

INSTRUCTION MANUAL

DCS-100A

Dynamic Data Recording Software

CTRS-100A Operations

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Read this instruction manual carefully in order to make full use of the product for many years to come.
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NOTATIONS USED IN THE INSTRUCTION MANUAL

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

Examples of notations

NOTE

Essential precautions required when handling the product.

MEMO

Reference items required when handling the product.

IMPORTANT USAGE PRECAUTIONS FOR DCS-100A

● PC settings

When any of the following states are enabled on your computer, DCS-100A might not function properly:

- The screensaver is scheduled to be activated.
- Energy-saving features such as system standby are activated.
- Applications such as anti-virus programs are scheduled to be activated.
- The PC is being accessed by the network, or the PC is accessing the network.

● LAN communication

The following ports are used for LAN communication between the PC and CTRS-100A: 34385, and 34440. Communication port 34440 is for control commands.

If communicating through a router, firewall, etc., confirm that the above communication ports are not disconnected.

Check with your network administrator regarding the router, firewall, etc. before specifying settings.

If there is a problem with LAN communication, first confirm the network-condition setting details. If they are normal, do the following:

- Turn off the CTRS-100A and then turn it back on.
- Restart the PC.

1 OUTLINE

This instruction manual explains how to use the dynamic data acquisition software DCS-100A to control the CTRS-100A.

For details on the CTRS-100A, see the separate manual INSTRUCTION MANUAL CTRS-100A Hardware.

For details on common operations for controlling measuring instruments, see the separate manual INSTRUCTION MANUAL DCS-100A Common Operations.

DCS-100A is measurement software that is connected to the CTRS-100A through a USB or LAN interface and then used to display or record measurement data by using a PC.

- Up to four CTRS-100A units can be controlled (up to 128 channels).
- Measurement data can be displayed in various formats, including numbers, Y-Time graphs, bar graphs, X-Y graphs, circle meters, and bar meters.
- The measurement control panel can be used to perform measurement operations similarly to using a remote control.
- Recorded measurement data is saved to a KYOWA standard format KS2 format data file (with extension KS2) or a KYOWA standard format KS3 format data file (with extension KS3).
When recording measurement data with CTRS-100A, data is saved to a KYOWA standard format KS3 format data file. However, it can be automatically converted to a KYOWA standard format KS2 format data file (with extension KS2) when collected on DCS-100A.
CAN data (data fields) is saved to a KYOWA standard format KC3 format data file (with extension KC3).
For information on KS3 files and the KS3 file format, see the separate manual, "IM-A-1318 KYOWA Standard Format 3 Instruction Manual".
- The optional software DCS-101A can be used to perform various types of real-time processing while monitoring or recording measurement data (video recording, arithmetic processing), which enables test-status video recording as well as the judgment of calculation results in real-time.
- The data analysis software DAS-200A can be used to display recorded measurement data as numbers or graphs or perform operations that include the following: editing, extraction, file conversion, calculation, and analysis.
Because data can be converted to CSV files, commercially available software can be used to read measurement data.
- Because measurement and calculation conditions can be saved to files, condition files can be read to set all the conditions at once when making measurements using the same conditions as last time.

2 BASIC OPERATIONS

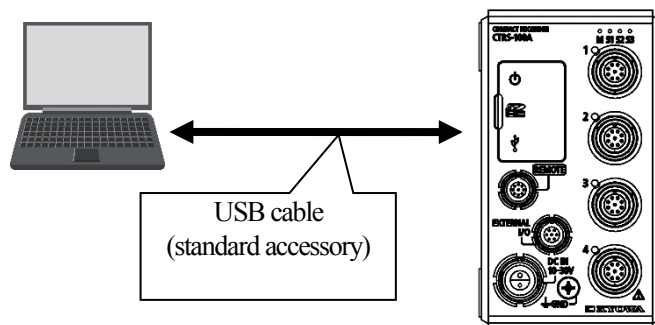
This chapter explains the basic DCS-100A operations.

2-1 Connecting a Sensor

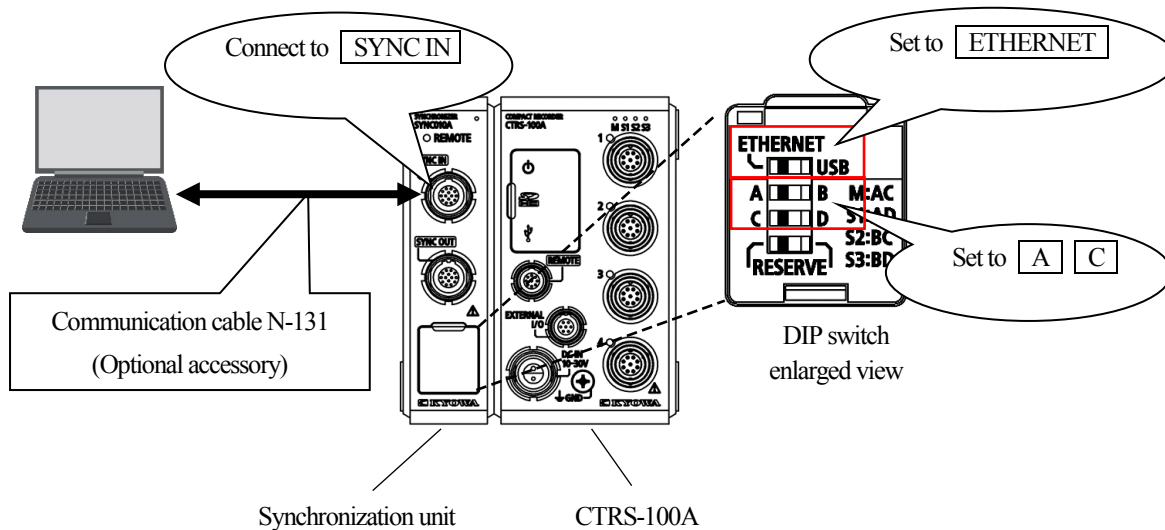
Connect a sensor to the CTRS-100A INPUT connector.

2-2 Connecting the PC to the CTRS-100A and Setting It Up

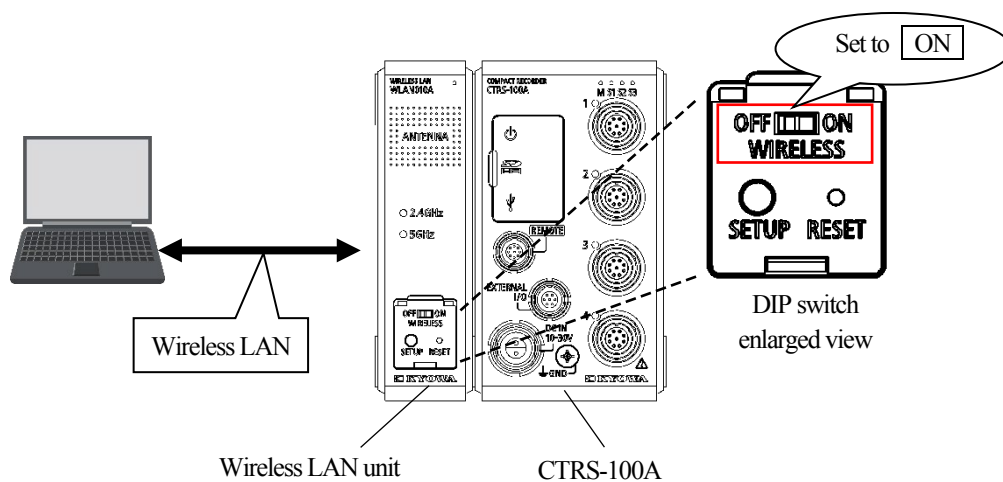
- If using a USB connection, connect the PC to the CTRS-100A by using the included USB cable.



- If using a Wired LAN connection, connect the PC to the CTRS-100A by using the communication cable N-131.
(* If using a Wired LAN connection, the Synchronization unit is required.)



- If using a Wireless LAN connection, connect the PC to the CTRS-100A via wireless LAN.
(* If using a Wireless LAN connection, the Wireless LAN unit is required.)

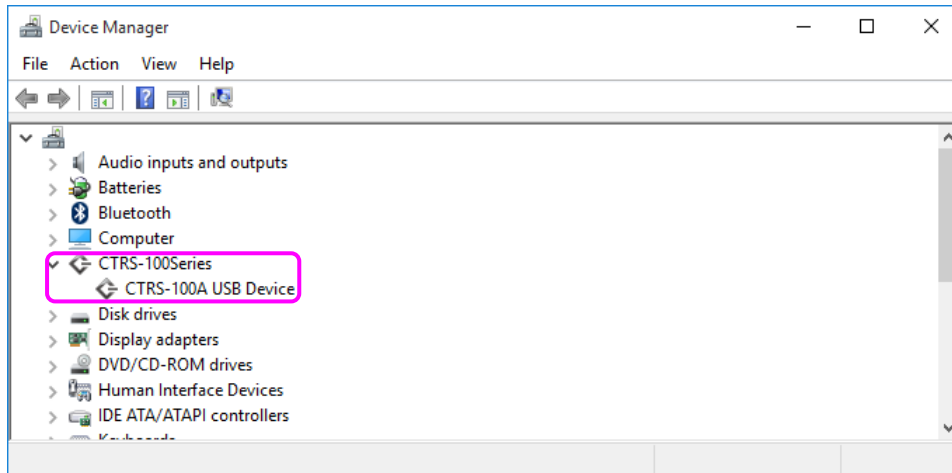


2-3 Starting Up the CTRS-100A

Turn on the CTRS-100A.

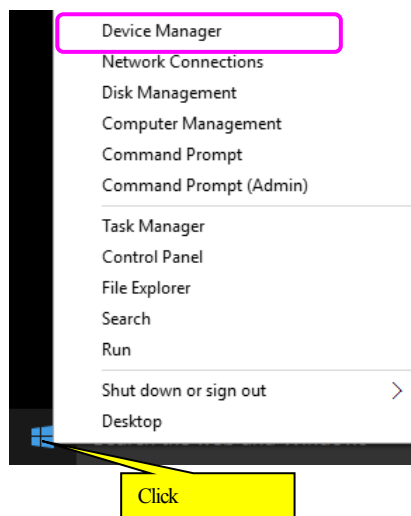
2-4 PC preparation

- If using a USB connection, open the "Device Manager", and then confirm that the CTRS-100A USB driver is installed.



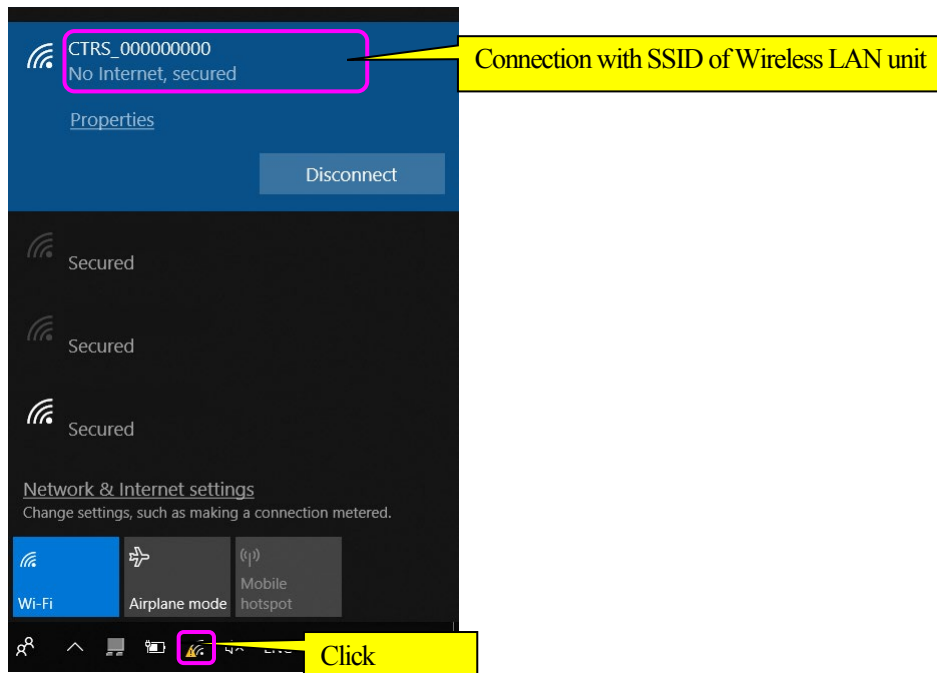
MEMO

If the PC's OS is Windows 10, right-click the **Start** button, and then select the "Device Manager" to open it.



- If using a Wireless LAN connection, in the connection destination list, make sure that you are already connected to the Wireless LAN unit.

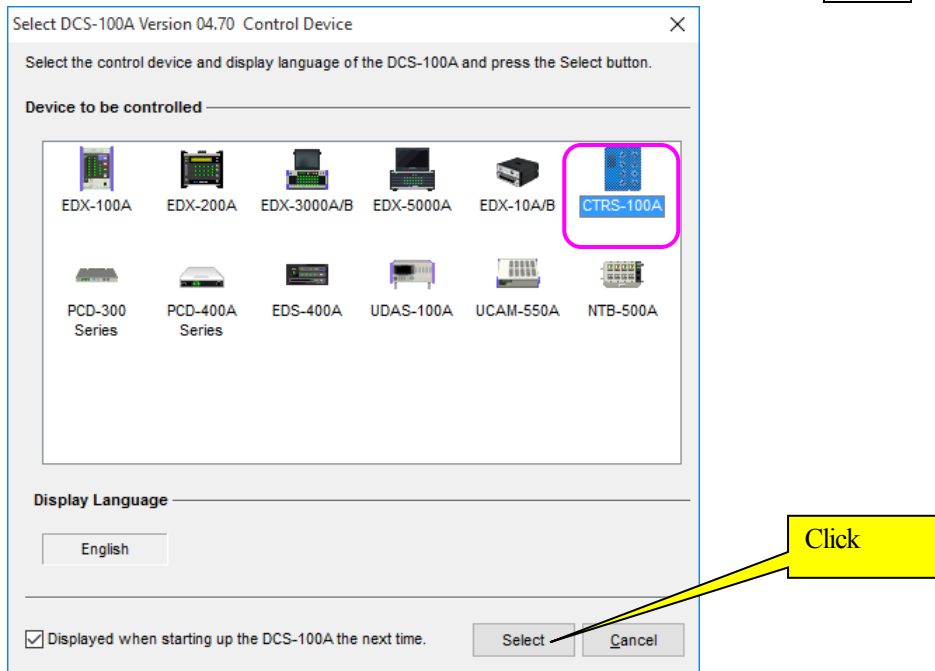
(See "3-3 Wireless LAN connection with the PC".)



2-5 Starting Up DCS-100A

(1) When DCS-100A is started up, the "Select DCS-100A Control Device" window is displayed.

In this window, select "CTRS-100A" under Device to control, and then click the **Select** button.



(2) The DCS-100A main window is displayed.

2-6 Environment Settings

(1) Select the "File" - "Environment" menu item or the "Envr." icon on the toolbar to open the "Set Environment" window.

(See "4 ENVIRONMENT SETTINGS".)

(2) Select the "Configuration" tab to display the "Configuration" window.

In this window, set the number of connected CTRS-100A units and the unit configuration.

(See "4-2 Configuration".)

(3) In the "Configuration" window, click the **Connection Test** button and test the connection to check whether the PC and CTRS-100A are communicating normally.

If they are communicating normally, click the **OK** button to close the "Set Environment" window.

2-7 Setting Channel Conditions

(1) Select the "Set" - "Set CH Condition" menu item or the "CH Cond." icon on the toolbar to open the "Set CH Condition" window.

(See "5 SETTING CHANNEL CONDITIONS".)

(2) In the "Set CH Condition" window, set the channel mode, range, calibration constant, unit, etc. for each channel.

(3) After specifying the settings, click the **OK** button to close the "Set CH Condition" window.

2-8 Setting Measurement Conditions

- (1) Select the "Set" - "Set Measure Condition" menu item or the "Meas. Cond." icon on the toolbar to open the "Set Measure Condition" window.
(See " 6 SETTING MEASUREMENT CONDITIONS".)
- (2) In the list on the left, select the "Measure Mode" tab to display the "Measure Mode" window.
In this window, set the measurement mode, sampling frequency, number of recorded data items per channel, etc.
(See " 6 - 1 Measurement Mode".)
- (3) In the list on the left, select the "Data File" tab to display the "Data File" window.
In this window, set the data-file saving location folder, file name, and file number.
(See " 6 - 5 Data File Conditions".)
- (4) Click the button to close the "Set Measure Condition" window.

2-9 Displaying Windows

- (1) Select from the "Window" menu or select the window-related icon on the toolbar to open the window that displays measurement data.

2-10 Measurement

- (1) On the measurement control panel, click the button to start measurement and enter the monitoring status.
Measurement data is displayed in each window.
(See " 7 MEASUREMENT".)
- (2) Click the button to execute balance.
Close the displayed "Balance results" window to return to the monitoring status.
(See " 7 - 9 Executing Balance".)
- (3) Click to start recording according to the measurement mode.
- (4) Click or finish recording the specified number of recorded data items per channel to return to the monitoring status.
- (5) In the monitoring status, click the button again to end measurement and enter the stopped status.

2-11 Confirming Data

- (1) Select the "Measurement" - "Latest Recorded Data File" menu item or the "Chk. Data" icon on the toolbar to display the Data Confirmation window.
- (2) If there is any unnecessary data, select the "Measurement" - "Delete the Latest Recorded Data File" menu item or the "Del. Data" icon on the toolbar to delete the data file.
To make measurements again, press the button.

2-12 Closing DCS-100A and the CTRS-100A

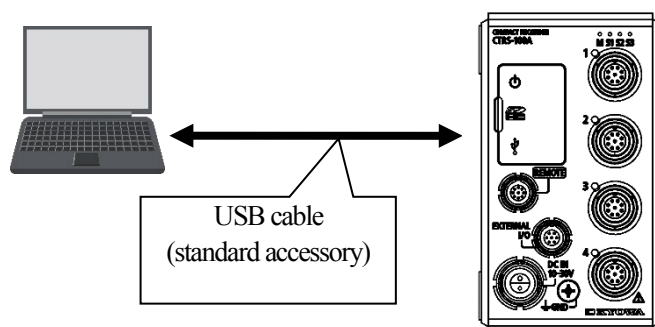
- Close DCS-100A and turn off the CTRS-100A.

3 CONNECTING THE CTRS-100A

3-1 Standalone (One Unit)

3-1-1 USB connection

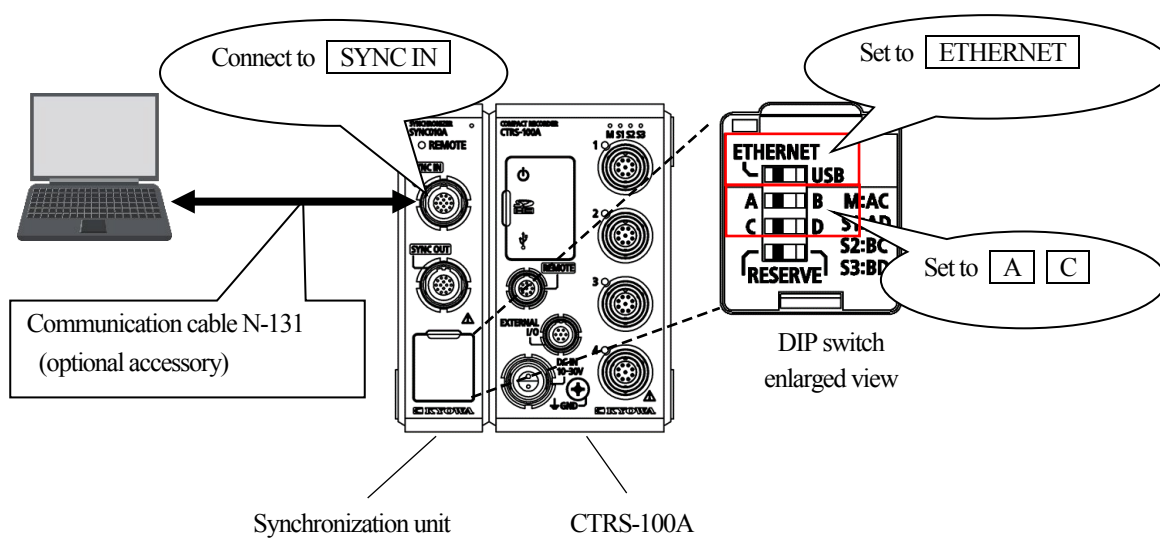
If using a USB connection, connect the PC to the CTRS-100A by using the included USB cable.



3-1-2 Wired LAN connection

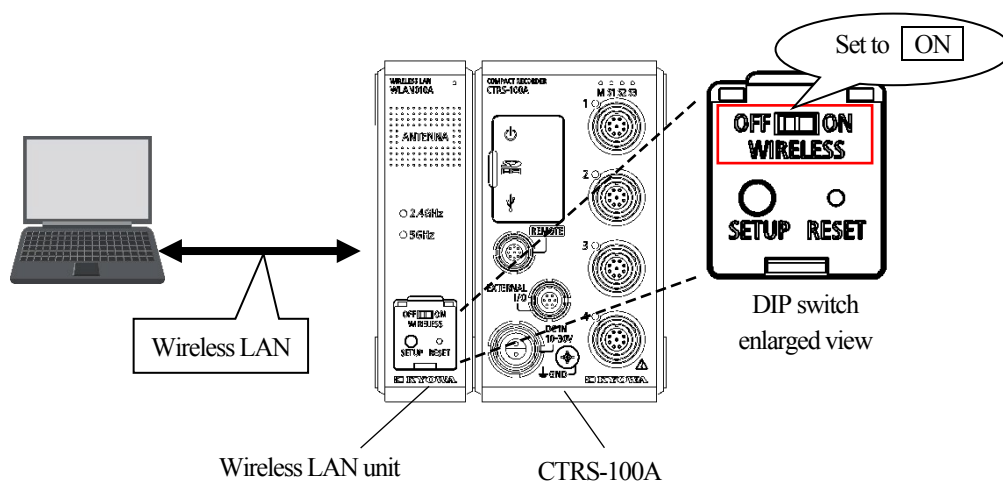
If using a Wired LAN connection, connect the PC to the CTRS-100A by using the communication cable N-131.

(* If using a Wired LAN connection, the Synchronization unit is required.)



3-1-3 Wireless LAN connection

- If using a Wireless LAN connection, connect the PC to the CTRS-100A via wireless LAN.
(* If using a Wireless LAN connection, the Wireless LAN unit is required.)



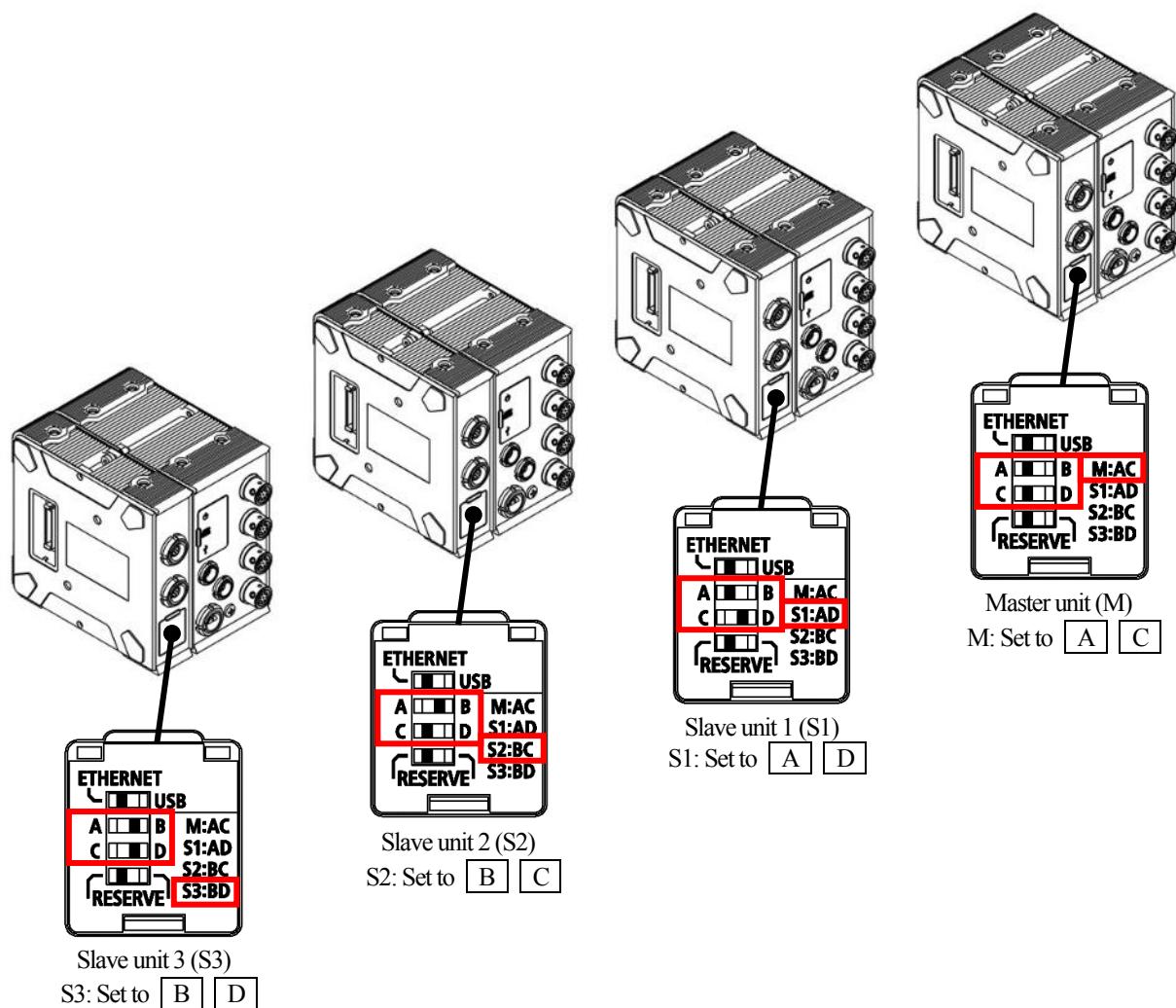
3-2 Synchronous Operation

Synchronous operation is a function that enables the use of multiple CTRS-100A units to make measurements. Using this function enables the recording of up to 128 channels (32 channels $\times$ 4) of measurement data.

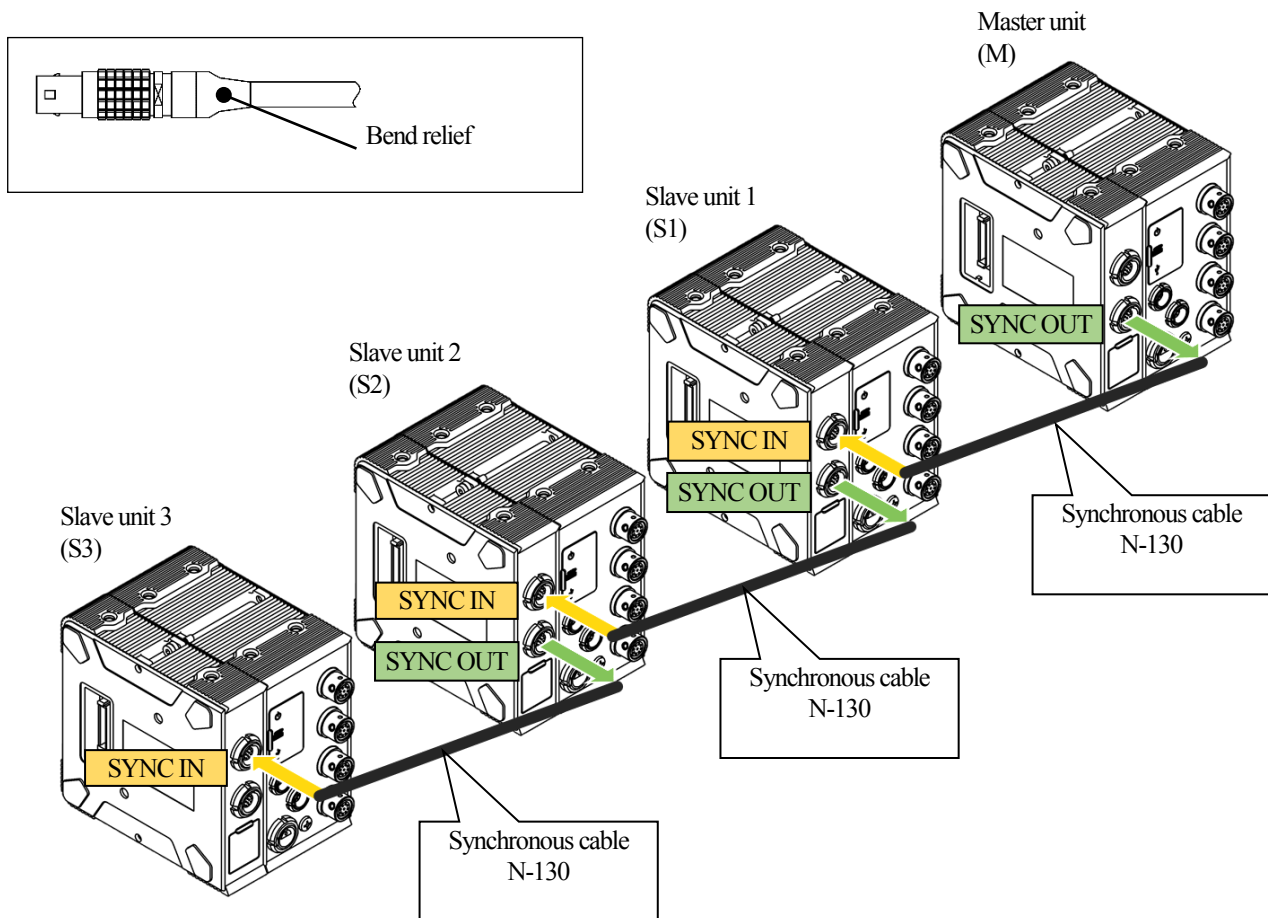
(During synchronous operation, the Synchronization unit and synchronous cable N-130 are required.)

(1) Link the CTRS-100A and synchronization unit.

(2) Operate the DIP switches of each synchronization unit and assign them as either the master unit (M) or a slave unit (S1 to S3).

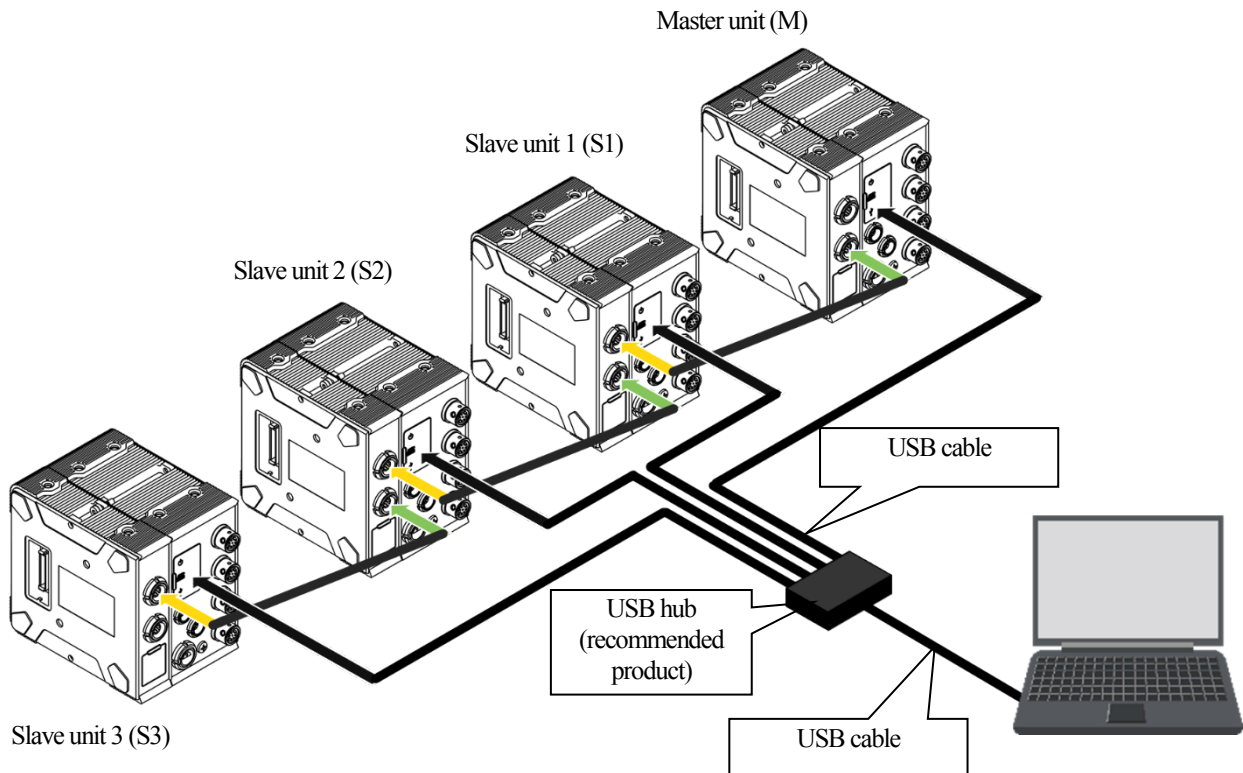


- (3) Use the synchronous cable N-130 to connect M to S1, S1 to S2, and S2 to S3 as shown in the figure below.
Connect the yellow bend-relief side of the synchronous cable to **SYNC IN**, and connect its green bend-relief side to **SYNC OUT**.



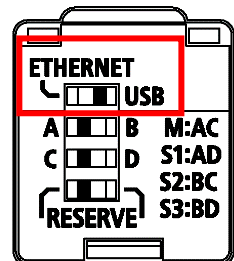
3-2-1 USB connection

If using a USB connection, connect the included USB cable to each CTRS-100A unit through a USB hub to connect them to the PC as shown below.



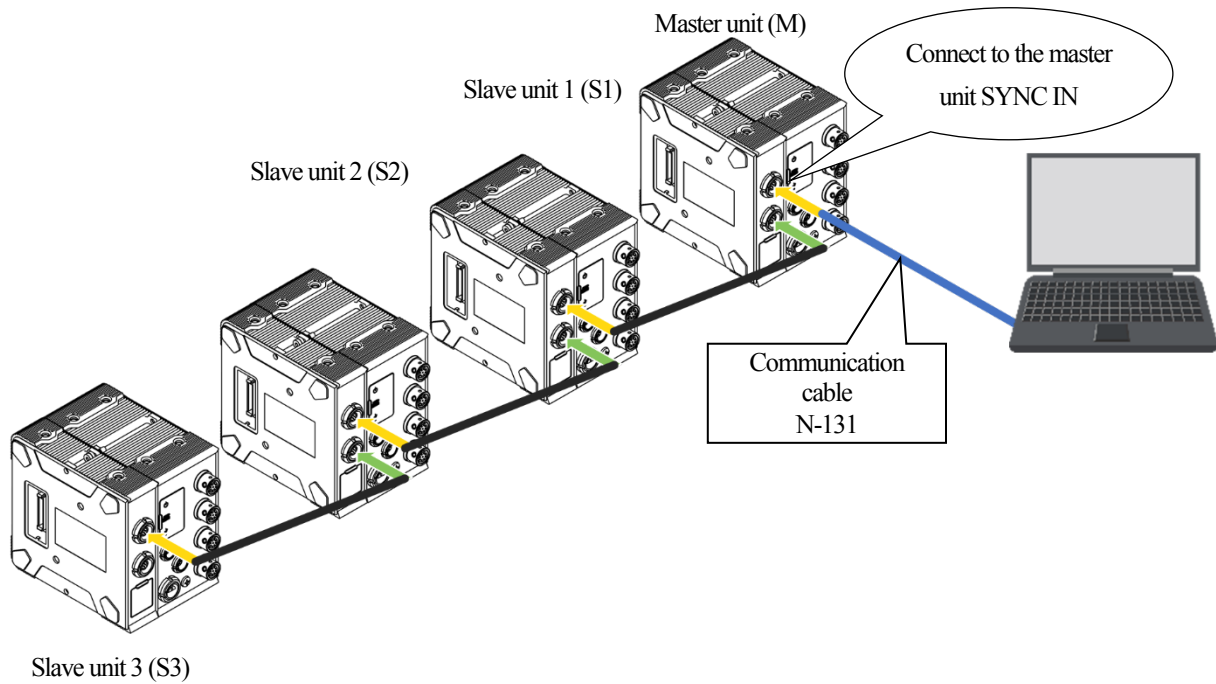
If using a USB connection, set the interface selection switch of every synchronization unit included in the synchronously connected system to the **USB** side.

(The figure shows a master unit, but set the switches of the slave units S1 to S3 to the **USB** side as well.)

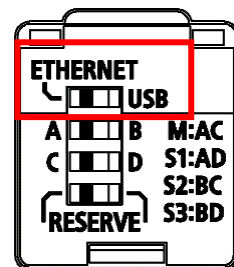


3-2-2 Wired LAN connection

If using a Wired LAN connection, use the communication cable N-131 as shown below.

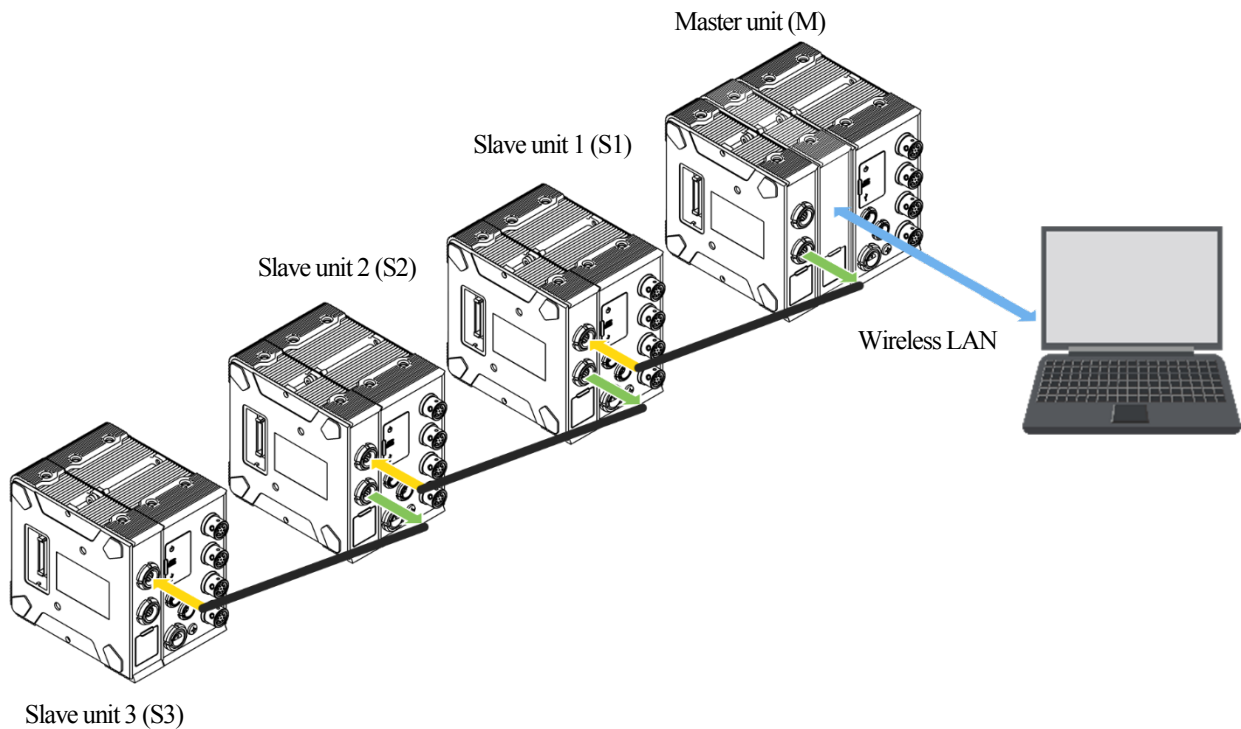


If using a Wired LAN connection, set the interface selection switch of every synchronization unit included in the synchronously connected system to the **ETHERNET** side.
(The figure shows a master unit, but set the switches of the slave units S1 to S3 to the **ETHERNET** side as well.)

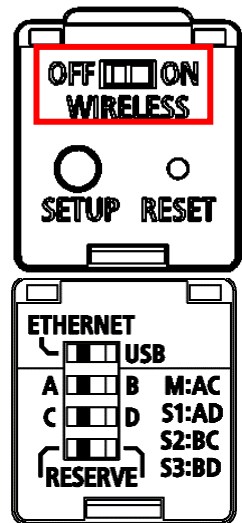


3-2-3 Wireless LAN connection

If using a Wireless LAN connection, connect the Wireless LAN unit to the master unit as shown below.



If using a Wireless LAN connection, Set the WIRELESS switch of the Wireless LAN unit connected to the master unit to the **ON** side.



If using a Wireless LAN connection, set the interface selection switch of every synchronization unit included in the synchronously connected system to the **ETHERNET** side.
(The figure shows a master unit, but set the switches of the slave units S1 to S3 to the **ETHERNET** side as well.)

NOTE

Even if you connect the Wireless LAN unit to the slave unit, you cannot connect to the Wireless LAN.
Connect the Wireless LAN unit to the master unit.

3-3 Wireless LAN connection with the PC

This section describes how to connect the PC and CTRS-100A via Wireless LAN.

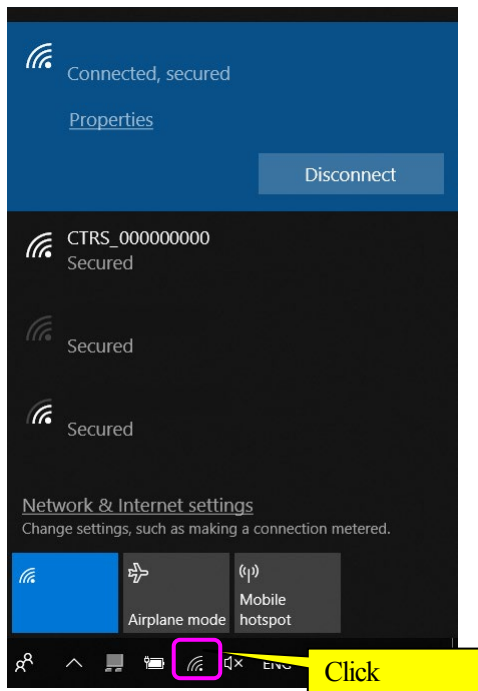
(* If using a Wireless LAN connection, the Wireless LAN unit is required.)

(1) Connect the CTRS-100A and the wireless LAN unit.

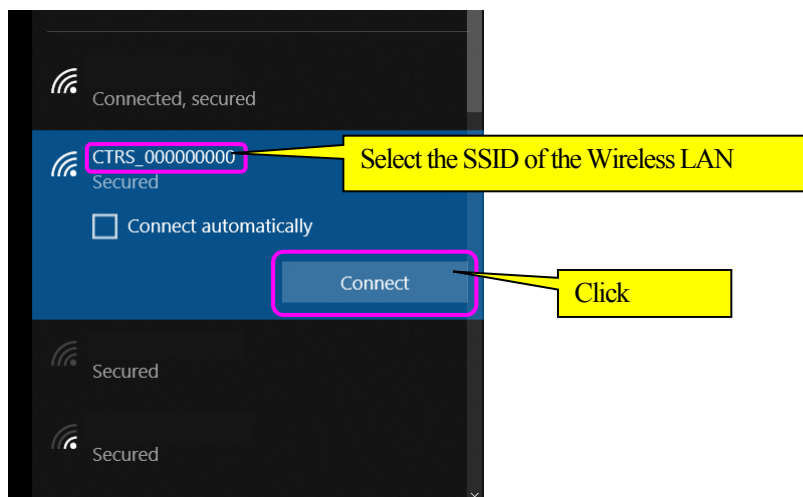
(See "3-1-3 Wireless LAN connection", "3-2-3 Wireless LAN connection".)

(2) Make sure that the WIRELESS switch of the Wireless LAN unit is ON, and then turn on the power of CTRS-100A.

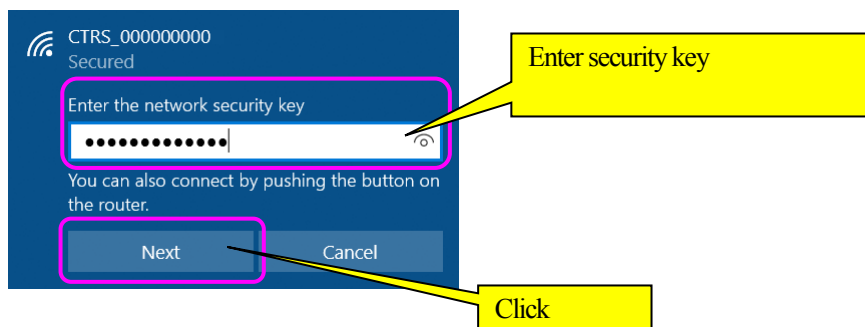
(3) Click the "Wireless" icon in the task tray to display the connection destination list.



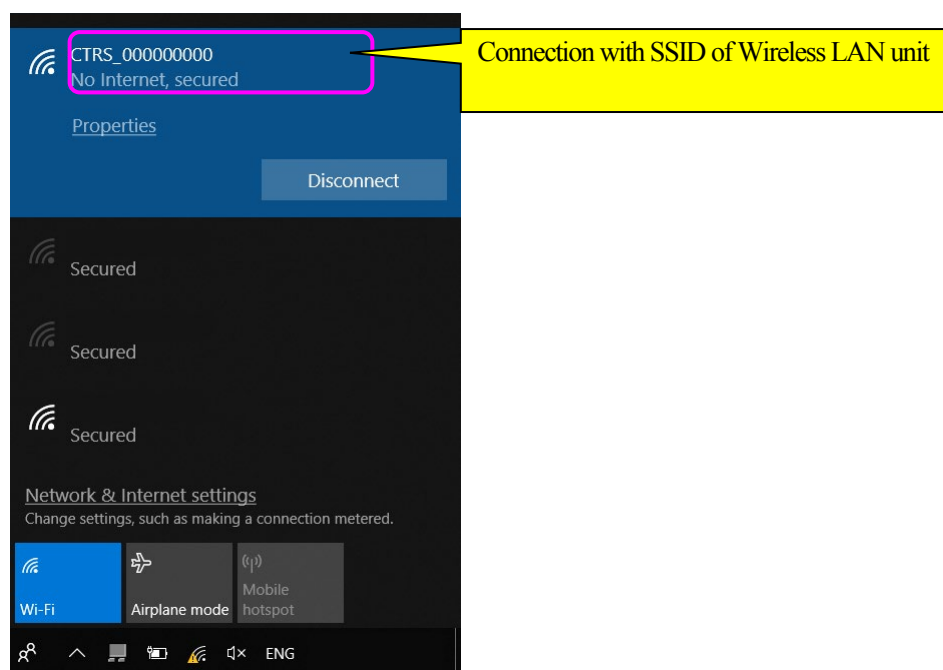
(4) Select the SSID of the Wireless LAN unit in the connection destination list and click the **Connect** button.



(5) The security key input screen is displayed. Enter the security key and click the **Next** button.



(6) The connection process will be performed, and the connection will be completed after a while.



MEMO

- The initial settings of the SSID and security key are written on the nameplate attached to the side of the Wireless LAN unit.
- After connecting, the network display will show "Restricted" or "Unrecognized network", but this is because there is no function to connect to the Internet.
There is no problem with the operation of CTRS-100A, so you can use it as it is.
- If the PC supports WPS (Wi-Fi Protected Setup), you can connect without entering a security key by using the simple connection function.
For the simple connection function, see the separate manual INSTRUCTION MANUAL CTRS-100A Hardware.

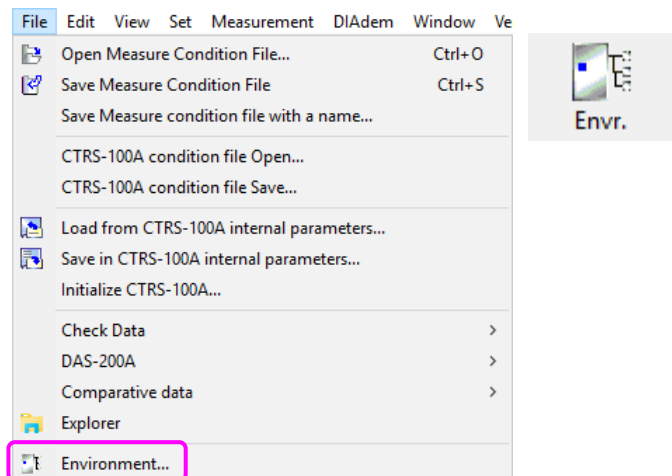
4 ENVIRONMENT SETTINGS

This chapter explains how to select the control interface and set the number of connected CTRS-100A units, the unit configuration, etc.

■ Display operation

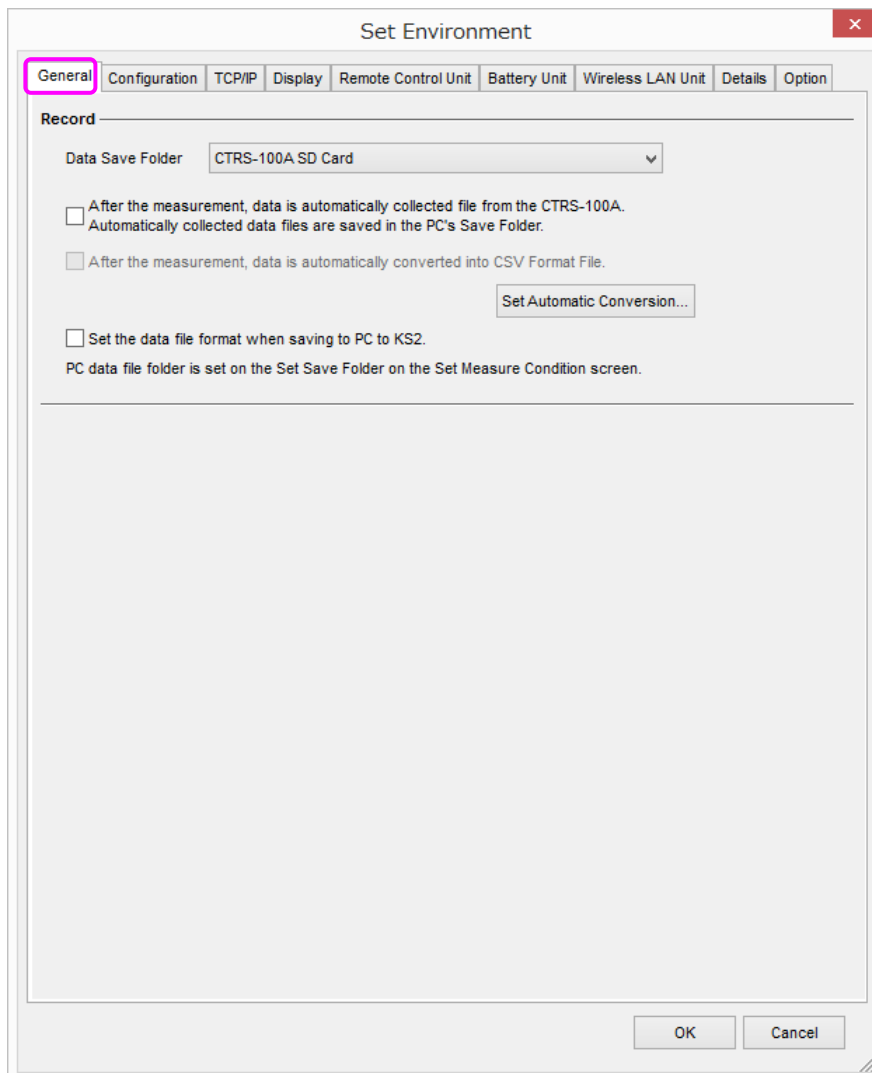
Do one of the following to open the "Set Environment" window:

- Select the "File" - "Environment" menu item.
- Select the "Envr." icon on the toolbar.



