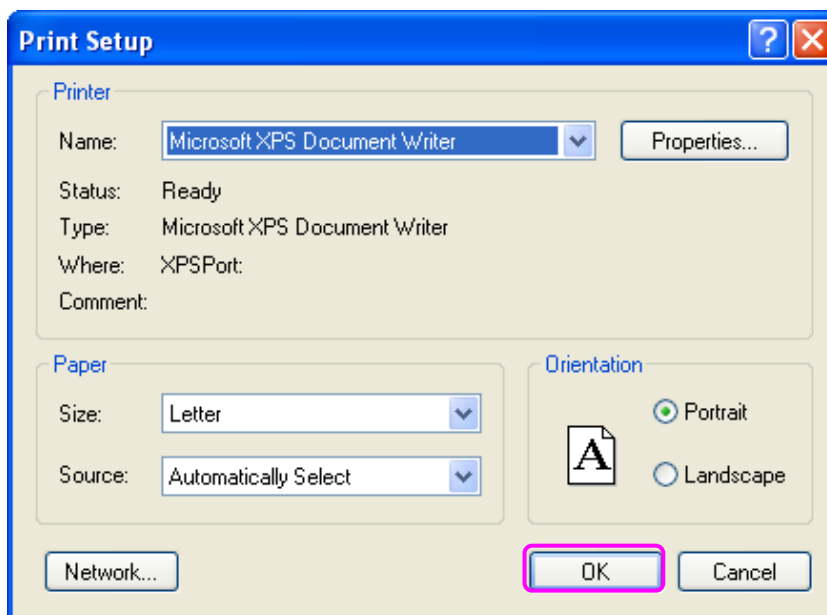
13-3 PRINT SETUP

Set the printer.

- 1) Click the **File** — **Print Setup...**.



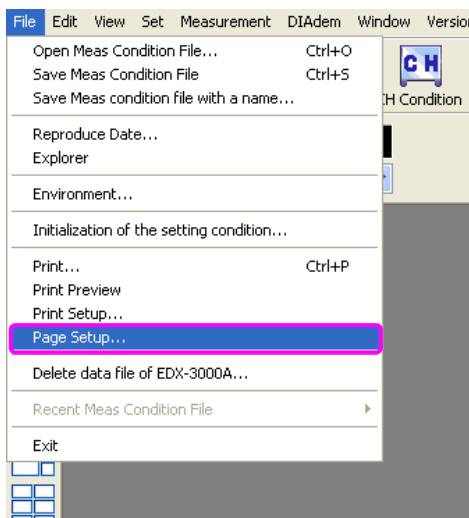
- 2) The **Print Setup** dialog box appears.
Select the relevant items and click the **OK** button.



13-4 PAGE SETUP

Set various printing options such as page orientation, margins, etc.

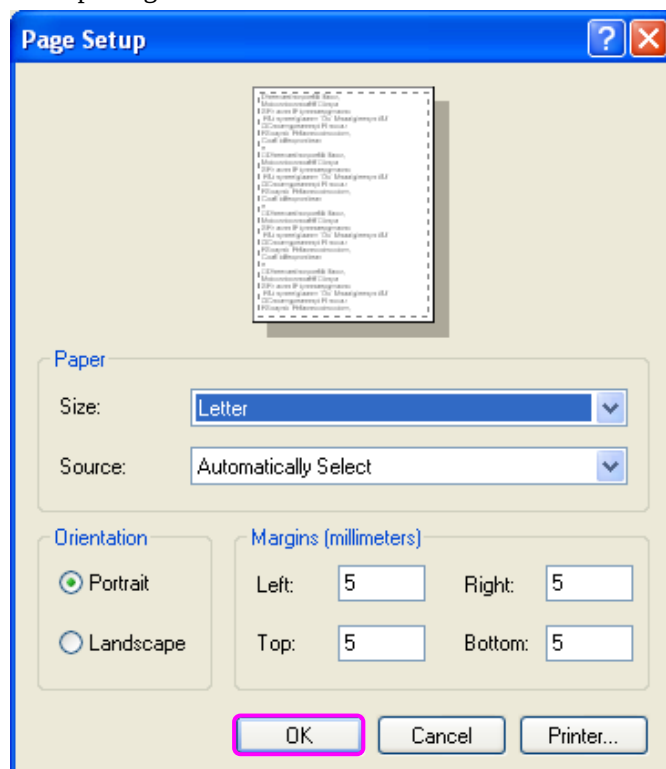
- 1) Click the **File** — **Page Setup...**.



- 2) The **Page Setup** dialog box appears.

Click the **OK** button.

Printing options such as page **Orientation**, **Margins**, etc. determined on the **Page Setup** dialog box are stored and reflected on the printing.