4-1 General

This section explains how to set the data-file saving location, etc. in the "General" window. Select the "General" tab to display the "General" window.



■ Data-file saving location

Select the data-file saving location.

- | | |
|---|---|
| "CTRS-100A SD card" | Save recorded data to a data file on the CTRS-100A SD card. |
| "PC data file folder" | Save recorded data to a data file in the PC data-file saving folder. |
| "Both CTRS-100A of the SD card and PC data file folder" | Saves the recorded data in the CTRS-100A SD card and PC data file folder. |

MEMO

- When the data file format is KS2

KS3 format data files (with extension KS3) on the CTRS-100A SD card are automatically converted to KS2 format data files (with extension KS2).

If "PC data file folder" was selected, measurement data will be saved to a KS2 format data file (with extension KS2).

For "Both CTRS-100A SD card and PC data file folder", measurement data will be saved as a KS3 format data file (with extension KS3) to the CTRS-100A SD card, and as a KS2 format data file (with extension KS2) in the PC data file folder.

- When the data file format is KS3

KS3 format data files (with extension KS3) on the CTRS-100A SD card will be collected as KS3 format data files (with extension KS3).

If "PC data file folder" was selected, measurement data will be saved to a KS3 format data file (with extension KS3).

For "Both CTRS-100A SD card and PC data file folder", measurement data will be saved as a KS3 format data file (with extension KS3) to the CTRS-100A SD card, and as a KS3 format data file (with extension KS3) in the PC data file folder.

NOTE

- When selecting the "Both CTRS-100A of the SD card and PC data file folder", the number of data files in the PC may be different from that of the SD card in the CTRS-100A.

We recommend you to use the data files in the PC data file folder for backup.

- When connecting to a Wireless LAN, you cannot select "PC data file folder".

■After the measurement, data is automatically collected file from the CTRS-100A

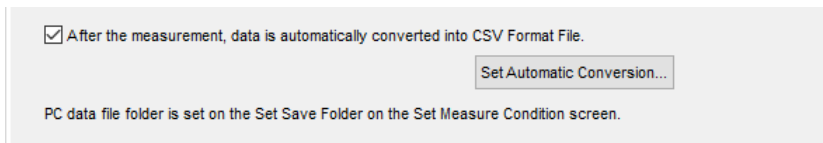
To automatically collect data files recorded on the CTRS-100A SD card in the PC folder after measurement finishes, select the "After the measurement, data is automatically collected file from the CTRS-100A." checkbox.

NOTE

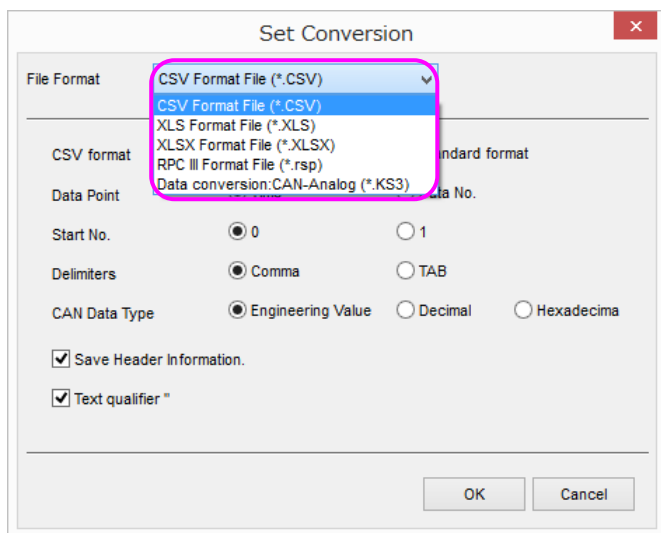
If the appending rule in the data file conditions is "Recording start date and time", data files cannot be collected after measurement finishes.

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

To automatically convert KS2 format data files or KS3 format data files to data files of another file format after measurement is complete, select the "After the measurement, data is automatically converted into CSV Format File."checkbox.



Click the **Set Automatic Conversion** button to display the "Set Conversion" window below. In this window, set the file format to convert to, etc.



NOTE

"CAN-analog data conversion" cannot be selected if a CAN input unit is not installed. It also cannot be selected if there is no signal (CAN channel) to measure in the receiving conditions in CAN Condition Settings.

File conversion examples

File format	Conversion source file name	Conversion target file name
CSV format file	TEST#0000.KS3	TEST#0000.CSV (*1)
XLS format file	TEST#0000.KS3	TEST#0000.XLS (*1)
XLSX format file	TEST#0000.KS3	TEST#0000.XLSX (*1)
RPCIII format file	TEST#0000.KS3	TEST#0000.rsp (*2)
CAN-analog data conversion	TEST#0000.KS3 TEST#0000.KC3	TEST#0000_CA.KS3 (*3)

(*1) When CAN data is recorded, TEST#0000.KC3 CAN data will also be saved to the same conversion target file.

(*2) TEST#0000.KC3 CAN data will not be saved even if CAN data was recorded.

(*3) When CAN data is recorded, TEST#0000.KC3 CAN data will also be saved to the same conversion target file.

In this case, TEST#0000.KC3 CAN data will be saved as analog channel data.

■ Data file formats when saving to a PC

Select the checkbox to use KS2 format as the data file format when saving to a PC.

Clear the checkbox to use KS3 format as the data file format when saving to a PC.

NOTE

When performing CAN measurement, clear the checkbox and select KS3 format.

4-2 Configuration

This section explains how to use the "Equipment Configuration" window to select the control interface and set the number of connected CTRS-100A units and unit configuration.

Select the "Configuration" tab to display the "Configuration" window.

General **Configuration** TCP/IP Display Remote Control Unit Battery Unit Details

Connection

Set Interface USB

Configuration

Connection Test... Detailed information...

Number of Connected Units 1 Up Down

ID No.	Model	Device Name	Check Device	Measure Unit	Expansion Unit
M	CTRS-100A	EM6-2(TEST2)	Flash	CTRS-CDV010A	CTRS-SYNC010A
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	***
				CTRS-CDV010A	***

Write device name... Device Information Register Window...

NOTE

It is not necessary to select battery or remote control units for the expansion unit item.

In addition, when the unit configuration is read from the CTRS-100A, battery and remote control units are not displayed for the expansion unit item.

■ Set Interface

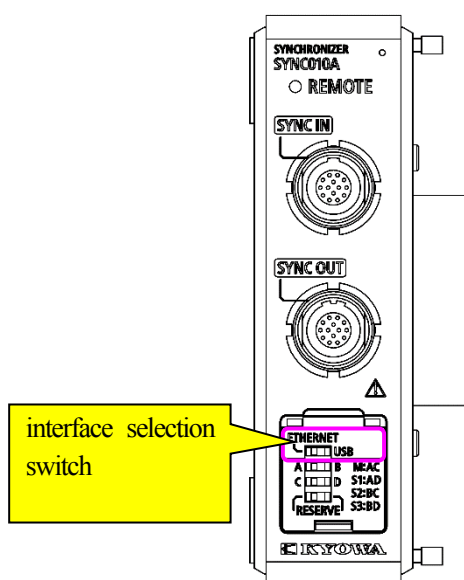
Select the control interface.

"LAN": Select for Wired LAN connection and Wireless LAN connection.

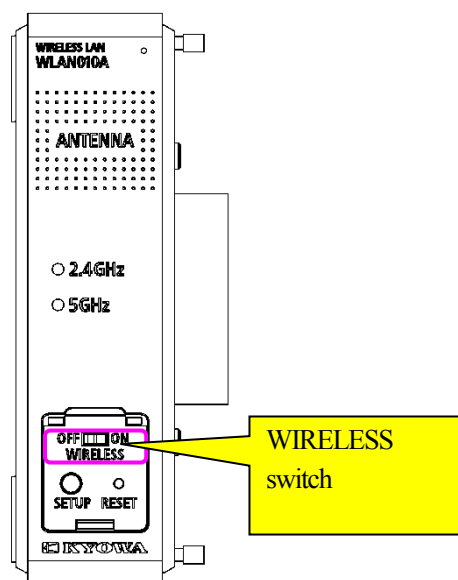
"USB": Select for USB connection .

With the expansion unit (synchronization unit, Wireless LAN unit) and DIP switch connected to the CTRS-100A, the control interface is determined as shown in the table below.

		Wireless LAN unit		
		Connection (WIRELESS:OFF)	Connection (WIRELESS:ON)	Disconnected
synchronization unit	Connection (interface:ETHERNET)	Wired LAN	Wireless LAN	Wired LAN
	Connection (interface:USB)	USB		
	Disconnected	USB	Wireless LAN	USB



synchronization unit



Wireless LAN unit

■ Configuration

Connection Test	button	Test the connection to check whether the PC and CTRS-100A can communicate normally.
Detailed Information	button	Display the "Detailed Information" window.
Write device Name	button	Write the device name to the CTRS-100A by using up to 30 single-byte characters.
Display Information Register Window	button	Display the "Register Device Information" window.
Up Down	buttons	Rearrange the equipment information. Select the row of the equipment information you want to move, and then click the Up or Down button.

The equipment configuration of a connected CTRS-100A unit can be set up in the three ways below.

● Manually setting up the equipment configuration

This method involves manually setting the number of connected CTRS-100A units to control, the equipment name, and the unit configuration for the equipment configuration.

(See "4 - 2 - 1 Manually setting up the equipment configuration".)

● Using the "Register Device Information" window to set up the equipment configuration

This method involves using the "Register Device Information" window to select the equipment name and unit configuration to set up the equipment configuration.

(See "4 - 2 - 2 Using the "Register Device Information" window to specify settings".)

● Using the "Connection Test" button to automatically set up the equipment configuration

This method involves setting the number of connected CTRS-100A units to control and then reading the equipment name and unit configuration from CTRS-100A units connected to the PC to automatically set up the equipment configuration.

(See "4 - 2 - 3 Testing the connection".)

NOTE

If using a LAN connection, confirm that the network conditions of the PC and CTRS-100A are correctly specified and then set up the equipment configuration.

4-2-1 Manually setting up the equipment configuration

■ Operating method

(1) Select the number of connected CTRS-100A units to control.

The screenshot shows a web-based configuration interface. At the top, there is a dropdown menu labeled "Number of Connected Units" with the value "1" selected. Below this is a table with columns: ID No., Model, Device Name, Check Device, Measure Unit, and Expansion Unit. The first row shows "M" for ID No., "CTRS-100A" for Model, and "Flash" for Check Device. The Measure Unit column lists "CTRS-CDV010A" and the Expansion Unit column lists "CTRS-SYNC010A".

ID No.	Model	Device Name	Check Device	Measure Unit	Expansion Unit
M	CTRS-100A		Flash	CTRS-CDV010A	CTRS-SYNC010A
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	***
				CTRS-CDV010A	***

(2) If using a LAN connection, enter the CTRS-100A IP address for the IP address item.
Double-click each item you want to enter or press the "SPACE" key on it to enter it.

The screenshot shows the same configuration interface as before, but now the "IP Address" column is visible. The value "172.17_34_150" is entered in the IP Address field. The Measure Unit column lists "CTRS-CDV010A" and the Expansion Unit column lists "CTRS-SYNC010A".

ID No.	Model	Device Name	IP Address	Check Device	Measure Unit	Ex
M	CTRS-100A		172.17_34_150	Flash	CTRS-CDV010A	CTF
					CTRS-CDV010A	Not installed
					CTRS-CDV010A	Not installed
					CTRS-CDV010A	Not installed
					CTRS-CDV010A	Not installed
					CTRS-CDV010A	***
					CTRS-CDV010A	***

(3) Under the measure unit and expansion unit items, select the measure and expansion units.

The screenshot shows the same configuration interface as before, but now the "Measure Unit" and "Expansion Unit" columns are visible. The "Measure Unit" column lists "CTRS-CDV010A" and the "Expansion Unit" column lists "CTRS-SYNC010A".

ID No.	Model	Device Name	Check Device	Measure Unit	Expansion Unit
M	CTRS-100A		Flash	CTRS-CDV010A	CTRS-SYNC010A
				Not installed	Not installed
				UNKNOWN	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	***
				CTRS-CDV010A	***

(4) If the CTRS-100A units to be controlled will be synchronously operated, repeat steps (2) and (3) for each unit.

NOTE

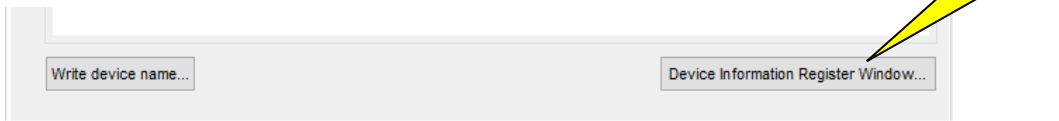
Enter the IP address of CTRS-100A in the IP address item.

If you enter the IP address of the Wireless LAN unit, the PC cannot connect to the CTRS-100A.

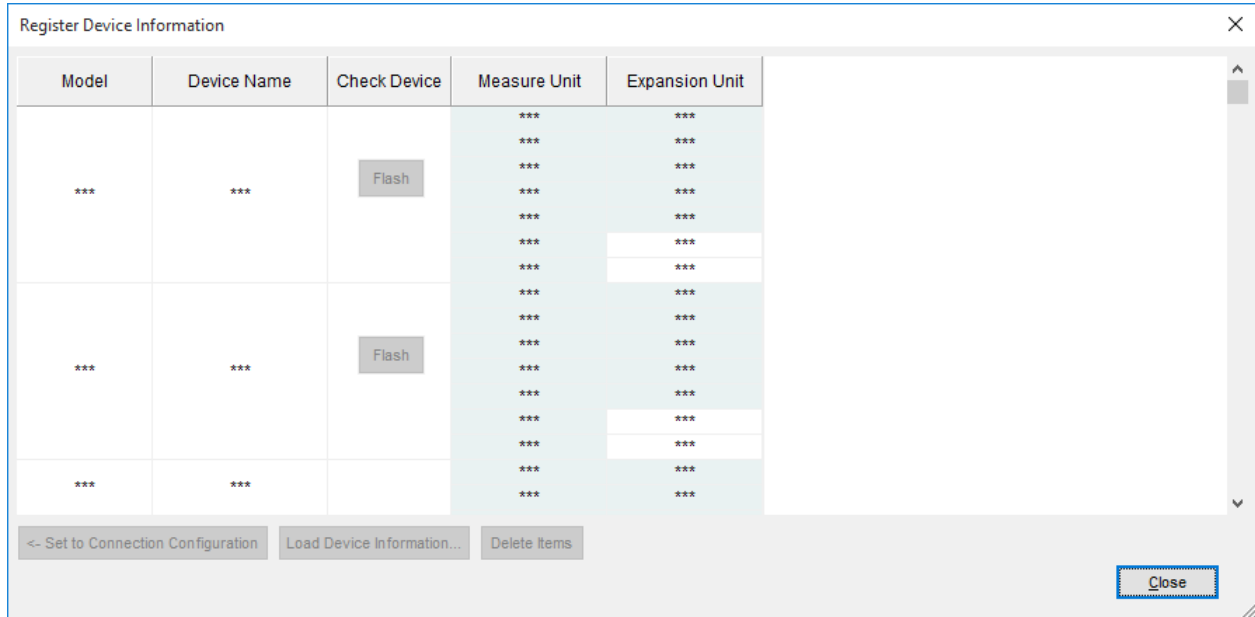
4-2-2 Using the "Register Device Information" window to specify settings

■ Operating method

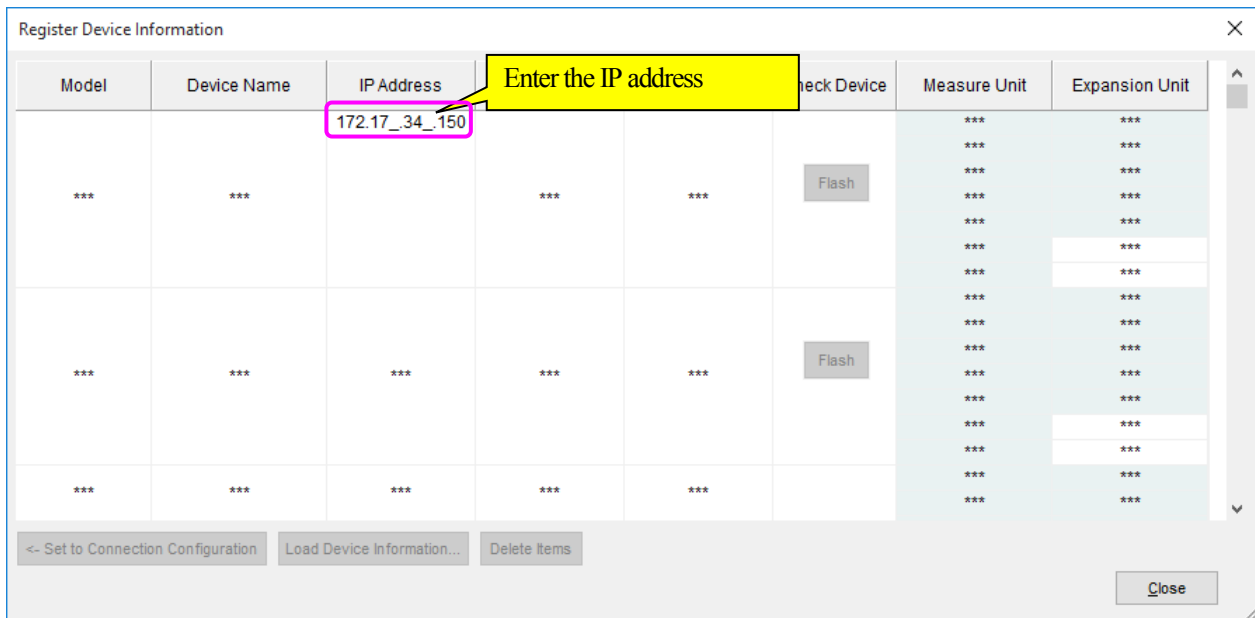
(1) Click the Device Information Register Window button.



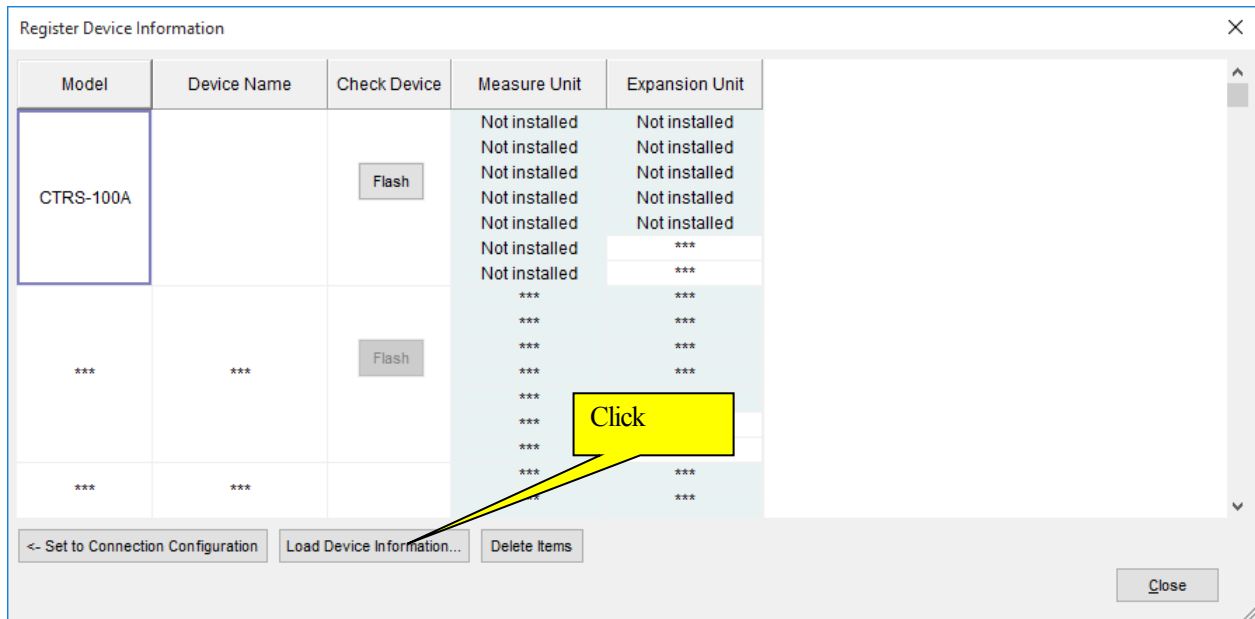
(2) The "Register Device Information" window is displayed.



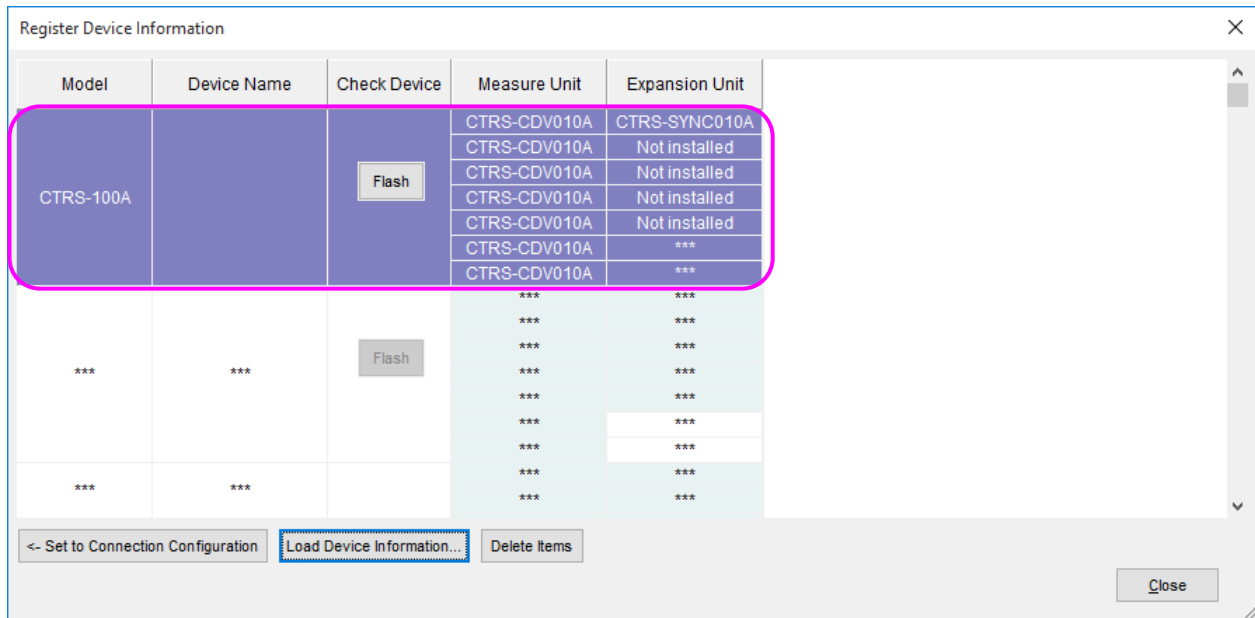
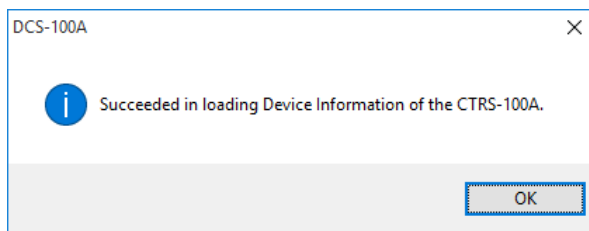
(3) If using a LAN connection, enter the CTRS-100A IP address, subnet mask, and default gateway for the IP address item. Double-click each item you want to enter or press the "SPACE" key on it to enter it.



(4) Move the cursor to the unit configuration reading row, and then click the **Load Device Information** button.



(5) If the equipment information is successfully read, the message below is displayed, and the read unit configuration is registered to the "Register Device Information" window.



(6) In the "Configuration" window, select the number of connected CTRS-100A units to control.

(7) In the same window, move the cursor to the row of the ID number item for the unit to be set.

In the "Register Device Information" window, move the cursor to the row of the of the unit settings to use, and then click the <- Set to Connection Configuration button.

ID No.	Model	Device Name	Check Device	Measure Unit	Expansion Unit
M	CTRS-100A		Flash	Not installed	Not installed
				Not installed	Not installed
				Not installed	Not installed
				Not installed	Not installed
				Not installed	Not installed
				Not installed	***
				Not installed	***

Model	Device Name	Check Device	Measure Unit	Expansion Unit
CTRS-100A		Flash	CTRS-CDV010A	CTRS-SYNC010A
			CTRS-CDV010A	Not installed
			CTRS-CDV010A	Not installed
			CTRS-CDV010A	Not installed
			CTRS-CDV010A	Not installed
			CTRS-CDV010A	***
			CTRS-CDV010A	***
			***	***
			***	***
			***	***
			***	***
			***	***
			***	***
			***	***
			***	***

Buttons: <- Set to Connection Configuration, Load Device Information..., Delete Items, Close

(8) In the "Configuration" window, the equipment information from the "Register Device Information" window is specified for the items of equipment to be controlled.

ID No.	Model	Device Name	Check Device	Measure Unit	Expansion Unit
M	CTRS-100A		Flash	CTRS-CDV010A	CTRS-SYNC010A
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	Not installed
				CTRS-CDV010A	***
				CTRS-CDV010A	***

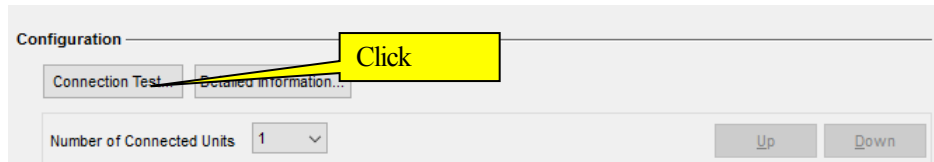
(9) If the CTRS-100A units to be controlled will be synchronously operated, repeat steps (3) to (8) for each unit.

4-2-3 Testing the connection

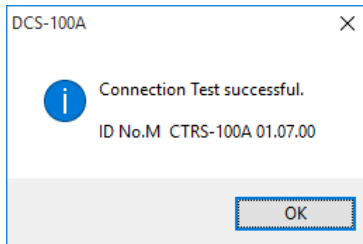
After setting up the equipment configuration, connect DCA-100A to the CTRS-100A to test whether the unit configuration is correct.

■ Operating method

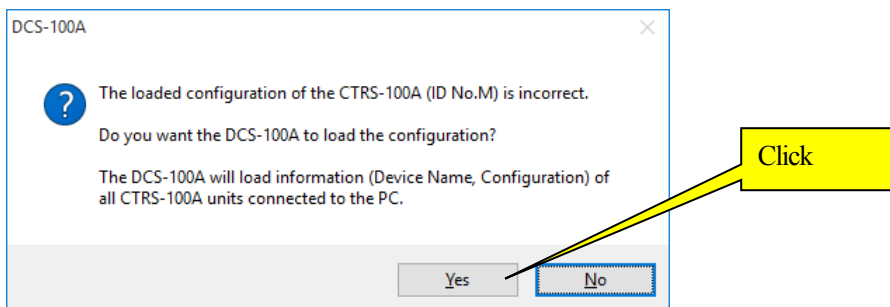
- (1) In the "Equipment Configuration" window, click the **Connection Test** button.



- (2) If the CTRS-100A is successfully connected and the unit configuration is correct, the message below is displayed.

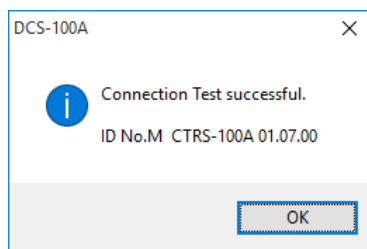


- (3) If the CTRS-100A is successfully connected but the unit configuration is incorrect, the message below is displayed. Click the **Yes** button.

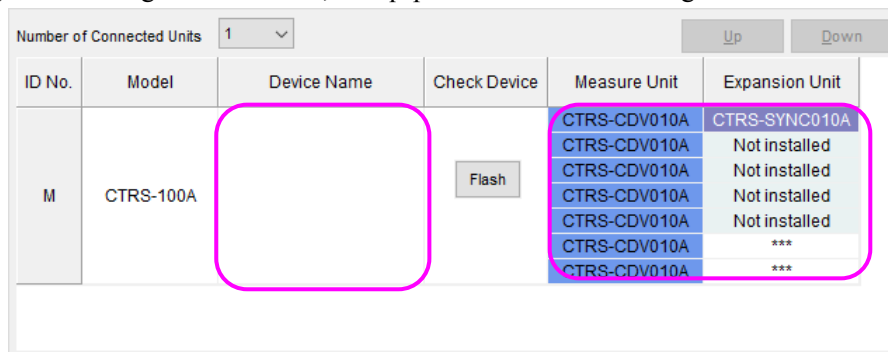


(4) The equipment name and unit configuration are read from the connected CTRS-100A unit.

If reading is successful, the message below is displayed.



(5) In the "Configuration" window, the equipment name and unit configuration of the read CTRS-100A unit are displayed.



NOTE

If the PC and CTRS-100A cannot communicate normally, confirm the items below.

- USB connection

Confirm that the PC and CTRS-100A have been connected by using a USB cable.

Confirm that the equipment-configuration and CTRS-100A ID numbers match.

- LAN connection

Confirm that the network conditions of the PC and CTRS-100A are correctly set.

Confirm that the equipment-configuration and CTRS-100A ID numbers match.

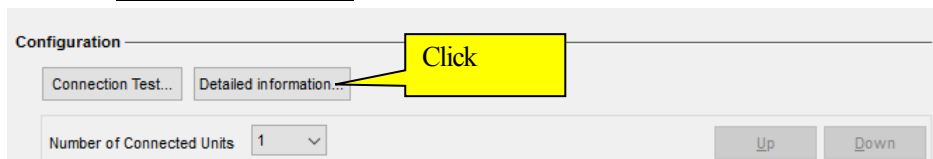
For Wired LAN connection, Confirm that the PC and CTRS-100A have been connected by using a LAN cable.

For Wireless LAN connection, check that the connection with the Wireless LAN unit is already established in the connection destination list of the PC.

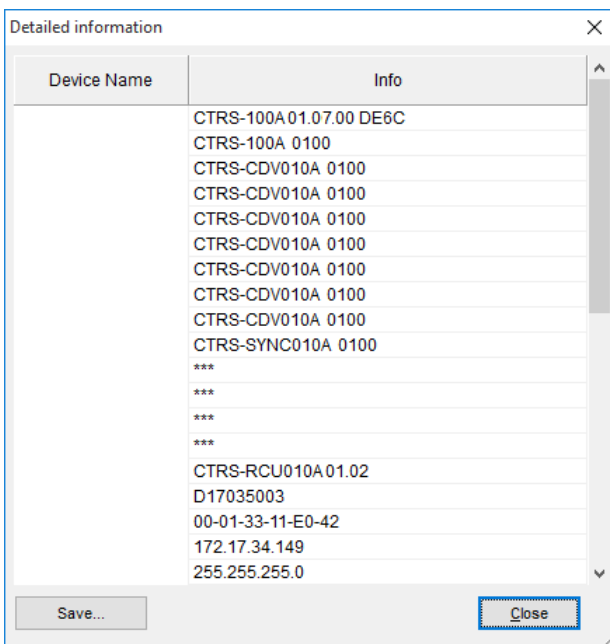
4-2-4 Detailed information

■ Operating method

- (1) Click the **Detailed Information** button.



- (2) When the "Detailed Information" window below is displayed, the CTRS-100A information can be confirmed.



MEMO

Click the **Detailed Information** button for a battery unit or remote control unit connected to the CTRS-100A to display the model, serial number, and other information.

4-3 Setting Up TCP/IP

To control the CTRS-100A by using a LAN connection, it is necessary to first set the CTRS-100A network conditions. In the "TCP/IP Settings" window, set these conditions.

There are three ways to set the CTRS-100A network conditions:

- **Using a USB connection to specify the settings**

This method involves temporarily using a USB connection to set the network conditions.

- **Specifying the settings offline**

This method involves saving the network conditions to an SD card inserted into the PC SD card drive and then inserting the SD card into the CTRS-100A to set the network conditions.

- **Specifying the settings online**

This method involves actually using a LAN connection to set the network conditions.

MEMO

- The default CTRS-100A network conditions are as follows:

IP address	192.168.70.100
Subnet mask	255.255.255.0
Default gateway	0.0.0.0
IP address(Wireless LAN unit)	192.168.70.90

- When a Wireless LAN unit is connected, the IP address of the Wireless LAN unit is required in addition to the IP address of CTRS-100A.

The IP address of the Wireless LAN unit is automatically assigned based on the IP address of CTRS-100A.

The value obtained by subtracting 10 from the IP address of the CTRS-100A is the IP address of the Wireless LAN unit.

Example:

IP address	192.168.70.100
IP address(Wireless LAN unit)	192.168.70.90

The IP address of the Wireless LAN unit is displayed to check for duplicate IP addresses.

NOTE

- To use the unit in an existing network environment, contact the network administrator to determine the IP address and other setting values.
- Do not duplicate the IP address of the PC, the IP address of the CTRS-100A, and the IP address of the Wireless LAN. Please set a different value.
- If there are other PCs and equipment connected in a LAN connection environment, confirm each IP address, and then specify settings so as to avoid duplicating values.

4-3-1 Using a USB connection to specify the settings

- (1) Select the "Configuration" tab to display the "Configuration" window.

In this window, set the control interface to USB, and select the number of connected CTRS-100A units to control.

- (2) Select the "TCP/IP" tab to display the "TCP/IP" window.

- (3) Connect all the CTRS-100A units for which to set network conditions.

- (4) Click the **Load Network Condition** button to read the network conditions for all the connected CTRS-100A units.

- (5) Click the  button to copy the network conditions for the "Current" item to the network conditions for the "New" item.
Enter the network conditions to change to for the "New" item of each CTRS-100A unit.

ID No.		IP Address	Subnet Mask	Default Gateway	IP Address (Wireless LAN Unit)	
M	Current	192.168.70.100	255.255.255.0	0.0.0.0	192.168.70.90	
	New	192.168.70_101	255.255.255.0	0.0.0.0	192.168.70.91	

Click

- (6) Click the  button to write the new network conditions to all the connected CTRS-100A units.



- (7) Disconnect all the connected CTRS-100A units, and then restart.

4-3-2 Specifying the settings offline

This method involves saving a network condition file (extension: IP) to an SD card inserted into the PC's SD card drive and then reading this file to the CTRS-100A to set the network conditions.

The name of the network condition file is as follows:

CTRS-100A	Name of the network condition file
Standalone (one unit), Master (synchronous operation)	CTRS100A_0.IP
Slave 1 (synchronous operation)	CTRS100A_1.IP
Slave 2 (synchronous operation)	CTRS100A_2.IP
Slave 3 (synchronous operation)	CTRS100A_3.IP

(1) Select the "Configuration" tab to display the "Configuration" window.

In this window, set the control interface to LAN, and select the number of connected CTRS-100A units to control.

(2) Select the "TCP/IP" tab to display the "TCP/IP" window.

The screenshot shows the "TCP/IP" configuration window. At the top, there are tabs: General, Configuration, TCP/IP (selected), Display, Remote Control Unit, Battery Unit, Wireless LAN Unit, Details, and Option. Below the tabs, there is a "Load network condition..." button and a checkbox labeled "Connect the wireless LAN unit." which is currently unchecked. The main area contains a table with columns: ID No., IP Address, Subnet Mask, Default Gateway, IP Address (Wireless LAN Unit), and an action column. The table has two rows: "Current" and "New". The "Current" row shows IP Address 192.168.70.100, Subnet Mask 255.255.255.0, Default Gateway 0.0.0.0, and IP Address (Wireless LAN Unit) ***. The "New" row shows IP Address 192.168.70.100, Subnet Mask 255.255.255.0, Default Gateway 0.0.0.0, and IP Address (Wireless LAN Unit) ***. The "Online" button is next to the "Current" row, and the "Save" button is next to the "New" row. Below the table, there is a section for "Wireless LAN unit frequency band" with radio buttons for 2.4GHz (selected) and 5GHz. At the bottom, there is a section for "Current setting Computer Name and IP Address int the PC." with a text box containing 172.17.32.73. Below this, there is a note: "Set an IP address to the target CTRS-100A. Note that the IP address should be different from that in the current PC."

(3) When connecting a Wireless LAN unit, select the checkboxes.

Displays the IP address of the Wireless LAN.

The screenshot shows the "TCP/IP" configuration window with the "Connect the wireless LAN unit." checkbox now checked. The table below shows the "New" row with the IP Address (Wireless LAN Unit) set to 192.168.70.90, which is highlighted with a pink box. The "Online" button is next to the "Current" row, and the "Save" button is next to the "New" row.

(4) When connecting a Wireless LAN unit, select the frequency band of the Wireless LAN unit.

Wireless LAN unit frequency band ☒ 2.4GHz ☐ 5GHz

NOTE

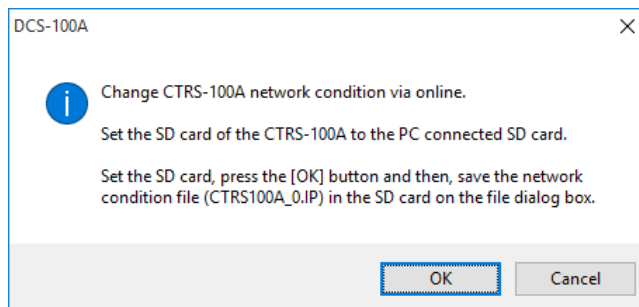
Frequency bandwidth 5GHz is available and prohibited.
Select 2.4GHz for use with.

(5) Enter the network conditions to change to for the "New" item of each CTRS-100A unit, and then click the **Save** button.

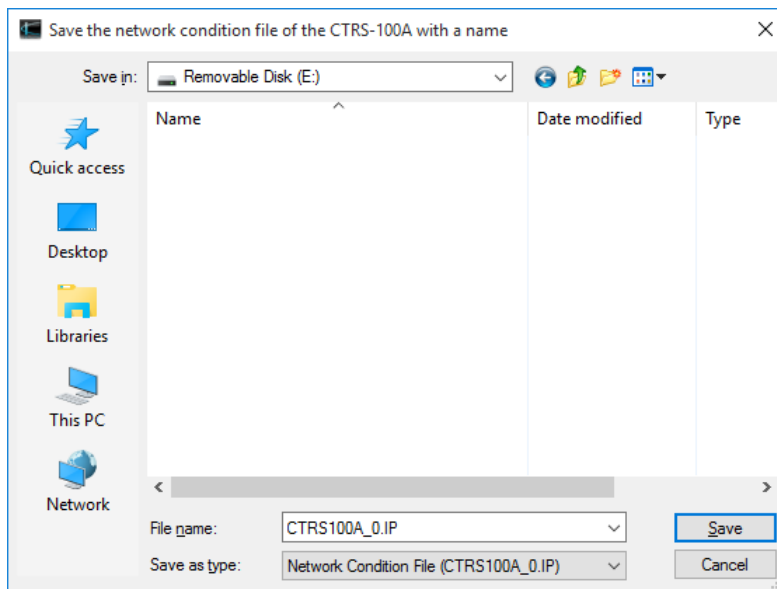
ID No.		IP Address	Subnet Mask	Default Gateway	IP Address (Wireless LAN Unit)	
M	Current	192.168.70.100	255.255.255.0	0.0.0.0	***	Online
	New	192.168.70.101	255.255.255.0	0.0.0.0	192.168.70.91	Save

Click

(6) When the message below is displayed, insert the SD card into the PC's SD card drive, and then click the **OK** button.



- (7) When the "Save the network condition file of the CTRS-100A with a name" window is displayed, select the PC's SD card drive, and then click the **Save** button to save the network condition file.



- (8) Connect the remote control unit to the CTRS-100A.
Insert the SD card to which the network condition file has been saved into the CTRS-100A, and then turn on the CTRS-100A while simultaneously pressing the remote control unit's "STOP" and "OPTION1" buttons to read the network condition file.
- (9) Restart the CTRS-100A to enable the changed network conditions.
- (10) In the case of synchronous operation, repeat steps (5) to (9).

4-3-3 Specifying the settings online

(1) Select the "Configuration" tab to display the "Configuration" window.

In this window, set the control interface to LAN, and select the number of connected CTRS-100A units to control.

(2) Select the "TCP/IP" tab to display the "TCP/IP" window.

(3) Connect all the CTRS-100A units for which to set network conditions.

(4) When connecting a Wireless LAN unit, select the checkboxes.

Displays the IP address of the Wireless LAN.

ID No.	IP Address	Subnet Mask	Default Gateway	IP Address (Wireless LAN Unit)
M	Current	192.168.70.100	255.255.255.0	0.0.0.0
	New	192.168.70.100	255.255.255.0	0.0.0.0

(5) For the "Current" item of each CTRS-100A unit, enter the IP address currently set to that unit.

For the "New" item of each CTRS-100A unit, enter the network conditions to change to, and then click the **Online** button.

ID No.	IP Address	Subnet Mask	Default Gateway	IP Address (Wireless LAN Unit)
M	Current	192.168.70.100	255.255.255.0	0.0.0.0
	New	192.168.70.101	255.255.255.0	0.0.0.0

(6) The "Change CTRS-100A Network Conditions" window below is displayed.

Click the **Change Network Condition** button to change the network conditions.

Change CTRS-100A Network Condition

Change CTRS-100A network condition via online.

Input the current IP address of the CTRS-100A and press the [Change Network Condition] button.

IP Address on the Current CTRS-100A

192 . 168 . 70 . 100

Network Condition after the Change

IP Address: 192.168.70.101

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

Change Network Condition... Close

(7) Restart the CTRS-100A to enable the changed network conditions.

(8) In the case of synchronous operation, repeat steps (5) and (7).

MEMO

With LAN connection possible, Click the **Load Network Condition** button to read the network conditions for all the connected CTRS-100A units.

When you read the network conditions, you do not need to enter the IP address currently set in the CTRS-100A.

Click

Load network condition... ☒ Connect the wireless LAN unit.

ID No.	IP Address	Subnet Mask	Default Gateway	IP Address (Wireless LAN Unit)
M	Current	172.17.34.150	255.255.255.0	172.17.34.250
	New	172.17.34.150	255.255.255.0	172.17.34.250

Online Save

NOTE

When setting online, the frequency band of the wireless LAN unit cannot be changed.
Change the frequency band of the wireless LAN unit on the "Wireless LAN unit" window.
(See "4-7 Wireless LAN Unit".)

4-4 Display

This section explains how to use the "Display" window to specify settings related to the display. Select the "Display" tab to display the "Display" window.

GeneralConfigurationTCP/IPDisplayRemote Control UnitBattery UnitDetails

Background color of the Measure Unit

Set background colors of items of the Measure Units with the CH condition settings.

Unit Type	Back Color
CDV	
Reserve	
Other	

☒ Displays background color.

Color setting...Reset

The Number of Display Digits8Set the number of numeric digits to display graph scale, legends, and numeric value data on numeric or graph window.

Number of digits of the name40

☒ When starting up the DCS-100A the next time, the Control Device window is displayed.

■ Measuring unit background colors

Set the "Set CH Condition" window item background colors for each measuring unit type.

- Set Color

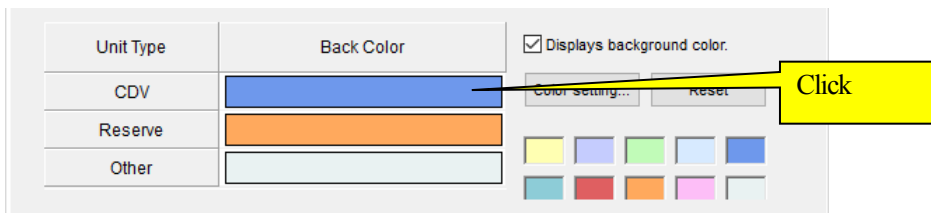
 button Display the "Set Color" window, where you can set the cursor-target background color.
- Reset

 button Restore all background colors to their initial status.

To enable the specified background colors in the "Set CH Condition" window, select the "Displays background color." checkbox.

Operation example 1: To use the background color list to change the CDV unit background color, do the following:

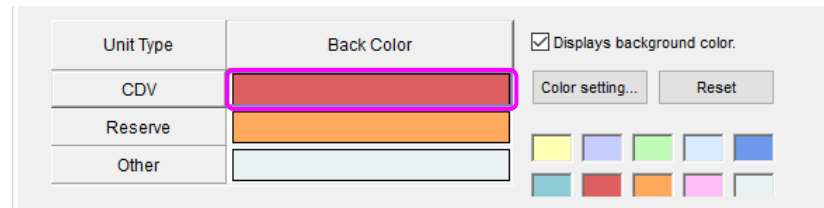
- (1) Click the CDV unit background color item to set the cursor target to the CDV card background color item.



- (2) In the background color list, click the color you want to set the background color to.

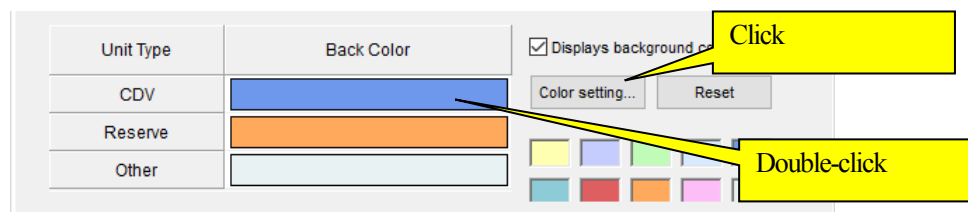


- (3) The CDV unit background color is changed.

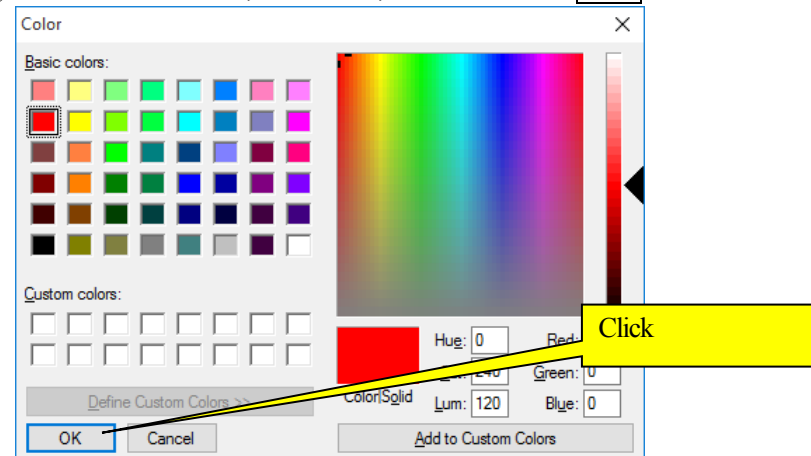


Operation example 2: To use the "Set Color" window to change the CDV unit background color, do the following:

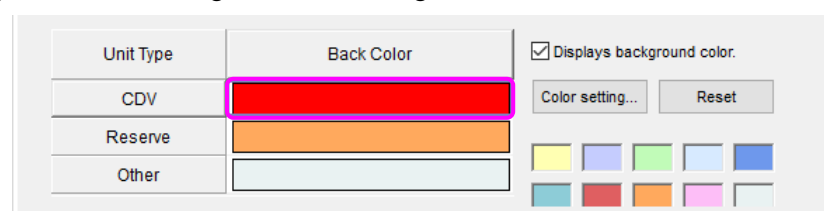
- (1) Click the CDV unit background color item to set the cursor target to the CDV unit.
- (2) Click the Set Color button or double-click the CDV unit background color item to display the "Set Color" window.



- (3) In the "Color" window, set the color, and then click the **OK** button.



- (4) The CDV unit background color is changed.



■ The Number of Display Digits

The Number of Display Digits
8

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

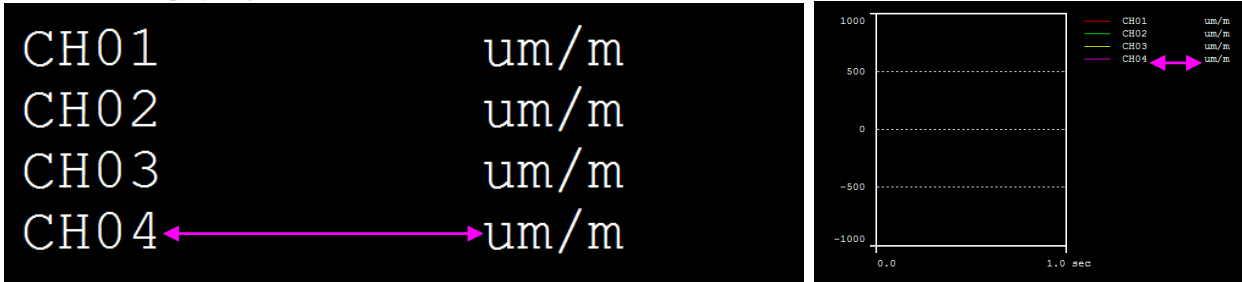
Number of digits of the name
40

☒ When starting up the DCS-100A the next time, the Control Device window is displayed.

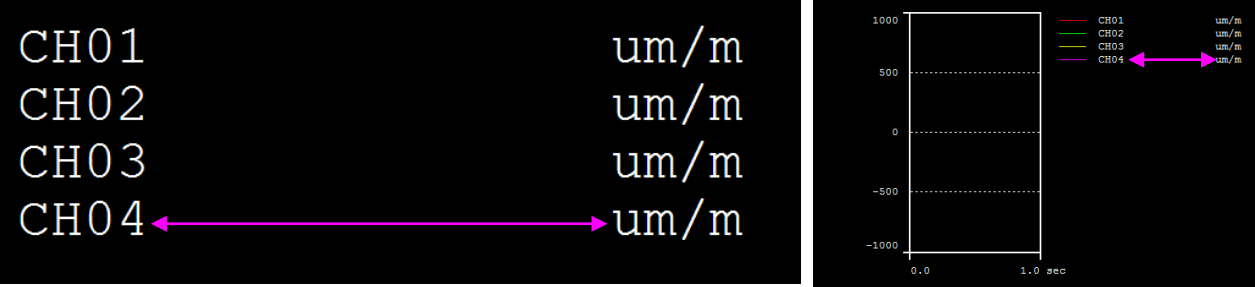
Select the number of digits to use when displaying scales, legends, or numerical data in the numerical/graph window (selectable range: 6 to 11 digits).

If displayed numbers are not within the specified number of digits to display, exponential notation is used.

• The Number of Display Digits: 6



• The Number of Display Digits: 11



■ Number of digits of the name

The Number of Display Digits
8

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

Number of digits of the name
40

☒ When starting up the DCS-100A the next time, the Control Device window is displayed.

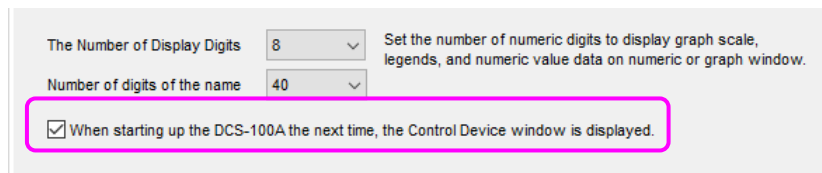
Select the number of channel-name characters to display when displaying legends in the numerical/graph window (selectable range: 10, 20, 30, or 40).

If a channel name exceeds the specified number of characters to display, the channel name is displayed within the specified number.

Example: If the channel name of CH01 is "ABCDEFGHJKLMN" and the number of channel-name characters to display is 10, the first ten characters ("ABCDEFGHIJ") are displayed as shown below.



■ When starting up the DCS-100A the next time, the Control Device window is displayed



The Number of Display Digits 8 Set the number of numeric digits to display graph scale, legends, and numeric value data on numeric or graph window.

Number of digits of the name 40

☒ When starting up the DCS-100A the next time, the Control Device window is displayed.

To display the "Select DCS-100A Control Device" window when DCS-100A is started up, select the "Display when starting up the DCS-100A the next time." checkbox.

4-5 Remote Control Unit

This section explains how to use the "Remote Control Unit" window to specify settings related to beeps sounded by the Remote control unit as well as the button execution method, etc.

Select the "Remote Control Unit" tab to display the "Remote Control Unit" window.

General Configuration TCP/IP Display **Remote Control Unit** Battery Unit 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 CTRS-100A is not under recording.

Button

STOP Button ☒ Press twice ☐ Press once

BAL Button ☒ Press twice ☐ Long press

OPTION1 Button No setting ▾

OPTION2 Button No setting ▾

■ Operation beep sound

Select the operation beep that sounds when monitoring, recording, stopping, balance, and other operations are performed.

Options: "OFF", "ON (high pitch)", "ON (low pitch)"

■ Emitting condition of the beep sound for an excessive input

Select the beep that sounds when each channel goes over in terms of data input (when the upper-limit check value or lower-limit check value specified for the channel conditions is exceeded).

If any setting other than "OFF" is specified, a high-pitched beep sounds regardless of the "Operation beep sound" item setting.

Options: "None", "Beep is generated only when input over.", "Beep is generated until STOP/PAUSE."

If the "Emit beep sound while the CTRS-100A is not recording." checkbox is selected, beeps are sounded even during monitoring.

■ Button

- "STOP" button execution methods

"Press twice" : Press the button twice within 0.5 seconds.

"Press once" : Press the button once.

- "BAL" button execution methods

"Press twice" : Press the button twice within 0.5 seconds.

"Long press" : Hold down the button for at least 1 second.

- "OPTION1" and "OPTION2" button function assignments

"No setting" : The button does nothing when pressed.

"Start monitoring" : Start monitoring.

This is the same operation as when the "Measurement" - "MONITOR" menu item is selected.

"Delete the recorded data" : Delete the most recently recorded data file after measurement finishes.

This is the same operation as when the "Measurement" - "Delete the Latest Recorded Data File" menu item is selected.

"Over Reset" : Clear the input-over status (the status where the specified range value has been exceeded) and restore the original status (the status before the input went over).

This is the same operation as when the "Measurement" - "Over Reset" menu item is selected.

"PAUSE" : Pause recording.

This is the same operation as when the "Measurement" - "REC/PAUSE" menu item is selected.

"Output CAN (Manual)" : Output a preset CAN data field.

This will perform the same operation as when the "Measurement" - "Output CAN (Manual)" menu item is selected.

MEMO

The "Remote Control Unit" window settings are only valid if a remote control unit is connected.

4-6 Battery Unit

This section explains how to use the "Battery Unit" window to specify the battery error judgement and operation upon DC power interruption settings.

Select the "Battery Unit" tab to display the "Battery Unit" window.

■ Battery error judgment

If the checkbox is selected, it becomes impossible to start data recording if the remaining battery charge is 5% or less or if a soundness error occurs.

■ Operation upon DC power interruption

If "Battery powered" is selected, the system switches to battery power.

If "Shutdown after acquiring data protection" is selected and the CTRS-100A is in the recording status, the measurement data is protected, and then the CTRS-100A power supply is turned off.

If the "After the power resume, the acquisition resumes." checkbox is selected, data recording is resumed if the power is restored after being interrupted while the CTRS-100A was in the recording status.

MEMO

The "Battery Unit" window settings are only valid if a battery unit is connected.

4-7 Wireless LAN Unit

This section explains how to change the Wireless LAN conditions of the Wireless LAN unit.

MEMO

- The "Wireless LAN Unit" window settings are only valid if a Wireless LAN unit is connected.
- The initial settings of the SSID and security key are written on the nameplate attached to the side of the Wireless LAN unit.
- The Wireless LAN conditions that can be changed with this software are frequency band, SSID, and security key.
The following Wireless LAN conditions can be changed by using the CTRS-100A network utility software.
Frequency band, SSID, Security key,
Wireless channel, Encryption method, DHCP, Arbitrary IP address

(1) Select the "Configuration" tab to display the "Configuration" window.

In this window, select the control interface and set the number of connected CTRS-100A units and unit configuration.

(2) Select the "Wireless LAN Unit" tab to display the "Wireless LAN Unit" window.

General Configuration TCP/IP Display Remote Control Unit Battery Unit **Wireless LAN Unit** Details Option

Load Wireless LAN condition...

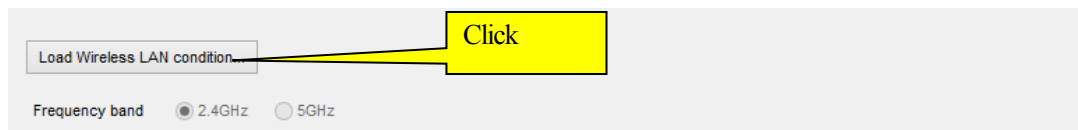
Frequency band ☒ 2.4GHz ☐ 5GHz

ID No.	Wireless LAN condition
M	***

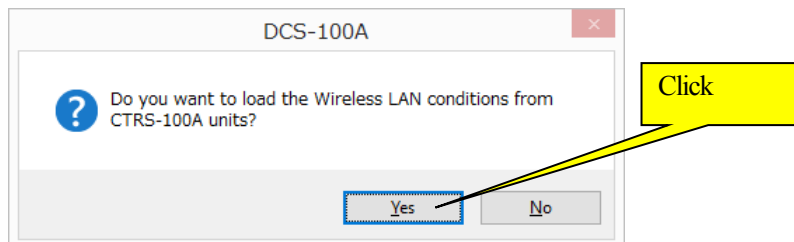
Write Wireless LAN condition...

(3) Connect all the CTRS-100A units for which to change Wireless LAN conditions.

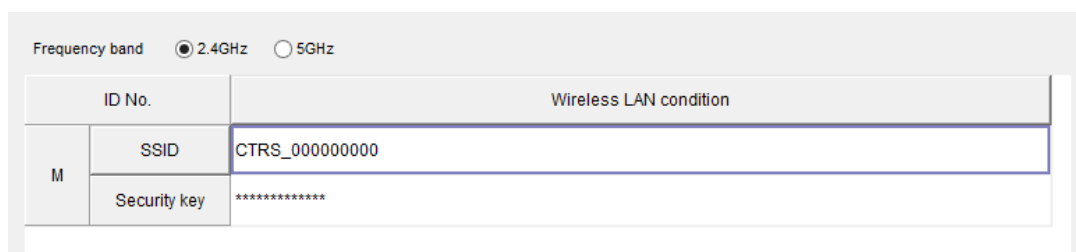
Click the **Load Wireless Condition** button to read the Wireless LAN conditions for all the connected CTRS-100A units.



(4) When the following confirmation message is displayed, click the **Yes** button to read the Wireless LAN conditions.



(5) If reading is successful, the Wireless LAN conditions of read CTRS-100A unit are displayed.



■Frequency band

Select the frequency band for all CTRS-100A at once.

Options: "2.4GHz", "5GHz"

NOTE

Frequency bandwidth 5GHz is available and prohibited.
Select 2.4GHz for use with.

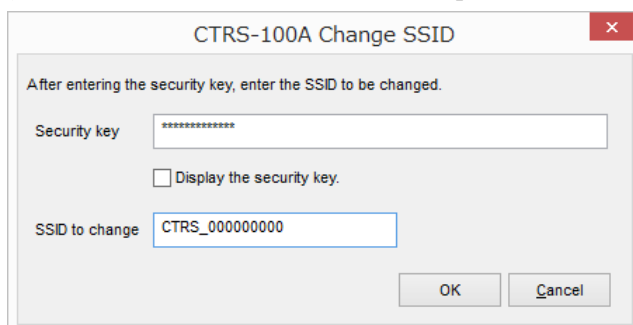
■SSID

Change the SSID of each CTRS-100A.

Double-click or press the "SPACE" key over the SSID item to display the "Change SSID" window.

In the "Change SSID" window, enter the security key, enter the SSID you want to change, and click the **OK** button.

(Available characters for SSID: Half-width alphanumeric characters, '_', '-', Within 30 characters)



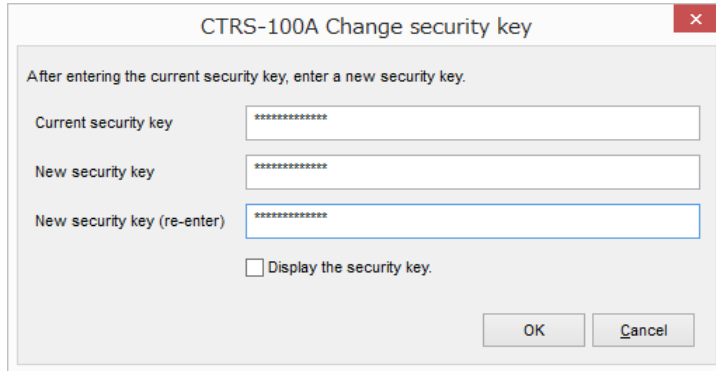
■Security key

Change the security key for each CTRS-100A.

Double-click or press the "SPACE" key over the Security key item to display the "Change Security key" window.

In the "Change Security Key" window, enter the current security key, enter the security key to be changed twice, and click the **OK** button.

(Available characters for Security Key: Half-width alphanumeric characters, 8 characters or more, 60 characters or less)



The screenshot shows a dialog box titled "CTRS-100A Change security key". Inside the dialog, there is a message: "After entering the current security key, enter a new security key." Below this message are three text input fields. The first field is labeled "Current security key" and contains seven asterisks. The second field is labeled "New security key" and also contains seven asterisks. The third field is labeled "New security key (re-enter)" and contains seven asterisks. Below the input fields is a checkbox labeled "Display the security key." which is currently unchecked. At the bottom right of the dialog are two buttons: "OK" and "Cancel".

- (6) After changing the Wireless LAN conditions, Click the **Write Wireless LAN Condition** button to write the new Wireless LAN conditions to all the connected CTRS-100A units.



NOTE

Restart the CTRS-100A to enable the changed Wireless LAN conditions.

4-8 Details

This section explains how to use the "Details" window to specify detailed settings.
Select the "Details" tab to display the "Details" window.

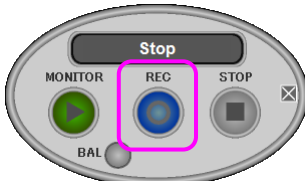
■ Operation

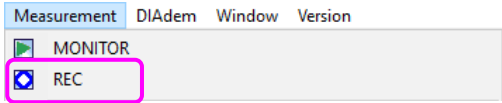
- If the "Do not use the PAUSE function while recording data." checkbox is selected, the PAUSE function is disabled during recording.

MEMO

Enabling or disabling the use of the PAUSE function during recording changes the button name on the measurement control panel as well as the measurement-related menu item.

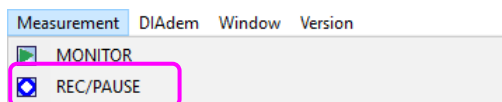
- PAUSE function disabled





- PAUSE function enabled





- If the "Excute input resistance check during balance adjustment." checkbox is selected, an input resistance check is performed upon executing balance.
- If the "Excute burnout check during balance adjustment." checkbox is selected, a burnout check is performed upon executing balance.

■ Balance standard value (0.1 to 50.0%)

Set the standard balance value.

Balance standard value (0.1 to 50.0 %) _____

5.0

■ Internal Sampling Frequency

The Thermocouple unit performs AD conversion while switching for each channel.

The data update cycle(internal sampling frequency) can be selected from 2 Hz and 0.5 Hz.

When measuring in an environment with large variations in measured values, setting 0.5 Hz can reduce variations in measured values.

CTRS-CTA010A Internal Sampling Frequency _____

☒ 2Hz ☐ 0.5Hz

MEMO

- "Excute burnout check during balance adjustment." and Internal Sampling Frequency settings are only valid if a Thermocouple unit is connected.

■ Error processing

If the "When CAN overflow occurs, recording will be stopped." checkbox is selected, recording will be stopped if CAN overflow occurs when recording CAN data with CTRS-100A.

CTRS-CAG010A Error _____

☒ When CAN overflow occurs, recording will be stopped.

MEMO

- The setting for performing error processing during CAN data recording is enabled when a CAN input unit is connected.

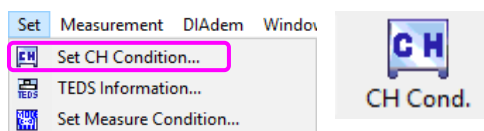
5 SETTING CHANNEL CONDITIONS

This chapter explains how to specify whether there is analog-channel measurement as well as the mode, range, calibration constant, offset, unit, etc.

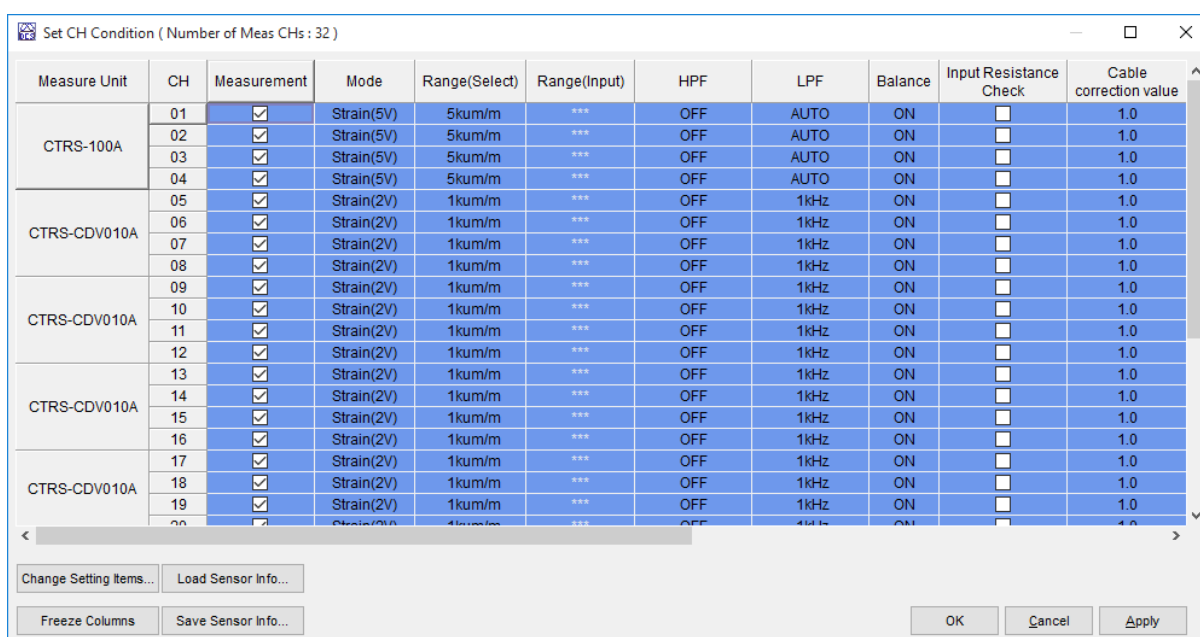
■ Display operation

Do one of the following to open the "Set CH Condition" window:

- Select the "Set" - "Set CH Condition" menu item.
- Select the "CH Cond." icon on the toolbar.



■ "Set CH Condition" window



Change Setting Items button

Add, delete, or rearrange displayed setting items.

Freeze Columns button

Switch between using or not using the "Fix Columns" function.

Load Sensor Info button

Using the "Fix Columns" function makes it possible to scroll through unspecified setting items while continuing to display specified setting items. Read the calibration constant, rated capacity, rated output, and other sensor-related information from a sensor information file (CSV). These can then be specified as the channel conditions.

Save Sensor Info button

Save the calibration constant, rated capacity, rated output, and other sensor-related information as a sensor information file.

OK button

Finalize the specified details and close the "Channel Condition Settings" window.

Cancel button

Cancel the specified details and close the "Channel Condition Settings" window.

Apply button

Finalize the current setting details.

MEMO

For details on reading and saving sensor information files, see the separate manual INSTRUCTION MANUAL DCS-100A Common Operations.

■ Title bar

The title bar displays the number of analog measurement channels currently specified in the "Set CH Condition" window.

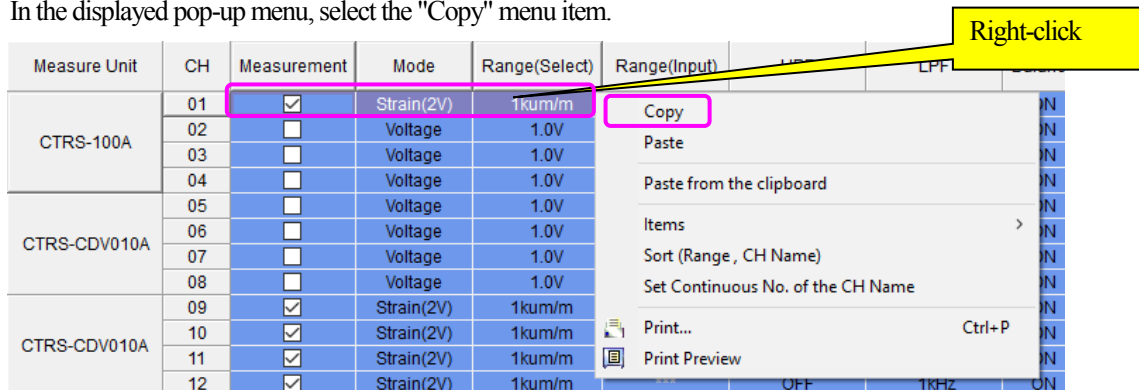
 Set CH Condition (Number of Meas CHs : 4)

■ Copying and pasting setting items

The setting item details can be copied and then pasted to the setting items for a different channel.

(1) Use the mouse to drag setting items from the channel to be copied, and then right-click.

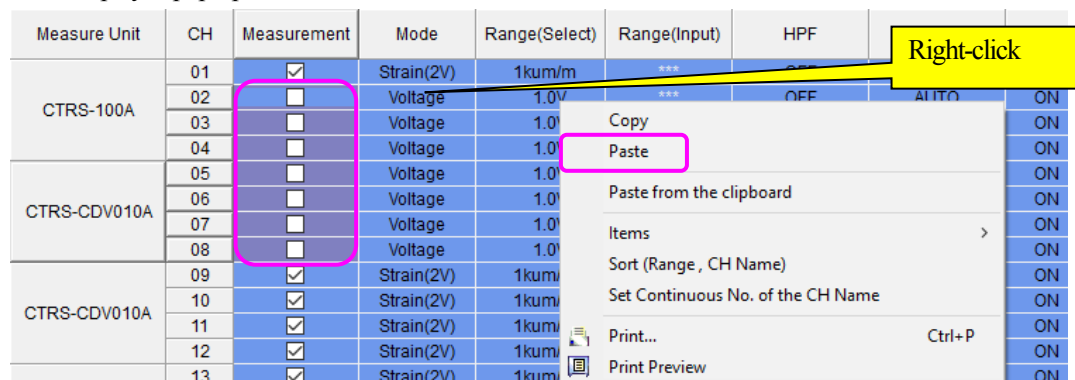
In the displayed pop-up menu, select the "Copy" menu item.



Measure Unit	CH	Measurement	Mode	Range(Select)	Range(Input)	HPF	LPF	Balance
CTRS-100A	01	☒	Strain(2V)	1kum/m	***	OFF	AUTO	ON
	02	☐	Voltage	1.0V	***	OFF	AUTO	ON
	03	☐	Voltage	1.0V	***	OFF	AUTO	ON
	04	☐	Voltage	1.0V	***	OFF	AUTO	ON
CTRS-CDV010A	05	☐	Voltage	1.0V	***	OFF	1kHz	ON
	06	☐	Voltage	1.0V	***	OFF	1kHz	ON
	07	☐	Voltage	1.0V	***	OFF	1kHz	ON
	08	☐	Voltage	1.0V	***	OFF	1kHz	ON
CTRS-CDV010A	09	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	10	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	11	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	12	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON

(2) Drag the range of channels to be pasted to, and then right-click.

In the displayed pop-up menu, select the "Paste" menu item.



Measure Unit	CH	Measurement	Mode	Range(Select)	Range(Input)	HPF	LPF	Balance
CTRS-100A	01	☒	Strain(2V)	1kum/m	***	OFF	AUTO	ON
	02	☐	Voltage	1.0V	***	OFF	AUTO	ON
	03	☐	Voltage	1.0V	***	OFF	AUTO	ON
	04	☐	Voltage	1.0V	***	OFF	AUTO	ON
CTRS-CDV010A	05	☐	Voltage	1.0V	***	OFF	1kHz	ON
	06	☐	Voltage	1.0V	***	OFF	1kHz	ON
	07	☐	Voltage	1.0V	***	OFF	1kHz	ON
	08	☐	Voltage	1.0V	***	OFF	1kHz	ON
CTRS-CDV010A	09	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	10	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	11	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	12	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	13	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON

(3) The setting items from the copied channel are pasted to the range of selected channels.

Measure Unit	CH	Measurement	Mode	Range(Select)	Range(Input)	HPF	LPF	Balance
CTRS-100A	01	☒	Strain(2V)	1kum/m	***	OFF	AUTO	ON
	02	☒	Strain(2V)	1kum/m	***	OFF	AUTO	ON
	03	☒	Strain(2V)	1kum/m	***	OFF	AUTO	ON
	04	☒	Strain(2V)	1kum/m	***	OFF	AUTO	ON
CTRS-CDV010A	05	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	06	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	07	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON
	08	☒	Strain(2V)	1kum/m	***	OFF	1kHz	ON

5- 1 Setting Items

•ID No.

Displays the CTRS-100A ID No. The ID No. are as follows:

CTRS-100A	ID No.
Standalone (one unit), master (synchronous operation)	M
Slave 1 (synchronous operation)	S1
Slave 2 (synchronous operation)	S2
Slave 3 (synchronous operation)	S3

•Device Name

Displays the CTRS-100A equipment name.

•Measure Unit

Displays the models of the currently installed measuring units.

•CH

Displays the channel number.

For DCS-100A, the channels are as follows:

CTRS-100A channels	DCS-100A channels
Standalone (one unit), master (synchronous operation) CH01 to CH32	CH01 to CH32
Slave 1 (synchronous operation) CH01 to CH32	CH33 to CH64
Slave 2 (synchronous operation) CH01 to CH32	CH65 to CH96
Slave 3 (synchronous operation) CH01 to CH32	CH97 to CH128

•ID-CH

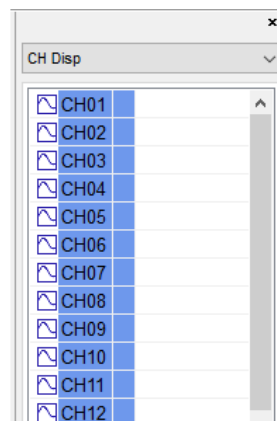
Displays the ID-CH No.

Example: ID1-01 is displayed for CH01 of ID No. S1.

•Measurement

Select the checkboxes of measurement target channels.

Measurement target channels are displayed in the channel display bar of the main window as shown by the figure at the right.



• **Mode**

Select the channel mode.

The options are determined based on the currently installed measuring unit.

• **Range (Select)**

Select the range.

The options are determined based on the currently installed measuring unit.

The "Range (Select)" item and "Meas. Range (Select)" item are linked, so changing the "Range (Select)" item automatically changes the "Meas. Range (Select)" item.

• **Range (Input)**

Enter any range values.

This can be entered if "Optimal" is selected for the "Range (Select)" item.

• **Meas. Range (Select)**

Select the measuring range.

The option values are the result of performing a calibration-constant calculation for the range value.

The "Meas. Range (Select)" item and "Range (Select)" item are linked, so changing the "Meas. Range (Select)" item automatically changes the "Range (Select)" item.

• **Meas. Range (Input)**

Enter any measuring range.

This can be entered if "Optimal" is selected for the "Meas. Range (Input)" item.

• **HPF, LPF**

Select the cutoff frequency for the high-pass and low-pass filters.

The options are determined based on the currently installed measuring unit.

• **Balance**

Select the checkboxes of balance target channels.

It might not be possible to set the "Balance" item depending on the measuring unit and "Mode" item.

- | | | |
|--------|---|--|
| "ON" | : | The channel is subject to balance (balance function enabled). |
| "OFF" | : | The channel is not subject to balance (balance function enabled). |
| "NONE" | : | The channel is not subject to balance, and entered measurement data values are used as is (balance function disabled). |

• **Offset Zero**

Select the checkboxes of offset-zero target channels.

Executing the offset zero function sets the currently monitored measurement data to the offset zero value and makes the apparent measurement data zero.

In addition, the offset zero value can be initialized to zero by using the "Measurement" - "Execute Offset Zero" menu item.

• **Input Resistance check**

Select the checkboxes of input-resistance-check target channels.

It might not be possible to set the "Input Resistance check" item depending on the measuring unit and "Mode" item.

• **Burnout check**

Select the checkboxes of burnout-check target channels.

It might not be possible to set the "Burnout check" item depending on the measuring unit and "Mode" item.

• **Cable correction value**

Enter the cable correction value.

• **Rated Capacity (Sensor phy. Value)**

Enter the rated capacity of the input sensor according to the "Rated output" item.

When the "Rated Capacity" item is changed, the "Calibr. const." item is automatically changed.

• **Rated Output (Sensor Output)**

Enter the rated output of the input sensor according to the "Rated Capacity" item.

When the "Rated Output" item is changed, the "Calibr. const." and "Rated Output (mV/V)" items are automatically changed.

• **Rated Output (mV/V)**

Enter the rated output of the input sensor. This item is only valid if "Mode" is set to strain.

When the "Rated output (mV/V)" item is changed, the "Calibr. Const." and "Rated Output" items are automatically changed.

• **Calibr. Const.**

Enter the calibration constant to multiply the measurement data by.

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

For the calibration constant, set the conversion factor, etc. for the physical quantity corresponding to the input sensor of each channel.

When the "Calibr. const." item is changed, the "Rated Capacity" item is automatically changed.

• **Offset**

Enter the offset as a physical quantity (a value multiplied by the calibration constant).

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

The offset is used to shift the measurement data by a certain amount.

• **Offset zero value**

Displays the offset zero value obtained by executing the offset zero function.

The offset zero value can be changed.

MEMO

If the calibration constant, offset, cable correction value, and offset zero value have been specified, a calibration constant calculation is performed based on the equation below to find the measurement data.

Measurement data (physical quantity) = measurement data $\times$ calibration constant $\times$ cable correction value + offset + offset zero value

* The offset zero value is added only if the "Offset zero" item is set to ON.

•Unit

Select the physical-quantity unit according to the input sensor.

Double-click or press the "SPACE" key over the channel item you want to set to display the "Set Unit" window, and then select the unit.

- When the data file format is KS2

Set Unit CH01

KS2 Format unit

☒ um/m ☐ e ☐ mV ☐ V ☐ mA ☐ A

☐ mm ☐ cm ☐ m ☐ degC ☐ degF ☐ gf/cm2

☐ kgf/mm2 ☐ kgf/cm2 ☐ kgf/m2 ☐ mmHg ☐ kPa ☐ MPa

☐ g ☐ kg ☐ ton ☐ gf ☐ kgf ☐ tonf

☐ N ☐ kgf.mm ☐ kgf.cm ☐ kgf.m ☐ Nm ☐ OHM

☐ kOHM ☐ MOHM ☐ % ☐ dB ☐ ppm ☐ cm/s

☐ m/s ☐ m/min ☐ km/h ☐ Hz ☐ kHz ☐ MHz

☐ deg ☐ deg ☐ rad ☐ kN ☐ kNm ☐ kW

☐ rpm ☐ cm/s2 ☐ m/s2 ☐ G ☐ daN ☐ mile/h

☐ *100kpa ☐ deg/s ☐ msec ☐ sec ☐ min ☐ hour

☐ user1 ☐ user2 ☐ user3

OK Cancel

If the unit is not displayed in the "Set Unit" window, up to three user-defined units can be registered for use with all channels. User-defined units must be seven single-byte characters or less.

☐ user1 ☐ user2 ☐ user3

- When the data file format is KS3

Set Unit CH01

Unit

☒ um/m ☐ e ☐ mV ☐ V ☐ mA ☐ A

☐ mm ☐ cm ☐ m ☐ degC ☐ degF ☐ gf/cm2

☐ kgf/mm2 ☐ kgf/cm2 ☐ kgf/m2 ☐ mmHg ☐ kPa ☐ MPa

☐ g ☐ kg ☐ ton ☐ gf ☐ kgf ☐ tonf

☐ N ☐ kgf.mm ☐ kgf.cm ☐ kgf.m ☐ Nm ☐ OHM

☐ kOHM ☐ MOHM ☐ % ☐ dB ☐ ppm ☐ cm/s

☐ m/s ☐ m/min ☐ km/h ☐ Hz ☐ kHz ☐ MHz

☐ deg ☐ deg ☐ rad ☐ kN ☐ kNm ☐ kW

☐ rpm ☐ cm/s2 ☐ m/s2 ☐ G ☐ daN ☐ mile/h

☐ *100kpa ☐ deg/s ☐ msec ☐ sec ☐ min ☐ hour

☐ User

OK Cancel

If the unit is not displayed in the "Set Unit" window, a unit can be registered for each channel. User-defined units must be 31 single-byte characters or less.

•Chk. Val. (Up)

Set the upper-limit check value as a range-value percentage (setting range: -100 to 100%).

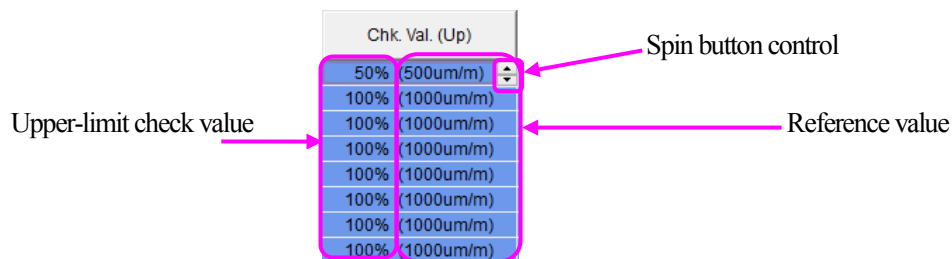
Setting the upper and lower-limit check values makes it possible to know that the status is abnormal when the measurement data of each channel goes outside the standard data range.

Once the measurement data of each channel equals or exceeds the upper-limit check value, the values in the numerical/graph window are displayed in red.

Double-click or press the "SPACE" key over the channel item you want to set to make entry possible.

In addition, the spin button control can be used to change the number.

(For details on input-over display and input-over resets, see "7 - 1 2 Input-Over Display".)



•Chk. Val. (Down)

Set the lower-limit check value (setting range: -100 to 100%).

The setting method is the same as for the upper-limit check value.

(For details on input-over display and input-over resets, see "7 - 1 2 Input-Over Display".)

MEMO

The upper-limit and lower-limit check values displayed in parentheses are physical quantities displayed as reference values.

•Deci Digits

Select the number of decimal places to use when displaying numbers. See the environment settings in the separate manual INSTRUCTION MANUAL DCS-100A Common Operations.

•CH Name

If the data file format is KS2, enter a comment as a character string within 40 single-byte characters (or 20 two-byte characters).

If the data file format is KS3, enter a comment as a character string within 127 single-byte characters (or 63 two-byte characters).

Double-click or press the "SPACE" key over the channel item you want to set to make entry possible, and then enter the comment character string.

- **TEDS User Data**

Displays the user data read from the TEDS sensor.

The TEDS user data can be changed by using up to 28 single-byte (or 14 two-byte) characters.

- **TEDS Sensor S/N**

Displays the serial number read from the TEDS sensor.

The TEDS sensor S/N can be changed by using up to 12 single-byte (or 6 two-byte) characters.

- **TEDS Sensor Model**

Displays the serial number read from the TEDS sensor.

The TEDS sensor model can be changed by using up to 28 single-byte (or 14 two-byte) characters.

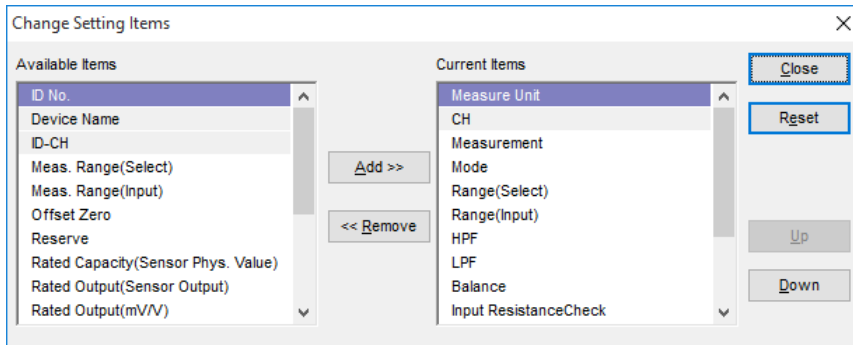
- **TEDS ROMID**

Displays the ROMID read from the TEDS sensor.

The TEDS ROMID cannot be changed.

5-2 Changing Displayed Setting Items

Click the **Change Setting Items** button to display the "Change Setting Items" window.
Add, delete, or rearrange setting items displayed in the "Set CH Condition" window.

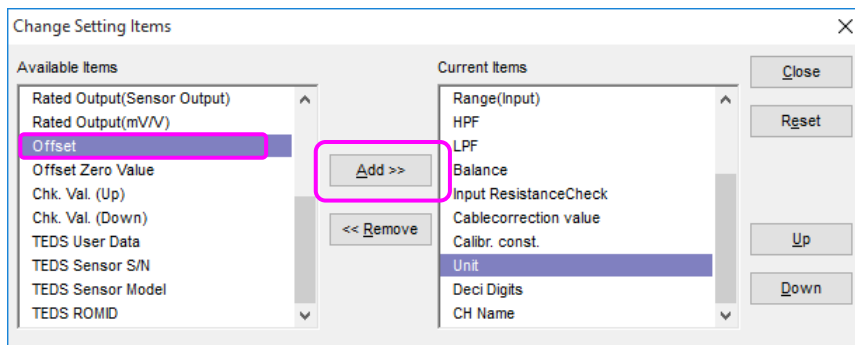


- Add** button Add setting items that are not currently displayed to the "Set CH Condition" window.
- Delete** button Delete setting items that are currently displayed from the "Set CH Condition" window.
- Close** button Finalize the specified details and close the "Change Setting Items" window.
- Reset** button Restore set items to their initial status.
- Up/Down** button Rearrange the current setting details.
Select a setting item you want to move, and then click the **Up** or **Down** button.

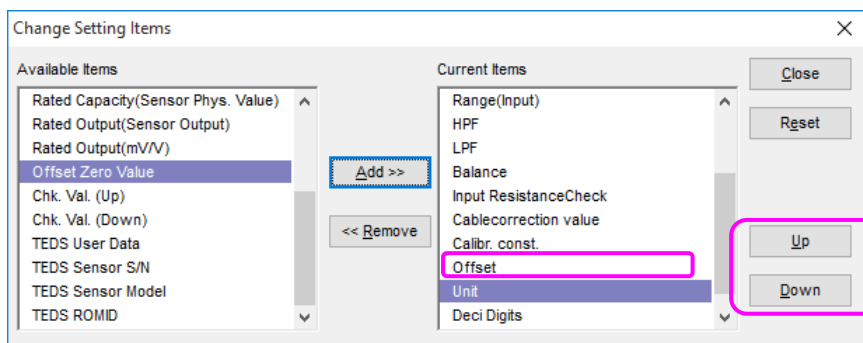
■ Operation example

This example shows how to add the "Offset" setting item to the "Set CH Condition" window.

- (1) Under Displayable setting items, select "Offset", move the cursor to the desired insertion position under Current setting items, and then click the **Add (A) ->** button.



- (2) "Offset" is added to the current setting items.
Under Current setting items, you can click the **Up** and **Down** buttons to move a setting item to any position.



- (3) Click the **Close** button to close the "Change Setting Items" dialog box.

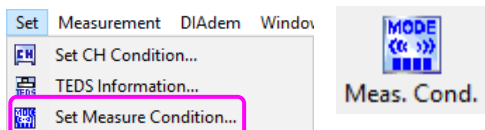
6 SETTING MEASUREMENT CONDITIONS

This chapter explains how to specify settings related to measurement mode conditions (the measurement mode, sampling frequency, number of recorded data items per channel, etc.) and data files.

■ Display operation

Do one of the following to open the "Set Measure Condition" window:

- Select the "Settings" - "Set Measure Condition" menu item.
- Select the "Meas. Cond." icon on the toolbar.



6-1 Measurement Mode

This section explains how to use the "Measure Mode" window to set the measurement mode, sampling frequency, number of recorded data items per channel, etc.

In the list on the left, select the "Measure Mode" tab to display the "Measure Mode" window.

The image is a screenshot of the 'Set Measure Condition' dialog box, with the 'Measure Mode' tab selected. The dialog has a sidebar on the left with three tabs: 'Measure Mode' (selected), 'Extra', and 'Data File'. The main area contains several sections: 'Measure Mode' with a dropdown menu set to 'Manual (Set Record Data)'; 'Sampling Frequency' with a dropdown set to '1,2,5' and a unit dropdown set to '1kHz', followed by a note about CTRS-100A units and a 'Clockout frequency dividing' input set to '1'; 'Clockout Mode' with radio buttons for 'always' (selected), 'during recording', and 'Do not output', and a 'reverse' checkbox; 'Record Data' with 'Number of Data/CH' set to '1000' and 'Record Time' set to '1.000sec'; 'Repeat Times' with a value of '1'; and 'Static Measurement' with an unchecked checkbox and a note about CSV format. At the bottom right are 'OK' and 'Cancel' buttons.

button

Finalize the specified details and close the "Set Measure Condition" window.

button

Cancel the specified details and close the "Set Measure Condition" window.

■ Measure Mode

Select the measurement mode from the options below.

"Manual"	Manually start and stop recording.
"Manual (Set Record Data)"	Manually start recording until the set number of recorded data items per channel are recorded.
"Interval"	Automatically record at the set time interval.
"Analog Trigger"	Automatically record when the set analog trigger conditions are satisfied.
"Ext Trigger"	Automatically start data recording when an external trigger signal is input.
"Manual Trigger"	Manually start recording. The delay before the start trigger and after the end trigger can be set.
"Complex Trigger"	Automatically start data recording when the four analog-trigger channel, external trigger, and manual trigger AND/OR conditions are satisfied.
"CAN Trigger"	Use the CAN signal (CAN channel) as the trigger source, and automatically start recording data when CAN trigger conditions are met.

The measurement mode options are determined based on the data-file saving location as shown in the table below.

Data-file saving location	Selectable measurement modes
"CTRS-100A SD Card"	"Manual", "Manual (Set Record Data)", "Interval", "Analog Trigger", "Ext Trigger", "Manual Trigger", "Complex Trigger", "CAN Trigger"
"PC data-file saving folder"	"Manual", "Manual (Set Record Data)", "Interval", "Analog Trigger"
"Both CTRS-100A of the SD card and PC data file folder"	"Manual", "Manual (Set Record Data)"

NOTE

If there is no analog channel to measure, "Manual", "Manual (Set Recorded Data)", "Interval", "Analog Trigger", "Ext Trigger", "Manual Trigger", and "Complex Trigger" cannot be selected.

If there is no signal (CAN channel) to measure, "CAN Trigger" cannot be selected.

■ Sampling frequency

- Select the sampling frequency.

The sampling frequency is the same for all channels.

Sampling frequency	Options
1, 2, 5 series	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
2n series	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
External clock	Enter the external clock sampling frequency. Enter the external clock from "EXTERNAL I/O", which is on the front of the CTRS-100A.

MEMO

Use the 2n series sampling frequency setting to, for example, set the FFT analysis result frequency resolution to a nice round number.

Sampling frequency	FFT (2048) analysis result resolution
4.096 kHz	1.0000 Hz

- Clockout frequency dividing (setting range: 1 to 65534)

To enable the use of the CTRS-100A to make measurements in cooperation with external equipment (high-speed cameras, loggers of other companies, etc.), any divided clock signal can be output from the internal sampling clock signal. The clock signal is output from "EXTERNAL I/O", which is on the front of the CTRS-100A.

MEMO

For details on setting the external clock output, see the separate manual INSTRUCTION MANUAL CTRS-100A Hardware.

■ Record Data

If any measurement mode other than "Manual" has been selected, enter the number of recorded data items per channel or the recording time.

The number of recorded data items per channel and recording time are linked, so changing the number of recorded data items per channel automatically changes the recording time.

■ Repeat Times

Set the number of repetitions.

The setting range is determined based on the number of digits for the file number in the "Data File" window as follows:

File-number number of digits	Setting range
3	Zero to 999
4	Zero to 9999
5	Zero to 99999

NOTE

When the maximum number of repetitions or file number is reached, recording stops.

■ Static Measurement

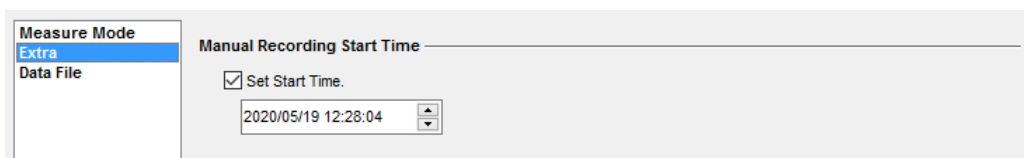
To make static measurements, select the "Performs the static measurements." checkbox.
(See "7 - 1 3 Static Measurement".)

6-2 Manual Conditions

This section explains how to use the "Measurement Mode" window to set the manual conditions.
For the measurement mode item in this window, select "Manual" or "Manual (Set Record Data)".

■ Setting operation

- (1) To perform repeated recording with the measurement mode set to "Manual (Set Record Data)", set the number of repetitions to 2 or more.
(See "7-3-1 Repeated recording".)
- (2) To set the recording start date and time, select the "Extra" tab in the list on the left to display the "Extra" window, select the "Set Start Time." checkbox, and then set the date and time.
(See "7-3-2 Specifying the recording start date and time".)



NOTE

If the data-file saving location is "PC data file folder", "Both CTRS-100A of the SD card and PC data file folder", the recording start date and time cannot be set for manual measurement.

6-3 Interval Conditions

This section explains how to use the "Interval" window to set the interval conditions.

■ Display operation

- (1) In the "Measure Mode" window, select "Interval" for the measurement mode item to display the "Interval" tab in the list on the left.
- (2) In the list on the left, select the "Interval" tab to display the "Interval" window.

■ Setting operation

- (1) To set the interval start date and time (the first recording start date and time), select the "Set Interval Start Time." checkbox, and then set the date and time.
If the interval start date and time is not set, the interval start date and time will be a few seconds after a recording start operation is performed.
- (2) Set the interval time.
- (3) Enter the number of repetitions.

MEMO

If a recording start operation is performed after the interval start date and time passes, the interval time and number of repetitions are automatically calculated based on the current date and time, and then interval measurement continues if any repetitions remain.
If no repetitions remain, a message is displayed, and interval measurement ends.

NOTE

If using a standalone (one unit) configuration, specify the recording time plus at least 10 seconds as the interval time.
If using synchronous operation, specify the recording time plus at least 30 seconds as the interval time.

6-4 Trigger Conditions

This section explains how to set the analog trigger conditions, external trigger conditions, manual trigger conditions, complex trigger, and CAN trigger conditions.

■ Selecting the trigger slope (analog trigger conditions, complex trigger conditions, CAN trigger (analog, complex) conditions)

Select the trigger-channel trigger slope from the options below.

- | | |
|------------|---|
| "Positive" | When the trigger-channel measurement data changes from a value less than the trigger level value to one greater than or equal to it, the trigger condition is satisfied and recording starts. |
| "Negative" | When the trigger-channel measurement data changes from a value greater than the trigger level value to one less than or equal to it, the trigger condition is satisfied and recording starts. |

MEMO

· If the trigger slope is "Positive" and the trigger level value is 100, the trigger condition is satisfied when the measurement data changes from a value less than 100 to a value greater than or equal to 100.

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

Measurement data that satisfies the trigger condition

· If the trigger slope is "Negative" and the trigger level value is 100, the trigger condition is satisfied when the measurement data changes from a value greater than 100 to a value less than or equal to 100.

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

Measurement data that satisfies the trigger condition

■ Maximum delay before the start trigger and after the end trigger (analog trigger, external trigger conditions, manual trigger conditions, and complex trigger conditions)

When performing CAN measurement

Maximum delay = $2,097,152 / (\text{No. of data bytes} * \text{No. of measurement channels} + 8)$

When not performing CAN measurement

Maximum delay = $2,097,152 / (\text{No. of data bytes} * \text{No. of measurement channels})$

The number of bytes of data is as follows:

- Real-time arithmetic processing not performed: 4
- Real-time arithmetic processing performed: 8

* The number of measurement channels is equal to the total analog channels and calculation channels.

■ Maximum CAN trigger recording time

The maximum recording time is determined as follows.

When there is an analog channel to measure

Maximum recording time = $4,000,000,000 / (\text{No. of data bytes} * \text{No. of analog channels} + 8)$

* If this exceeds 24 hours it will be rounded down to 24 hours.

When there is no analog channel to measure

24 hours

■ Maximum delay (sec.) after CAN trigger end trigger

The maximum delay (sec.) after the end trigger is determined as follows.

When there is an analog channel to measure

Maximum delay = $2,097,152 / (\text{No. of data bytes} * \text{No. of analog channels} + 8)$

* If this exceeds 65535 it will be rounded down to 65535.

When there is no analog channel to measure

65535 sec.

6-4-1 Analog trigger conditions

This section explains how to use the "Analog Trigger" window to set the analog trigger conditions.

■ Display operation

- (1) In the "Measurement Mode" window, select "Analog trigger" for the measurement mode item to display the "Analog Trigger" tab in the list on the left.
- (2) In the list on the left, select the "Analog Trigger" tab to display the "Analog Trigger" window.

The screenshot shows the 'Analog Trigger' configuration window. On the left, a sidebar lists 'Measure Mode', 'Analog Trigger' (selected), 'Extra', and 'Data File'. The main window is titled 'Analog Trigger' and contains the following settings:

- Start Trigger:** CH No. 01, Slope Positive, Level 500 (range -1000 ~ 1000 um/m).
- End Trigger:** CH No. 01, Slope Positive, Level 500 (range -1000 ~ 1000 um/m).
- Pre Trigger Data(Delay):** Number of Data/CH 1000 (range 0 - 16384), Time 1.000sec (range 0 - 16.384sec).
- Post Trigger Data(Delay):** Number of Data/CH 1000 (range 0 - 16384), Time 1.000sec (range 0 - 16.384sec).
- ☒ Set End Trigger.
- Repeat Times:** 1.

■ Setting operation

- (1) Select the trigger channel for which to start recording.

Measurement channels that can be selected as trigger channels are determined by the data-file saving location as shown in the table below.

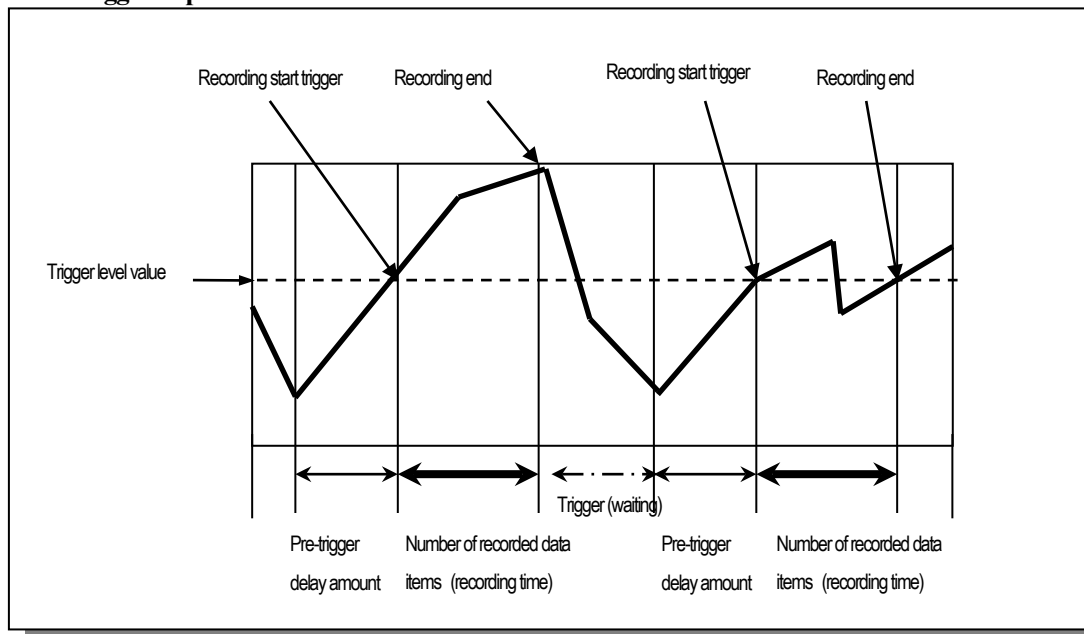
Data-file saving location	Measurement channels that can be selected as trigger channels
"CTRS-100A data drive"	Standalone (one unit): analog channels Synchronous operation: master analog channels
"PC data file folder"	Analog channels and calculation channels of all CTRS-100A units

- (2) Select the trigger slope.
- (3) Enter the trigger level value (the value for firing a trigger) as a physical quantity.
For your information, the range that can be entered is displayed on the right.
- (4) To record measurement data before the start of recording, enter the amount of delay before the start trigger as a time or number of data items per channel.
For your information, the range that can be entered is displayed on the right.
- (5) To specify an end trigger, select the "Specify the end trigger." checkbox. Specify end trigger conditions in the same way as start trigger conditions.
- (6) Enter the number of repetitions.