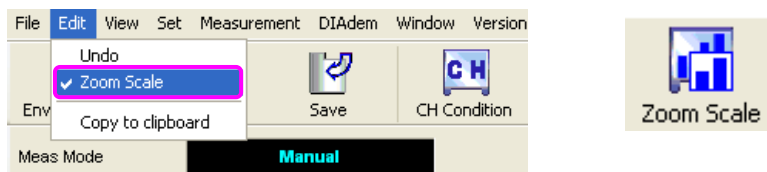
14. EDITING

Details of editing data such as zooming the graph scale, undoing the zoomed scale to the original size, and copying to selected window to clipboard are described in this section.

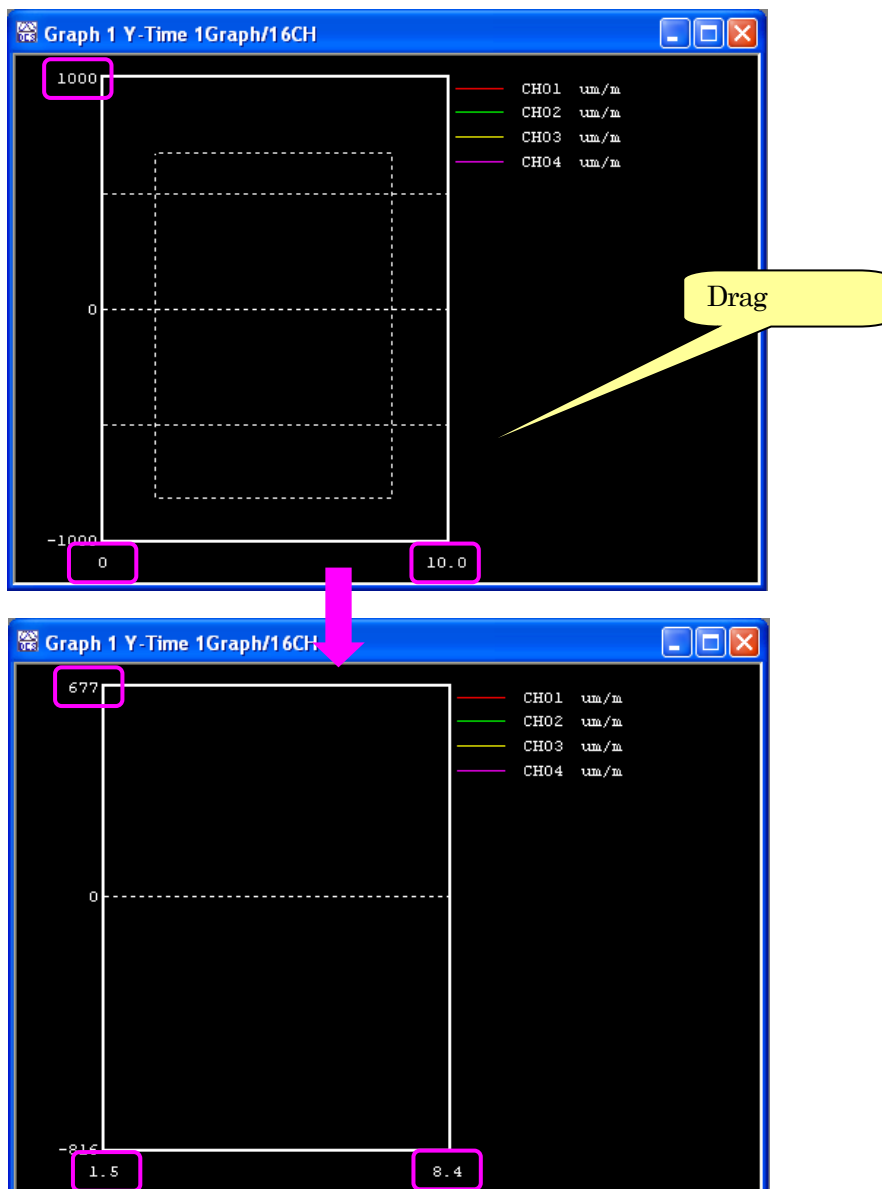
14-1 ZOOMING THE SCALE

Drag the data displaying area of the graph and select whether or not **Zoom Scale** function.

- 1) Activate the target window.
- 2) Zoom the scale by either of the following.
 - Click the **Edit**—**Zoom Scale** to put a check mark.
 - Keep pressing the **Zoom Scale** icon from the toolbar.