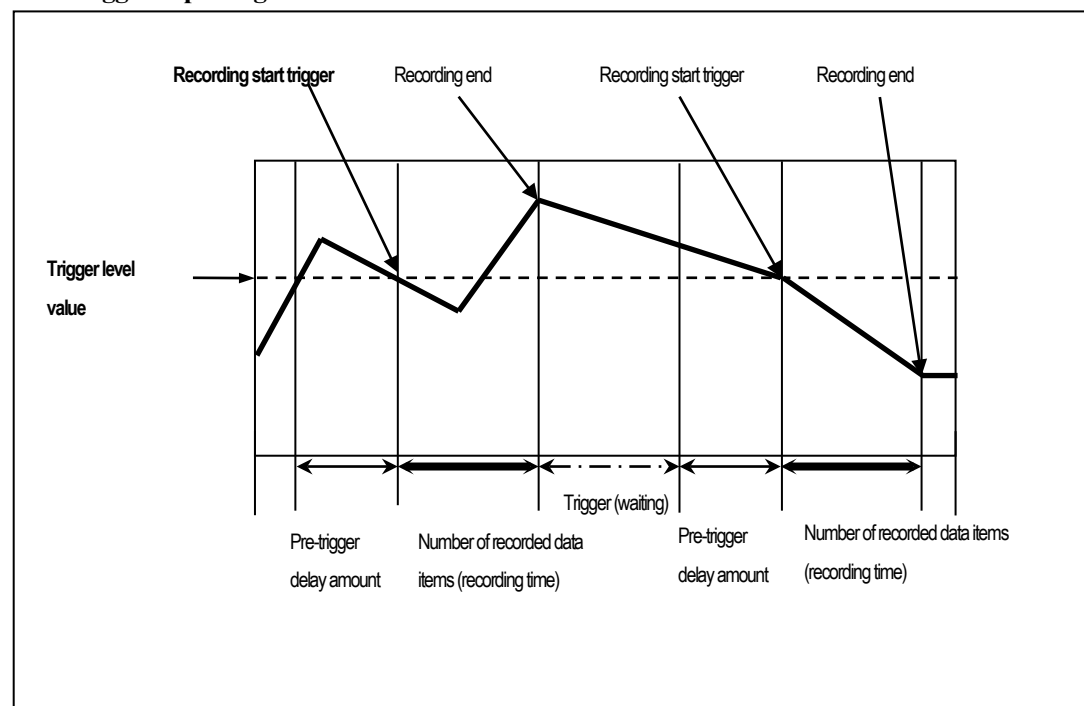
■ Start trigger operation example

In the example shown below, data recording starts when the start trigger condition is satisfied, and the set number of data items per channel are recorded.

Start trigger slope: Positive



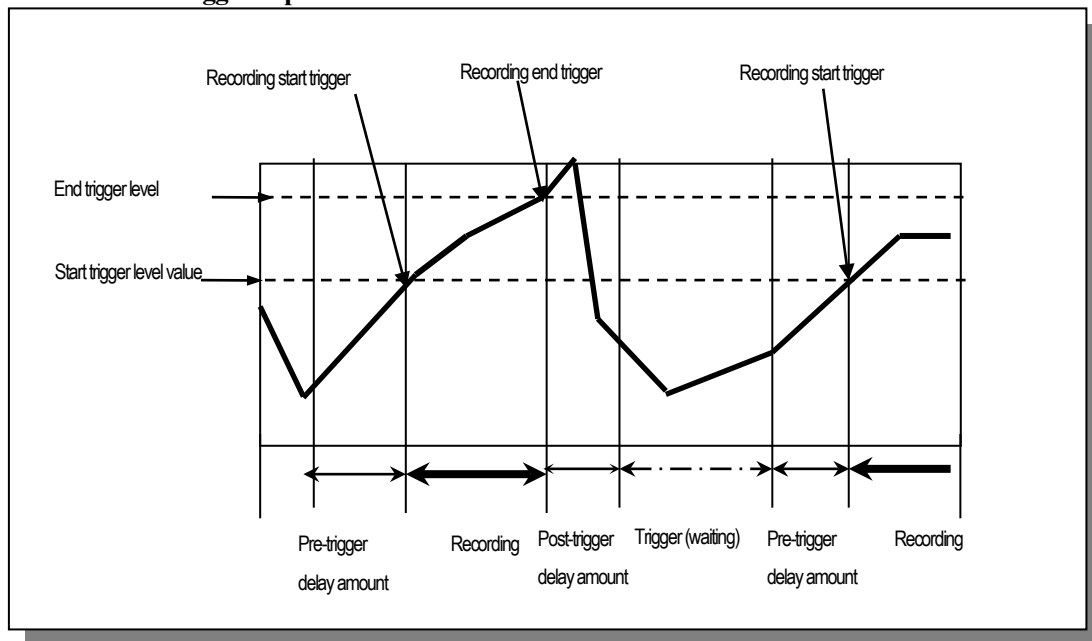
Start trigger slope: Negative



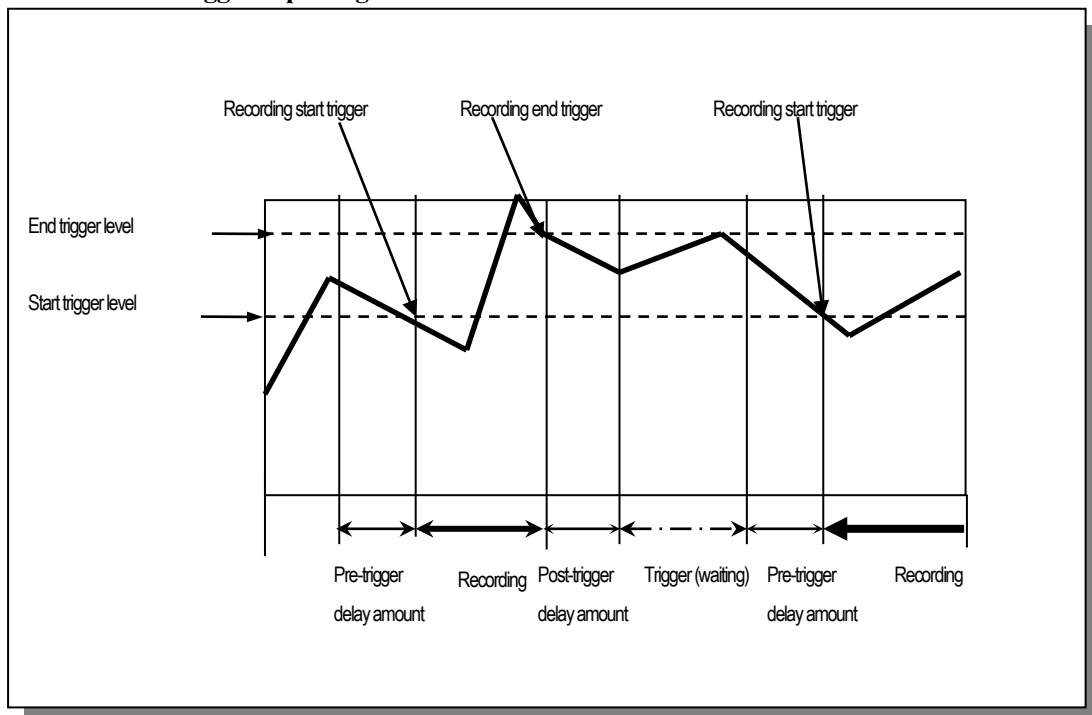
■ End trigger operation example

In the example shown below, data recording starts when the start trigger condition is satisfied, and recording is performed until the end trigger condition is satisfied.

Start and end trigger slope: Positive



Start and end trigger slope: Negative



6-4-2 External trigger conditions

This section explains how to use the "Ext Trigger" window to set the trigger conditions for external trigger measurement.

■ Display operation

- (1) In the "Measure Mode" window, select "Ext Trigger" for the measurement mode item to display the "Ext Trigger" tab in the list on the left.
- (2) In the list on the left, select the "Ext Trigger" tab to display the "Ext Trigger" window.

The screenshot shows the "Ext Trigger" configuration window. On the left, a sidebar lists "Measure Mode", "Ext Trigger" (selected), "Extra", and "Data File". The main panel is titled "Ext Trigger" and contains the following settings:

- Start Trigger Slope:** Positive (dropdown menu)
- End Trigger Slope:** Positive (dropdown menu)
- Pre Trigger Data(Delay):**
 - Number of Data/CH: 1000 (range 0 - 16384)
 - Time: 1.000sec (range 0 - 16.384sec)
- Post Trigger Data(Delay):**
 - Number of Data/CH: 1000 (range 0 - 16384)
 - Time: 1.000sec (range 0 - 16.384sec)
- ☒ Set End Trigger.
- Repeat Times:** 1 (spin box)

■ Operating method

- (1) Select the trigger slope (the way of traversing data in terms of the trigger level value).
"Positive", "Negative"
- (2) If you want to record data before the start of recording, enter the amount of delay before the start trigger as a time (in seconds) / number of data items per channel.
For your information, the range that can be set is displayed to the right of each entry location.
- (3) To specify an end trigger, select the "Set End trigger." checkbox. Specify end trigger conditions in the same way as start trigger conditions.
- (4) Enter the number of repetitions.

6-4-3 Manual trigger conditions

This section explains how to use the "Manual Trigger" window to set the trigger conditions for manual trigger measurement.

■ Display operation

- (1) In the "Measure Mode" window, select "Manual Trigger" for the measurement mode item to display the "Manual Trigger" tab in the list on the left.
- (2) In the list on the left, select the "Manual Trigger" tab to display the "Manual Trigger" window.

The screenshot shows the 'Manual Trigger' window. On the left, a sidebar lists 'Measure Mode', 'Manual Trigger' (highlighted with a red box), 'Extra', and 'Data File'. The main window area is titled 'Manual Trigger' and contains the following settings:

- Pre Trigger Data(Delay)**: Number of Data/CH is 1000 (range 0 ~ 16384). Time is 1.000sec (range 0 ~ 16.384sec).
- Post Trigger Data(Delay)**: Number of Data/CH is 1000 (range 0 ~ 16384). Time is 1.000sec (range 0 ~ 16.384sec).
- ☒ Set Post Trigger.
- Repeat Times**: 1

■ Operating method

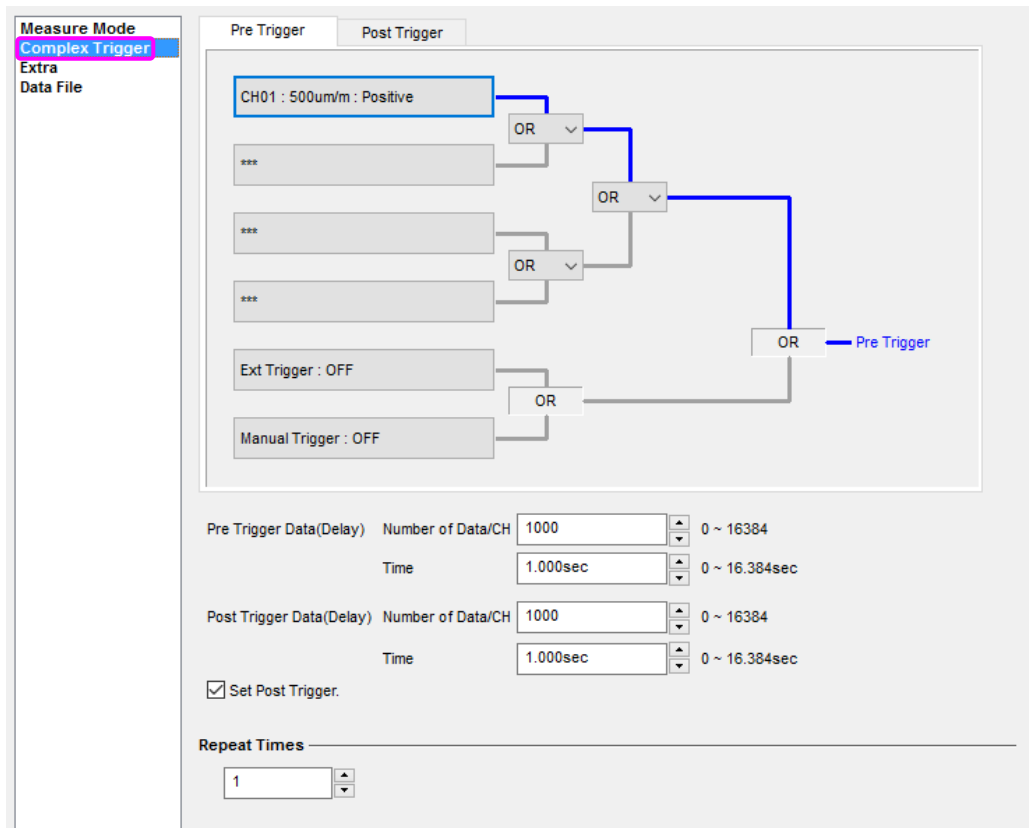
- (1) If you want to record data before the start of recording, enter the amount of delay before the start trigger as a time (in seconds) / number of data items per channel.
For your information, the range that can be set is displayed to the right of each entry location.
- (2) To specify an end trigger, select the "Set End trigger." checkbox. Specify end trigger conditions in the same way as start trigger conditions.
- (3) Enter the number of repetitions.

6-4-4 Complex trigger conditions

This section explains how to use the "Complex Trigger" window to set the trigger conditions for complex trigger measurement.

■ Display operation

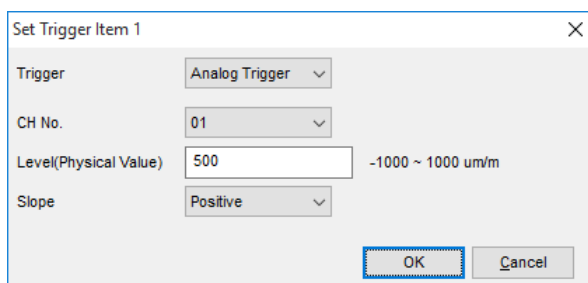
- (1) In the "Measure Mode" window, select "Complex Trigger" for the measurement mode item to display the "Complex Trigger" tab in the list on the left.
- (2) In the list on the left, select the "Complex Trigger" tab to display the "Complex Trigger" window.



■ Operating method

- (1) Set the four analog-trigger channel, external trigger, and manual trigger AND/OR conditions.

• Click an analog trigger condition button to display the window below.



For Specify trigger, select "None" or "Analog trigger", and then set each condition.

- Click the external trigger condition button to switch the setting in the following order:
 "External trigger: ON: Positive" → "External trigger: ON: Negative" → "External trigger: OFF".
 - Click the manual trigger condition button to switch the setting in the following order:
 "Manual Trigger: ON" → "Manual Trigger: OFF"
 If "Manual trigger: ON" is specified, press the REC button in the trigger awaiting status to start recording.
 - Specify logical AND or OR.
 The valid trigger conditions for firing the start trigger are displayed using blue lines.
- (2) To record measurement data before the start of recording, enter the amount of delay before the start trigger as a time or number of data items per channel.
 For your information, the range that can be entered is displayed on the right.
- (3) To specify an end trigger, select the "Set End trigger." checkbox. Specify end trigger conditions in the same way as start trigger conditions.
- (4) Enter the number of repetitions.

6-4-5 CAN trigger conditions

Trigger conditions for CAN trigger measurement can be set in the "CAN Trigger" screen.

■ Display method

- (1) In the "Measurement Mode" screen, select "CAN Trigger" for the measurement mode item to display the "CAN Trigger" tab in the list on the left.
- (2) From the list on the left, select the "CAN Trigger" tab to display the "CAN Trigger" screen.
Select "Manual Trigger", "Analog Trigger", "Digital Trigger", or "Complex Trigger" as the specified trigger.

■ Operating method for manual triggers

When using a manual trigger, recording is started manually and measurement can be performed with a set delay after the end trigger.

The screenshot shows the "CAN Trigger" configuration interface. On the left, a sidebar under "Measure Mode" lists "CAN Trigger", "Extra", and "Data File", with "CAN Trigger" highlighted. The main panel contains the following settings:

- Trigger:** A dropdown menu set to "Manual Trigger", which is highlighted with a pink rectangular box.
- Record Time:** A numeric input field set to "1sec".
- Post Trigger Data(Delay) Time:** A numeric input field set to "0sec", with a range indicator "0 ~ 8" to its right.
- Set Post Trigger:** An unchecked checkbox.
- Repeat Times:** A numeric input field set to "1".

- (1) Select "Manual Trigger" as the specified trigger.
- (2) To specify an end trigger, select the "Set End Trigger." checkbox.
To record data after recording stops, enter the delay amount after the end trigger in seconds.
For reference, the settable range for the delay amount is displayed to the right of each entry location.
If an end trigger will not be set, enter the recording time.
- (3) Enter the number of repetitions.

NOTE

Recording may be performed for approximately one second even if the delay amount after the end trigger is set to 0 seconds.

■ Operating method for analog triggers

When using an analog trigger, recording will start once the measurement data for a single signal (CAN channel) being measured exceeds the level value.

The screenshot shows the 'Measure Mode' sidebar with 'CAN Trigger' selected. The main configuration area is titled 'Trigger' and is set to 'Analog Trigger'. Below this, 'Record Time' is set to '1sec'. There are two rows for trigger settings. The first row, 'Start Trigger', has 'CH No.' set to 'E0-0001', 'Slope' set to 'Positive', and 'Level (Physical Value)' set to '0.0'. The second row, 'End Trigger', also has 'CH No.' set to 'E0-0001', 'Slope' set to 'Positive', and 'Level (Physical Value)' set to '0.0'. Below these, 'Post Trigger Data(Delay) Time' is set to '0sec', with a range of '0 ~ 8' indicated. There is a checkbox labeled 'Set Post Trigger.' which is currently unchecked. At the bottom, there is a 'Repeat Times' section with a value of '1'.

(1) Select "Analog Trigger" as the specified trigger.

(2) Select the trigger channel for which to start recording.

Signals (CAN channels) measured by a standalone (one unit) configuration or a master (synchronous operation) unit can be selected as trigger channels.

(3) Select the trigger slope.

(4) Enter the trigger level value (the value for firing a trigger) as a physical quantity.

(5) To specify an end trigger, select the "Set End Trigger." checkbox.

Then, set the end trigger conditions. To record data after recording stops, enter the delay amount after the end trigger in seconds. For reference, the settable range for the delay amount is displayed to the right of each entry location.

If an end trigger will not be set, enter the recording time.

(6) Enter the number of repetitions.

NOTE

Recording may be performed for approximately one second even if the delay amount after the end trigger is set to 0 seconds.

■ Operating method for digital triggers

When using a digital trigger, recording will start with one bit of a single signal (CAN channel) being measured as the trigger.

Measure Mode
CAN Trigger
Extra
Data File

Trigger: Digital Trigger

Record Time: 1sec

CH No.: 1 Bit: 1 (1-16) Slope: Positive Level: 0

Start Trigger: E0-0001 End Trigger: E0-0001

Pre Trigger

		bit							
		7	6	5	4	3	2	1	0
Byte	0	07	06	05	04	03	02	01	00
	1	15	14	13	12	11	10	09	08
	2	23	22	21	20	19	18	17	16
	3	31	30	29	28	27	26	25	24
	4	39	38	37	36	35	34	33	32
	5	47	46	45	44	43	42	41	40
	6	55	54	53	52	51	50	49	48
	7	63	62	61	60	59	58	57	56

Post Trigger Data(Delay) Time: 0sec 0 ~ 8

☐ Set Post Trigger.

Repeat Times: 1

(1) Select "Digital Trigger" as the specified trigger.

(2) Select the trigger channel for which to start recording.

Signals (CAN channels) measured by a standalone (one unit) configuration or a master (synchronous operation) unit can be selected as trigger channels.

(3) Enter the target bit.

The bit that is currently selected will be highlighted red in the bit layout table.

(4) Select the trigger slope.

"Rising" : Recording starts when the applicable bit switches from 0 to 1.

"Falling" : Recording starts when the applicable bit switches from 1 to 0.

"Level" : Recording starts when the applicable bit is the same as the selected level.

(5) If "Level" was selected for the trigger slope, select the trigger level.

"0" or "1"

(6) To specify an end trigger, select the "Set End Trigger." checkbox.

Then, set the end trigger conditions. To record data after recording stops, enter the delay amount after the end trigger in seconds. For reference, the settable range for the delay amount is displayed to the right of each entry location.

If an end trigger will not be set, enter the recording time.

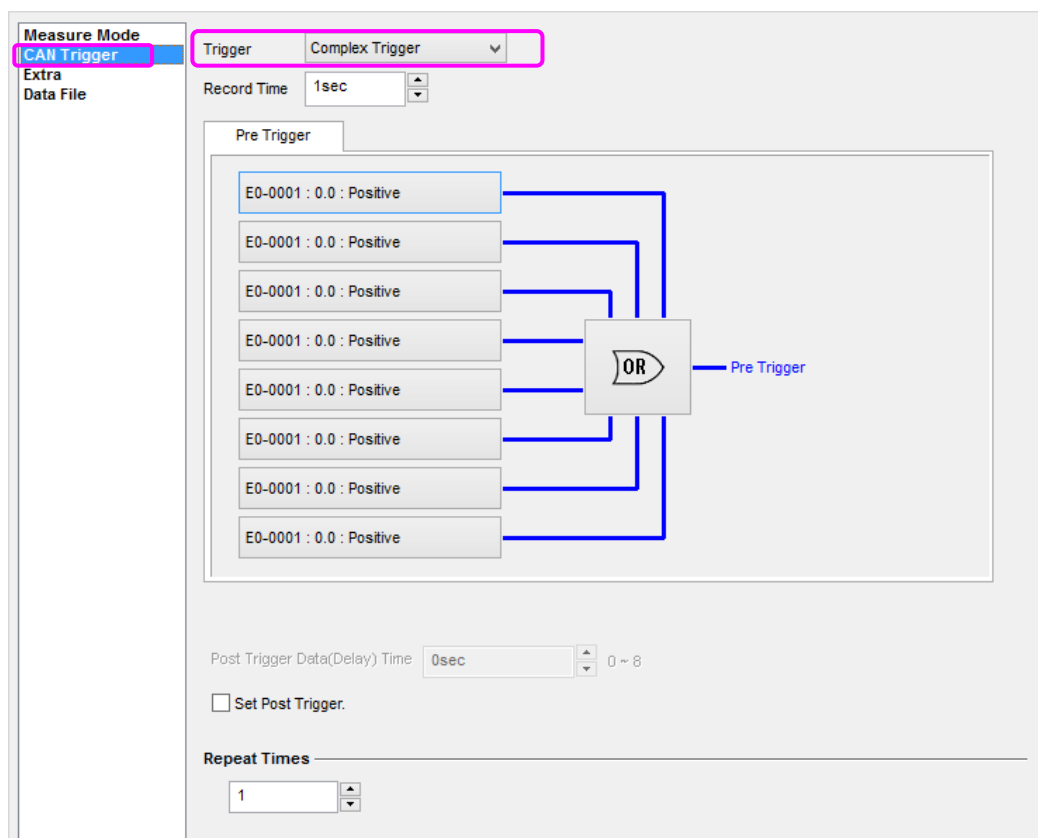
(7) Enter the number of repetitions.

NOTE

Recording may be performed for approximately one second even if the delay amount after the end trigger is set to 0 seconds.

■ Operating method for complex triggers

When using a complex trigger, recording starts when trigger conditions are met, based on an AND/OR operation performed on the analog trigger and digital trigger.



(1) Select "Complex Trigger" as the specified trigger.

(2) Set the trigger channel (any eight signals for standalone or master) and the AND/OR condition.

- Clicking the trigger channel conditions button will open the following window.

The "Set Trigger Item 1" dialog box shows the "Analog Trigger" tab selected. It contains three input fields: "CH No." with a dropdown menu showing "E0-0001", "Slope" with a dropdown menu showing "Positive", and "Level (Physical Value)" with a text input field showing "0.0". At the bottom right, there are "OK" and "Cancel" buttons.

The "Set Trigger Item 1" dialog box shows the "Digital Trigger" tab selected. It contains four input fields: "CH No." with a dropdown menu showing "E0-0001", "Bit" with a dropdown menu showing "1" and a range "(1-16)", "Slope" with a dropdown menu showing "Positive", and "Level" with a dropdown menu showing "0". Below these fields is a table with 8 rows (labeled "Byte" 0-7) and 8 columns (labeled "bit" 0-7). The table contains hexadecimal values. At the bottom right, there are "OK" and "Cancel" buttons.

		7	6	5	4	3	2	1	0
Byte	0	07	06	05	04	03	02	01	00
	1	15	14	13	12	11	10	09	08
	2	23	22	21	20	19	18	17	16
	3	31	30	29	28	27	26	25	24
	4	39	38	37	36	35	34	33	32
	5	47	46	45	44	43	42	41	40
	6	55	54	53	52	51	50	49	48
	7	63	62	61	60	59	58	57	56

Select "None", "Analog Trigger", or "Digital Trigger" as the specified trigger, and then set each condition.

Refer to the previous pages for information on how to use analog triggers and digital triggers.

- Specify AND (logical AND) or OR (logical OR).

Trigger conditions valid until the trigger starts are indicated with blue lines.

(3) To specify an end trigger, select the "Set End Trigger." checkbox.

Then, set the end trigger conditions. To record data after recording stops, enter the delay amount after the end trigger in seconds. For reference, the settable range for the delay amount is displayed to the right of each entry location.

If an end trigger will not be set, enter the recording time. (Maximum 24 hours.)

(4) Enter the number of repetitions.

NOTE

Recording may be performed for approximately one second even if the delay amount after the end trigger is set to 0 seconds.

6-5 Details

This section explains how to use the "Extra" window to specify detailed settings.
Select the "Extra" tab to display the "Extra" window.

Measure Mode
CAN Trigger
Extra
Data File

Manual Recording Start Time

☒ Set Start Time.
2021/07/13 10:53:13

CTRS-CTA010A Reference junction compensation

☒ Internal contact ☐ External contact

Test Information Marker Memo

No.	Memo
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

■ Manual Recording Start Time

You can set the measure recording start time by selecting "Manual" in the measurement mode item on the "Measurement Mode" window.

Select the "Set Start Time." checkbox, and then set the date and time.

■ Referenc junction compensation

The Thermocouple unit can switch the reference junction compensation Internal / External.

MEMO

- The Referenc junction compensation settings are only valid if a Thermocouple unit is connected.

■ Arbitrary test information

Enter test information as a character string within 127 single-byte characters (or 63 two-byte characters).

Double-click the channel item to set or press the "SPACE" key to switch to input.

Then, enter test information as a character string.

■ Marker name

Enter the marker name as a character string within 127 single-byte characters (or 63 two-byte characters).

Double-click the channel item to set or press the "SPACE" key to switch to input.

Then, enter the marker character string as a character string.

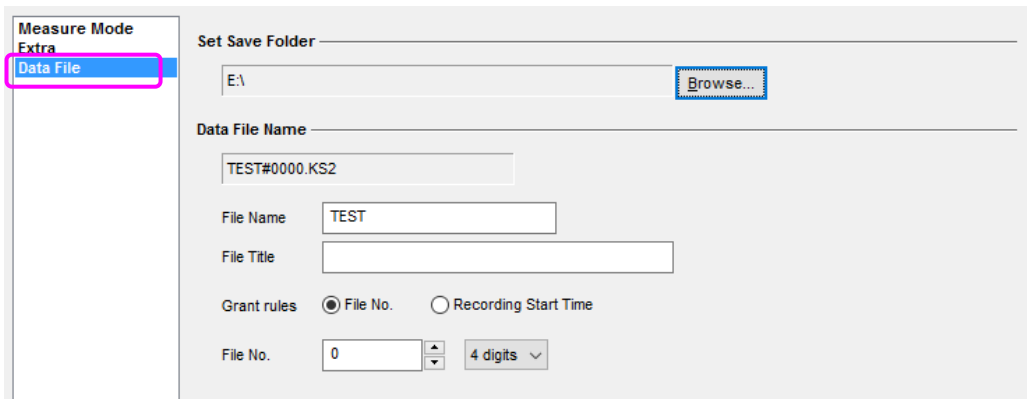
Number 1 is the marker name for the option 1 button on the remote control unit, and number 2 is the marker name for option button 2.

MEMO

- The character strings entered for arbitrary test information and marker names are saved in a KS3 format data file. They are not saved in KS2 format data files.

6-6 Data File Conditions

This section explains how to use the "Data File" window to specify settings related to data files.
In the list on the left, select the "Data File" tab to display the "Data File" window.



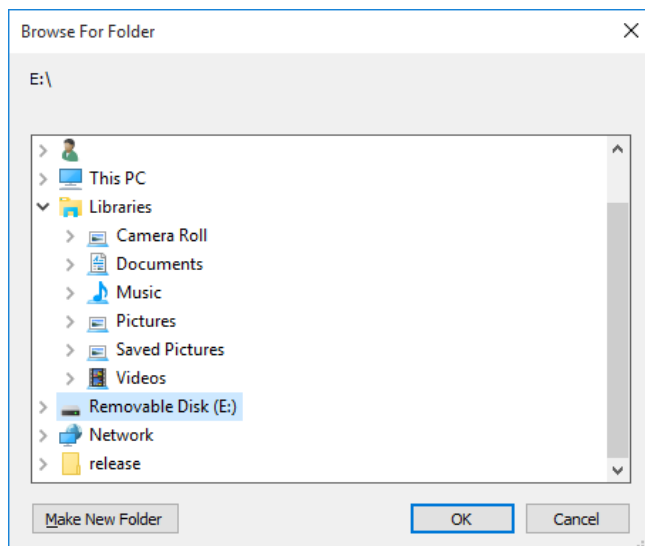
NOTE

Analog channel and calculation channel measurement data is saved to a KYOWA standard format KS2 format data file (with extension KS2) or KYOWA standard format KS3 format data file (with extension KS3).
CAN data (data fields) is saved to a KYOWA standard format KC3 format data file (with extension KC3).

■ Saving folder

Set the data-file saving location folder.

Click the **Browse** button to display the "Browse For Folder" window below, and then select the data-file saving location folder.



■ File Name

Specify the file name by using up to 20 single-byte (or 10 two-byte) characters.

■ File Title

If the data file format is KS2, set the file title within 40 single-byte characters (or 20 two-byte characters).

If the data file format is KS3, set the file title within 120 single-byte characters (or 60 two-byte characters).

■ Grant rules

Select the number to append to the file name.

If "File No." is selected, the number is automatically incremented each time the specified number of recording operations finishes.

If "Recording Start Time" is selected, the recording start date and time (year, month, day_hour, minute, second_millisecond) is appended.

NOTE

For the appending rule, if "Recording Start Time" is selected, it is not possible to collect data files after measurement finishes.

■ File No.

Set the number of digits and starting number for the file number.

If the number of digits is "3", data recording is not possible after the file number exceeds 999.

If the number of digits is "4", data recording is not possible after the file number exceeds 9999.

If the number of digits is "5", data recording is not possible after the file number exceeds 99999.

MEMO

The setting range for the number of repetitions is determined based on the number of digits for the file number as shown below.

Number of digits	Setting range
3	Zero to 999
4	Zero to 9999
5	Zero to 99999

NOTE

When the maximum number of repetitions or file number is reached, recording stops.

■ Data file name

The data file name is determined as shown below.

(This example assumes that the appending rule is "File No." and the file number has "4" digits.)

Measure mode	data file name
"Manual"	TEST # 0000 .KS2/KS3 (a) (b)
If the number of repetitions is one and "Manual (Set Record Data)" is specified	
If the number of repetitions is 2 or more and "Manual (Set Record Data)" is specified	TEST # 0000 _△ 0000 .KS2/KS3 (a) (b) (c)
"Interval"	
"Analog Trigger"	
"Ext Trigger"	
"Manual Trigger"	
"Complex Trigger"	
"CAN Trigger"	

(a)File Name

(b)File No.

Automatically incremented each time a recording start operation is performed.

(c)Repeat Times

Automatically incremented each time recording ends.

Before the repetition number, a letter is inserted in place of △ depending on the measurement mode:

M: "Manual (Set Record Data)", I: "Interval",

A: "Analog Trigger", E: "Ext Trigger", L: "Manual Trigger",

C: "Complex Trigger", N:"CAN Trigger"

MEMO

• When the data file format is KS2

KS3 format data files (with extension KS3) on the CTRS-100A SD card are automatically converted to KS2 format data files (with extension KS2). If "PC data file folder" was selected, measurement data will be saved to a KS2 format data file (with extension KS2).

• When the data file format is KS3

KS3 format data files (with extension KS3) on the CTRS-100A SD card will be collected as KS3 format data files

(with extension KS3).

If "PC data file folder" was selected, measurement data will be saved to a KS3 format data file

(with extension KS3).

NOTE

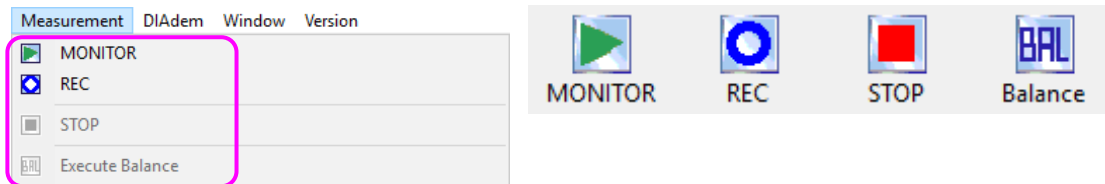
In the case of the following conditions, the appending rule is fixed to "File No.", and the number of digits for the file is fixed to "4":

- If the data-file saving location is "PC data file folder"
- When DCS-101A video recording (web camera) or FFT analysis is executed

7 MEASUREMENT

Perform measurement operations by using the methods shown below.

- Select measurement-related menu items.
- Select measurement-related buttons on the toolbar.
- Click measurement-related buttons on the measurement operation panel.

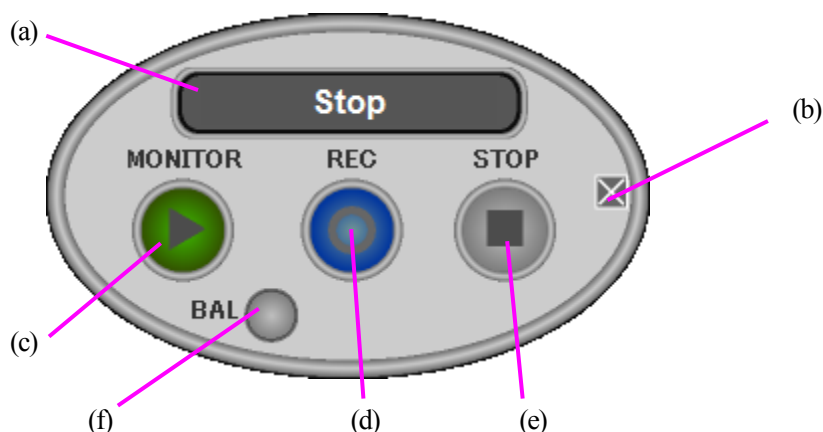


MEMO

Initially, measurement-related buttons are not displayed on the toolbar.

To display these buttons, select the "View" - "Control Bar" - "Toolbar" - "Customize" menu item, and then specify the appropriate settings in the displayed "Change Toolbar" window.

7 - 1 Measurement Control Panel



(a) Status

Displays the current measurement status.

Stop	Measurement is stopped.
Monitoring	Measurement is being monitored.
Recording	Measurement data is being recorded.
Pausing	Recording is paused in the manual measurement mode.
Wait for Manual	The system is waiting to record in the manual measurement mode.
Wait for Intvl	The system is waiting to record in the interval measurement mode.
Wait for Trig	The system is waiting to record in the trigger measurement mode.

(b) **X** button

Close the measurement control panel.

(c) **MONITOR** button

Start monitoring.

Selecting the "Measurement" - "MONITOR" menu item does the same thing.

(d) **REC** button

Manual measurement : Start recording.

Interval measurement: Switch to the interval (waiting) status.

Trigger measurement: Switch to the trigger (waiting) status.

Selecting the "Measurement" - "REC/PAUSE" menu item does the same thing.

(e) **STOP** button

Stop recording or monitoring.

Selecting the "Measurement" - "STOP" menu item does the same thing.

(f) **BAL** button

Execute balance and then display the result.

Selecting the "Measurement" - "Execute Balance" menu item does the same thing.

MEMO

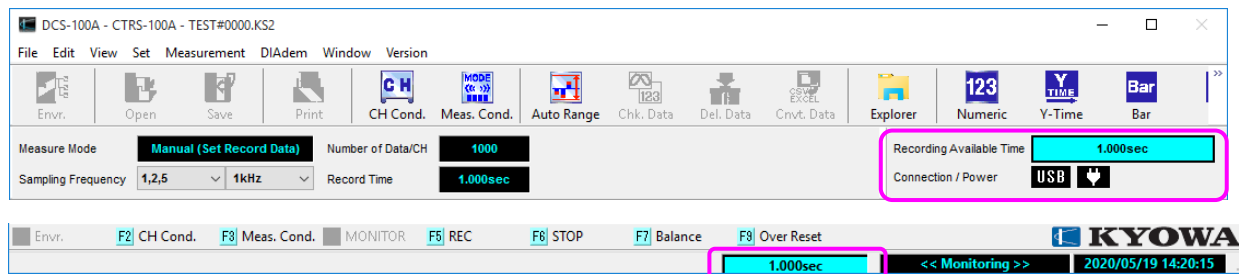
You can select the "View" - "Control Bar" - "Measure Operation Panel" - "Disp" menu item to switch between showing and hiding the measurement control panel.

7-2 Measurement Mode Bar and Status Bar Display

Depending on the measurement status, various items are displayed on the measurement mode bar and status bar.

■ Recording-possible time, Connection Status, Power status

When monitoring is started, the recording-possible time, connection status and power status are displayed on the measurement mode bar and status bar.



•Recording-possible time

The time displayed as the recording-possible time is determined based on the measurement conditions as follows:

- If the number of recorded data items has been determined, the recording time calculated based on the number of recorded data items and sampling frequency is displayed.
- If the number of recorded data items is undetermined, the maximum possible recording time is displayed.

The recording-possible time decreases after data recording starts.



MEMO

- If the number of recorded data items has been determined, the measurement conditions are the same as those used when the measurement mode is "Manual (Set Record Data)" or "Interval" or when no end trigger is set for trigger measurement.
- If the number of recorded data items is undetermined, the measurement conditions are the same as those used when the measurement mode is "Manual" or when an end trigger is set for trigger measurement.
- If no end trigger is set for trigger measurement, the recording-possible time is calculated as follows:
Recording-possible time = (number of recorded data items + start-trigger delay amount) / sampling frequency

•Connection status

Displays the CTRS-100A connection status.



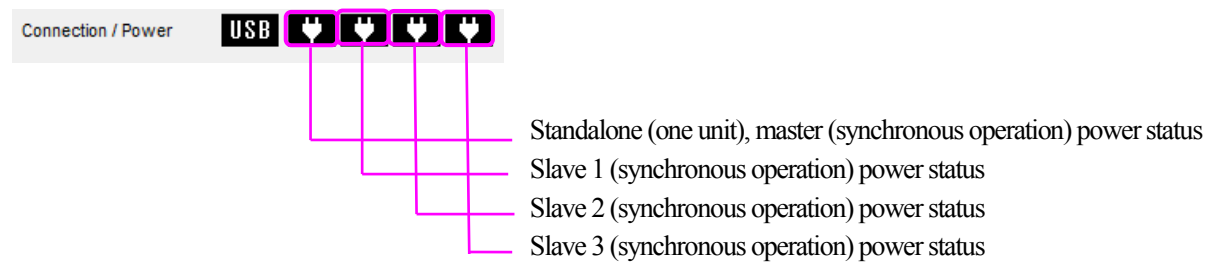
USB Displayed when connected to USB.

LAN Displayed when connected to Wired LAN.

WLAN Displayed when connected to Wireless LAN.

• **Power status**

Displays the CTRS-100A power status.



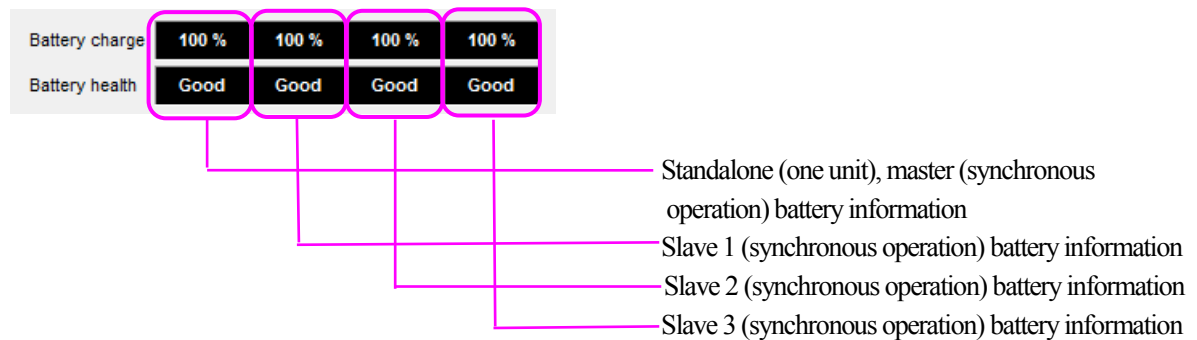
 Displayed if the system is DC powered.

 Displayed if the system is battery powered.

 Displayed when the battery is charging.

• **Battery unit information**

Displays battery information (the remaining charge and soundness) if a battery unit is connected.

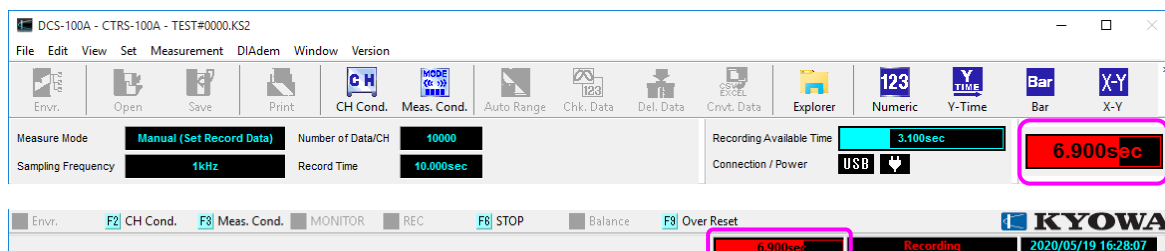


If the remaining battery charge is 5% or less, it is displayed in red.

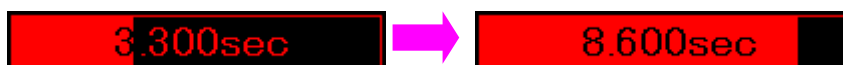
For the battery soundness, "Good", "Caution", "Replace", or "Error" is displayed, with "Replace" and "Error" displayed in red.

■ Recording time

When data recording is started, the recording time (the amount of time that has passed since data recording started) is displayed on the measurement mode bar and status bar.



- If the number of recorded data items has been determined, the recording time is displayed on the bar, and this time increases after data recording starts.



MEMO

If no end trigger is set for trigger measurement, the recording time is calculated as follows:

Recording-possible time = (number of recorded data items + start-trigger delay amount) / sampling frequency

■ Measurement conditions

In the case of interval measurement or trigger measurement, if the system enters the interval (waiting) or trigger (waiting) status, the measurement conditions are displayed on the status bar.



• Interval

2020/05/19 17:00:00 1 / 11

The recording start time and number of repetitions are displayed.

• Analog Trigger

CH01 > 500.000um/m 1 / 1

The trigger channel, trigger level value, and number of repetitions are displayed.

• Ext Trigger

Ext Trigger Signal Positive 1 / 1

The number of repetitions is displayed.

• Manual Trigger

Manual Trigger 1 / 1

The number of repetitions is displayed.

• Complex Trigger

Complex Trigger 1 / 1

The number of repetitions is displayed.

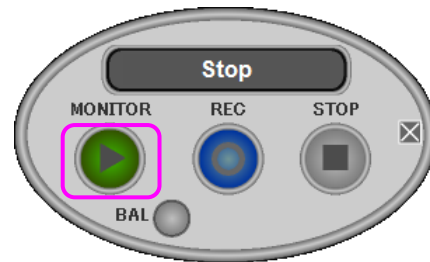
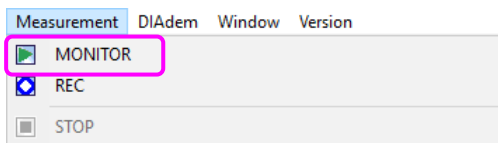
7-3 Manual Measurement

This section explains the operations for when the measurement mode is "Manual" or "Manual (Set Record Data)".

■ Operating method

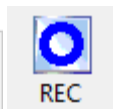
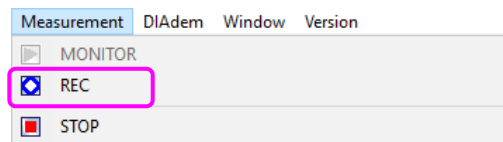
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording:

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



(3) When recording starts, the recording progress is displayed on the status bar.



(4) To pause recording when the PAUSE function is valid, perform one of the operations below.

These operations can also be performed to resume recording after it is paused.

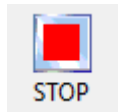
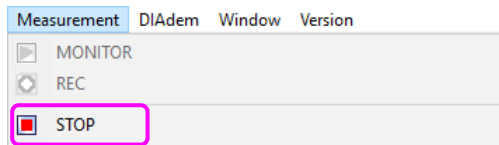
- Select the "Measurement" - "REC/PAUSE" menu item.
- Select the "REC/PAUSE" icon on the toolbar.
- Click the **REC/PAUSE** button on the measurement control panel.

MEMO

To enable or disable the PAUSE function, use the "Details" window of the "Set Environment" window.
(See "4-8 Details".)

(5) Do the following to stop recording:

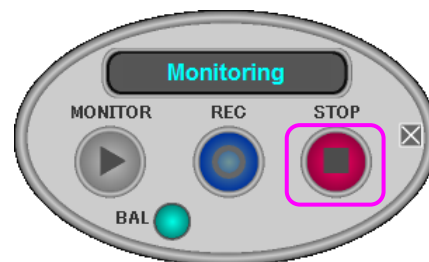
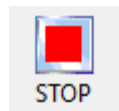
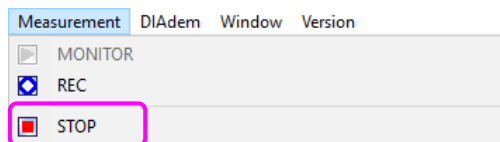
- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



If the measurement mode is "Manual (Set Record Data)", the specified number of recorded data items per channel is recorded.

(6) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-3-1 Repeated recording

If the measurement mode is "Manual (Set Record Data)", the number of repetitions can be set to perform repeated recording.

Using the repeated recording function in the manual measurement mode makes it possible to record for a long time and then save a specific number of data items (or save whenever a specific interval of time passes) to a data file.

■ Conditions

- Usage is possible if the measurement mode is "Manual (Set Record Data)".
- Recording cannot be paused (by selecting the "Measurement" - "REC/PAUSE" menu item, clicking the [REC/PAUSE] key, etc.).

NOTE

Specify a recording time of at least 5 seconds.

■ Operating method

(1) Do one of the following to display the "Measurement Conditions" window:

- Select the "Set" - "Set Measure Condition" menu item.
- Click the "Meas. Cond." icon on the toolbar.

(2) In the "Measure Condition" window, select "Measure Mode" from the list box.

Set the measurement mode item to "Manual (Set Record Data)", and then specify the recorded data items.

The number of recorded data items (recorded data time) to save to each data file is determined based on the recorded-data-item settings.

(3) Next, set the number of repetitions item.

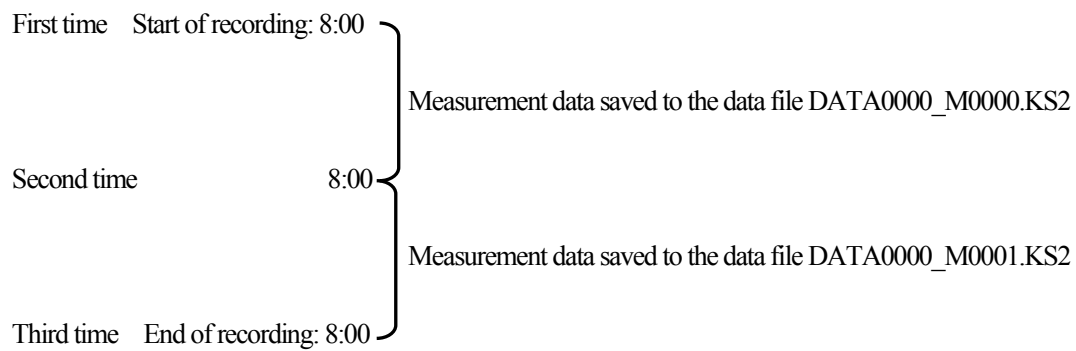
This item determines the number of times to save the number of recorded data items (recorded data time) specified for the recorded data settings to a file.

If you specify two or more repetitions, the total recording time is displayed in the title of the number of repetitions item.

Total recording time

2 days = recording time of 24:00:00 × two repetitions

- (4) If recording is started with the above measurement mode conditions set, recording is performed as follows.
(This example assumes that recording was started at 8:00 with the data file name "DATA" and the file number "0000".)



When recording ends the specified number of times, the system enters the monitoring status.

The system also enters the monitoring status if repeated recording is stopped by using the "Measurement " – "REC/PAUSE" menu item or STOP key.

7-3-2 Specifying the recording start date and time

If the measurement mode is "Manual" or "Manual (Set Record Data)", the recording start date and time can be set to perform recording.

NOTE

- If the data-file saving location is "PC data file folder", the recording start date and time cannot be set for manual measurement.
- In the "Details" window of the "Set Environment" window, if the "Do not use the PAUSE function while recording data." checkbox is not selected, the recording start date and time cannot be set for manual measurement.

■ Operating method

- (1) Do one of the following to display the "Measurement Conditions" window:
 - Select the "Set" - "Set Measure Condition" menu item.
 - Click the "Meas. Cond." icon on the toolbar.
- (2) In the "Set Measure Condition" window, select "Measure Mode" from the list box.
Set the measurement mode item to "Manual" or "Manual (Set Record Data)", and then specify the recorded data items and number of repetitions.

The screenshot shows the "Set Measure Condition" window. On the left, a sidebar lists "Measure Mode", "Extra", and "Data File". The main area is titled "Measure Mode" and contains several settings. The "Measure Mode" dropdown is set to "Manual (Set Record Data)". Below it, "Sampling Frequency" is set to "1,2,5" and "1kHz". A note states: "The number of measuring CHs of CTRS-100A units are listricted by the selected sampling frequency." The "Clockout frequency dividing" is set to "1" with a note "(Frequency that is output from the CTRS-100A : 1000Hz)". The "Clockout Mode" has three radio buttons: "always" (selected), "during recording", and "Do not output". There is also a "reverse" checkbox. The "Record Data" section has two fields: "Number of Data/CH" set to "1000" and "Record Time" set to "1.000sec". The "Repeat Times" section has a field set to "1".

- (3) Next, select "Details" from the list box.
Select the "Specify the start date and time." checkbox, and then set the date and time.

The screenshot shows the "Manual Recording Start Time" window. On the left, a sidebar lists "Measure Mode", "Extra", and "Data File". The main area is titled "Manual Recording Start Time" and contains a checkbox labeled "Set Start Time." which is checked. Below the checkbox, the date and time are set to "2020/03/10 00:00:00".

- (4) If recording is started with the above measurement mode conditions set, recording is started at the specified date and time (2020/03/10 00:00:00).

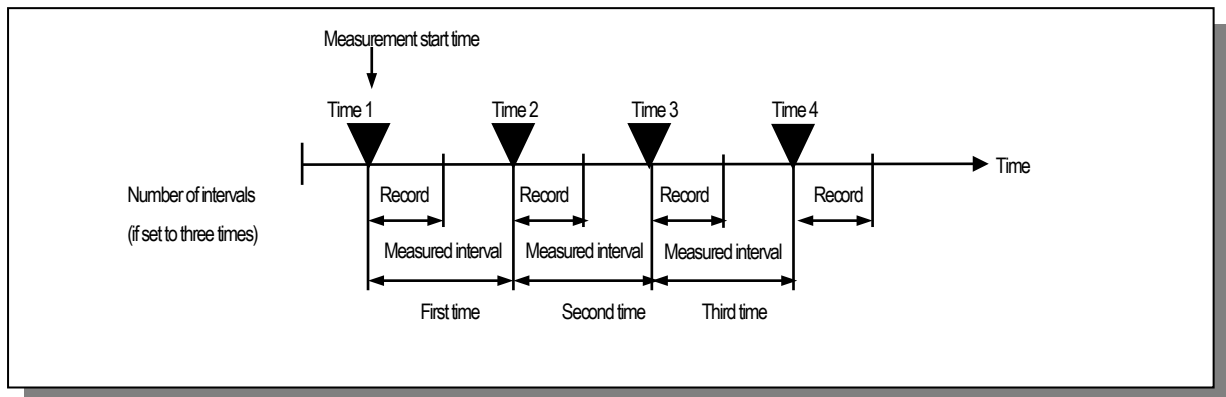
When recording ends the specified number of times, the system enters the monitoring status.

The system also enters the monitoring status if repeated recording is stopped by using the "Measurement " – "REC/PAUSE" menu item or STOP key.

7-4 Interval Measurement

This section explains the operations for when the measurement mode is "Interval".

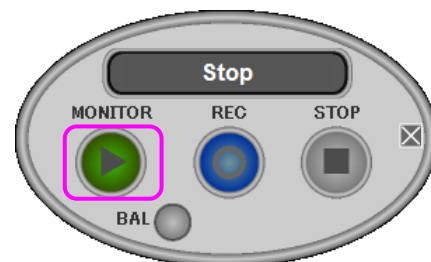
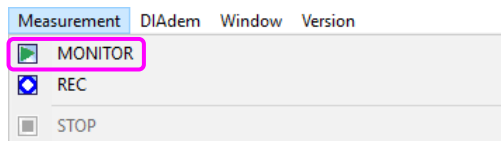
In the interval measurement mode, data recording automatically starts at the set time interval and is then performed until the set number of recorded data items per channel is reached.



■ Operating method

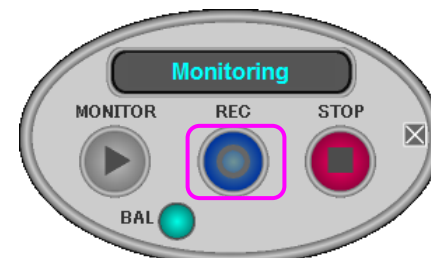
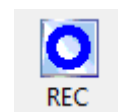
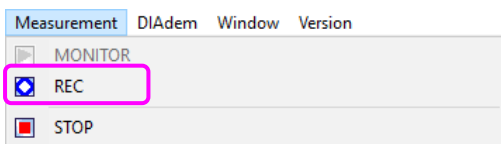
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording and set the system to the interval (waiting) status.

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



The recording start date and time, number of repetitions, and measurement status are displayed on the status bar.

2020/05/19 17:00:00 1 / 11 **<< Wait for Intvl >>**

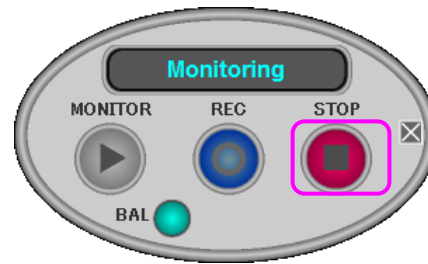
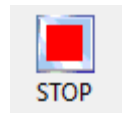
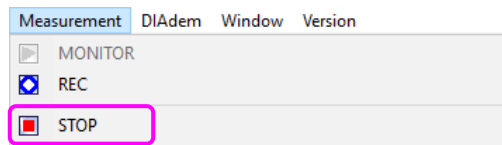
(3) When recording starts, the recording progress is displayed on the status bar.

44.350sec **<< Recording >>**

(4) When recording finishes the specified number of times, the system returns to the monitoring status.

(5) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-5 Analog Trigger Measurement

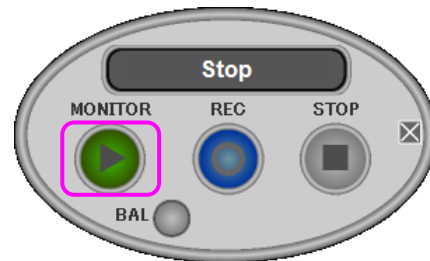
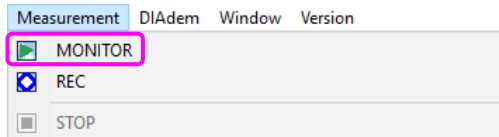
This section explains the operations for when the measurement mode is "Analog Trigger".

In the analog trigger measurement mode, data recording automatically starts when the start trigger condition is satisfied and is then performed until the specified number of recorded data items per channel is reached or the end trigger condition is satisfied.

■ Operating method

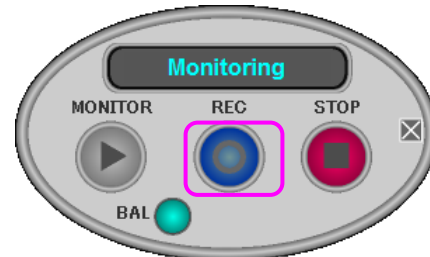
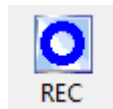
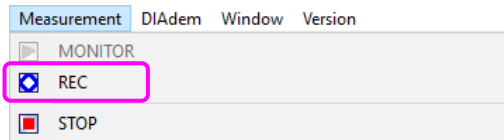
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording and set the system to the trigger (waiting) status.

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



The trigger channel, trigger level value, number of repetitions, and measurement status are displayed on the status bar.



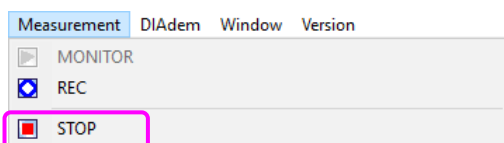
(3) When recording starts, the recording progress is displayed on the status bar.



(4) When recording finishes the specified number of times, the system returns to the monitoring status.

(5) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-6 External Trigger Measurement

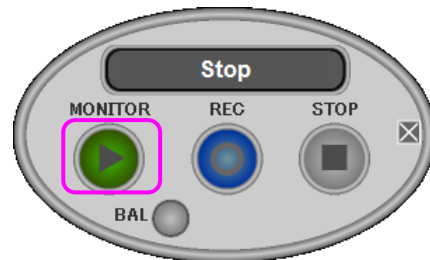
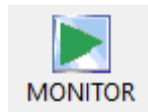
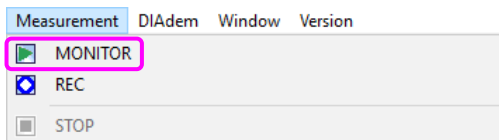
This section explains the operations for when the measurement mode is "Ext Trigger".

In the external trigger measurement mode, data recording automatically starts when an external trigger signal is input and is then performed until the specified number of recorded data items per channel is reached or the end trigger condition is satisfied. For details on how to connect an external trigger signal, see the separate manual INSTRUCTION MANUAL CTRS-100A Hardware.

■ Operating method

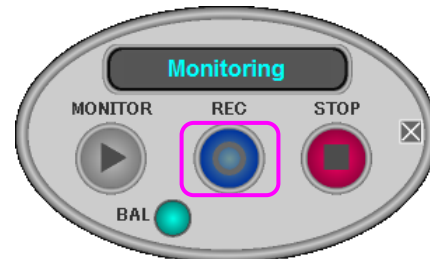
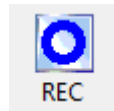
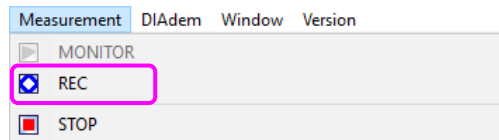
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording and set the system to the trigger (waiting) status.

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



The number of repetitions and measurement status are displayed on the status bar.



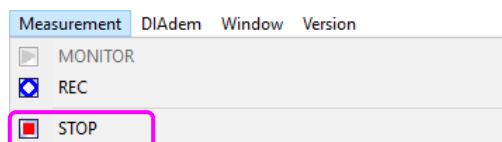
(3) When an external trigger signal is input and recording starts, the recording progress is displayed on the status bar.



(4) When recording finishes the specified number of times, the system returns to the monitoring status.

(5) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-7 Manual Trigger Measurement

This section explains the operations for when the measurement mode is "Manual Trigger".

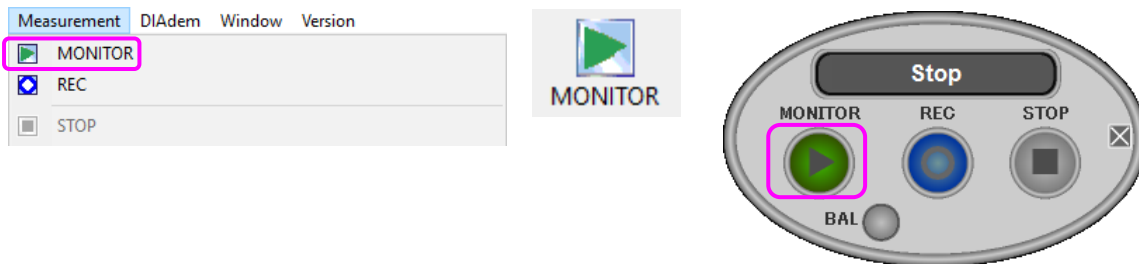
In the manual trigger measurement mode, recording is manually started and is then performed until the specified number of recorded data items per channel is reached or the end trigger condition is satisfied.

Unlike the manual measurement mode, the delay before the start trigger and after the end trigger can be specified.

■ Operating method

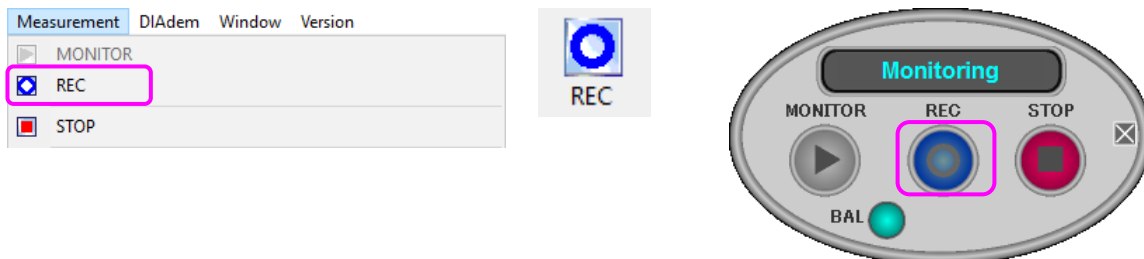
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording and set the system to the trigger (waiting) status:

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



The number of repetitions and measurement status are displayed on the status bar.



(3) Restart recording. When recording starts, the recording progress is displayed on the status bar.



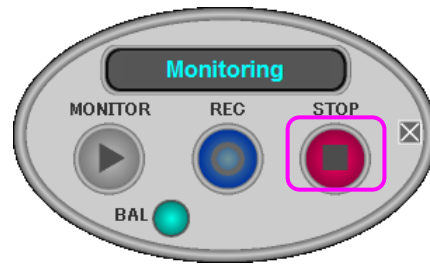
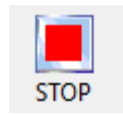
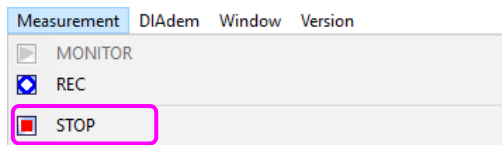
(4) If an end trigger has been specified, do the following to stop recording:

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.

(5) When recording finishes the specified number of times, the system returns to the monitoring status.

(6) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-8 Complex Trigger Measurement

This section explains the operations for when the measurement mode is "Complex Trigger".

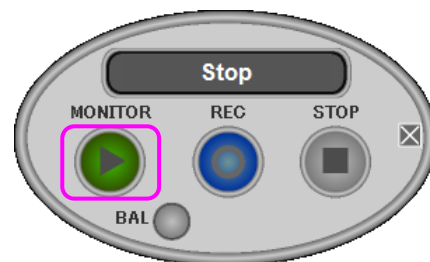
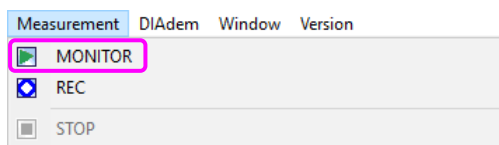
In the complex Trigger measurement mode, data recording automatically starts when the four analog-trigger channel, external trigger, and manual trigger AND/OR conditions are satisfied and is then performed until the specified number of recorded data items per channel is reached or the end trigger condition is satisfied.

For details on the analog trigger, external trigger, and manual trigger specifications, see the corresponding parts of the preceding section.

■ Operating method

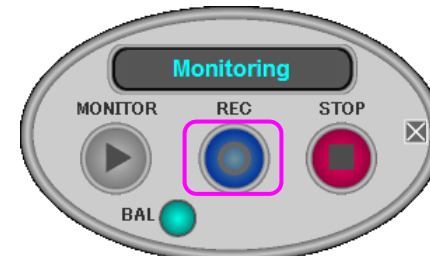
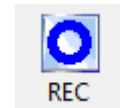
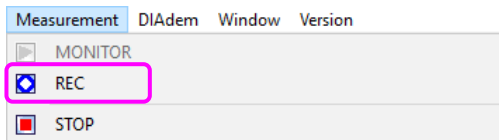
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording and set the system to the trigger (waiting) status:

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



The number of repetitions and measurement status are displayed on the status bar.



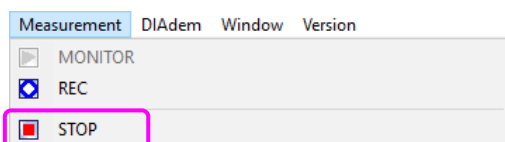
(3) When recording starts, the recording progress is displayed on the status bar.



(4) When recording finishes the specified number of times, the system returns to the monitoring status.

(5) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-9 CAN Trigger Measurement(Manual)

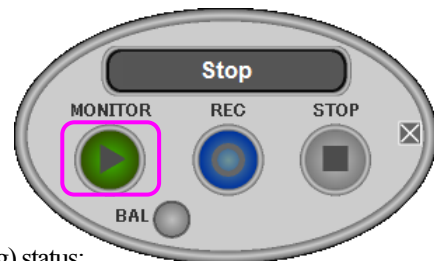
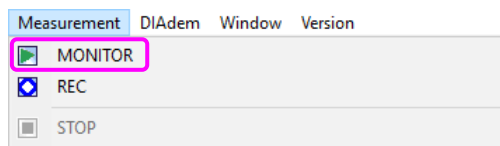
This section explains the operations for when the measurement mode is "CAN Trigger" and a manual trigger is the specified trigger.

In the CAN trigger (manual trigger) measurement mode, recording is started manually and then continues to the set recording time or until the end trigger conditions are met.

■ Operating method

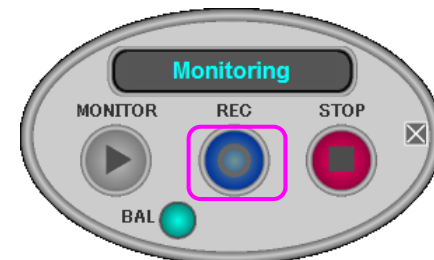
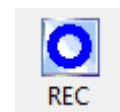
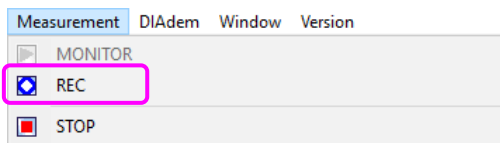
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording and set the system to the trigger (waiting) status:

- Select the "Measurement" - "REC/PAUSE" menu item.
- Select the "REC/PAUSE" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



The number of repetitions and measurement status are displayed on the status bar.



(3) Restart recording. When recording starts, the recording progress is displayed on the status bar.



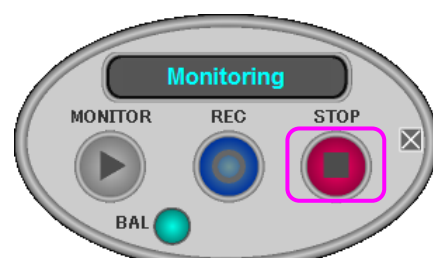
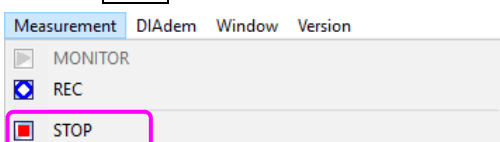
(4) If an end trigger has been specified, do the following to stop recording.

- Select the "Measurement" - "REC/PAUSE" menu item.
- Select the "REC/PAUSE" icon on the toolbar.
- Click the REC button on the measurement control panel.

(5) When recording finishes the specified number of times, the system returns to the monitoring status.

(6) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-10 CAN Trigger Measurement(Analog, Digital, Complex)

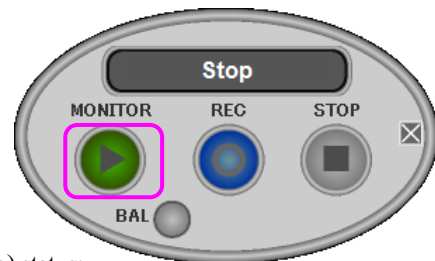
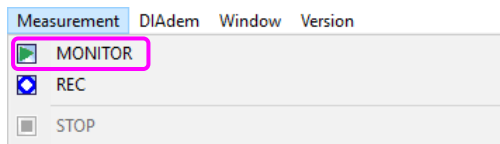
This section explains the operations for when the measurement mode is "CAN Trigger" and an analog trigger, digital trigger, or complex trigger is the specified trigger.

In the CAN trigger measurement (analog trigger, digital trigger, or complex trigger) mode, recording is started automatically when the trigger conditions are met and then continues to the set recording time or until the end trigger conditions are met.

■ Operating method

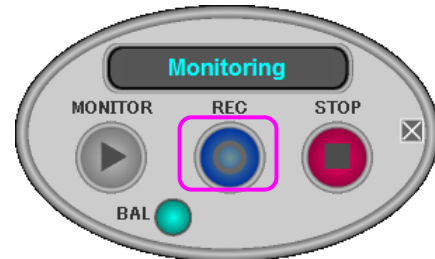
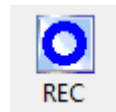
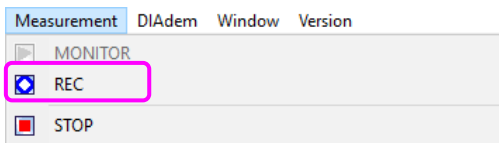
(1) Do the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the **MONITOR** button on the measurement control panel.



(2) Do the following to start recording and set the system to the trigger (waiting) status:

- Select the "Measurement" - "REC/PAUSE" menu item.
- Select the "REC/PAUSE" icon on the toolbar.
- Click the **REC** button on the measurement control panel.



The number of repetitions and measurement status are displayed on the status bar.



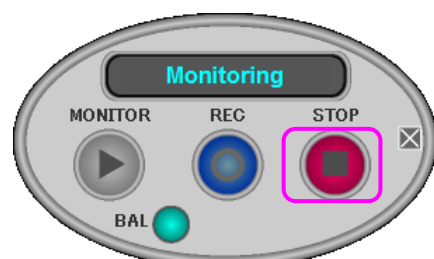
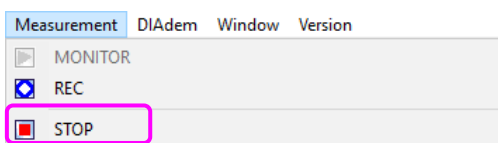
(3) When recording starts, the recording progress is displayed on the status bar.



(4) When recording finishes the specified number of times, the system returns to the monitoring status.

(5) Do the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.



7-1-1 Executing Balance

Balance can be executed during monitoring or while recording is paused.
Balance cannot be executed while in the stopped or recording status.

■ Operating method

(1) Do one of the following to open the "Set CH Condition" window:

- Select the "Set" - "Set CH Condition" menu item.
- Select the "CH Cond." icon on the toolbar.

(2) For the "Balance" item in the "Set CH Condition" window, select the checkboxes of channels subject to balance.



MEMO

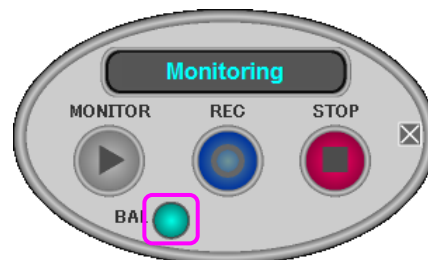
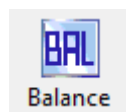
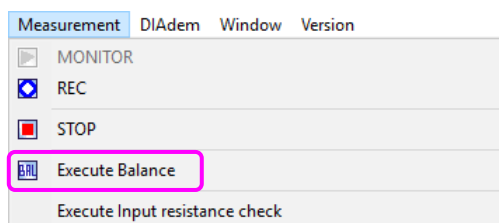
Channels for which "****" is displayed for the "Balance" item are not subject to balance.

(3) Do one of the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the MONITOR button on the measurement control panel.

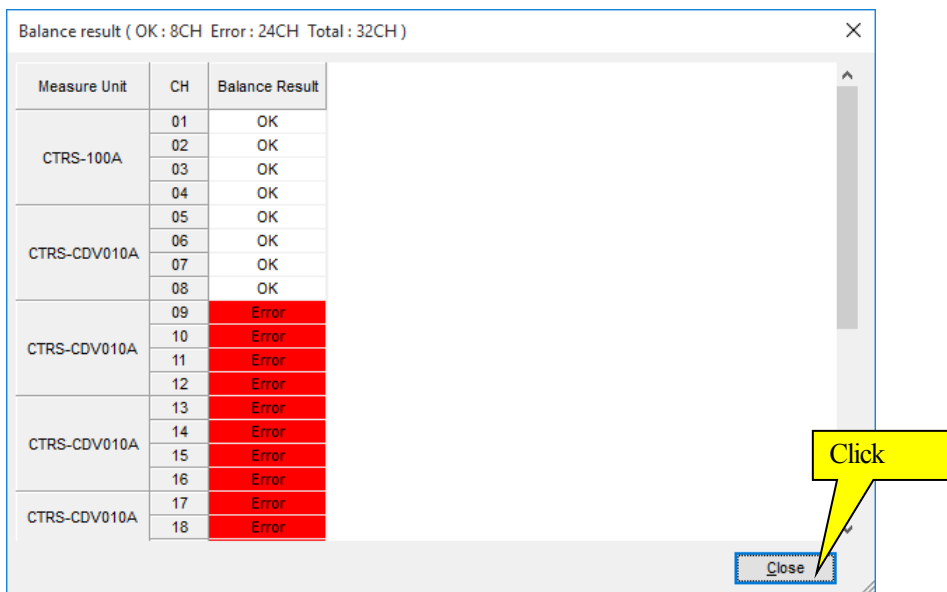
(4) Do one of the following to execute balance:

- Select the "Measurement" - "Execute Balance" menu item.
- Select the "Balance" icon on the toolbar.
- Click the BAL button on the measurement control panel.



(5) When balance is executed, the "Balance Results" window below is displayed.

Click the button to resume monitoring.



OK	Normal
NG	Abnormal
OFF	Not subject to balance execution
NONE	No balance
WRITE ERROR	Error while writing balance results
***	Not applicable

MEMO

- During monitoring, the "Balance" item in the "Set CH Condition" window can be changed.
- In the "Details" window of the "Set Environment" window, if the "Execute Input resistance check during balance adjustments." checkbox is selected, an input resistance check is performed upon executing balance.
- In the "Details" window of the "Set Environment" window, if the "Execute Burnout check during balance adjustments." checkbox is selected, a burnout check is performed upon executing balance.

7-12 Input Resistance Check

The resistance between A and C can be checked during monitoring.

The input resistance cannot be checked while in the stopped or recording status.

■ Operating method

(1) Do one of the following to open the "Set CH Condition" window:

- Select the "Set" - "Set CH Condition" menu item.
- Select the "CH Cond." icon on the toolbar.

(2) For the "Input Resistance Check" item in the "Set CH Condition" window, select the checkboxes of channels subject to input resistance checks.



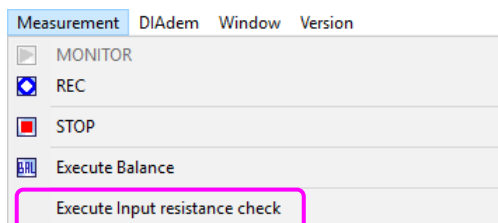
MEMO

Channels for which "****" is displayed for the "Input Resistance Check" item are not subject to input resistance checks.

(3) Do one of the following to start monitoring:

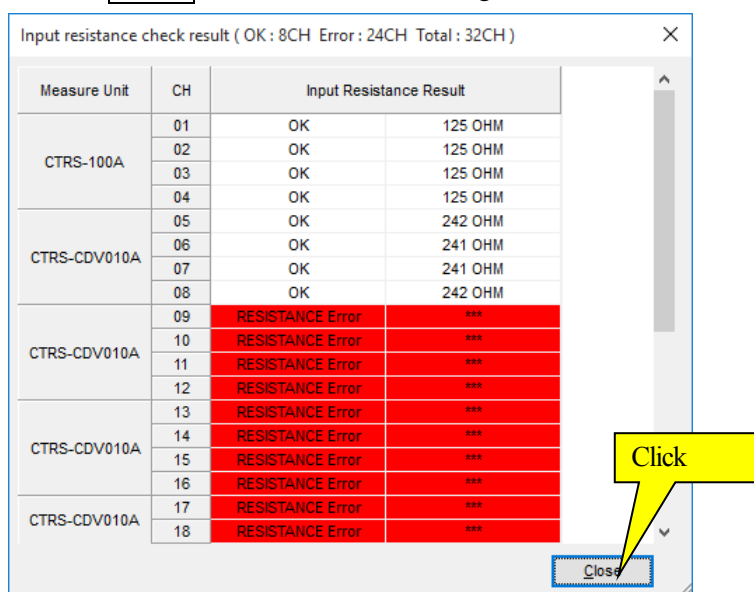
- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the MONITOR button on the measurement control panel.

(4) Select the "Measurement" - "Excute Input resistance check" menu item to execute an input resistance check.



(5) When the input resistance check is executed, the "Input resistance check results" window below is displayed.

Click the button to resume monitoring.



OK	Normal
BV NG	Usage not possible with the current BV
RESISTANCE NG	The maximum measurable resistance value has been exceeded
OFF	Not subject to input resistance check execution
***	Not applicable

MEMO

- During monitoring, the "Input resistance check" item in the "Set CH Condition" window can be changed.
- In the "Details" window of the "Set Environment" window, if the "Perform an input resistance check upon executing balance adjustment." checkbox is selected, an input resistance check is performed upon executing balance.

7-13 Burnout Check

The burnout can be checked during monitoring.

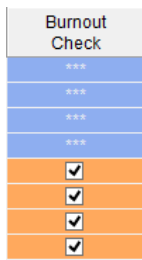
The burnout cannot be checked while in the stopped or recording status.

■ Operating method

(1) Do one of the following to open the "Set CH Condition" window:

- Select the "Set" - "Set CH Condition" menu item.
- Select the "CH Cond." icon on the toolbar.

(2) For the "Burnout Check" item in the "Set CH Condition" window, select the checkboxes of channels subject to burnout checks.



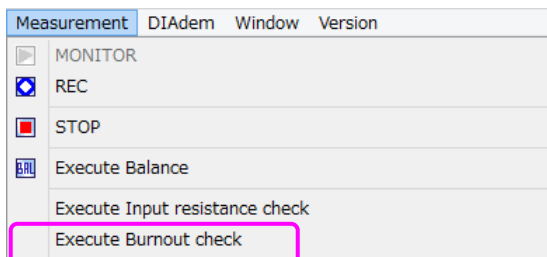
MEMO

Channels for which "***" is displayed for the "Burnout Check" item are not subject to burnout checks.

(3) Do one of the following to start monitoring:

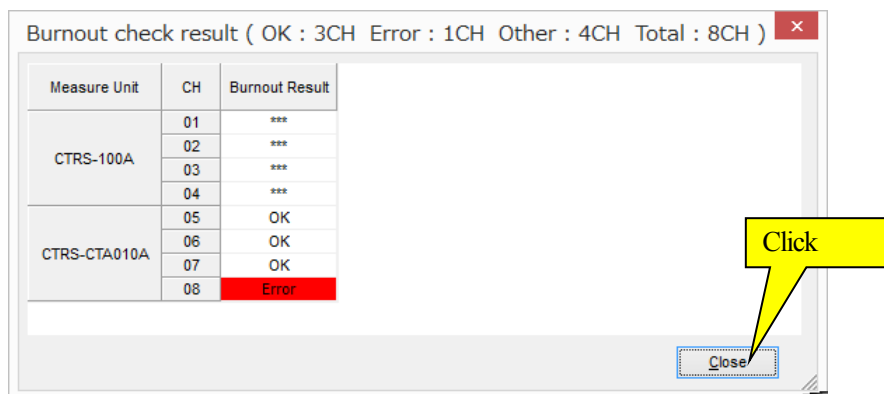
- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the MONITOR button on the measurement control panel.

(4) Select the "Measurement" - "Excute Burnout check" menu item to execute a burnout check.



(5) When the burnout check is executed, the "Burnout check results" window below is displayed.

Click the button to resume monitoring.



OK	Normal
Error	The thermocouple is broken. Or it exceeds the range of available resistance values (1 kohm or less).
OFF	Not subject to burnout check execution
***	Not applicable

MEMO

- During monitoring, the "Burnout Check" item in the "Set CH Condition" window can be changed.
- In the "Details" window of the "Set Environment" window, if the "Perform a burnout check upon executing balance adjustment." checkbox is selected, a burnout check is performed upon executing balance.

7-14 Offset Zero

The offset zero function is used to substitute the current measurement data for the channel-condition offset value and set the apparent measurement data to zero.

If the channel condition mode is "Strain", the measurement data ends up close to zero due to balance execution, but, in other modes, it is necessary to substitute the current measurement value for the offset zero value to make it zero.

This offset zero function makes it easy to substitute the current measurement data for the offset zero value.

■ Operating method

(1) Do one of the following to open the "Set CH Condition" window:

- Select the "Set" - "Set CH Condition" menu item.
- Select the "CH Cond." icon on the toolbar.

(2) For the "Offset zero" item in the "Set CH Condition" window, select the checkboxes of channels subject to offset zero function execution.



MEMO

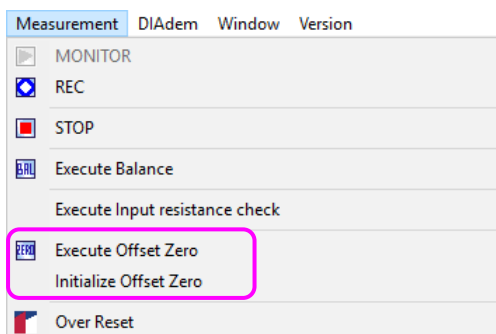
Channels for which "****" is displayed for the "Offset zero" item are not subject to the offset zero function.

(3) Do one of the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the MONITOR button on the measurement control panel.

(4) When the "Measurement" - "Execute Offset Zero" menu item is selected, the offset zero function is executed, and the current measurement data is set to the offset zero value.

When the "Measurement" - "Initialize Offset Zero" menu item is executed, the offset zero value is initialized to zero.



7-15 Input-Over Display

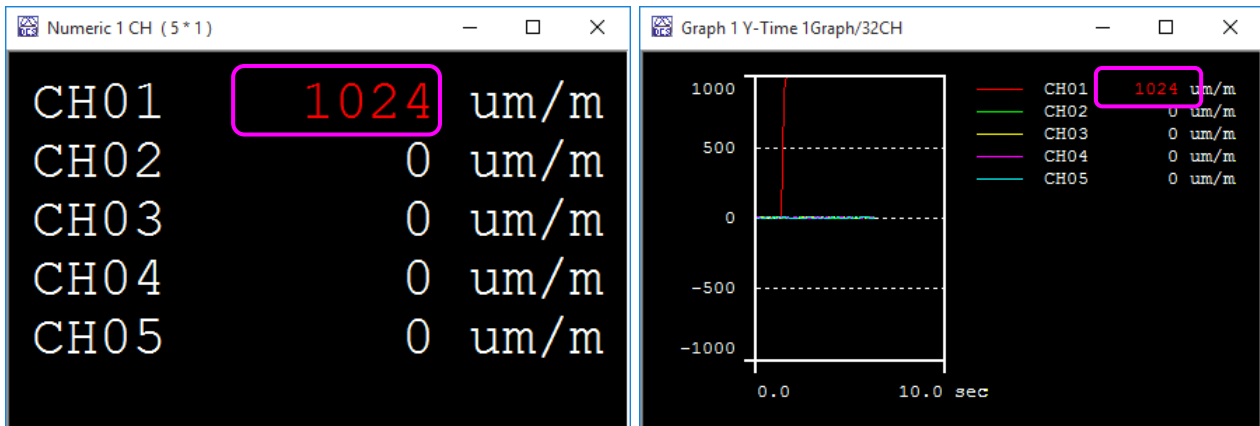
While monitoring or recording, once the measurement data becomes greater than or equal to the upper-limit check value or less than or equal to the lower-limit check value, numerical/graph window numbers are displayed in red.

The input-over display function makes it possible to judge whether each channel is over in terms of input.

MEMO

At the start of monitoring, the system is cleared and returns to the normal display.

The following figure shows an example of the display when the CH01 measurement data reaches or exceeds the upper-limit check value.



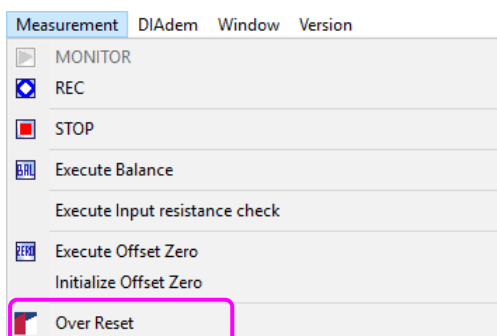
MEMO

To specify the upper-limit and lower-limit check values, use the "Chk. Val. (Up)" item and "Chk. Val. (Down)" item in the "Set CH Condition" window.

■ Input-over reset operating method

Do one of the following to reset the input-over status to the original status (the status before the input went over):

- Select the "Measurement" - "Over Reset" menu item.
- Select the "Over Reset" icon on the toolbar.



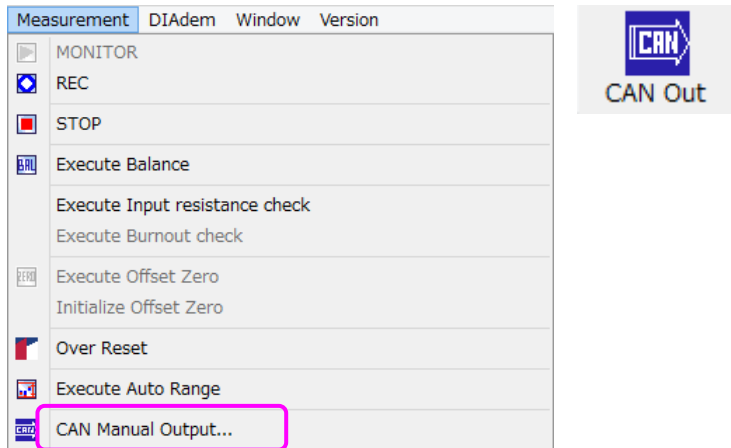
7-16 CAN Manual Output

Data fields set in the "Manual Output" screen in the "CAN Condition Settings" window can be output at any given time.

■ Operating method

Perform any of the following actions to manually perform CAN output during monitoring.

- Select the "Measurement" - "Output CAN (Manual)" menu item.
- Click the "CAN Output" icon on the toolbar.



MEMO

- At least one "Output" item must be selected in the "Manual Output" screen in the "CAN Condition Settings" window in order to manually perform CAN output.
- Manual CAN output cannot be performed while stopped.

7-17 Static Measurement

If the measurement mode is "Manual" or "Interval", static measurements can be made.

During static measurement, each time recording is started, measurement data on which moving average processing has been performed (average-value data) is additionally saved to one CSV data file.

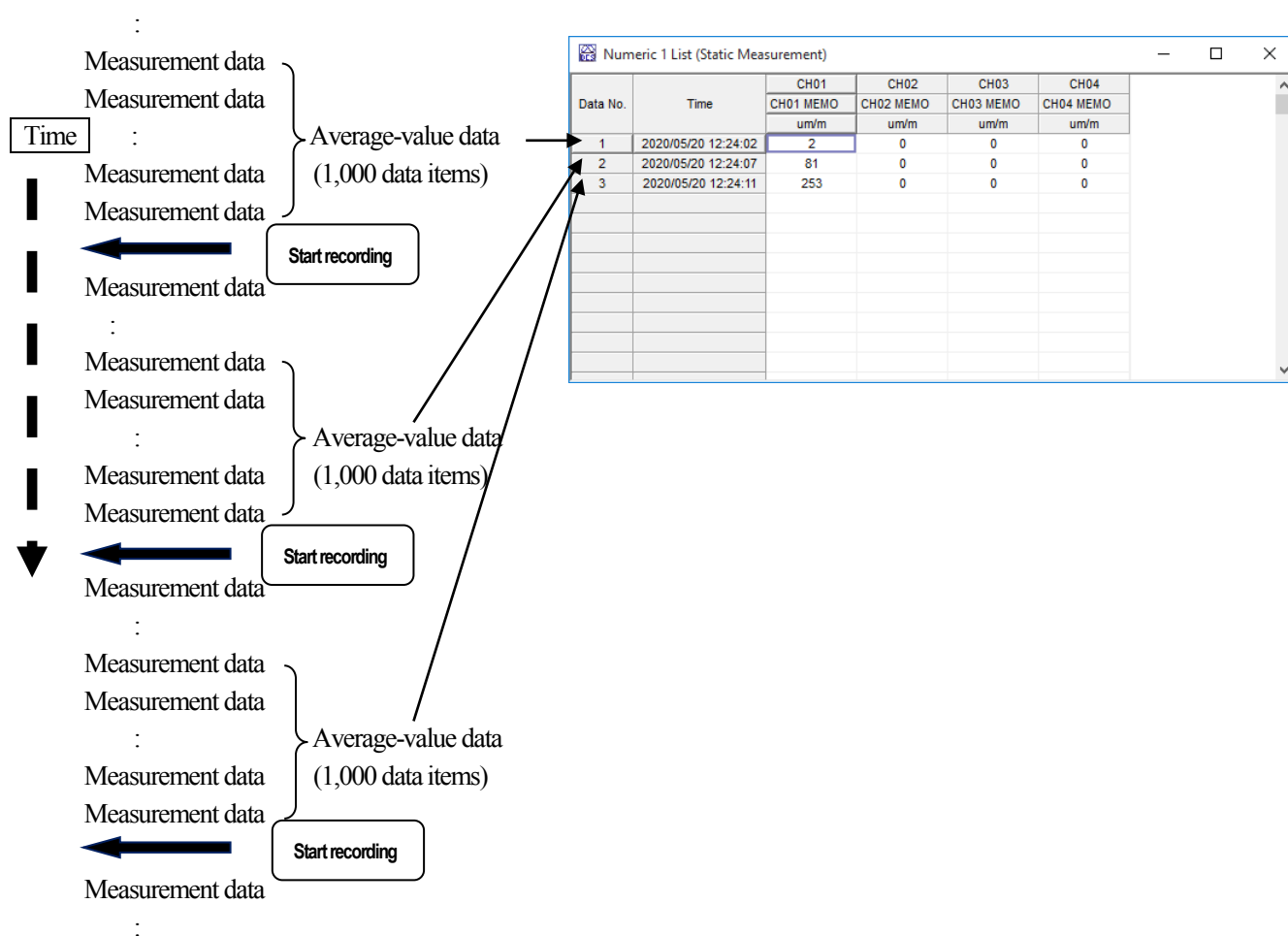
The average-value data is displayed in the numerical window list as well as the Y-Cycle graph in the graph window.

■ Measurement conditions

- Usage is possible if the data-file saving location is "PC data-file saving folder".
- Usage is possible if the measurement mode is "Manual" or "Interval".
- The sampling frequency is fixed to 1 kHz.

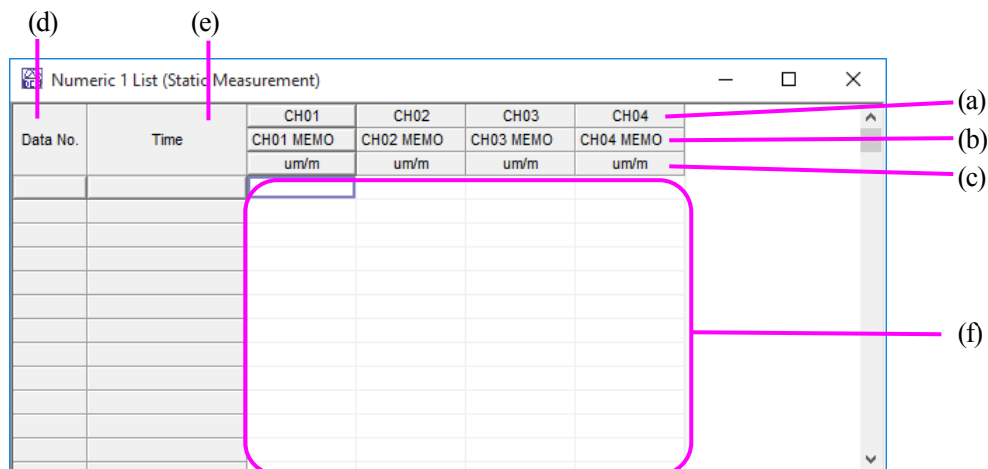
■ Operation

The average-value data is the average value of the 1,000 data items recorded immediately after recording last started.



7-17-1 Numerical window list display

When static measurements are made, the numerical window list display can be selected.
In this display, the average-value data of the most recent 1,000 data items can be displayed.



- (a) Displays each channel number.
- (b) Displays each channel comment.
- (c) Displays each channel unit.
- (d) Displays the data number.
- (e) Displays the measurement time.
- (f) Displays the average-value data of each channel.

MEMO

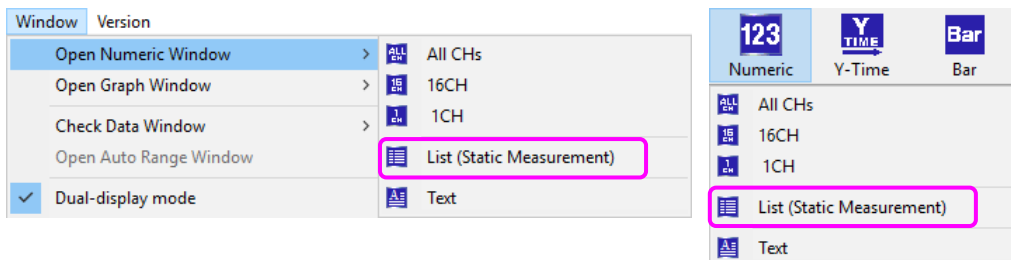
"Static measurement" is displayed in the numerical window list display as well as the Y-Cycle graph title in the graph window.



Display method

Do one of the following to display the numerical window:

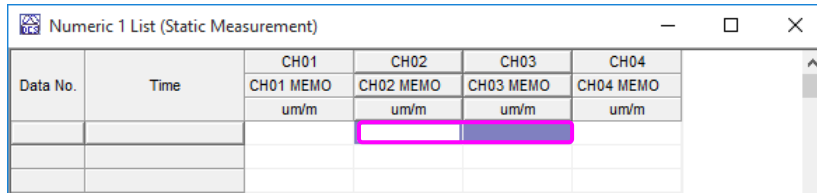
- Select the "Window" - "Open Numerical Window" - "List (Static Measurement)" menu item.
- In the toolbar, select the "Tools" button followed by the "List (Static Measurement)" menu item.



Hiding channels

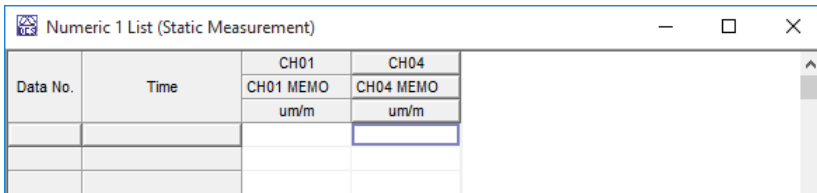
A channel can be hidden by pressing the "DELETE" key while the cursor is over it.

- (1) Use the cursor to select the channel to hide.



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

- (2) Press the "DELETE" key to hide the channel.

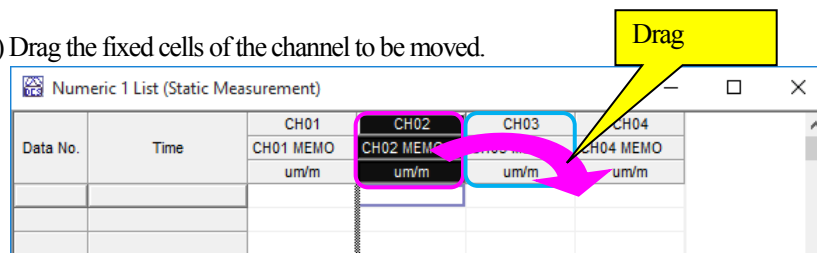


Data No.	Time	CH01	CH04
		CH01 MEMO	CH04 MEMO
		um/m	um/m

Sorting channels

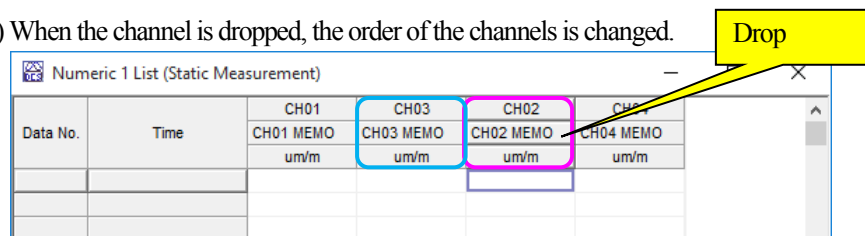
Fixed cells can be dragged and dropped to sort channels.

- (1) Drag the fixed cells of the channel to be moved.



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

- (2) When the channel is dropped, the order of the channels is changed.

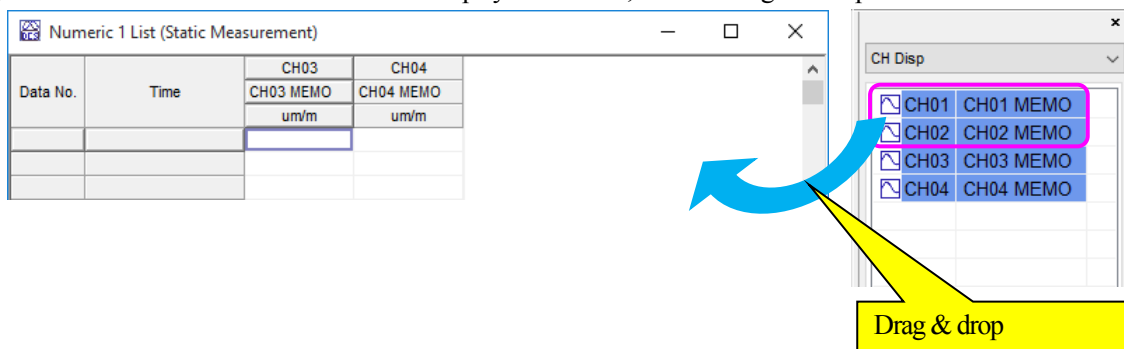


Data No.	Time	CH01	CH03	CH02	CH04
		CH01 MEMO	CH03 MEMO	CH02 MEMO	CH04 MEMO
		um/m	um/m	um/m	um/m

Specifying displayed channels

To set a displayed channel to the window, drag and drop it from the display channel bar.

- (1) Use the mouse to select channels from the display channel bar, and then drag and drop them in the window.