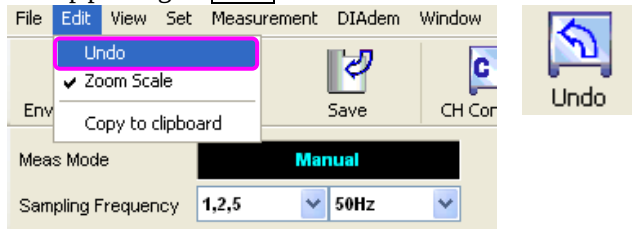
- 3) Drag the mouse inside the active graph window to zoom the graph.



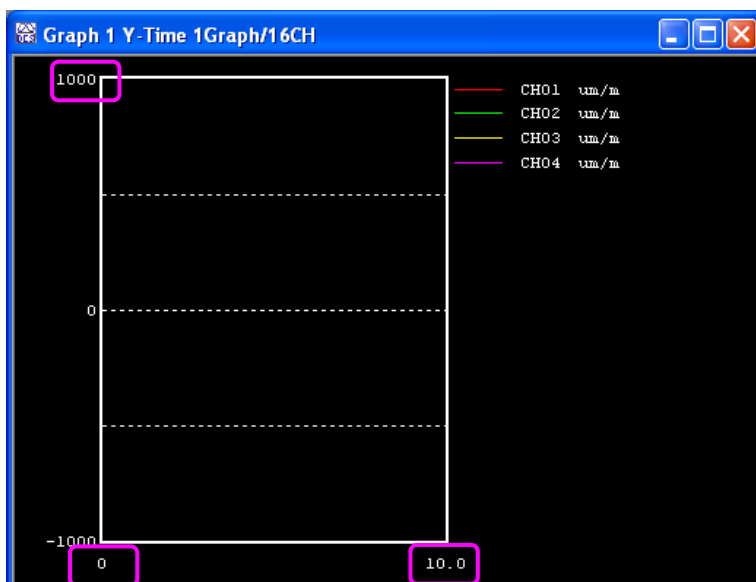
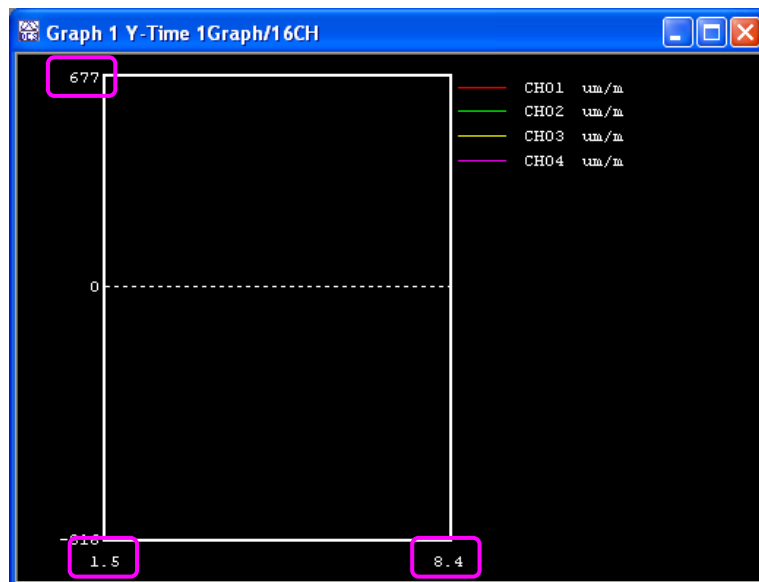
14-2 UNDOING

The graph has the latest 10 scale data in due order from zoomed in the above section. This Undo menu returns the zoomed scale to the previous state before it was zoomed.

- 1) Activate the target window.
- 2) Undo the scale by either of the following.
 - Click the **Edit** – **Undo**.
 - Keep pressing the **Undo** icon from the toolbar.



- 3) The window returns to the display the previous graph.



14-3 COPYING TO CLIPBOARD

Hard copy of the current active window is copied to the clipboard.

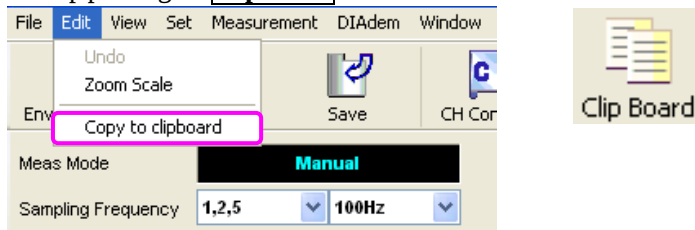
Loading the hard copy to the clipboard enables you to paste the hard copy with another software.

The copy size is in proportional to the current window size.

1) Activate the target window.

2) Conduct either of the following operation.

- Click the **Edit** – **Copy to clipboard**.
- Keep pressing the **Clip Board** icon from the toolbar.



3) Start up any software to copy the hard copy and to paste it.