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

CH Disp	
☒	CH01 CH01 MEMO
☒	CH02 CH02 MEMO
☒	CH03 CH03 MEMO
☒	CH04 CH04 MEMO

(2) The selected display channels are displayed in the window.

Numeric 1 List (Static Measurement)					
Data No.	Time	CH03	CH04	CH01	CH02
		CH03 MEMO	CH04 MEMO	CH01 MEMO	CH02 MEMO
		um/m	um/m	um/m	um/m

7-17-2 Data file name

The name of the CSV file used to save average-value data for static measurement is determined as follows based on items in the "Data File" window of the "Set Measure Condition" window:

CSV file name: File Name # File No..CSV

Set Save Folder

E:\ Browse...

Data File Name

TEST#0000.CSV

File Name TEST
File Title

Grant rules: ☒ File No. ☐ Recording Start Time

File No. 0 4 digits

MEMO

If there is already a CSV file that has the same name in the saving-location folder, the average-value data is added to this CSV file.

NOTE

CSV files cannot be viewed by using DCS-100A.
They can only be viewed by using the optional software DAS-200A.

7-17-3 Manual measurement

This section explains the operations for when the measurement mode is "Manual".

■ Operating method

- (1) Do one of the following to open the "Set Measure Condition" window:
 - Select the "Set" - "Set Measure Condition" menu item.
 - Select the "Meas. Cond." icon on the toolbar.
- (2) When the "Measure Mode" window is displayed, set the measurement mode in the window to "Manual".
- (3) Select the "Perform the static measurements (in CSV format file)." checkbox.

Static Measurement

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

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

(4) Do one of the following to start monitoring:

- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the button on the measurement control panel.

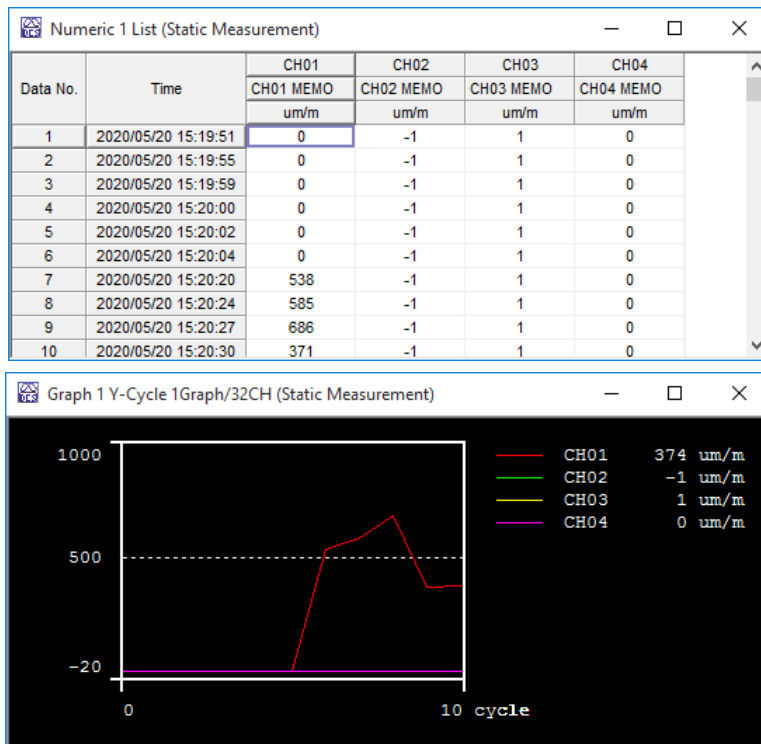
When the system enters the monitoring status, the average-value data is displayed in windows other than the Y-Cycle graph in the graph window and the numerical window list display.

(5) Do one of the following to start recording:

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the button on the measurement control panel.

The average-value data for the measurement data is saved to a CSV file and then displayed in the numerical window list and Y-Cycle graph in the graph window.

The following is an example of the window displayed if the recording operation is performed ten times.



(6) Do one of the following to stop monitoring:

(If data was being recorded, the file number is incremented.)

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the button on the measurement control panel.

7 - 1 7 - 4 Interval measurement

This section explains the operations for when the measurement mode is "Interval".

- (1) Do one of the following to open the "Set Measure Condition" window:
 - Select the "Set" - "Set Measure Condition" menu item.
 - Select the "Meas. Cond." icon on the toolbar.
- (2) When the "Measure Mode" window is displayed, set the measurement mode in the window to "Interval".
- (3) Select the "Perform the static measurements (in CSV format file)." checkbox.
- (4) When the "Interval" window is displayed, specify the interval conditions.

NOTE

If making static measurements, specify an interval time of at least 5 seconds.

- (5) Do one of the following to start monitoring:
 - Select the "Measurement" - "MONITOR" menu item.
 - Select the "MONITOR" icon on the toolbar.
 - Click the MONITOR button on the measurement control panel.

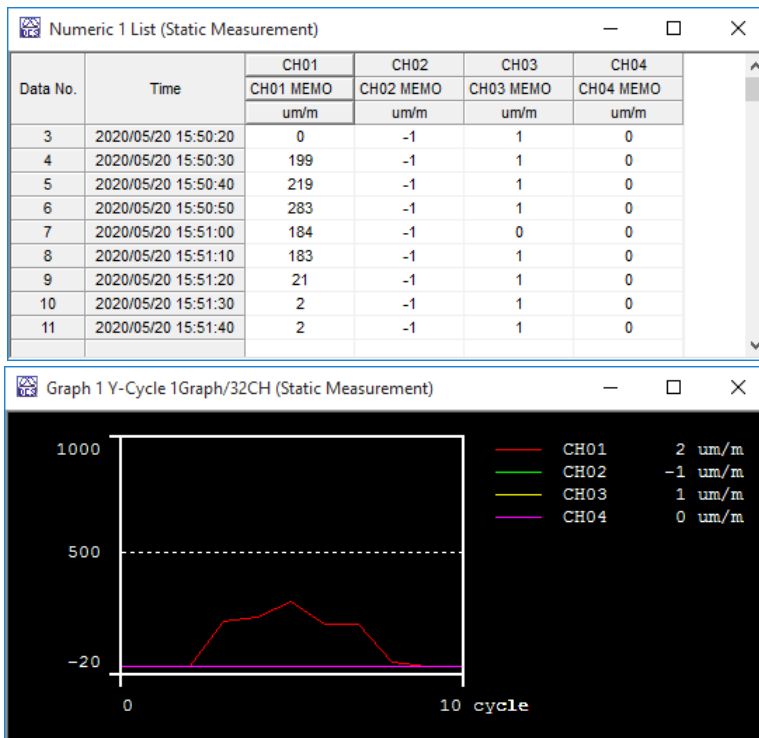
When the system enters the monitoring status, the average-value data is displayed in windows other than the Y-Cycle graph in the graph window and the numerical window list display.

(6) Do one of the following to set the system to the trigger (waiting) status:

- Select the "Measurement" - "REC" menu item.
- Select the "REC" icon on the toolbar.
- Click the **REC** button on the measurement control panel.

Each time the recording start time is reached, the average-value data is saved to a CSV file and then displayed in the numerical window list and Y-Cycle graph in the graph window.

The following is an example of the window displayed if the recording start time is 2020/12/12 15:18:00, the number of repetitions is ten, the interval time is 10 seconds, and recording is performed.



If the specified number of recording repetitions ends or one of the following operations is performed to stop recording, the system enters the monitoring status (and the file number is incremented if data was being recorded):

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.

(7) Do one of the following to stop monitoring:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.

7-18 Auto Range

This section describes auto-range function that automatically sets range of channels by measuring the actual input level. Actual load is applied but when input levels of channels are not clear, use this auto-range function that automatically sets the most appropriate measuring range.

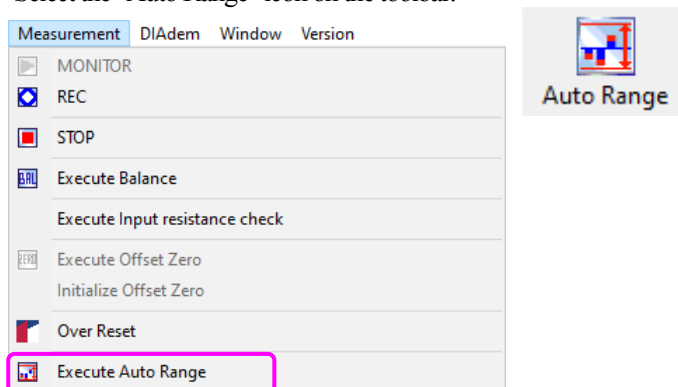
■ Operating method

(1) Do one of the following to start monitoring:

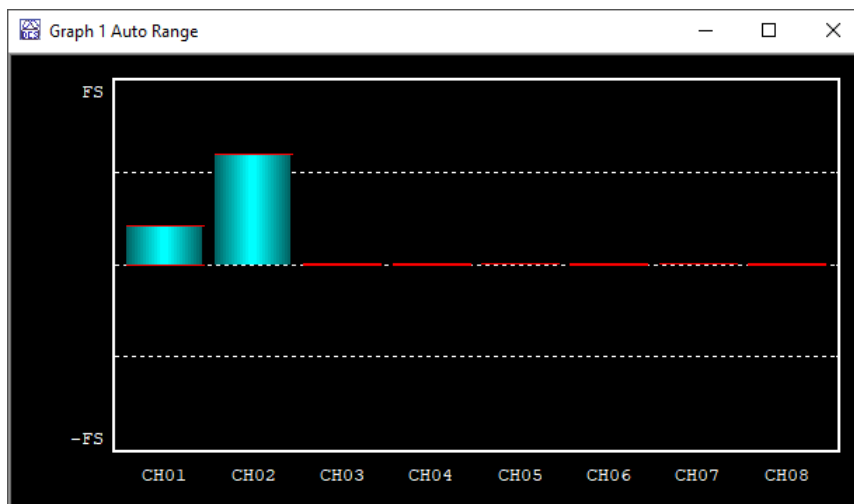
- Select the "Measurement" - "MONITOR" menu item.
- Select the "MONITOR" icon on the toolbar.
- Click the MONITOR button on the measurement control panel.

(2) Do one of the following to execute Auto Range:

- Select the "Measurement" - "Execute Auto Range" menu item.
- Select the "Auto Range" icon on the toolbar.



(3) When Auto Range is executed, the "Auto Range Results" window below is displayed. FS(Full Scale) is the maximum range value of each channel.



MEMO

Select the "Window" - "Open Auto Range Window" menu item to open the Auto Range window.

(4) While operating the Auto Range function, apply the actual load to channels.

(5) Do one of the following to stop Auto Range:

- Select the "Measurement" - "STOP" menu item.
- Select the "STOP" icon on the toolbar.
- Click the **STOP** button on the measurement control panel.

(6) The "Auto Range Result" window below is displayed.

- "Auto Range Result" window

Displays the maximum value of measured data, the old range (currently set range value), and the new range (detected range value).

The new range displays the range value where the maximum value of measured data does not exceed about 70%, and if it is different from the old range, displayed in yellow.

Auto Range Result				
Auto Range Result				
Measure Unit	CH	Max (absolute value)	Range (Old)	Range (New)
CTRS-100A	01	10534 um/m	1kum/m	20kum/m
	02	30057 um/m	1kum/m	50kum/m
	03	26 um/m	1kum/m	1kum/m
	04	25 um/m	1kum/m	1kum/m
CTRS-CDV010A	05	45 um/m	1kum/m	1kum/m
	06	25 um/m	1kum/m	1kum/m
	07	40 um/m	1kum/m	1kum/m
	08	17 um/m	1kum/m	1kum/m

• "MAX/MIN List" window

The highest 5 PEAK values and the lowest 5 VALLEY values are displayed.

Auto Range Result

Auto Range Result	MAX/MIN List	MAX/MIN Graph					
Measure Unit	CH		No.1	No.2	No.3	No.4	No.5
CTRS-100A	01	MAX	10534 um/m	6271 um/m	19 um/m	12 um/m	*
			6.341 sec	4.440 sec	10.65 sec	0.001 sec	*
		MIN	-2 um/m	12 um/m	5710 um/m	***	*
			10.57 sec	0.001 sec	4.530 sec	***	*
	02	MAX	30057 um/m	***	***	***	*
			8.923 sec	***	***	***	*
		MIN	30042 um/m	***	***	***	*
			0.001 sec	***	***	***	*
	03	MAX	26 um/m	***	***	***	*
			8.923 sec	***	***	***	*
		MIN	15 um/m	***	***	***	*
			0.001 sec	***	***	***	*
	04	MAX	25 um/m	***	***	***	*
			4.440 sec	***	***	***	*
		MIN	12 um/m	***	***	***	*
			0.001 sec	***	***	***	*
CTRS-CDV010A	05	MAX	45 um/m	***	***	***	*

Close

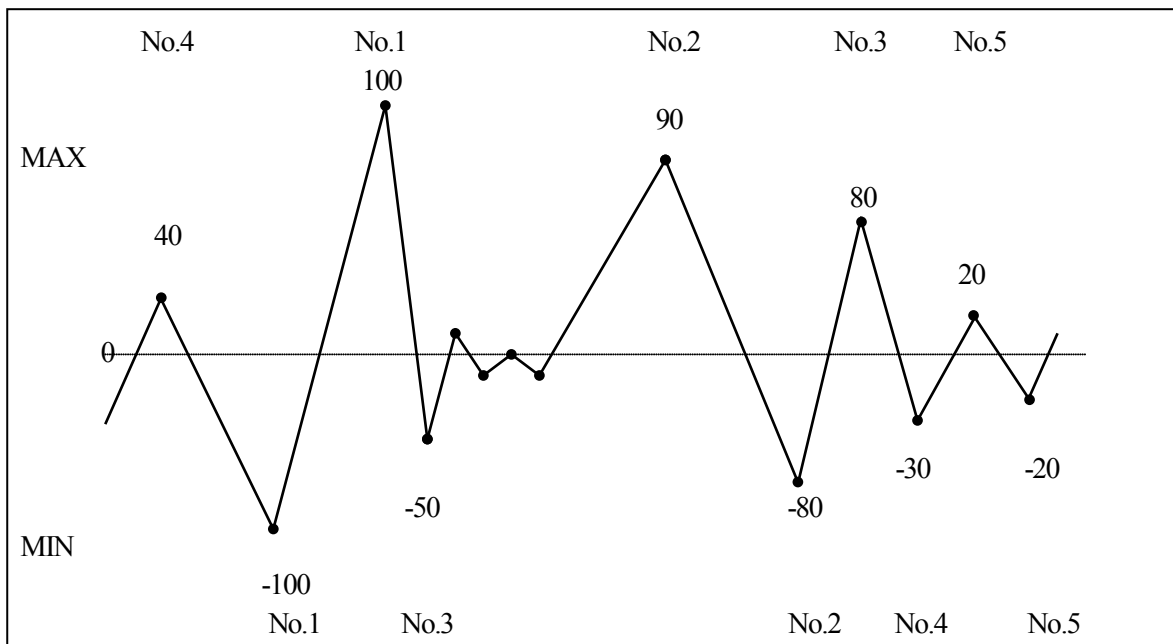
Ex) No. 1

10534um/m 1st PEAK value data of the extreme value data (Physical value)

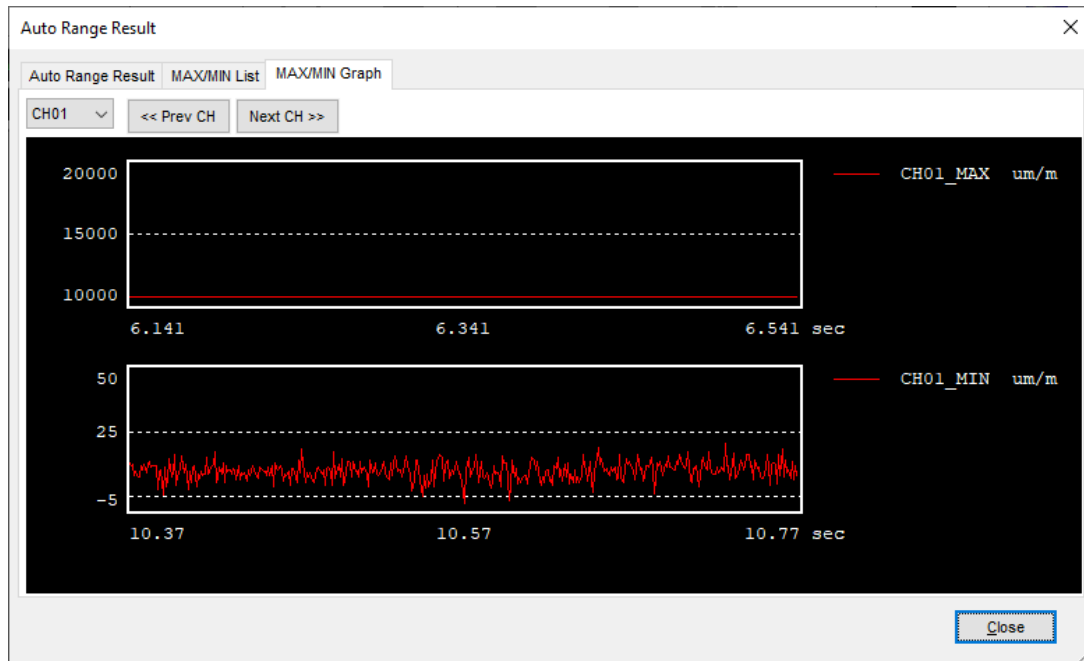
6.341sec Time when the PEAK value occurred for the first time.

-2um/m 1st VALLEY value data of the extreme value data (Physical value)

10.57sec Time when the VALLEY value occurred for the first time.



- "MAX/MIN Graph" window
200 data before and after the maximum PEAK value (total 400 data), 200 data before and after the minimum VALLEY value (400 data total) is displayed.



NOTE

Display conditions such as scale cannot be changed.

- (7) Click the **Close** button to display the following confirmation message, and then click the **Yes** button.



- (8) The monitor is restarted in the set range.

■ Confirming Appropriate Range by Auto-Range Function

Range value of the auto-range results is automatically selected to a value that does not exceed approximately 70% of the maximum measured value obtained during the auto-range function.

Therefore, when using the auto-range function, it is operated in a state as near as possible with the actual test. For example, if the auto-range function is operated with no input (no-load) state, it may be set to maximum sensitivity range and the correct range may not be selected.

■ MAX Data

The maximum data is, by centering on maximum peak value, displayed with 200 data in the front and 199 data in the back totaling 400 data. If the number of data around the maximum value does not satisfy the specified number (for example, when the head data is the maximum value or the number of maximum value detecting target data is less than 400), short of data is filled with □0.□

■ MIN Data

The Minimum data is, by centering on minimum valley value, displayed with 200 data in the front and 199 data in the back totaling 400 data. If the number of data around the minimum value does not satisfy the specified number (for example, the head data is the minimum value or the number of data of the minimum value detecting target data is less than 400), short of data is filled with '0.'

8 CAN/GPS Input unit and measurement

This section describes how to Measurement using GPS(record the GPS data, record data by using the GPS time data, CTRS-100A time correction) with the CAN/GPS input unit.

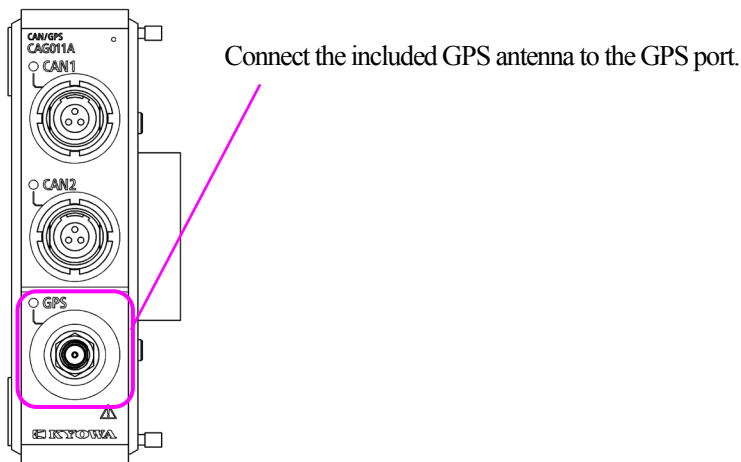
NOTE

- (1) Be sure to mount the CAN / GPS input unit on the master unit.
Even if it is mounted on the slave unit, the GPS function cannot be used.
- (2) If the sampling frequency is "external clock", acquisition using GSP time data cannot be performed.
- (3) Before using the "time synchronization function", make sure the time zone, date and time on the PC are correct.
The DCS-100A does not synchronize the PC clock with the GPS time. Note that the PC time, displayed on the status bar, may differ from the GPS time.

8- 1 Preparation for measurement

8- 1- 1 To connect the GPS antenna

Connect the accessory GPS antenna as follows.



8-1-2 To confirm the configuration

This section describes how to confirm the CAN/GPS input unit configuration.

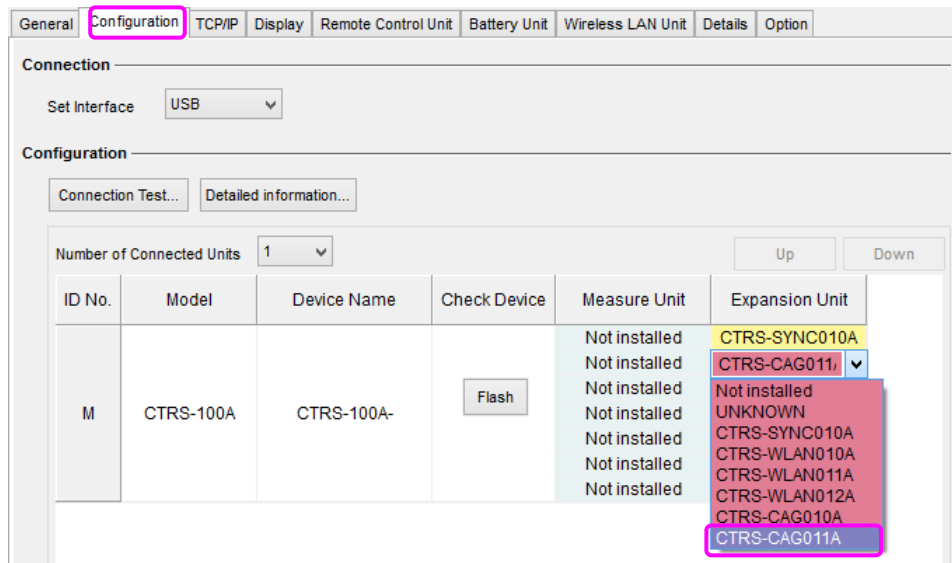
(1) Open the Set Environment window by any of the following.

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

(2) Click the [Configuration] tab on the Set Environment window.

Make sure the CAN/GPS input unit appears on the “Expansion Unit” column on the [Configuration] tab.

When the CAN/GPS input unit does not appear, select the CAN/GPS input unit on the “Expansion Unit” column on the [Configuration] tab.



(3) Click the  button to close the window.

8-2 To record the GPS data

When recording the GPS data, the DCS-100A monitors/records the GPS data (latitude, longitude, speed, azimuth, etc.) as well as the measured data.

The DCS-100A saves the GPS data in the NMEA format.

MEMO

When recording the GPS data, the time of CTRS-100A is automatically corrected.

When recording the GPS data, you can create an NMEA file which is not included unpositioned data by checking "It does not save unpositioned NMEA sentence".

■ Operation method

(1) Connect the accessory GPS antenna.

(For details, see “8-1-1 To connect the GPS antenna”)

(2) Make sure the CAN/GPS input unit appears on the “Expansion Unit” column on the [Configuration] tab.

(For details, see “8-1-2 To confirm the configuration.”)

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

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

(4) Click the [Measure Mode] tab.

Put a check mark to the check box next to the "Records GPS data."

(5) Click the **OK** button to close the window.

(6) Go to “7 MEASUREMENT.”

8-3 To record the data by using the GPS time data

The DCS-100A records the data by using the GPS time data in the following 2 methods.

●Point ZERO (manual) measurement

Starts the manual measurement at 0 msec by using the time data, received from the GPS satellite.

●Interval (GPS synchronization) measurement

Starts the interval measurement at 0 msec by using the time data, received from the GPS satellite.

For details, see separate volume of "CTRS-100A INSTRUCTION MANUAL (FOR HARDWARE)."

NOTE

To record the data by using the GPS time data, set the data-file saving location to "CTRS-100A SD card".

MEMO

When recording the GPS data, the time of CTRS-100A is automatically corrected.

8-3-1 Point ZERO (manual) measurement

This section describes how to execute the Point ZERO (manual) measurement.

■Operation method

(1) Connect the accessory GPS antenna.

(For details, see "8-1-1 To connect the GPS antenna")

(2) Make sure the CAN/GPS input unit appears on the "Expansion Unit" column on the [Configuration] tab.

(For details, see "8-1-2 To confirm the configuration.")

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

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

(4) Click the [Measure Mode] tab.

Put a check mark to the check box next to the "Records data by using the time data received through the GPS data."

(5) The Point ZERO (Manual) and Point ZERO (Manual n. of data) appear.

Select the target item from the following.

- | | |
|--------------------------------|--|
| Point ZERO (Manual) | Manually starts and stops the data recording. |
| Point ZERO (Manual n. of data) | Manually starts the data recording and records data for the pre-set Number of data/CH. |

Measure Mode

Extra
Data File

Measure Mode

Point ZERO(Manual n. of data) ✓
Point ZERO(Manual)
Point ZERO(Manual n. of data)
Interval(GPS sync)

100A units are restricted by the selected sampling frequency.

Clockout frequency dividing: 1 (Frequency that is output from the CTRS-100A: 20000Hz)

Clockout Mode: ☒ always ☐ during recording ☐ Do not output
☐ reverse

Record Data

Number of Data/CH: 10000
Record Time: 0.50000sec

Repeat Times

1

CTRS-CAG011A

☐ Records GPS data. ☐ It does not save unpositioned NMEA sentences.
☒ Records data by using the time data received through the GPS data.
☒ The time of CTRS-100A is corrected by GPS data.

(6) Click the **OK** button to close the window.

(7) Go to “7 - 3 Manual Measurement.”

MEMO

The DCS-100A is able to set the Start Time in the Local Time or UTC Time.
The Local Time and UTC Time are linked.

Manual Recording Start Time

☒ Set Start Time.

Local Time: 2021/10/21 16:00:00
UTC Time: 2021/10/21 07:00:00

Local Time

UTC Time

8-3-2 Interval (GPS synchronization) measurement

This section describes how to execute the Interval (GPS synchronization) measurement.

■Operation method

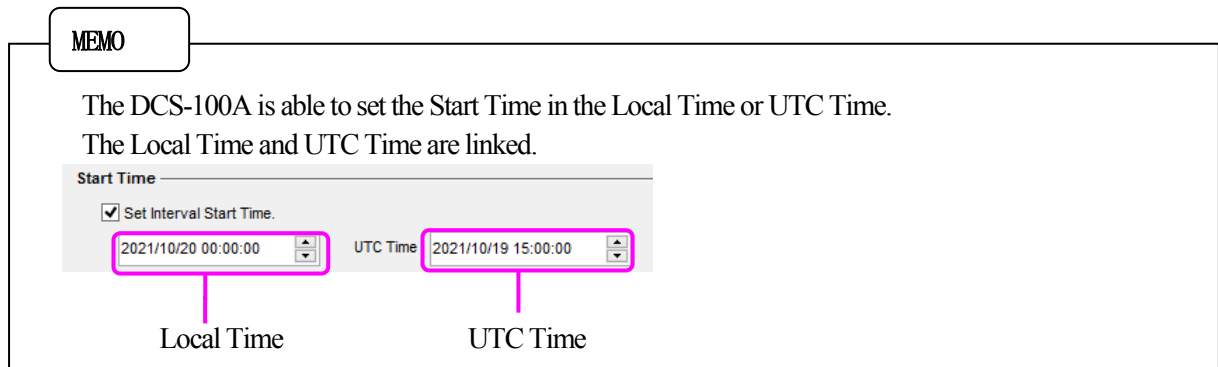
- (1) Connect the accessory GPS antenna.
(For details, see “8-1-1 To connect the GPS antenna”)
- (2) Make sure the CAN/GPS input unit appears on the “Expansion Unit” column on the [Configuration] tab.
(For details, see “8-1-2 To confirm the configuration.”)
- (3) Open the Set Measure Condition window by any of the following.
 - Click the Set - Set Measure Condition....
 - Click the Meas. Cond. icon from the toolbar.
- (4) Click the [Measure Mode] tab.
Put a check mark to the check box next to the "Records data by using the time data received through the GPS data."
- (5) The “Interval (GPS sync) appears.

The screenshot shows the 'Measure Mode' window. On the left sidebar, 'Measure Mode' is selected. The main area has 'Interval(GPS sync)' selected in the 'Measure Mode' dropdown. Below it, 'Sampling Frequency' is set to '1,2,5' and '20kHz'. A note states: 'The number of measuring CHs of CTRS-100A units are listricted by the selected sampling frequency.' 'Clockout frequency dividing' is set to '1' with a note '(Frequency that is output from the CTRS-100A : 20000Hz)'. 'Clockout Mode' has 'always' selected. 'Record Data' section has 'Number of Data/CH' set to '2' and 'Record Time' set to '0.00010sec'. 'Repeat Times' is set to '10'. Under 'CTRS-CAG011A', the checkbox 'Records data by using the time data received through the GPS data.' is checked and highlighted with a red box. Other checkboxes include 'Records GPS data.', 'It does not save unpositioned NMEA sentences.', and 'The time of CTRS-100A is corrected by GPS data.'.

- (6) Click the [Interval] tab .

The screenshot shows the 'Interval' tab selected in the 'Measure Mode' window. The 'Start Time' section has 'Set Interval Start Time.' checked, with a date/time field set to '2021/10/20 00:00:00' and a 'UTC Time' field set to '2021/10/19 15:00:00'. A note says: 'If start date is not set, the date when [REC] button is pressed shall be the start date.' The 'Interval Time' section has fields for Day (0), Hour (0), Minute (1), and Second (30). A note states: 'Set interval time to a time more than 'record time (0.00010sec) + 10 second'.' The 'Repeat Times' section is set to '10'.

- (7) Set the interval conditions (such as the Start Time, Interval Time, etc.)
 (For details, see “6 - 3 Interval Conditions.”)
 Click the **OK** button to close the window.



- (8) Go to “7 - 4 Interval Measurement.”

8 - 4 Time correction of CTRS-100A by GPS time data

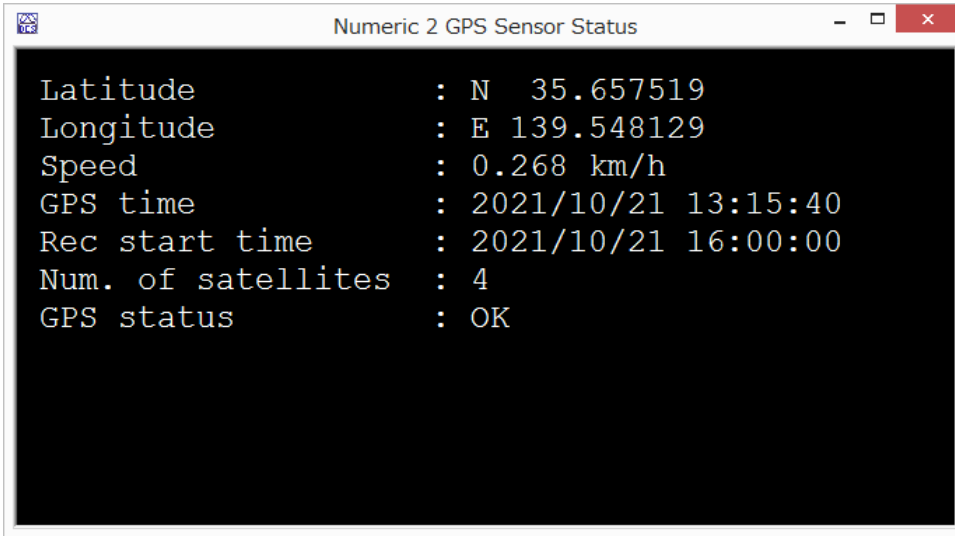
You can use GPS time data to correct the time on the CTRS-100A.

■ Operation method

- (1) Connect the accessory GPS antenna.
 (For details, see “8 - 1 - 1 To connect the GPS antenna”)
- (2) Make sure the CAN/GPS input unit appears on the “Expansion Unit” column on the [Configuration] tab.
 (For details, see “8 - 1 - 2 To confirm the configuration.”)
- (3) Open the Set Measure Condition window by any of the following.
 - Click the Set - Set Measure Condition....
 - Click the **Meas. Cond.** icon from the toolbar.
- (4) Click the [Measure Mode] tab.
 Put a check mark to the check box next to the "The time of CTRS-100A is corrected by GPS data."
- (5) Click the **OK** button to close the window.
- (6) The time is corrected when the monitor starts or when the measurement conditions are set, and the time is corrected every hour thereafter.

8-5 GPS sensor status window

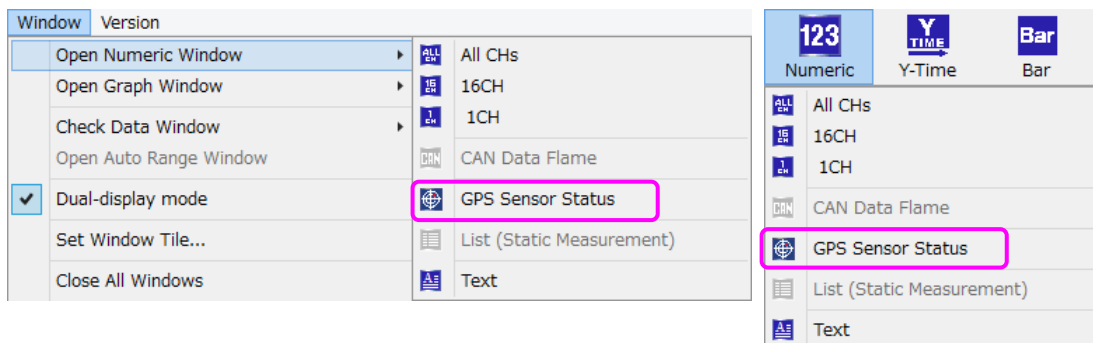
This section describes how to open the GPS sensor status window when recording the GPS data or when recording data by using the GPS time data.



■How to display

Open the GPS sensor status window by any of the following.

- Click the Window - Open Numeric Window - GPS sensor status.
- Click the **Numeric** icon from the toolbar. Click the GPS sensor status.

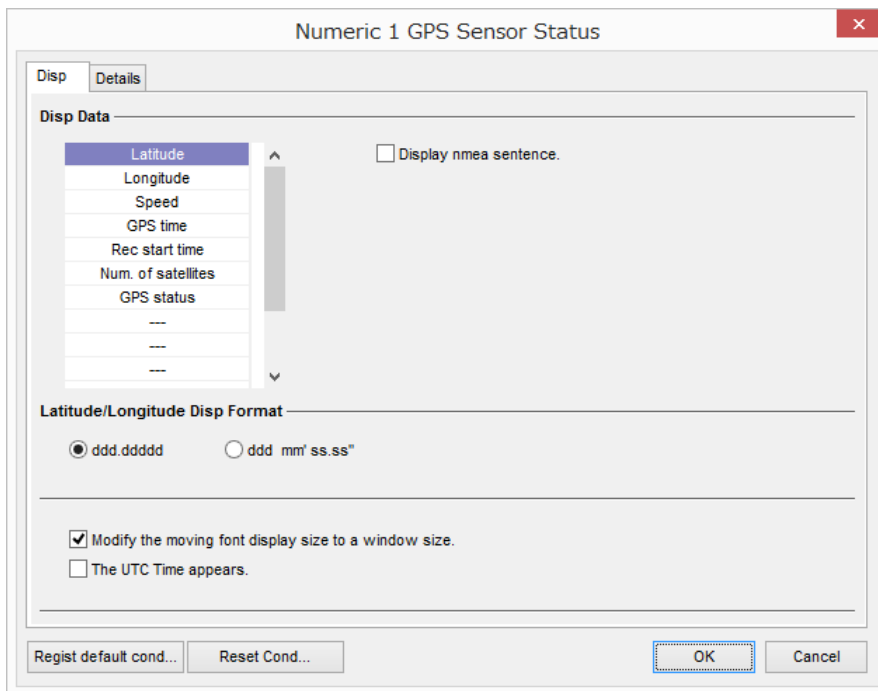


1-1-1 Set display condition... window

To set the display conditions of the GPS sensor status window, open the Set Display Condition... window.

Open the Set Display Condition... window 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... on the pop-up-menu.
- Click the **Disp. Cond.** icon from the toolbar.
- Double-click the GPS sensor status window.



■Disp Data

Select the target item to be displayed on the GPS sensor status window.

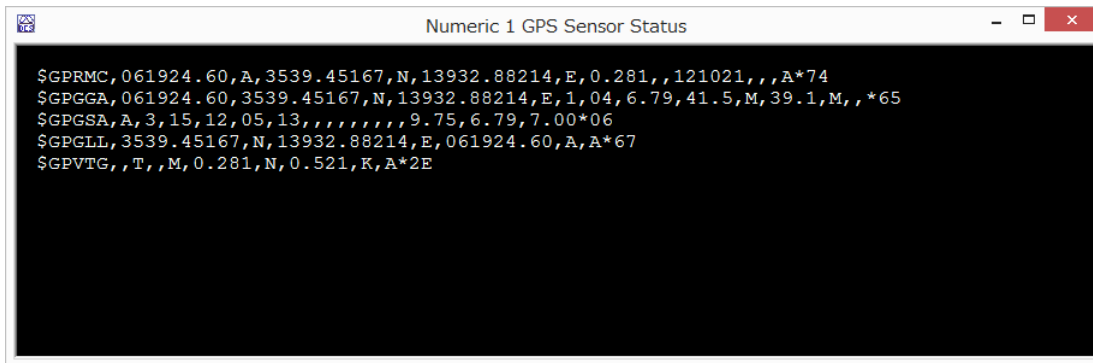
Latitude	Latitude (N: North latitude, S: South latitude)
Longitude	Longitude (E: East longitude, W: West longitude)
Speed	Speed (km/h)
GPS time	Date and time of the GPS sensor
Rec start time	The next recording start time of the Point ZERO (manual) measurement/Interval (GPS synchronization) measurement.
Num. of satellites	The number of satellites in use Use the "Num. of satellites" as a guide when checking the receiving conditions.
GPS status	"OK" Non-differential GPS fix available The time synchronization function is available. "Error" Fix not available The time synchronization function is not available. NONE GPS sensor not connected.
Course	Traveling direction (°, TN: 0°)
Sea level altitude	Altitude above sea level (m)
Geoid height	Geoid height (m)
Hrzn. dltn. of prec.	Horizontal dilution of precision
Posn. dltn. of prec.	Position dilution of precision
Vert. dltn. of prec.	Vertical dilution of precision

NOTE

The magnetic declination cannot be displayed.

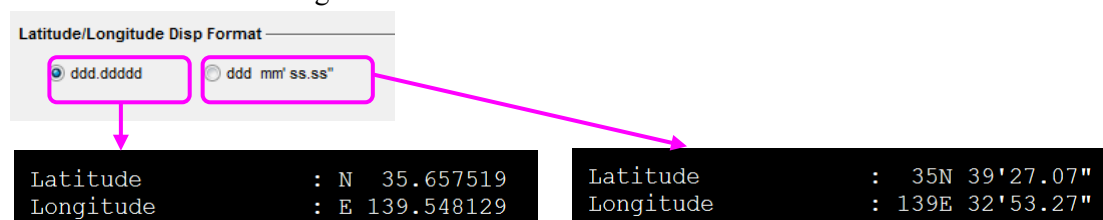
■GPS sentence display

When recording GPS data, you can display the received GPS data in nmea sentence by turning on the check mark of "Display nmea sentence."



■To select the latitude format/longitude format

Select the latitude format/longitude format.

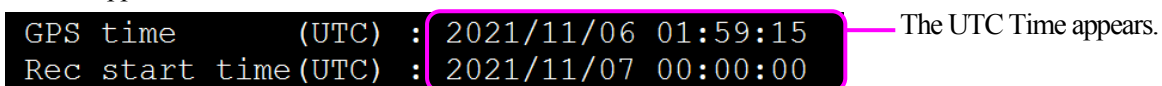


■To change the time format (UTC Time/Local Time).

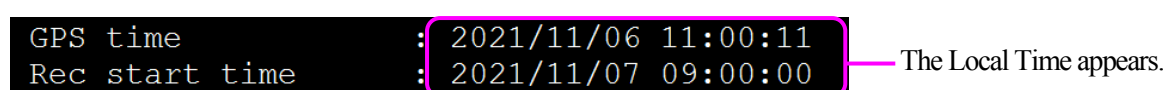
On the Set Display Condition... window, the DCS-100A is able to change the time format on the GPS sensor status window.



To display the UTC Time on the GPS sensor status window, put a check mark to the check box next to the "The UTC Time appears."



To display the Local Time on the GPS sensor status window, release a check mark from the box next to the "The UTC Time appears."



9 READING TEDS INFORMATION

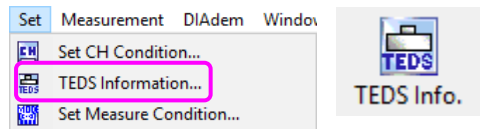
The CTRS-100A can read TEDS (Transducer Electronic Data Sheet) sensor information and then automatically set the optimal range, calibration constant, unit, etc.

(It is not possible to read all the TEDS sensor information.)

■ Display operation

Do one of the following to open the "TEDS Information" window:

- Select the "Set" - "TEDS Information" menu item.
- Select the "TEDS Info." icon on the toolbar.



TEDS Information

Auto Set Items

Range(Meas. Range)	☒
LPF	☒
Calibr. const.	☒
Unit	☒
Sensor Information	☒

Measure Unit	CH	Set	Result	Mode	Range(Select)	Range(Input)	Meas. Range(Select)	Meas. Range(Inp)
CTRS-100A	01	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	02	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	03	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	04	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
CTRS-CDV010A	05	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	06	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	07	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	08	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
CTRS-CDV010A	09	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	10	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	11	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	12	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
CTRS-CDV010A	13	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	14	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	15	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	16	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
CTRS-CDV010A	17	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	18	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	19	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	20	☒	***	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***

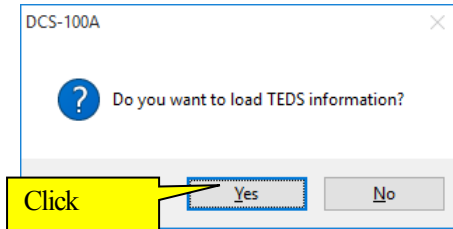
9-1 Reading TEDS Information

When the TEDS sensor information is read, the information of all installed channels is read.

■ Operating method

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

(2) When the TEDS information reading confirmation message is displayed, click the **Yes** button to read the information.



(3) After reading the TEDS information finishes, "OK" or "NG" is displayed as the reading result as shown in the following window.

Measure Unit	CH	Set	Result	Mode	Range(Select)	Range(Input)	Meas. Range(Select)	Meas. Range(Inp
CTRS-100A	01	☒	OK	Strain(5V)	5kum/m	***	-1082.228 - 1082.228 N	***
	02	☒	OK	Strain(5V)	5kum/m	***	-4380.435 - 4380.435 um/m	***
	03	☒	OK	Strain(5V)	5kum/m	***	-4380.435 - 4380.435 um/m	***
	04	☒	OK	Strain(5V)	5kum/m	***	-4380.435 - 4380.435 um/m	***
CTRS-CDV010A	05	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	06	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	07	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	08	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
CTRS-CDV010A	09	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	10	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	11	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	12	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
CTRS-CDV010A	13	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	14	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	15	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	16	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
CTRS-CDV010A	17	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	18	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	19	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***
	20	☒	Error	Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***

9-1-1 Changing the range (Meas. Range)

After reading the TEDS information, the automatically specified range (Meas. Range) can be changed.

Mode	Range(Select)	Range(Input)	Meas. Range(Select)	Meas. Range(In
Strain(5V)	2kum/m	***	-432.891 - 432.891 N	***
Strain(5V)	Optional	***	-4380.435 - 4380.435 um/m	***
Strain(5V)	1kum/m	***	-4380.435 - 4380.435 um/m	***
Strain(5V)	2kum/m	***	-4380.435 - 4380.435 um/m	***
Strain(2V)	5kum/m	***	-1000 - 1000 um/m	***
Strain(2V)	10kum/m	***	-1000 - 1000 um/m	***
Strain(2V)	20kum/m	***	-1000 - 1000 um/m	***
Strain(2V)	50kum/m	***	-1000 - 1000 um/m	***
Strain(2V)	OFF	***	-1000 - 1000 um/m	***
Strain(2V)	1kum/m	***	-1000 - 1000 um/m	***

MEMO

When the range (Meas. Range) is changed, the background color changes to yellow.

The mode, unit, low-pass filter, calibration constant, channel name, etc. cannot be changed in the "TEDS Information" window. To change these items, use the "Set CH Condition" window.

9-1-2 Reading user data

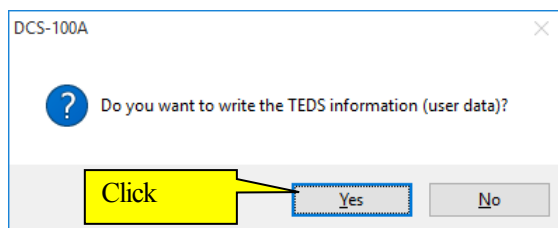
After reading the TEDS information, the changed user data can be written to the TEDS sensor (only if the manufacturer ID is Kyowa).

■ Operating method

- (1) After reading the TEDS information, change the user data, and then select the checkboxes of changed user data items.
(When the user data is changed, the background color changes to yellow.)

User Data	User Data Change
1234	☐
22	☐
KYOWA	☒
Juuji	☐

- (2) Click the **Save User Data** button to display the following confirmation message, and then click the **Yes** button.



- (3) The user data is written to the TEDS sensor, and the writing result is displayed.

Written result of the TEDS information (user data) (OK : 1CH Other : ...		
Measure Unit	CH	Result
CTRS-100A	01	OFF
	02	OFF
	03	OK
	04	OFF
CTRS-CDV010A	05	OFF
	06	OFF
	07	OFF
	08	OFF
CTRS-CDV010A	09	OFF
	10	OFF

9-1-3 Displaying TEDS sensor details

This section explains how to display the TEDS sensor information details of the selected channel.

MEMO

- The **Details of Sensor Info** button is only valid if the TEDS information was successfully read.
- For details about each item displayed in the detailed information, contact the TEDS sensor manufacturer.

■ Operating method

When the **Details of Sensor Info** button is clicked, the "Details of Sensor Information" window below is displayed.

TEDS Properties	Values
CH No.	01
Unique Registration Number	0x4200000043E6D023
Manufacture ID	58
Model Number	0
Version Letter	A
Version Number	5
Serial Number	11000045
Template ID	33
Physical Measurand	N
Minimum physical value	-500.000
Maximum physical value	500.000
Transducer Electrical Signal Type	Bridge Sensor
Minimum electrical output [V/V]	-0.00115502
Maximum electrical output [V/V]	0.00115502
Mapping Method	Linear
Bridge Type	FULL
Bridge element impedance [Ohm]	374.600
Response Time [sec]	1.00000E-6
Excitation level, nominal [V]	10.0000
Excitation level, min [V]	1.00000
Excitation level, max [V]	15.0000
Calibration Date	2005/12/15
Calibration Initials	GTO
Calibration Period [days]	365
Measurement location ID	0
User Data1	1234
User Data2	LUX-A-500N-ID,FD5350008,20051215,114.2

<< Prev CH Next CH >> Close

Prev CH button

Displays detailed sensor information on the previous channel.

Next CH button

Displays detailed sensor information on the next channel.

Close button

Closes the "Detailed Sensor Information" window.

9-2 Applying Settings to Channel Conditions

When the "TEDS Information" window is closed after reading the TEDS information, set the read TEDS information to the channel conditions according to the set conditions.

9-2-1 Setting channels

After reading the TEDS information, select the checkboxes of channels to set to the channel conditions.

Measure Unit	CH	Set
CTRS-100A	01	☒
	02	☒
	03	☒
	04	☒
CTRS-CDV010A	05	☒
	06	☒
	07	☒
	08	☒

MEMO

When the TEDS information is read, the TEDS information of all channels is read regardless of whether setting channel checkboxes are selected.

9-2-2 Setting items

After reading the TEDS information, select the checkboxes of items to set to the channel conditions.

The setting items can be changed before or after reading the TEDS information.

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

NOTE

The setting items for all channels are set at the same time, and the settings for individual channels cannot be specified.

■ Range (Meas. Range)

To set the mode and range to the channel conditions, select the checkbox.

MEMO

- The mode and range values are automatically calculated based on the sensor type and rated capacity.
- For the maximum range, the maximum measurable value, which is calculated based on the range and calibration constant, is displayed, so refer to this when deciding on the range.
- In the case of a sensor for which the rated capacity is not included in the TEDS information, the maximum range is assumed.

■ LPF

To set the mode and low-pass filter to the channel conditions, select the checkbox.

■ Calibr. const

To set the calibration constant to the channel conditions, select the checkbox.

NOTE

Only the calibration constant can be set based on the TEDS information.
The offset information is not included in the TEDS information and can therefore not be set.

■ Unit

To set the unit to the channel conditions, select the checkbox.

MEMO

- If a unit that cannot be specified for the CTRS-100A is included in the TEDS information, mm will be used as the unit.
- If the unit Pa is included in the TEDS information, it will be converted to kPa or MPa depending on the rated capacity.

■ Sensor Information

To set the TEDS information (the user data, sensor S/N, sensor model, and ROMID) to the channel conditions, select the checkbox.

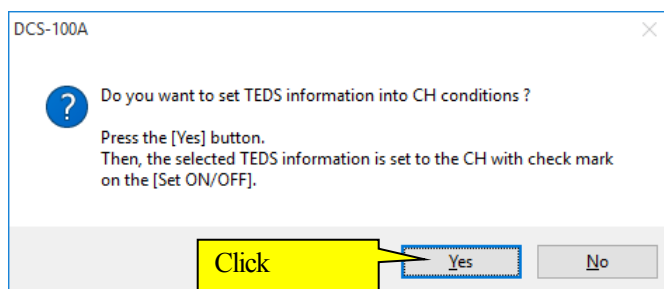
For the user data, the user data part of the Manufacturer ID = 58 (Kyowa Electronic Instruments) TEDS sensor data will be read.

The following shows an example of the display if the TEDS information is set to the channel conditions.

Measure Unit	CH	TEDS User Data	TEDS Sensor S/N	TEDS Sensor Model	TEDS ROMID
CTRS-100A	01	1234	FD5350008	LUX-A-500N-ID	0x4200000043E6D023
	02	aa	DUMMY3280	DUMMY	0xFA00000332123523
	03	KYOWA	FB3280003	AS-2GB	0xF60000283FB93E2D
	04	Juujj	FB3280003	AS-2GB	0x160000283FC0A42D
	05				0x0000000000000000

9-2-3 Applying Settings to Channel Conditions

Click the button to display the following confirmation message, and then click the button to apply the settings to the channel conditions.



NOTE

The only items that are set to the channel conditions are the ones for which both the setting channel checkbox is selected and the setting item checkbox is selected.
If either checkbox is not selected, the settings will not be applied to the channel conditions.

1 0 CAN Condition Settings

A CAN input unit can be used to record CAN data (data fields).

The following CAN condition settings can be set.

- | | |
|------------------------|--|
| • Receiving Cond | Set conditions for data fields to receive. |
| • Output Start Cond | Set conditions for data fields to send when monitoring starts. |
| • Output Stop Cond | Set conditions for data fields to send when monitoring stops. |
| • Output Interval Cond | Set conditions for data fields to send at the set time period. |
| • Output Manual Cond | Set conditions for data fields to send at an arbitrary time. |
| • Comm Cond | Set CAN communication conditions. |

MEMO

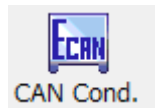
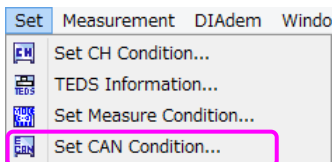
- A data field is the data portion of a CAN communication data packet.
- The output conditions (start, stop, interval, and manual) are CAN output settings.
For details on operations during CAN output, refer to the separate manual, "CTRS-100A Instruction Manual - Hardware Manual" - CAN Output Operation Chart.

NOTE

CAN condition settings are enabled when a CAN input unit is connected.

Perform any of the following actions to display the "CAN Condition Settings" window.

- Select the "Settings" - "CAN Condition Settings" menu item.
- Select the "CAN Conditions" icon on the toolbar.



Set CAN Condition (Number of using Signals(CAN-CHs) : 8)

Receiving Cond | Output Start Cond | Output Stop Cond | Output Interval Cond | Output Manual Cond | Comm Cond

Insert Up Bit Assignment
Delete Down

ID No. M

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format	Frame ID	Data Length (Byte)
E0-0001	Node	☒	BOX_1	CAN1	CAN Standard	0x000	8
E0-0002	Node	☒	BOX_1	CAN1	CAN Standard	0x000	8
E0-0003	Node	☒	BOX_2	CAN1	CAN Standard	0x001	8
E0-0004	Node	☒	BOX_2	CAN1	CAN Standard	0x001	8
E0-0005	Node	☒	BOX_3	CAN1	CAN Standard	0x002	8
E0-0006	Node	☒	BOX_3	CAN1	CAN Standard	0x002	8
E0-0007	Node	☒	BOX_4	CAN1	CAN Standard	0x003	8
E0-0008	Node	☒	BOX_4	CAN1	CAN Standard	0x003	8
E0-0009		☐		CAN1	CAN Standard	0x008	8
E0-0010		☐		CAN1	CAN Standard	0x009	8
E0-0011		☐		CAN1	CAN Standard	0x00A	8
E0-0012		☐		CAN1	CAN Standard	0x00B	8
E0-0013		☐		CAN1	CAN Standard	0x00C	8
E0-0014		☐		CAN1	CAN Standard	0x00D	8
E0-0015		☐		CAN1	CAN Standard	0x00E	8

Change Setting Items... Load Condition... Load CANdb File...
Freeze Columns Save Condition... OK Cancel Apply

Change Setting Item Display button

Add, delete, or rearrange displayed setting items.

(Refer to " 5 - 2 Changing Displayed Setting Items".)

Lock Column button

Allow horizontal scrolling with the currently selected column displayed.

Load Conditions... button

Load a previously saved condition file (with extension EC3).

EC3 file: A file containing CAN condition settings.

Save Conditions... button

Save current CAN conditions as a CAN condition file (with extension EC3).

Load CANdb File... button

Load a CANdb file (with extension DBC).

(Refer to " 9 - 3 Loading CANdb Files".)

OK button

Apply settings and close the "CAN Condition Settings" window.

Cancel button

Close the "CAN Condition Settings" window without applying settings.

Apply button

Apply settings.

■ Common buttons unrelated to communication conditions

Insert button

Insert a number of rows equal to the number of selected rows.

Delete button

Delete the selected rows.

Up/Down button

Move the selected row up or down.

■ CAN condition common operations

For information on copying and pasting setting items, refer to "5 SETTING CHANNEL CONDITIONS".

● Clear

Revert the selected item to its default setting.

(1) Select the item to initialize and then right-click.

Select "Clear" from the menu.

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001	Node			CAN1	CAN Standard
E0-0002	Node			CAN1	CAN Standard
E0-0003	Node			CAN1	CAN Standard
E0-0004	Node			CAN1	CAN Standard
E0-0005	Node			CAN1	CAN Standard
E0-0006	Node			CAN1	CAN Standard
E0-0007	Node			CAN1	CAN Standard
E0-0008	Node			CAN1	CAN Standard
E0-0009				CAN1	CAN Standard
E0-0010				CAN1	CAN Standard
E0-0011				CAN1	CAN Standard

(2) The selected item is initialized.

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001				CAN1	CAN Standard
E0-0002				CAN1	CAN Standard
E0-0003	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0004	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0005	Node	☒	BOX1_3	CAN1	CAN Standard
E0-0006	Node	☒	BOX1_3	CAN1	CAN Standard
E0-0007	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0008	Node	☒	BOX1_4	CAN1	CAN Standard

● Insert

A number of rows equal to the number of selected rows can be inserted.

(1) Select a number of rows equal to the number of rows to insert.

Right-click, then either select "Insert" from the menu or select the **Insert** button.

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001	Node			CAN1	CAN Standard
E0-0002	Node			CAN1	CAN Standard
E0-0003	Node			CAN1	CAN Standard
E0-0004	Node			CAN1	CAN Standard
E0-0005	Node			CAN1	CAN Standard
E0-0006	Node			CAN1	CAN Standard
E0-0007	Node			CAN1	CAN Standard
E0-0008	Node			CAN1	CAN Standard
E0-0009				CAN1	CAN Standard
E0-0010				CAN1	CAN Standard
E0-0011				CAN1	CAN Standard

(2) A number of rows equal to the number of selected rows will be inserted from the first row selected.

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001				CAN1	CAN Standard
E0-0002				CAN1	CAN Standard
E0-0003	Node	☒	BOX1_1	CAN1	CAN Standard
E0-0004	Node	☒	BOX1_1	CAN1	CAN Standard
E0-0005	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0006	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0007	Node	☒	BOX1_3	CAN1	CAN Standard
E0-0008	Node	☒	BOX1_3	CAN1	CAN Standard
E0-0009	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0010	Node	☒	BOX1_4	CAN1	CAN Standard

Inserting a row is not the same as adding a row.

Inserting rows will shift settings downward a number of rows equal to the number of rows inserted.

Note that this will change the signal (CAN channel) numbers.

• Delete

Multiple rows can be deleted at the same time.

(1) Select the rows to delete

Right-click, then either select "Delete" from the menu or select the **Delete** button.

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001	Node		BOX1_2	CAN1	CAN Standard
E0-0002	Node		BOX1_2	CAN1	CAN Standard
E0-0003	Node		BOX1_3	CAN1	CAN Standard
E0-0004	Node		BOX1_3	CAN1	CAN Standard
E0-0005	Node		BOX1_3	CAN1	CAN Standard
E0-0006	Node		BOX1_4	CAN1	CAN Standard
E0-0007	Node		BOX1_4	CAN1	CAN Standard
E0-0008	Node		BOX1_4	CAN1	CAN Standard
E0-0009				CAN1	CAN Standard
E0-0010				CAN1	CAN Standard
E0-0011				CAN1	CAN Standard

(2) The selected rows are deleted.

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0002	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0003	Node	☒	BOX1_3	CAN1	CAN Standard
E0-0004	Node	☒	BOX1_3	CAN1	CAN Standard
E0-0005	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0006	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0007		☐		CAN1	CAN Standard
E0-0008		☐		CAN1	CAN Standard

Deleting rows will cause settings to shift upward a number of rows equal to the number of rows that were deleted.

Note that this will change the signal (CAN channel) numbers.

• Move up/down

Settings can be moved up or down by one row.

(1) Select the row to move.

Click the **Up** button or the **Down** button.

Receiving Cond	Output Start Cond	Output Stop Cond	Output Interval Cond	Output Manual Cond	Comm Cond
Insert	Up	Down			
Delete	Down				
ID No.M					
Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0002	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0003	Node	☐	BOX1_3	CAN1	CAN Standard
E0-0004	Node	☐	BOX1_3	CAN1	CAN Standard
E0-0005	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0006	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0007		☐		CAN1	CAN Standard

(2) The setting is moved.

Receiving Cond	Output Start Cond	Output Stop Cond	Output Interval Cond	Output Manual Cond	Comm Cond
Insert	Up	Down			
Delete	Down				
ID No.M					
Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format
E0-0001	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0002	Node	☐	BOX1_3	CAN1	CAN Standard
E0-0003	Node	☒	BOX1_2	CAN1	CAN Standard
E0-0004	Node	☐	BOX1_3	CAN1	CAN Standard
E0-0005	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0006	Node	☒	BOX1_4	CAN1	CAN Standard
E0-0007		☐		CAN1	CAN Standard

10-1 Setting Communication Conditions

Select the "Comm Cond" tab in the "CAN Condition Settings" window to display the "Communication Conditions" screen.

Receiving Cond	Output Start Cond	Output Stop Cond	Output Interval Cond	Output Manual Cond	Comm Cond
----------------	-------------------	------------------	----------------------	--------------------	------------------

Communication Speed Survey...

Port	Data Recording Mode	Comm Speed (kbps)	CAN FD Data Bit Rate	Listen Only Mode	Term Resist
CAN1	Specified ID Mode	500	2Mbps	OFF	OFF
CAN2	Specified ID Mode	500	2Mbps	OFF	OFF

■ Setting items

Click the **Change Setting Item Display** button to add, delete, or rearrange display items.

● ID Number

Displays the ID number for CTRS-100A.

The ID number will be as follows.

CTRS-100A	ID number
Standalone (one unit), master (synchronous operation)	M
Slave 1 (synchronous operation)	S1
Slave 2 (synchronous operation)	S2
Slave 3 (synchronous operation)	S3

● Device Name

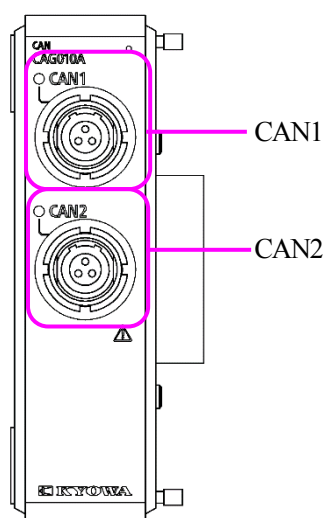
Displays the device name for CTRS-100A.

● Measuring Unit

Displays the model of the CAN input unit that is currently installed.

● Port

Displays the communication port.



- **Data Recording Mode**

Select either "Specified ID Mode" or "All IDs Mode".

Specified ID Mode : Monitor/record only those data fields specified in receiving conditions.

All IDs Mode : Monitor/record all received data fields.

- **Communication Speed (kbps)**

Select the communication speed.

Choices: 1000, 800, 500, 250, 125, 100, 83.3, 62.5, 50, 33.3, 25, 20, 10

- **CAN FD Data Bit Rate**

CAN FD provides bit rate switching functionality, which makes high-speed communication possible by switching the communication speed for the data portion only.

Select the switching communication speed.

Only certain combinations of CAN FD data bit rate and communication speed are allowed. (Refer to the table below.)

Select OFF if using CAN only, as CAN FD data bit rate cannot be used in this case.

Communication speed (kbps)	CAN FD data bit rate choices
"1000"	"2Mbps", "1Mbps", "OFF"
"800"	"2Mbps", "1Mbps", "OFF"
"500"	"5Mbps", "4Mbps", "2Mbps", "1Mbps", "0.5Mbps", "OFF"
"250"	"5Mbps", "4Mbps", "2Mbps", "1Mbps", "0.5Mbps", "OFF"
"125"	"2Mbps", "1Mbps", "0.5Mbps", "OFF"
"100"	"1Mbps", "0.5Mbps", "OFF"
"83.3"	"1Mbps", "0.5Mbps", "OFF"
"62.5"	"1Mbps", "0.5Mbps", "OFF"
"50"	"0.5Mbps", "OFF"
"33.3"	"0.5Mbps", "OFF"
"25"	"OFF"
"20"	"OFF"
"10"	"OFF"

- **Listen Only Mode**

Select whether to turn the Listen Only Mode "OFF" or "ON".

When "ON" is selected, the CAN input unit does not return an ACK or error frame when receiving a Message, and does not return to the bus.

It does not affect.

Also, if "ON" is selected, CAN output will not be performed.

- **Terminator**

Select whether to turn the terminator "OFF" or "ON".

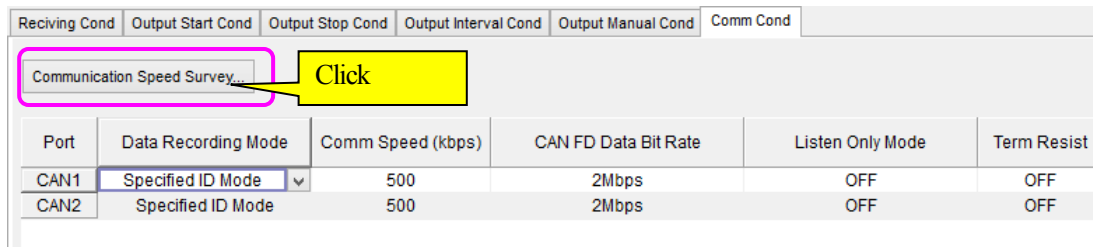
Selecting ON will insert a 120Ω terminator.

1 O-1-1 Automatically Checking Communication Speed

A CAN input unit can be used to automatically check communication speed.

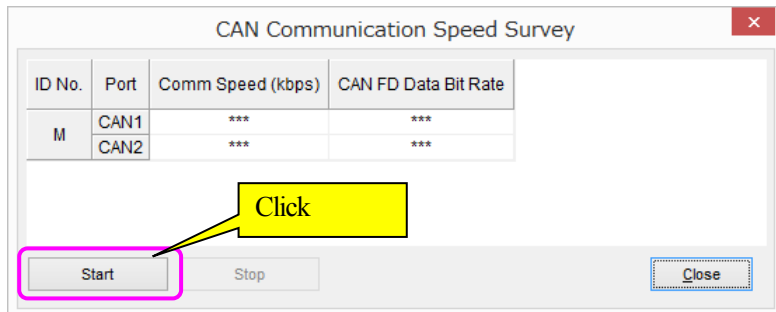
This function analyzes CAN/CAN FD data packets currently traveling along the bus and sets the communication speed in the CAN input unit.

- (1) Select the "Communication Speed Survey" button.



- (2) Connect the CAN input unit to the CAN bus to check.

- (3) Ensure that data packets are traveling over the CAN bus then select the "Start" button.

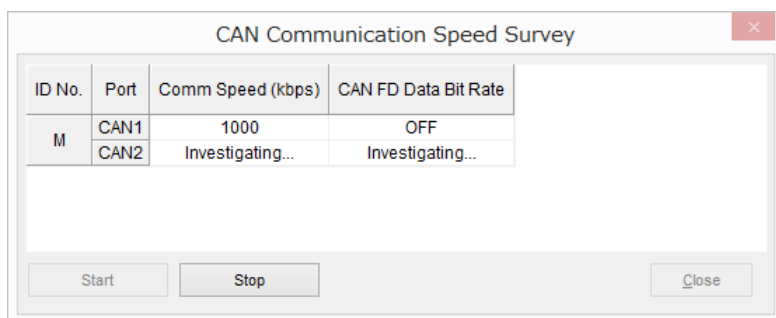


- (4) Checking will take up to 10 seconds.

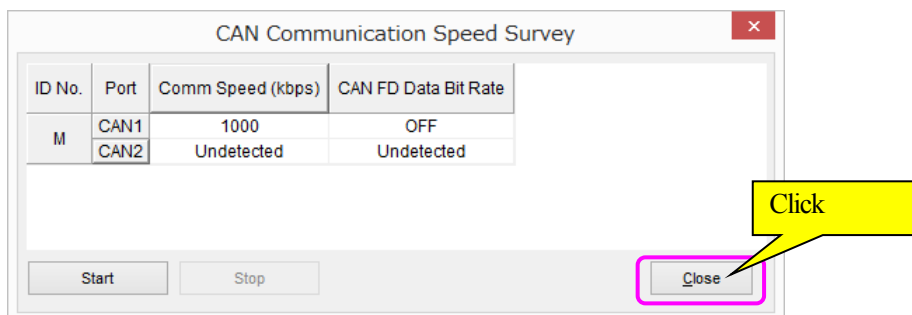
When checking is complete, the communication speed and CAN FD data bit rate will be displayed.

"Not detected" will be displayed if information could not be detected.

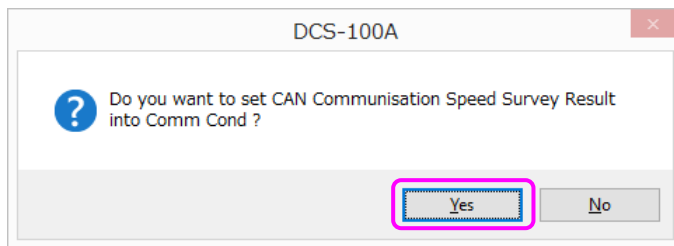
The "Stop" button can be selected to stop checking.



- (5) Select the "Close" button.



- (6) The following message will be displayed if detection was successful.
To apply the settings, select the "Yes" button.



- (7) The results are applied to the "Communication Conditions" screen.

Port	Data Recording Mode	Comm Speed (kbps)	CAN FD Data Bit Rate	Listen Only Mode	Term Resist
CAN1	Specified ID Mode	1000	OFF	OFF	OFF
CAN2	Specified ID Mode	500	2Mbps	OFF	OFF

NOTE

Automatically checking communication speed while no data packets are traveling along the CAN bus will result in a "not detected" status.

Ensure that data packets are traveling along the CAN bus before automatically checking communication speed.

1 0-2 Setting Receiving Conditions

Select the "Receiving Cond" tab in the "CAN Condition Settings" window, then set which data fields to receive.
Up to 1024 signals can be set for a single CAN input unit.

Set CAN Condition (Number of using Signals(CAN-CHs) : 8)

Receiving Cond | Output Start Cond | Output Stop Cond | Output Interval Cond | Output Manual Cond | Comm Cond

Insert | Up | Bit Assignment | Delete | Down

ID No. M

Signal (CAN-CH)	Node Name	Measurement	Message(CAN-ID) Name	Port	Format	Frame ID	Data Length (Byte)
E0-0001	Node	☒	BOX_1	CAN1	CAN Standard	0x000	8
E0-0002	Node	☒	BOX_1	CAN1	CAN Standard	0x000	8
E0-0003	Node	☒	BOX_2	CAN1	CAN Standard	0x001	8
E0-0004	Node	☒	BOX_2	CAN1	CAN Standard	0x001	8
E0-0005	Node	☒	BOX_3	CAN1	CAN Standard	0x002	8
E0-0006	Node	☒	BOX_3	CAN1	CAN Standard	0x002	8
E0-0007	Node	☒	BOX_4	CAN1	CAN Standard	0x003	8
E0-0008	Node	☒	BOX_4	CAN1	CAN Standard	0x003	8
E0-0009		☐		CAN1	CAN Standard	0x008	8
E0-0010		☐		CAN1	CAN Standard	0x009	8
E0-0011		☐		CAN1	CAN Standard	0x00A	8
E0-0012		☐		CAN1	CAN Standard	0x00B	8
E0-0013		☐		CAN1	CAN Standard	0x00C	8
E0-0014		☐		CAN1	CAN Standard	0x00D	8
E0-0015		☐		CAN1	CAN Standard	0x00E	8

Change Setting Items... | Load Condition... | Load CANdb File... | Freeze Columns | Save Condition... | OK | Cancel | Apply

Set CAN Condition (Number of using Signals(CAN-CHs) : 1)

Receiving Cond | Output Start Cond | Output Stop Cond | Output Interval Cond | Output Manual Cond | Comm Cond

Insert | Up | Bit Assignment | Delete | Down

Title bar

Displays the number of measurement signals (CAN channels).

Bit Assignment button

Displays data field usage.

■ Setting items

Click the **Change Setting Item** button to add, delete, or rearrange display items.

MEMO

- Applicable messages (CAN-IDs) for signals (CAN channels) are determined based on the port, format, and frame ID.

The same message (CAN-ID) will therefore be used if the port, format, and frame ID are the same.

Below, E0-0001 through E0-0004 have the same message (CAN-ID), E0-0005 through E0-0006 have the same message (CAN-ID), and E0-0007 through E0-0008 have the same message (CAN-ID).

Signal (CAN-CH)	Port	Format	Frame ID	Data Length (Byte)
E0-0001	CAN1	CAN FD Standard	0x100	64
E0-0002	CAN1	CAN FD Standard	0x100	64
E0-0003	CAN1	CAN FD Standard	0x100	64
E0-0004	CAN1	CAN FD Standard	0x100	64
E0-0005	CAN1	CAN Standard	0x102	8
E0-0006	CAN1	CAN Standard	0x102	8
E0-0007	CAN1	CAN Standard	0x103	8
E0-0008	CAN1	CAN Standard	0x103	8

Same message (CAN-ID)

Same message (CAN-ID)

Same message (CAN-ID)

- The node name, message (CAN-ID) name, and data length (bytes) items will be the same for the same (CAN-ID).

NOTE

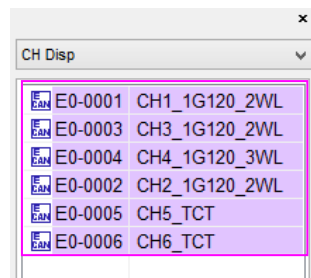
When setting signals (CAN channels) in receiving conditions, configure settings so that the same message (CAN-ID) will be on consecutive rows.

The display orders of signal (CAN channel) numbers is determined based on the message (CAN-ID) for DCS-100A. If these are not consecutive, signals (CAN channels) will not be displayed in descending order when making selections in numeric/graph windows, etc.

Following is an example where numeric/graph window choices are shown out of order (E0-0001, E0-0003, E0-0004, E0-0002, E0-0005, then E0-0006).

Signal (CAN-CH)	Port	Format	Frame ID
E0-0001	CAN1	CAN FD Standard	0x100
E0-0002	CAN1	CAN FD Standard	0x102
E0-0003	CAN1	CAN FD Standard	0x100
E0-0004	CAN1	CAN FD Standard	0x100
E0-0005	CAN1	CAN Standard	0x102
E0-0006	CAN1	CAN Standard	0x102

Applicable messages (CAN-IDs) are not consecutive
Between frame ID: 0x000 items is frame ID: 0 x 102.

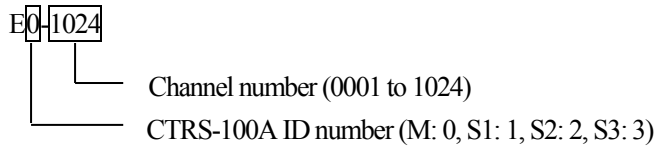


Selections are displayed out of order (E0-0001, E0-0003, E0-0004, E0-0002, E0-0005, then E0-0006).

- **Signal (CAN Channel)**

Displays the signal (CAN channel) number.

Signal (CAN channel) numbers are displayed in numeric/graph windows as "E*-****".



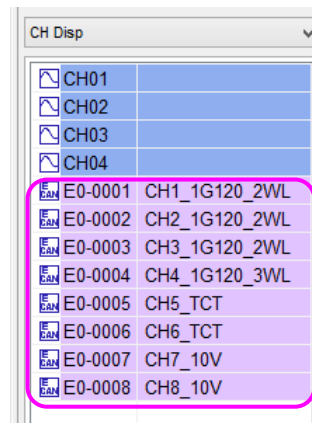
Example: The signal (CAN channel) for a standalone configuration with a channel number of 10 would be E0-0010.

- **Measure**

The selected signal (CAN channel)

will be measured.

As shown to the right, the CAN channels to measure will be displayed in the channel display bar in the main window.



Messages (CAN-IDs) will automatically be measured if "Measure" is selected.

- **Node Name**

Enter the node name. (Enter within 32 single-byte characters.)

- **Message (CAN-ID) Name**

Enter the name of the data field. (Enter within 32 single-byte characters.)

- **Port**

Select the communication port to receive data fields.

Select either CAN1 or CAN2.

NOTE

As shown below, if a port is selected with the "Data Recording Mode" item set to "All IDs Mode", the receiving conditions setting will be disabled.
(CAN1: "Specified ID Mode", CAN2: "All IDs Mode".)

Signal (CAN-CH)	Measurement	Message(CAN-ID) Name	Port	Format	Frame ID
E0-0001	☒	NTB500A_BOX1_1	CAN1	CAN Standard	0x100
E0-0002	☐	NTB500A_BOX1_1	CAN2	CAN Standard	0x100
E0-0003	☒	NTB500A_BOX1_1	CAN1	CAN Standard	0x100
E0-0004	☒	NTB500A_BOX1_1	CAN1	CAN Standard	0x100
E0-0005	☐		CAN1	CAN Standard	0x102

- **Format**

Select the format of data fields to receive, from the following choices.

"CAN Standard", "CAN Extended", "CAN FD Standard", "CAN FD Extended"

Selecting "CAN Extended" or "CAN FD Extended" will automatically switch the "Output Frame ID" item to displaying the extended ID.

- **Frame ID**

Set the ID of data fields to receive. IDs use hexadecimal notation.

The setting range varies depending on the "Format" item.

"Format" is "CAN Standard" or "CAN FD Standard": 0x0 to 0x7FF (11 bits)

"Format" is "CAN Extended" or "CAN FD Extended": 0x0 to 0x1FFFFFFF (29 bits)

- **Data Length (bytes)**

Select the data size of data fields to receive.

The setting range varies depending on the "Format" item.

"Format" is "CAN Standard" or "CAN Extended" : 1 to 8 bytes

"Format" is "CAN FD Standard" or "CAN FD Extended" : 1 to 8, 12, 16, 20, 24, 32, 48, or 64 bytes

Individual data included in data fields is handled as a signal (CAN channel) by CTRIS-100A.

- **Signal (CAN Channel) Name**

Enter the name of the signal (CAN channel). (Enter within 32 single-byte characters.)

- **Start Bit**

Set the start position of signal (CAN channel) data included in the data field, as a bit.

The setting range is from bit 0 to 511.

The start bit will vary depending on the "Endian" item setting.

- **Bit Length**

Set the size of signal (CAN channel) data included in the data field.

The setting range is from 1 to 64 bits.

NOTE

The setting range will vary depending on the values of the "Start bit", "Data length", and "Bit length" items.

The setting range is determined as follows.

$\text{Data length} \times 8 \geq \text{Start bit} + \text{Bit length}$

- **Data Type**

Select the type of the signal (CAN channel).

Signed	Signed integer type data	(bit length setting range: 1 to 64)
Unsigned	Unsigned integer type data	(bit length setting range: 1 to 64)
Float	Real number type data	(bit length: fixed to 32)
Double	Real number type data	(bit length: fixed to 64)

- **Endian**

Select the endian mode of the signal (CAN channel).

Select either "Big" or "Little".

- **Calibration Coefficient**

Set the value by which to multiply signal (CAN channel) measurement values.

Refer to the following equation for the physical quantity.

$$\text{Physical quantity} = \text{Channel} \times \text{Calibration coefficient} + \text{Offset}$$

Signal (CAN channel) measurement values will be automatically multiplied by the calibration coefficient.

Enter a value of 1.0 if this will not be used.

- **Offset**

Set the value to add to signal (CAN channel) measurement values.

The offset will be automatically added to signal (CAN channel) measurement values.

Enter a value of 0.0 if this will not be used.

MEMO

If a calibration coefficient and offset are set, signal (CAN channel) measurement data will be calculated as follows.

$$\text{Measurement data (physical quantity)} = \text{Measurement data} \times \text{Calibration coefficient} + \text{Offset}$$

- **Unit**

Select a unit based on the signal (CAN channel).

Double-click the signal (CAN channel) item to set or press the "SPACE" key to display the following

"Set Unit" window. Select a unit.

If the unit is not displayed in the "Set Unit" window, a user-defined unit can be registered for each signal (CAN channel).

User-defined units must be 32 single-byte characters or less.

- **Number of Digits Displayed for Numbers**

Select the number of digits after the decimal point to display for numbers.

Refer to "Environment Settings" in the separate manual, "DCS-100A Instruction Manual - Common Operations Manual".

- **Maximum, Minimum**

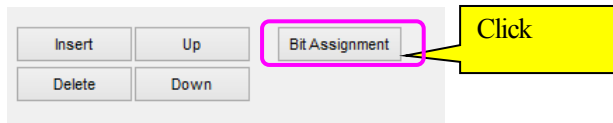
The maximum value and minimum value can be set.

These values are recorded in the CANdb file.

■ Bit Assignment

Select the **Bit Assignment** button to display the "Bit Assignment" window.

The "Bit Assignment" window shows how signals (CAN channels) are assigned to data fields.



The colors of cells in the "Bit Assignment" window correspond to the colors of cells in the receiving conditions.

Bit Assignment E0-0001

		bit							
		7	6	5	4	3	2	1	0
Byte	0	07	06	05	04	03	02	01	00
	1	15	14	13	12	11	10	09	08
	2	23	22	21	20	19	18	17	16
	3	31	30	29	28	27	26	25	24
	4	39	38	37	36	35	34	33	32
	5	47	46	45	44	43	42	41	40
	6	55	54	53	52	51	50	49	48
	7	63	62	61	60	59	58	57	56

Close

Signal (CAN-CH)	Frame ID	Data Length (Byte)	Signal(CAN-CH) Name	Start Bit	Bit Length
E0-0001	0x100	8	CH1_1G120_2WL	0	16
E0-0002	0x100	8	CH2_1G120_2WL	16	16
E0-0003	0x100	8	CH3_1G120_2WL	32	16
E0-0004	0x100	8	CH4_1G120_3WL	48	16
E0-0005	0x102	8	CH5_TCT	7	32

1 0-3 Loading CANdb Files (DCS-105A)

Information can be loaded from CANdb files (DBC format) and set as receiving conditions.

MEMO

DBC format is a standard format by Vector that describes CAN communication data.

NOTE

In order to load a CANdb file, the DCS-105A software (optional software for DCS-100A) is required.

1 0-3-1 Configuration Limitations

■ CANdb files that can be loaded

The following types of CANdb files can be loaded by DCS-105A (during CTRS-100A control).

- | | |
|-----------------------------|------|
| • Format | DBC |
| • Max. no. of network nodes | 2048 |
| • Max. no. of messages | 2048 |
| • Max. no. of signals | 2048 |

If you attempt to load a CANdb file exceeding these limits, a message will be displayed indicating that the system failed to load CANdb file.

The CANdb file cannot be loaded in this situation.

Try loading again after reducing CANdb information to within the allowable limits.

■ Limitations when configuring a CAN input unit

- The maximum number of messages (CAN-ID) and maximum number of signals (CAN channels) that can be set for a single CAN input unit are 1024 each.
- The same message (CAN-ID) cannot be set more than once.

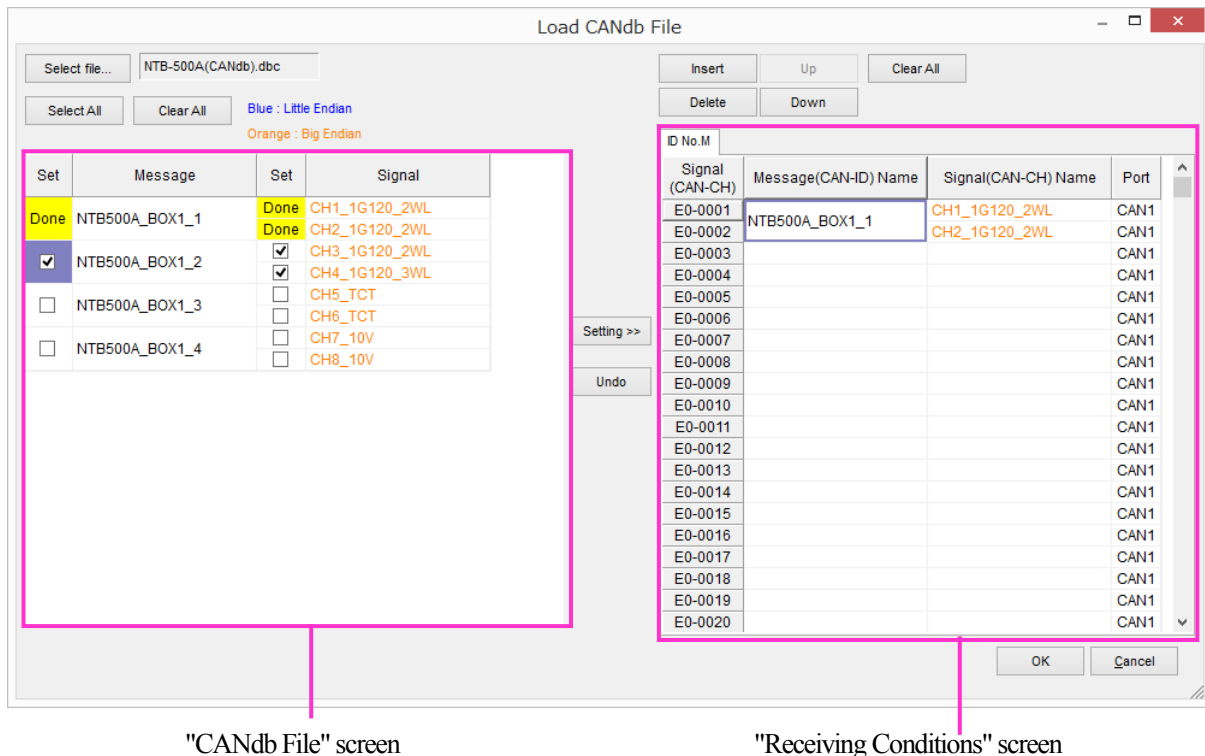
However, the same message (CAN-ID) can be set under the following conditions.

The message (CAN-ID) port is different

The message (CAN-ID) format is different

1 0-3-2 "Load CANdb File" Window

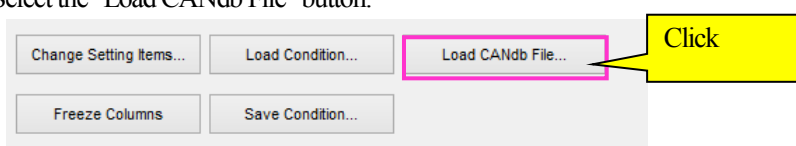
The "Load CANdb File" window displays the content of the loaded CANdb file split between two screens: the "CANdb File" screen and the "Receiving Conditions" screen.



Load CANdb File button	Display the "Select File" window to select a CANdb file.
Select All button	Select all CANdb file checkboxes.
Clear All button	Clear all CANdb file checkboxes.
Set>> button	Set all items with checkboxes selected on the "CANdb File" screen in the "Receiving Conditions" screen.
Cancel Settings button	Use this to cancel all settings that were just configured.
Insert button	Insert a number of rows equal to the number of selected rows on the "Receiving Conditions" screen.
Delete button	Delete the selected rows on the "Receiving Conditions" screen.
Up/Down button	Move the selected row up or down.
Clear All button	Initialize content on the "Receiving Conditions" screen.
OK button	Apply settings and close the "Load CANdb File" window.
Cancel button	Close the "Load CAN File" window without applying settings.

■ Display method

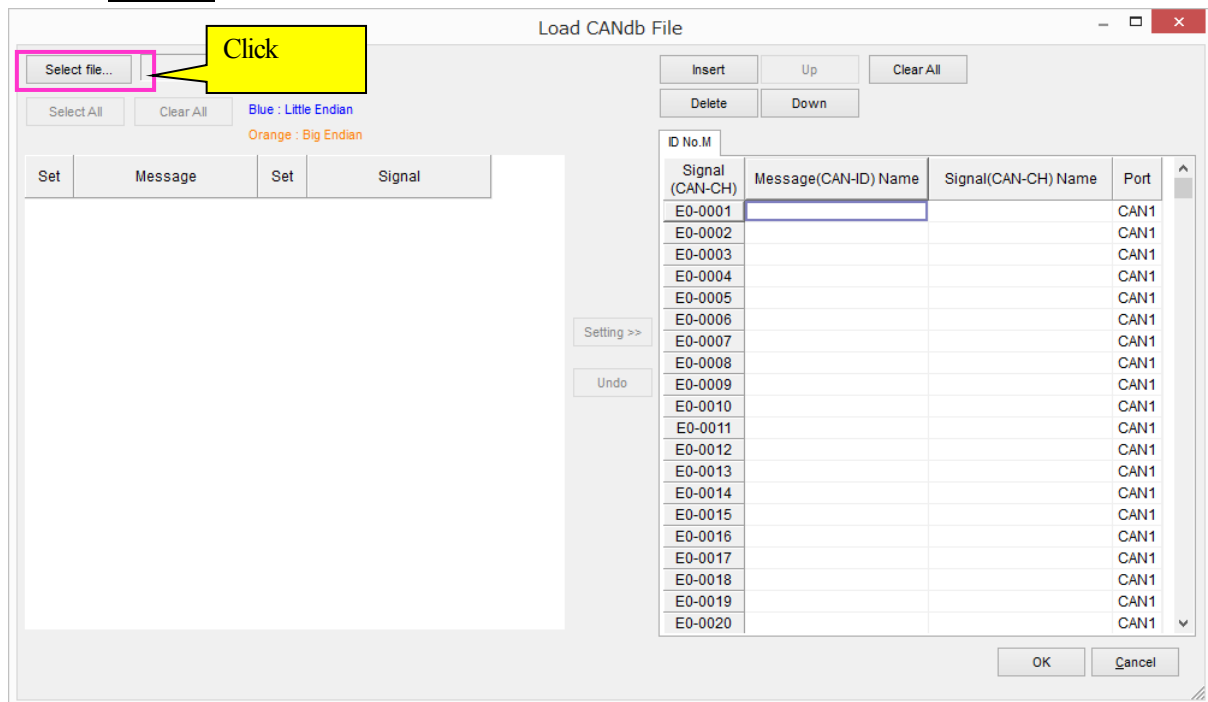
- (1) Select the "Receiving Cond" tab in the "CAN Condition Settings" window, then set which data fields to receive.
- (2) Select the "Load CANdb File" button.



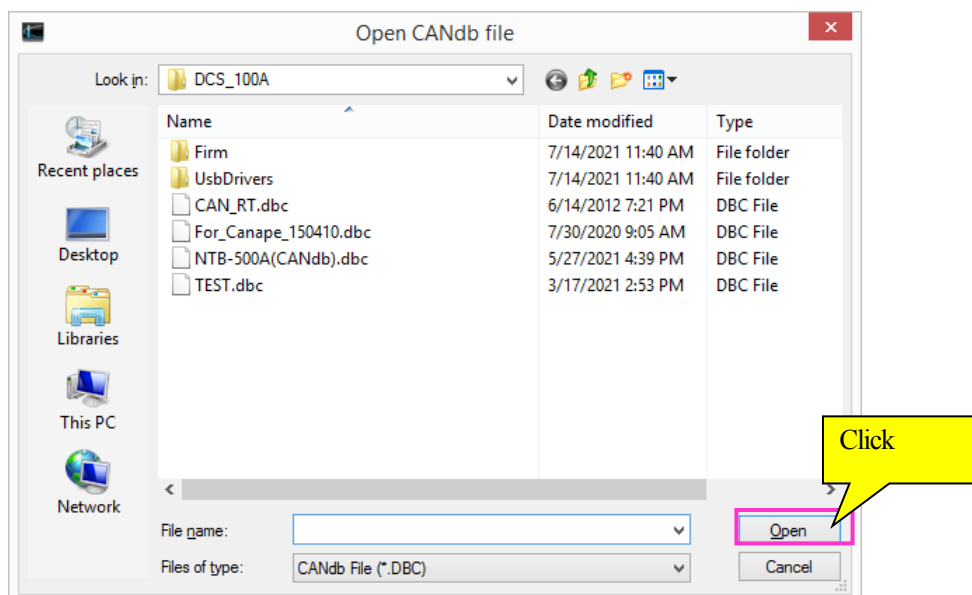
- (3) The "Load CANdb File" window is displayed.

1 0-3-3 Setting Receiving Conditions

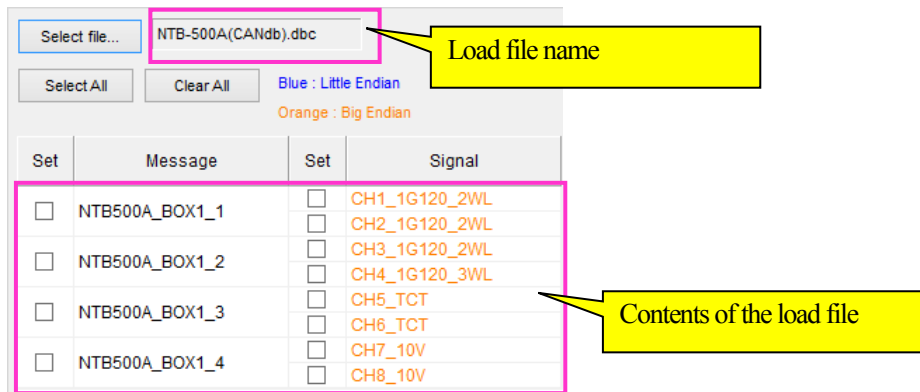
(1) Select the **Select File** button in the "Load CANdb File" window.



(2) Select the file to load (DBC format with extension .dbc), then select the **Open** button.



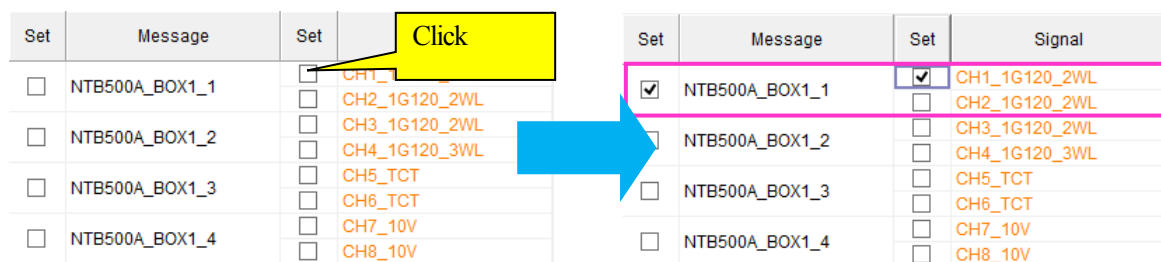
(3) The content of the file will be displayed if the DBC file was successfully loaded.



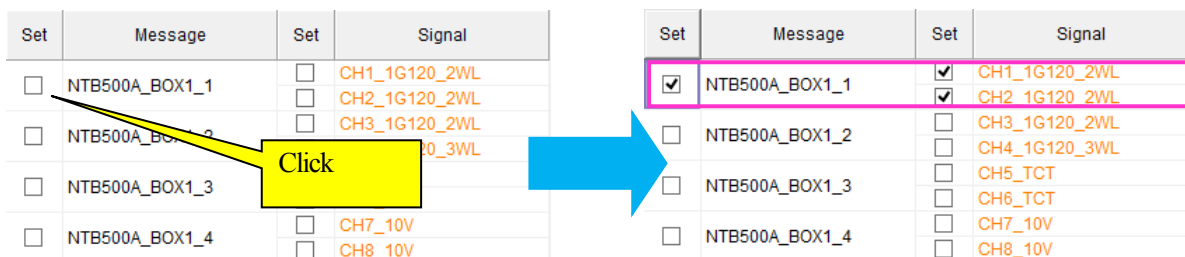
(4) Select the CANdb file content to set on the "Receiving Conditions" screen.

Select either a "Message" or "Signal" checkbox.

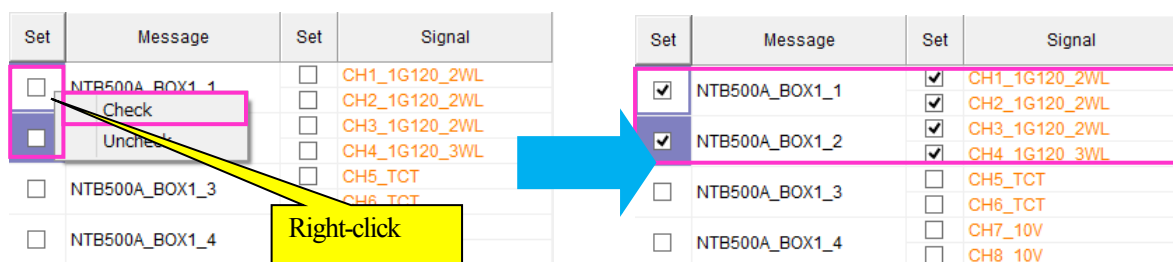
- Selecting a "Signal" checkbox will also select the "Message" checkbox.



- If a "Message" checkbox is selected, the checkboxes for all "Signals" included in the "Message" will be selected.



- You can also drag and select multiple "Message" or "Signal" checkboxes and then right-click to display a popup menu. Select the "Select" menu item to select all of these checkboxes.



(5) Select the **Setting>>** button to set CANdb file content with checkboxes selected to the "Receiving Conditions" screen.

The diagram illustrates the process of setting receiving conditions. It begins with a table of messages and signals. A yellow box highlights the 'Setting >>' button. A blue arrow points to the 'Receiving Conditions' screen, where the same data is displayed. A yellow box labeled 'Click' points to the 'Setting >>' button. Another yellow box labeled 'Set to cursor position' points to the 'Message(CAN-ID) Name' column in the 'Receiving Conditions' screen.

Set	Message	Set	Signal
☒	NTB500A_BOX1_1	☒	CH1_1G120_2WL
☒	NTB500A_BOX1_2	☒	CH2_1G120_2WL
☐	NTB500A_BOX1_3	☐	CH3_1G120_2WL
☐	NTB500A_BOX1_4	☐	CH4_1G120_3WL
		☐	CH5_TCT
		☐	CH6_TCT
		☐	CH7_10V
		☐	CH8_10V

Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001			CAN1
E0-0002			CAN1
E0-0003			CAN1
E0-0004			CAN1
E0-0005			CAN1
E0-0006			CAN1
E0-0007			CAN1
E0-0008			CAN1

Set	Message	Set	Signal
Done	NTB500A_BOX1_1	Done	CH1_1G120_2WL
Done	NTB500A_BOX1_2	Done	CH2_1G120_2WL
☐	NTB500A_BOX1_3	☐	CH3_1G120_2WL
☐	NTB500A_BOX1_4	☐	CH4_1G120_3WL
		☐	CH5_TCT
		☐	CH6_TCT
		☐	CH7_10V
		☐	CH8_10V

Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001			CAN1
E0-0002	NTB500A_BOX1_1	CH1_1G120_2WL	CAN1
E0-0003		CH2_1G120_2WL	CAN1
E0-0004	NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0005		CH4_1G120_3WL	CAN1
E0-0006			CAN1
E0-0007			CAN1
E0-0008			CAN1
E0-0009			CAN1
E0-0010			CAN1

Selected checkboxes will be confirmed.

Set to cursor position

MEMO

After setting receiving conditions with the **Setting>>** button, selecting the **Undo** button will cancel all settings that were just set.

The diagram illustrates the process of undoing settings. It begins with a table of messages and signals. A yellow box highlights the 'Undo' button. A blue arrow points to the 'Receiving Conditions' screen, where the data is cleared. A yellow box labeled 'Click' points to the 'Undo' button. Another yellow box labeled 'Set content is cleared' points to the 'Message(CAN-ID) Name' column in the 'Receiving Conditions' screen.

Set	Message	Set	Signal
Done	NTB500A_BOX1_1	Done	CH1_1G120_2WL
Done	NTB500A_BOX1_2	Done	CH2_1G120_2WL
☐	NTB500A_BOX1_3	☐	CH3_1G120_2WL
☐	NTB500A_BOX1_4	☐	CH4_1G120_3WL
		☐	CH5_TCT
		☐	CH6_TCT
		☐	CH7_10V
		☐	CH8_10V

Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001			CAN1
E0-0002			CAN1
E0-0003	NTB500A_BOX1_1	CH1_1G120_2WL	CAN1
E0-0004	NTB500A_BOX1_2	CH2_1G120_2WL	CAN1
E0-0005		CH3_1G120_2WL	CAN1
E0-0006		CH4_1G120_3WL	CAN1
E0-0007			CAN1
E0-0008			CAN1
E0-0009			CAN1
E0-0010			CAN1

Set	Message	Set	Signal
☒	NTB500A_BOX1_1	☒	CH1_1G120_2WL
☒	NTB500A_BOX1_2	☒	CH2_1G120_2WL
☐	NTB500A_BOX1_3	☐	CH3_1G120_2WL
☐	NTB500A_BOX1_4	☐	CH4_1G120_3WL
		☐	CH5_TCT
		☐	CH6_TCT
		☐	CH7_10V
		☐	CH8_10V

Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001			CAN1
E0-0002			CAN1
E0-0003			CAN1
E0-0004			CAN1
E0-0005			CAN1
E0-0006			CAN1
E0-0007			CAN1
E0-0008			CAN1
E0-0009			CAN1
E0-0010			CAN1

Confirmed checkboxes will revert to being selected.

Set content is cleared

1 0-3-4 Editing Receiving Conditions

• Insert

A number of rows equal to the number of selected rows can be inserted on the "Receiving Conditions" screen.

(1) Select a number of rows equal to the number of rows to insert, then select the **Insert** button.

The screenshot shows the 'Receiving Conditions' screen. At the top, there are buttons for 'Insert', 'Delete', and 'Down'. A yellow callout box labeled 'Click' points to the 'Insert' button. Below the buttons is a table with columns: 'ID No.M', 'Signal (CAN-CH)', 'Message(CAN-ID) Name', 'Signal(CAN-CH) Name', and 'Port'. The table contains 10 rows. Rows E0-0001 and E0-0002 are selected, indicated by a blue highlight. A yellow callout box labeled 'Select' points to the 'Signal(CAN-CH) Name' column of row E0-0002.

ID No.M	Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001		NTB500A_BOX1_1	CH1_1G120_2WL	CAN1
E0-0002			CH2_1G120_2WL	CAN1
E0-0003		NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0004			CH4_1G120_3WL	CAN1
E0-0005		NTB500A_BOX1_3	CH5_TCT	CAN1
E0-0006			CH6_TCT	CAN1
E0-0007		NTB500A_BOX1_4	CH7_10V	CAN1
E0-0008			CH8_10V	CAN1
E0-0009				CAN1
E0-0010				CAN1

(2) A number of rows equal to the number of selected rows will be inserted from the first row selected.

The screenshot shows the 'Receiving Conditions' screen after the insert operation. The 'Insert' button is highlighted. Below the buttons is a table with columns: 'ID No.M', 'Signal (CAN-CH)', 'Message(CAN-ID) Name', 'Signal(CAN-CH) Name', and 'Port'. The table contains 10 rows. Rows E0-0001 and E0-0002 are highlighted in blue, indicating they are the source rows for the insert. A yellow callout box labeled 'Inserted line' points to the new rows E0-0003 and E0-0004, which are also highlighted in blue.

ID No.M	Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001				CAN1
E0-0002				CAN1
E0-0003		NTB500A_BOX1_1	CH1_1G120_2WL	CAN1
E0-0004			CH2_1G120_2WL	CAN1
E0-0005		NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0006			CH4_1G120_3WL	CAN1
E0-0007		NTB500A_BOX1_3	CH5_TCT	CAN1
E0-0008			CH6_TCT	CAN1
E0-0009		NTB500A_BOX1_4	CH7_10V	CAN1
E0-0010			CH8_10V	CAN1

Inserting a row is not the same as adding a row.

Inserting rows will shift settings downward a number of rows equal to the number of rows inserted.

Note that this will change the signal (CAN channel) numbers.

• Delete

Rows can be selected and deleted on the "Receiving Conditions" screen.

(1) Select the rows to delete, then select the **Delete** button.

The screenshot shows the 'Receiving Conditions' screen with a table of CAN data. The 'Delete' button is highlighted with a pink box and a yellow arrow labeled 'Click'. Two rows in the table are highlighted with a pink box and a yellow arrow labeled 'Select'.

ID No.M	Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001			CH1_1G120_2WL	CAN1
E0-0002		NTB500A_BOX1_1	CH2_1G120_2WL	CAN1
E0-0003		NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0004			CH4_1G120_3WL	CAN1
E0-0005		NTB500A_BOX1_3	CH5_TCT	CAN1
E0-0006			CH6_TCT	CAN1
E0-0007		NTB500A_BOX1_4	CH7_10V	CAN1
E0-0008			CH8_10V	CAN1
E0-0009				CAN1
E0-0010				CAN1

(2) The selected rows are deleted.

The screenshot shows the 'Receiving Conditions' screen after deleting rows. The 'Delete' button is highlighted with a pink box. The table shows the remaining rows, with the first two rows (E0-0001 and E0-0002) now shifted up.

ID No.M	Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001		NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0002			CH4_1G120_3WL	CAN1
E0-0003		NTB500A_BOX1_3	CH5_TCT	CAN1
E0-0004			CH6_TCT	CAN1
E0-0005		NTB500A_BOX1_4	CH7_10V	CAN1
E0-0006			CH8_10V	CAN1
E0-0007				CAN1
E0-0008				CAN1
E0-0009				CAN1
E0-0010				CAN1

Deleting rows will cause settings to shift upward a number of rows equal to the number of rows that were deleted. Note that this will change the signal (CAN channel) numbers.

(3) Checkboxes corresponding to deleted rows will be selected on the "CANdb File" screen.

The screenshot shows the 'CANdb File' screen with a table of CAN data. The 'Set' column has checkboxes for each row. The first two rows (E0-0001 and E0-0002) have their checkboxes checked, indicating they were deleted. A yellow arrow points to the checked checkboxes with the text 'Confirmed checkboxes will revert to being selected.'

Set	Message	Set	Signal
☒	NTB500A_BOX1_1	☒	CH1_1G120_2WL
☒		☒	CH2_1G120_2WL
Done	NTB500A_BOX1_2	Done	CH3_1G120_2WL
Done		Done	CH4_1G120_3WL
Done	NTB500A_BOX1_3	Done	CH5_TCT
Done		Done	CH6_TCT
Done	NTB500A_BOX1_4	Done	CH7_10V
Done		Done	CH8_10V

● Move up/down

Settings can be moved up or down by one row on the "Receiving Conditions" screen.

(1) Select the row to move.

Click the **Up** button or the **Down** button.

Insert	Up	Clear All
Delete	Down	

Click

ID No.M	Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001		NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0002			CH4_1G120_3WL	CAN1
E0-0003		NTB500A_BOX1_3	CH5_TCT	CAN1
E0-0004			CH6_TCT	CAN1
E0-0005		NTB500A_BOX1_4	CH7_10V	CAN1
E0-0006			CH8_10V	CAN1
E0-0007				CAN1
E0-0008				CAN1

(2) The setting is moved.

Insert	Up	Clear All
Delete	Down	

ID No.M	Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001		NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0002		NTB500A_BOX1_3	CH5_TCT	CAN1
E0-0003		NTB500A_BOX1_2	CH4_1G120_3WL	CAN1
E0-0004		NTB500A_BOX1_3	CH6_TCT	CAN1
E0-0005		NTB500A_BOX1_4	CH7_10V	CAN1
E0-0006			CH8_10V	CAN1
E0-0007				CAN1
E0-0008				CAN1

1 0-3-5 Display of detailed conditions

On the "CANdb file" screen, if you double-click a line while the CANdb file is being load, displays the Detailed Information window.

Set	Message	Set	Signal
☐	NTB500A_BOX1_1	☐	CH1_1G120_2WL
☐	NTB500A_BOX1_2	☐	CH2_1G120_2WL
☐	NTB500A_BOX1_3	☐	CH3_1G120_2WL
☐	NTB500A_BOX1_4	☐	CH4_1G120_3WL
		☐	CH5_TCT
		☐	CH6_TCT
		☐	CH7_10V
		☐	CH8_10V

Double-click

Detailed information CANdb File

Network Node	NTB500A_BOX1
Message Name	NTB500A_BOX1_1
Message ID	0x100
ID-Format	CAN Standard
DLC [Byte]	8
Signal Name	CH1_1G120_2WL
Start Bit	7
Length [Bit]	32
Byte Order	Big
Value Type	Float
Factor	1
Offset	0
Maximum	30000
Minimum	-30000
Unit	um/m

		bit							
		7	6	5	4	3	2	1	0
Byte	0	07	06	05	04	03	02	01	00
	1	15	14	13	12	11	10	09	08
	2	23	22	21	20	19	18	17	16
	3	31	30	29	28	27	26	25	24
	4	39	38	37	36	35	34	33	32
	5	47	46	45	44	43	42	41	40
	6	55	54	53	52	51	50	49	48
	7	63	62	61	60	59	58	57	56

Close

Double-click a row on the "Receiving Conditions" screen to display the Detailed Information window.

Signal (CAN-CH)	Message(CAN-ID) Name	Signal(CAN-CH) Name	Port
E0-0001	NTB500A_BOX1_1	CH1_1G120_2WL	CAN1
E0-0002		CH2_1G120_2WL	CAN1
E0-0003	NTB500A_BOX1_2	CH3_1G120_2WL	CAN1
E0-0004		CH4_1G120_3WL	CAN1
E0-0005	NTB500A_BOX1_3	CH5_TCT	CAN1
E0-0006		CH6_TCT	CAN1
E0-0007	NTB500A_BOX1_4	CH7_10V	CAN1
E0-0008		CH8_10V	CAN1
E0-0009			CAN1
E0-0010			CAN1

Double-click

Detailed information E0-0001

Node Name

NTB500A_BOX1

Message(CAN-ID) Name

NTB500A_BOX1_1

Frame ID

0x100

Format

CAN Standard

Data Length(Byte)

8

Signal(CAN-CH) Name

CH1_1G120_2WL

Start Bit

7

Bit Length

32

Endian

Big

Data Type

Float

Calibr. const.

1

Offset

0.0

Maximum

30000

Minimum

-30000

Unit

um/m

		bit							
		7	6	5	4	3	2	1	0
Byte	0	07	06	05	04	03	02	01	00
	1	15	14	13	12	11	10	09	08
	2	23	22	21	20	19	18	17	16
	3	31	30	29	28	27	26	25	24
	4	39	38	37	36	35	34	33	32
	5	47	46	45	44	43	42	41	40
	6	55	54	53	52	51	50	49	48
	7	63	62	61	60	59	58	57	56

Close

10-4 Setting Output Conditions

In the "CAN Condition Settings" window, select either the "Output Start Cond", "Output Stop Cond", "Output Interval Cond", or "Output Manual Cond" tab, then set the data fields to output.

There are four types of output conditions, and the method for setting them is the same for all output conditions.

Output Start Cond: Output when monitoring starts.

Output Stop Cond: Output when monitoring stops.

Output Interval Cond: Output at a fixed period during monitoring.

Only "Output Interval Cond" has an interval setting.

Output Manual Cond: Output at any given time during monitoring.

Up to 32 data fields can be set for each output condition.

Set CAN Condition (Number of Message IDs(CAN-IDs) : 0)

Reciving Cond | **Output Start Cond** | Output Stop Cond | Output Interval Cond | Output Manual Cond | Comm Cond

Insert Up Output Test...
Delete Down

ID No.M

No.	Output	Tx Prot	Tx Format	Tx Frame ID	Tx Data Length(Byte)	B0	B1	B2	B3	B4	B5	B6	B7	Interval Until Ne. (msec)
1	☒	CAN1	CAN Standard	0x000	2	00	00	...	...	...	...	...	...	10
2	☐	CAN1	CAN Standard	0x001	2	00	00	...	...	...	...	...	...	10
3	☐	CAN1	CAN Standard	0x002	2	00	00	...	...	...	...	...	...	10
4	☐	CAN1	CAN Standard	0x003	2	00	00	...	...	...	...	...	...	10
5	☐	CAN1	CAN Standard	0x004	2	00	00	...	...	...	...	...	...	10
6	☐	CAN2	CAN Standard	0x005	2	00	00	...	...	...	...	...	...	10
7	☐	CAN1	CAN Standard	0x006	2	00	00	...	...	...	...	...	...	10
8	☐	CAN1	CAN Standard	0x007	2	00	00	...	...	...	...	...	...	10
9	☐	CAN1	CAN Standard	0x008	2	00	00	...	...	...	...	...	...	10
10	☐	CAN1	CAN Standard	0x009	2	00	00	...	...	...	...	...	...	10
11	☐	CAN1	CAN Standard	0x00A	2	00	00	...	...	...	...	...	...	10
12	☐	CAN1	CAN Standard	0x00B	2	00	00	...	...	...	...	...	...	10
13	☐	CAN1	CAN Standard	0x00C	2	00	00	...	...	...	...	...	...	10
14	☐	CAN1	CAN Standard	0x00D	2	00	00	...	...	...	...	...	...	10
15	☐	CAN1	CAN Standard	0x00E	2	00	00	...	...	...	...	...	...	10

Change Setting Items... Load Condition...
Freeze Columns Save Condition... OK Cancel Apply

Reciving Cond | **Output Start Cond** | Output Stop Cond | Output Interval Cond | Output Manual Cond | Comm Cond

Insert Up Output Test...
Delete Down

Cycle (sec) 0.1

Title bar Displays the number of messages (CAN-IDs) to output.

Test Output button Displays a window for testing output.

Interval box Set the period for interval output. (Only for "Output Interval Cond".)

• Interval box ("Output Interval Cond" only)

When "Output Interval Cond" is selected, data fields will be output at a fixed period.

The interval box is used to set this period.

The setting range is from 0.1 to 100.0 seconds.

■ Setting items

Click the Change Setting Item Display button to add, delete, or rearrange display items.

● No.

Displays the numbers of data fields to output.

No. 1 though 32

● Output

Set whether to output a data field.

Data fields selected here will be output based on the output conditions.

● Output Port

Select the port to use to output the data field.

Select either CAN1 or CAN2.

● Output Format

Select the format of the data field to output from the following.

"CAN Standard", "CAN Extended", "CAN FD Standard", "CAN FD Extended"

Selecting "CAN Extended" or "CAN FD Extended" will automatically switch the "Output Frame ID" item to displaying the extended ID.

● Output Frame ID

Set the ID of the data field to output. IDs use hexadecimal notation.

The setting range varies depending on the "Output Format" item.

"Output Format" is "CAN Standard" or "CAN FD Standard":

0x0 to 0x7FF (11 bits)

"Output Format" is "CAN Extended" or "CAN FD Extended":

0x0 to 0xFFFFFFFF (29 bits)

● Output Data Length (bytes)

Select the data size of the data field to output.

The setting range varies depending on the "Output Format" item.

"Output Format" is "CAN Standard" or "CAN Extended"

: 1 to 8 bytes

"Output Format" is "CAN FD Standard" or "CAN FD Extended"

: 1 to 8, 12, 16, 20, 24,
32, 48, or 64 bytes

● B0 through B7

Set the data field to output in hexadecimal notation.

The setting range for each item is from 0x00 to 0xFF.

Examples Output data length is 4 bytes

Tx Data Length(Byte)	B0	B1	B2	B3	B4	B5	B6	B7
4	00	00	00	00				
2	00	00						
2	00	00						

Setting range

Output data length is 64 bytes

Tx Data Length(Byte)	B0	B1	B2	B3	B4	B5	B6	B7
64	00	00	00	00	00	00	00	00
	00	00	00	00	00	00	00	00
	00	00	00	00	00	00	00	00
	00	00	00	00	00	00	00	00
	00	00	00	00	00	00	00	00
	00	00	00	00	00	00	00	00
	00	00	00	00	00	00	00	00
	00	00	00	00	00	00	00	00

Setting range

- **Period to Subsequent Output (msec)**

The time spent waiting to subsequent output can be set, if there is subsequent output. Once output has finished, the next data field will be output once the set time has passed. The time may be set from 10 ms to 1000 ms.

- **Confirmation**

Select this to perform response confirmation after output is finished.

(Response confirmation will be performed only for CAN output tests.)

When performing response confirmation, the system will either receive set response data after output is finished, or wait until the Rx timeout time has passed.

- **Rx Port**

Select the port to use to receive data fields when performing response confirmation.

Select either CAN1 or CAN2.

- **Rx Format**

Select the format of data fields to receive when performing response confirmation, from the following choices.

"CAN Standard", "CAN Extended", "CAN FD Standard", "CAN FD Extended"

Selecting "CAN Extended" or "CAN FD Extended" will automatically switch the "Rx Frame ID" item to displaying the extended ID.

- **Rx Frame ID**

Set the ID of data fields to receive, when performing response confirmation. IDs use hexadecimal notation.

The setting range varies depending on the "Rx Format" item.

"Rx Format" is "CAN Standard" or "CAN FD Standard": 0x0 to 0x7FF (11 bits)

"Rx Format" is "CAN Extended" or "CAN FD Extended": 0x0 to 0x1FFFFFFF (29 bits)

- **Rx Timeout**

If a data field is not received within the set time after transmission finishes when performing response confirmation, the system will move to the subsequent output. Rx timeout may be set from 10 ms to 1000 ms.

- **Test Result**

Displays the result of the output test.

NOTE

The "Confirmation", "Rx Port", "Rx Format", "Rx Frame ID", and "Rx Timeout" items are valid only when performing a CAN output test.

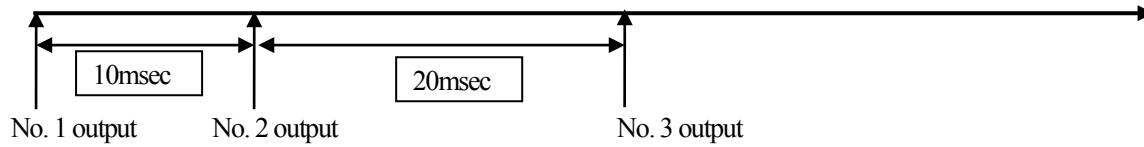
■ Output order/period

Set data fields are not output simultaneously. Instead, they are output in order beginning with No. 1.

In the example shown below, output will be performed in order of No. 1, No. 2, then No. 3.

No.	Output	Tx Prot	Tx Format	Tx Frame ID	Tx Data Length(Byte)	B0	B1	B2	B3	B4	B5	B6	B7	Interval Until Next Output (msec)
1	☒	CAN1	CAN Standard	0x000	2	00	00	...	...	...	...	...	...	10
2	☒	CAN1	CAN Standard	0x001	2	00	00	...	...	...	...	...	...	20
3	☒	CAN1	CAN Standard	0x002	2	00	00	...	...	...	...	...	...	30
4	☐	CAN1	CAN Standard	0x003	2	00	00	...	...	...	...	...	...	10
5	☐	CAN1	CAN Standard	0x004	2	00	00	...	...	...	...	...	...	10

Each No. will be output once the set "Period to Subsequent Output (msec)" has elapsed for the previous No.



Refer to the separate manual, "CTRS-100A Instruction Manual - Hardware Manual" for details on output timing.

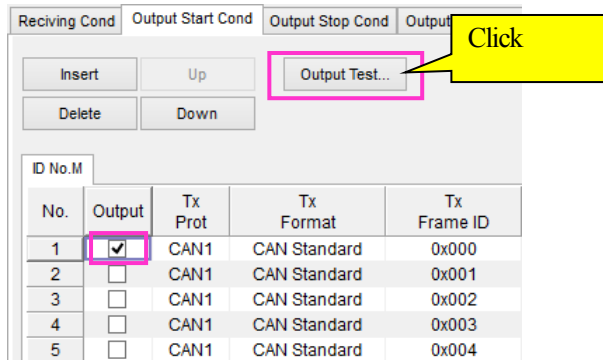
1 0-4-1 Testing Output

A CAN input unit can be used to test data field output.

Output response can be confirmed by performing an output test.

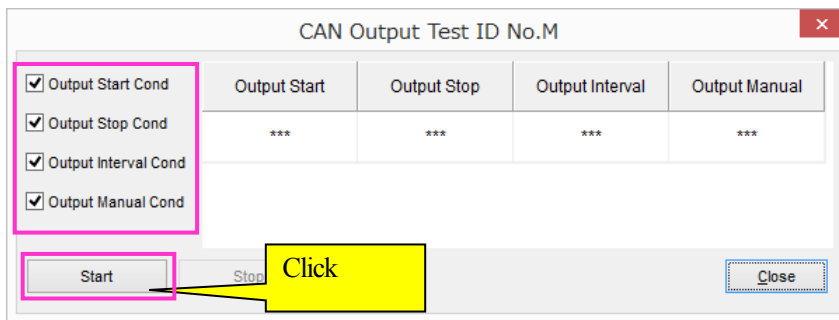
- (1) The **Test Output** button becomes enabled once the "Output" item is set for output conditions.

Select the **Test Output** button to display the "Test CAN Output" window.



- (2) Select the **Start** button in the "Test CAN Output" window to perform a CAN output test.

The output test will be performed only for conditions that are selected.



(3) "Testing..." is displayed.

The "Stop" button can be selected to stop testing.

(4) The result of the output test is displayed as "OK" or "NG".

If the result is "NG", check the relevant output ("Test Result" item) in the output conditions.

(5) Select the "Close" button.

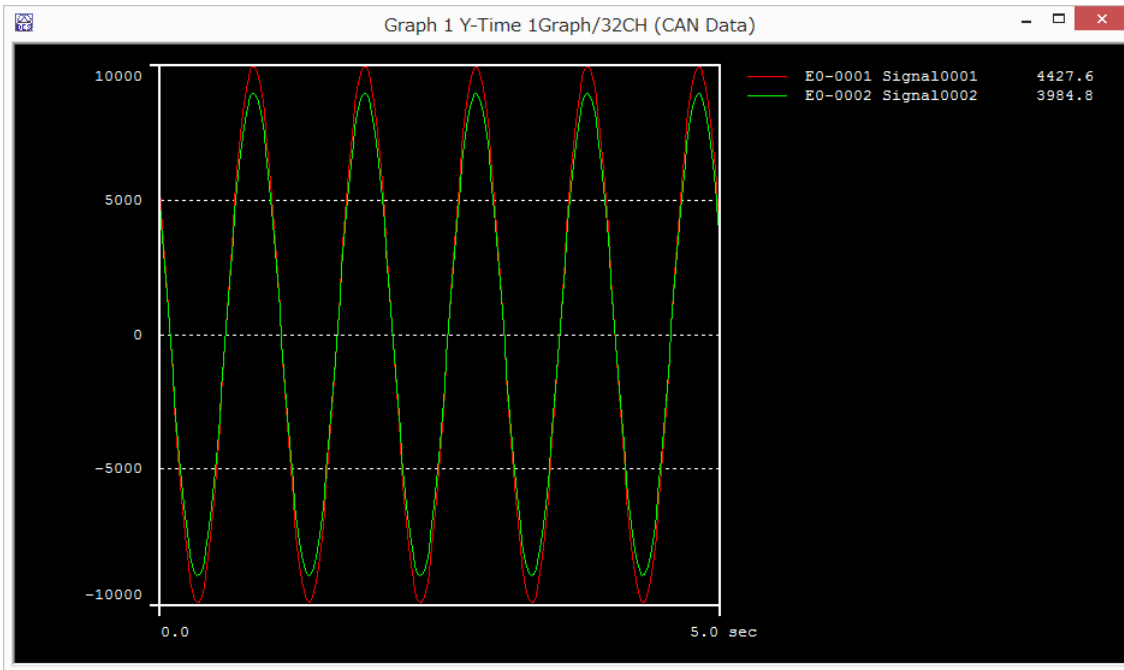
Check the "Test Result" item in the output conditions to see the results of performing output tests for each No.

Test Result
OK
Not applicable
Not applicable
Not applicable

OK	Normal
Output error	Data field could not be sent successfully.
Timeout	A timeout occurred while confirming receipt. Unable to confirm that response data was received within the specified time.
***	N/A

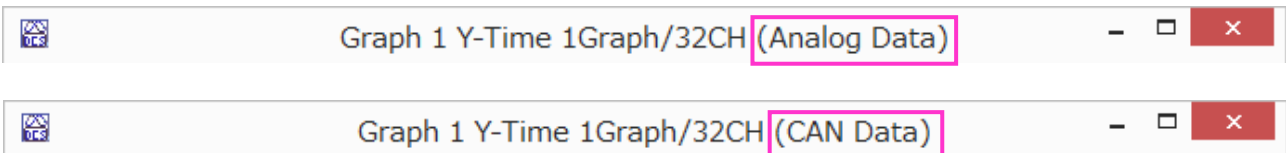
10-5 Monitoring Signals (CAN Channels)

Signal (CAN channel) measurement data can be displayed in a numeric/graph window.

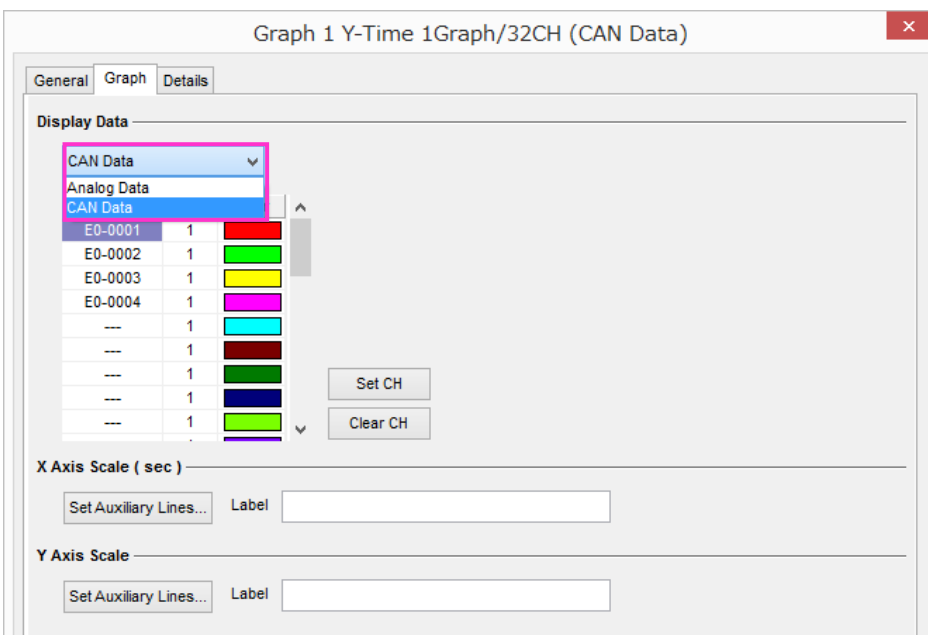


When performing CAN measurement, analog channel measurement data and CAN measurement data cannot be displayed on the same numeric/graph window.

Select the data ("Analog Data" or "CAN Data") to display in each window.



Select either "Analog Data" or CAN Data" in the "Display Condition Settings" window in the numeric/graph window.



MEMO

If Signal (CAN channel) measurement data is not updated or unexpected numbers are displayed even after starting monitoring, check the following.

- Check the communication conditions.

The port status LED on the CAN input unit will light up in red if the communication conditions are incorrect.

(It will light up in green if normal and flash blue when receiving data.)

- Check the ports.

There are two ports on the CAN input unit.

- Check the receiving condition settings.

Received data fields are converted into signal (CAN channel) measurement data based on the receiving conditions (data length, start bit, bit length, data type, and endian).

Check whether these settings are correct.

10-6 Monitoring Messages (CAN-IDs)

■ CAN data frames

Messages (CAN-IDs) are displayed in hexadecimal notation.

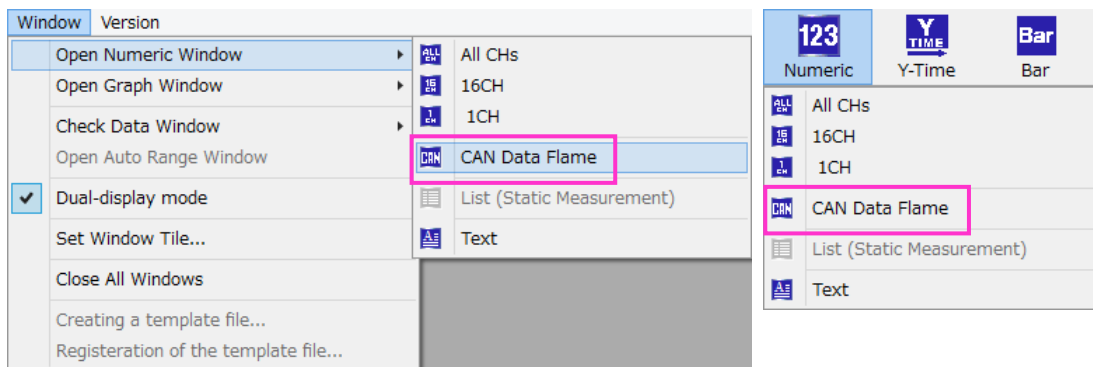
Up to 100 lines of messages (CAN-IDs) can be displayed at once.

Numeric 2 CAN Data Flame - Specified ID Mode										
Disp ID	Message Name	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	
0-1-0x000 00-07	Message0001	83	96	FE	FF	30	06	C2	02	
0-1-0x001 00-07	Message0002	82	96	FE	FF	94	06	C2	02	
0-1-0x002 00-07	Message0003	81	96	FE	FF	F8	06	C2	02	
0-1-0x003 00-07	Message0004	80	96	FE	FF	5C	07	C2	02	

■ Display method

Perform one of the following actions to open the numeric window.

- Select the "Window" - "Open Numeric Window" - "CAN Data Frame" menu items.
- Select the "Numeric" button from the toolbar.

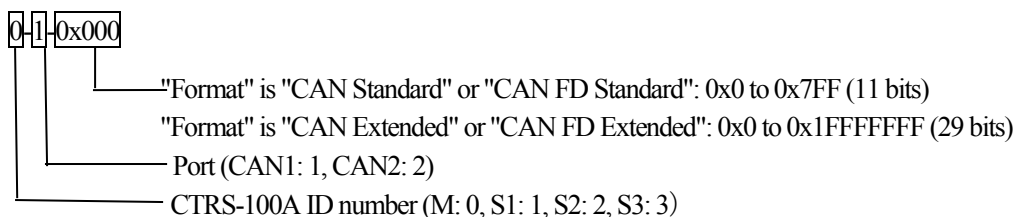


■ Display items

● Display ID

Displays the message (CAN-ID) number.

The message (CAN-ID) number is displayed as "*-*-0x***".



Example: The display ID for a standalone configuration where the port is CAN1 and the frame ID is 0x100 would be E0-0010.

- **Message Name**

Displays the name for only messages (CAN-IDs) where the specified ID mode port is selected.
The names of messages (CAN-IDs) where the all IDs mode port is selected are not displayed.

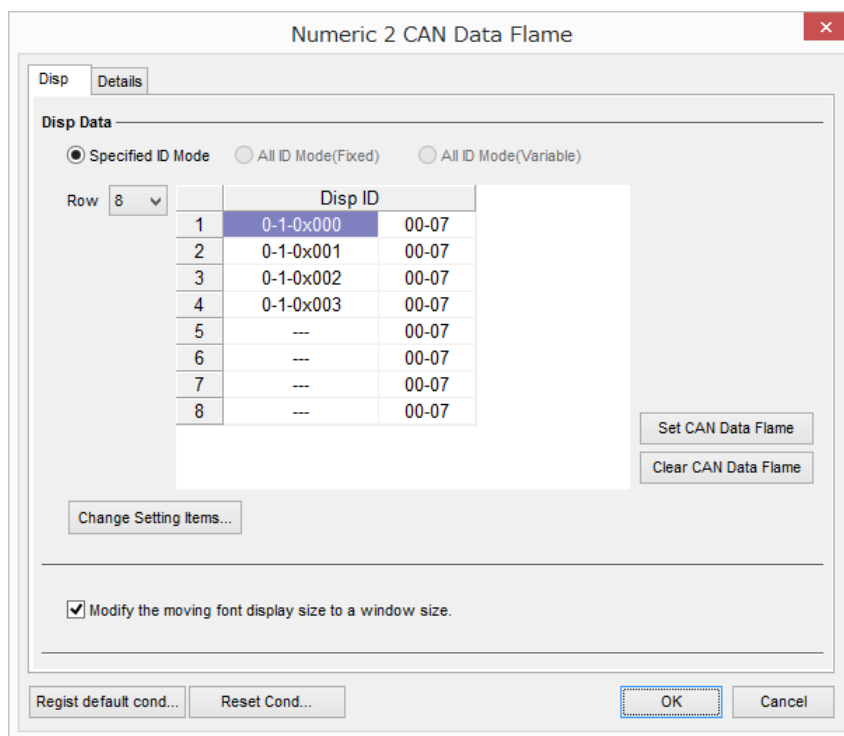
- **Bytes 0 through 64**

Data fields are displayed in hexadecimal notation.

- **Display conditions**

Perform any of the following actions to display the "Display Condition Settings" window.

- Select the "Display" - "Display Condition Settings" menu item.
- Right-click in the window to display a popup menu.
Select the "Display Condition Settings" menu item in the popup menu.
- Select the "Display Conditions" icon on the toolbar.
- Double-click the window.



- **Selecting the recorded data mode**

Select the recorded data mode for displayed messages (CAN-IDs).

"Specified ID Mode" : Displays only messages (CAN-IDs) where a specified ID mode port is selected.

"All IDs Mode (Fixed)" : Displays only messages (CAN-IDs) that have been entered where an all IDs mode port is selected.

"All IDs Mode (Variable)" : Displays messages (CAN-IDs) where an all IDs mode port is selected, in the order they are received.

• Selecting/entering display IDs

- If "Specified ID Mode" is selected as the recorded data mode, select the range of bytes to display for messages (CAN-IDs) and data fields that are measured under the receiving conditions.

Disp Data

☒ Specified ID Mode ☐ All ID Mode(Fixed) ☐ All ID Mode(Variable)

Row 8

Row	Disp ID	
1	0-1-0x000	00-07
2	---	---
3	0-1-0x000	Message0001
4	0-1-0x001	Message0002
5	0-1-0x002	Message0003
6	0-1-0x003	Message0004
7	---	00-07
8	---	00-07

Disp Data

☒ Specified ID Mode ☐ All ID Mode(Fixed) ☐ All ID Mode(Variable)

Row 8

Row	Disp ID	
1	0-1-0x000	00-07
2	0-1-0x001	00-07
3	0-1-0x002	08-15
4	0-1-0x003	16-23
5	---	24-31
6	---	32-39
7	---	40-47
8	---	48-55
		56-63

- If "All IDs Mode (Fixed)" is selected as the recorded data mode, select the format of displayed messages (CAN-IDs), enter the frame ID of the displayed message (CAN-ID), then select the range of bytes to display for the data field.

Disp Data

☐ Specified ID Mode ☒ All ID Mode(Fixed) ☐ All ID Mode(Variable)

Row 8

Row	Disp ID	
1	CAN Standard	0-1-0x000 00-07
2	CAN Standard	0-1-0x000 00-07
3	CAN Extended	0-1-0x000 00-07
4	CAN FD Standard	0-1-0x000 00-07
5	CAN FD Extended	0-1-0x000 00-07
6	CAN Standard	0-1-0x000 00-07
7	CAN Standard	0-1-0x000 00-07
8	CAN Standard	0-1-0x000 00-07

Disp Data

☐ Specified ID Mode ☒ All ID Mode(Fixed) ☐ All ID Mode(Variable)

Row 8

Row	Disp ID	
1	CAN Standard	0-1-0x000 00-07
2	CAN Standard	0-1-0x000 00-07
3	CAN Standard	0-1-0x000 00-07
4	CAN Standard	0-1-0x000 00-07
5	CAN Standard	0-1-0x000 00-07
6	CAN Standard	0-1-0x000 00-07
7	CAN Standard	0-1-0x000 00-07
8	CAN Standard	0-1-0x000 00-07

Disp Data

☐ Specified ID Mode ☒ All ID Mode(Fixed) ☐ All ID Mode(Variable)

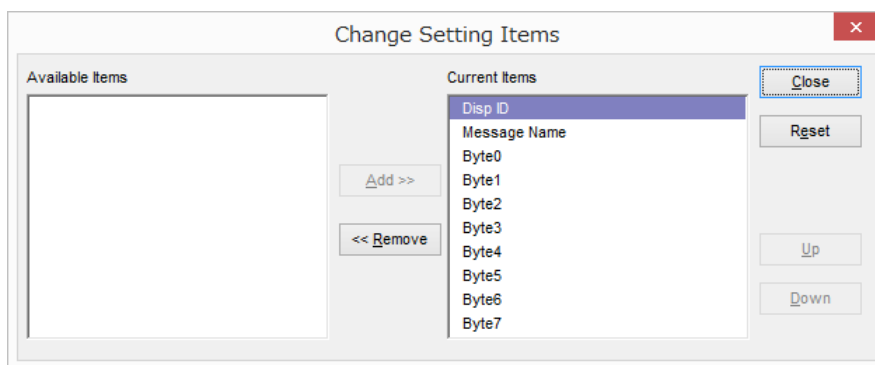
Row 8

Row	Disp ID	
1	CAN Standard	0-1-0x000 00-07
2	CAN Standard	0-1-0x000 00-07
3	CAN Standard	0-1-0x000 08-15
4	CAN Standard	0-1-0x000 16-23
5	CAN Standard	0-1-0x000 24-31
6	CAN Standard	0-1-0x000 32-39
7	CAN Standard	0-1-0x000 40-47
8	CAN Standard	0-1-0x000 48-55
		56-63

- If "All IDs Mode (Variable)" is selected as the recorded data mode, no configuration is necessary.

- **Changing display of setting items**

Display items can be rearranged, deleted, etc. in the "Change Setting Item Display" window.



MEMO

Up to 4096 messages (CAN-IDs) can be received in all IDs mode.

The "CAN Data Frame" window can display up to 100 lines of received messages (CAN-IDs).

1 1 COLLECTING AND DELETING DATA FILES

1 1-1 Collecting Data Files

A data file can be collected by the following 2 methods: collected from the SD card in the CTRS-100A, or collected from the PC's SD card drive. This section explains how to collect data files from the CTRS-100A SD card.

MEMO

- When the data file format is KS2
KS3 format data files (with extension KS3) on the CTRS-100A SD card will be automatically converted during collection to KS2 format data files (with extension KS2).
- When the data file format is KS3
KS3 format data files (with extension KS3) on the CTRS-100A SD card will be collected as KS3 format data files (with extension KS3).

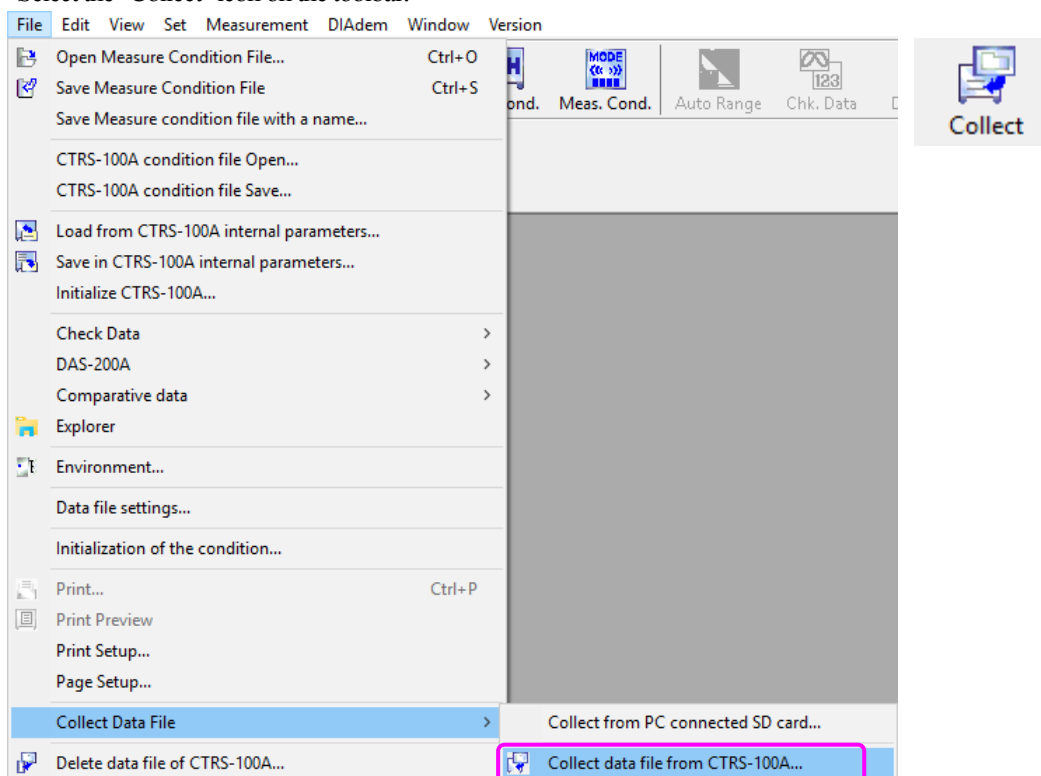
1 1-1-1 Collecting Data Files From CTRS-100A SD Card

This section explains how to collect data files saved to the CTRS-100A SD card.

■ Operating method

(1) Do one of the following:

- Select the "File" - "Collect data file from CTRS-100A" menu item.
- Select the "Collect" icon on the toolbar.



(2) The "Collect CTRS-100A Data File" window below is displayed.

	Name	Size (byte)	Date & Time	Type
☒	TEST#0001_A0000.ks3	311,388	2020/05/14 08:44:26	ks3 File
☐	TEST#0002.ks3	6,161,020	2020/05/14 09:37:20	ks3 File
☐	TEST#0003.ks3	239,960	2020/05/14 10:46:48	ks3 File
☐	TEST#0004.ks3	247,560	2020/05/14 10:54:40	ks3 File
☐	TEST#0005.ks3	74,328	2020/05/14 14:35:34	ks3 File

Set Save Folder

E:\ Browse...

☐ After collecting the KS2 file, data is automatically converted into CSV Format File.

☐ After collecting the data file, delete the original data file.

Collect Select All Close

Collect button

Collect data files for which the checkboxes have been selected.

Select All button

Select the checkboxes of all data files to target them for collection.

Close button

Close the "Collect Data Files" window.

(3) Select the checkboxes of files to be collected, and then click the Collect button to collect the data files.

(4) When the data files are successfully collected, the message below is displayed.

DCS-100A

i Succeeded in collecting the data file.

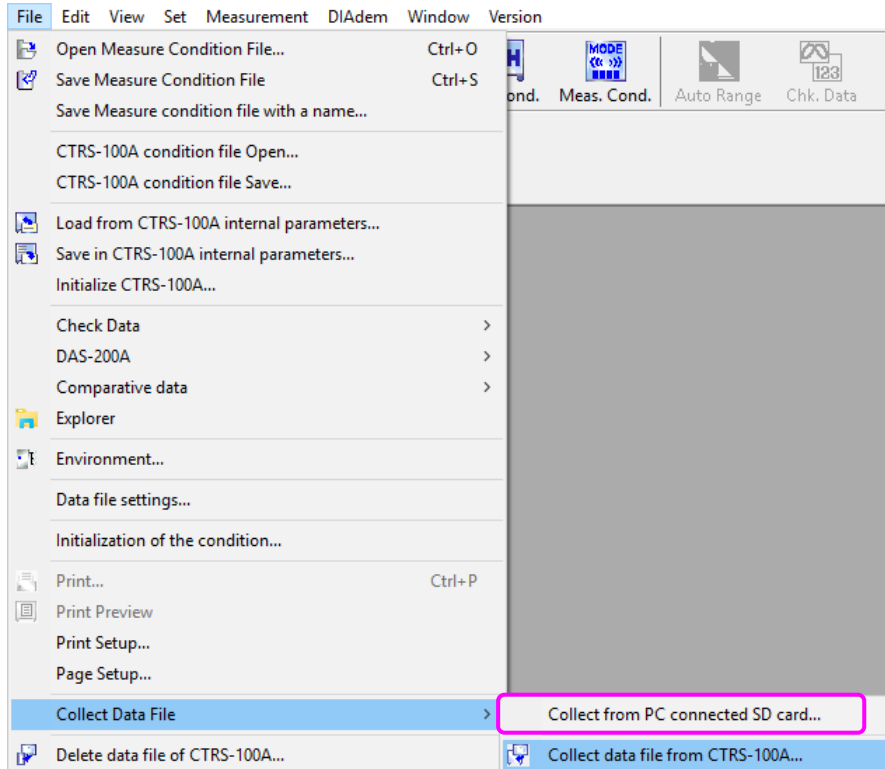
OK

1 1-1-2 Collecting Data Files From PC Connected SD Card

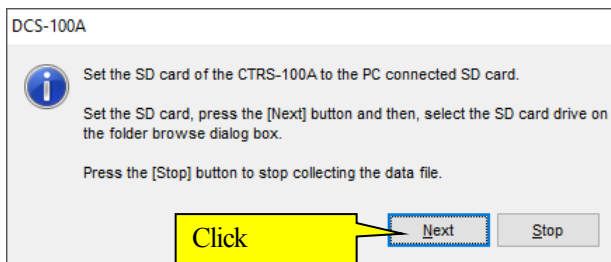
This section explains how to collect data files from the PC connected SD card.

■ Operating method

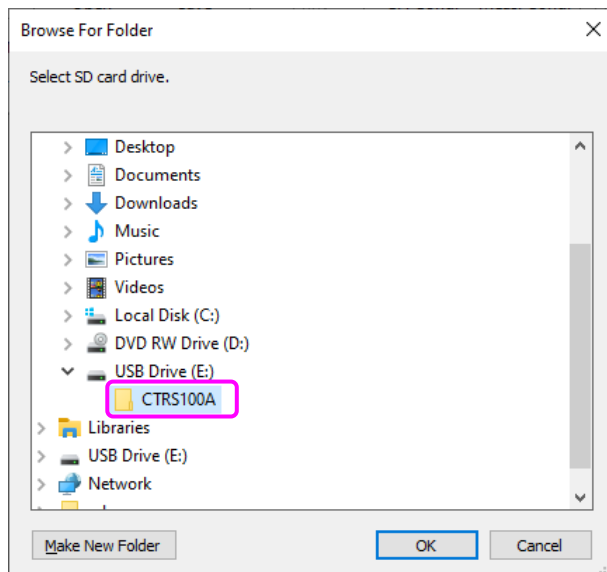
(1) Select the "File" - "Collect from PC connected SD card" menu item.



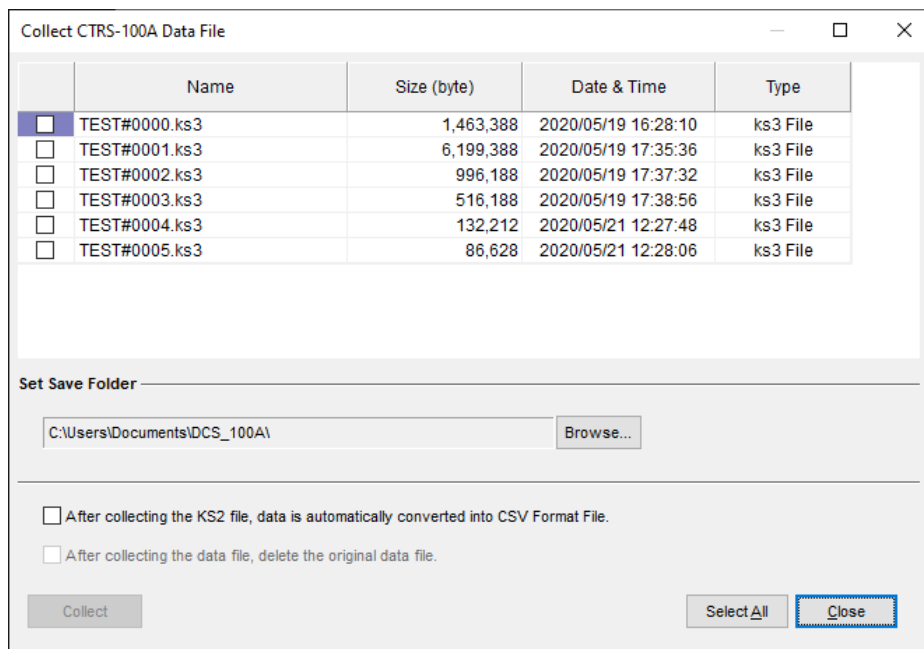
(2) Insert a SD card into the PC's SD card drive and click the Next button.



(3) The Browse for Folder window appears. Select the PC's SD card drive and click the OK button



(4) The "Collect CTRS-100A Data File" window below is displayed.



Collect button

Collect data files for which the checkboxes have been selected.

Select All button

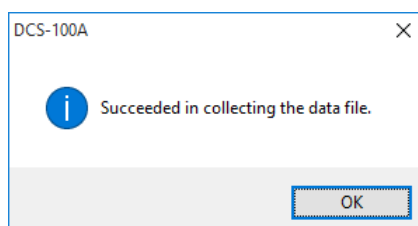
Select the checkboxes of all data files to target them for collection.

Close button

Close the "Collect Data Files" window.

(5) Select the checkboxes of files to be collected, and then click the **Collect** button to collect the data files.

(6) When the data files are successfully collected, the message below is displayed.



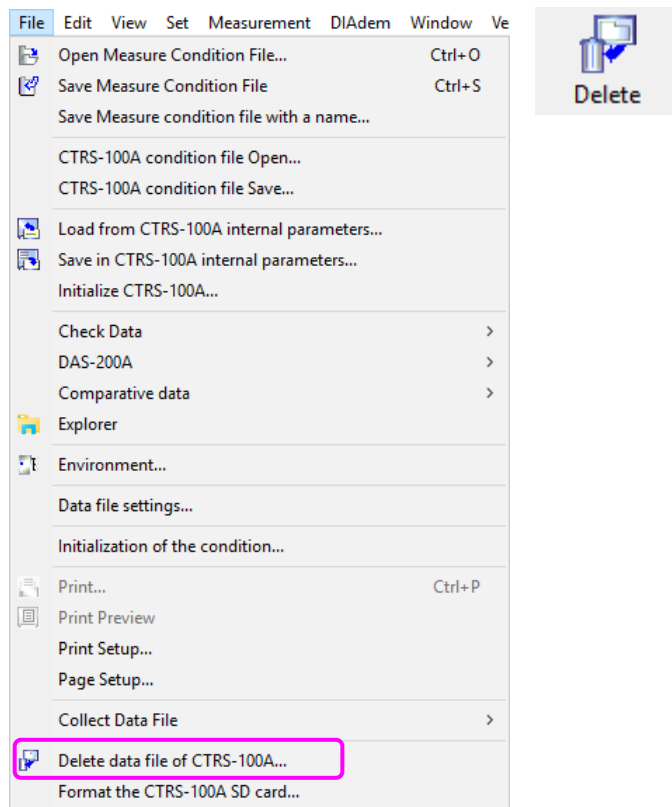
1 1-2 Deleting Data Files

This section explains how to delete data files saved to the CTRS-100A SD card.

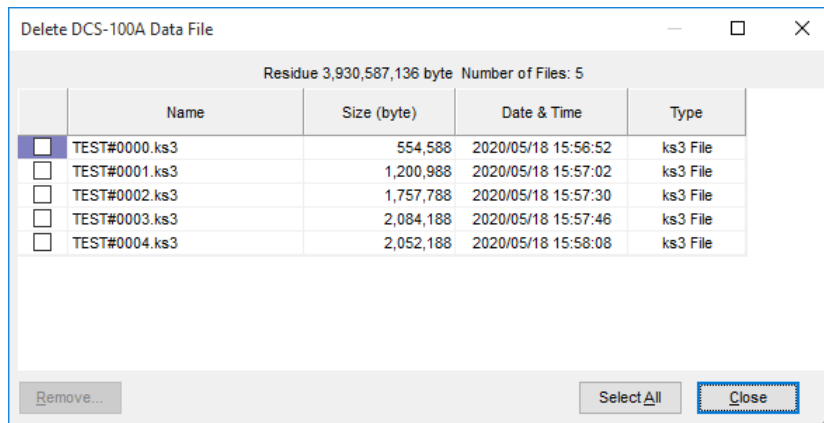
■ Operating method

(1) Do one of the following:

- Select the "File" - "Delete data file of CTRS-100A" menu item.
- Select the "Delete" icon on the toolbar.



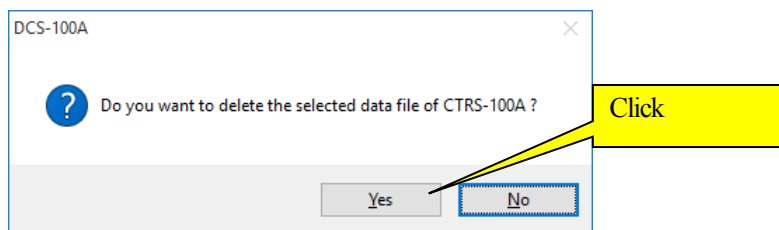
(2) The "Delete DCS-100A Data File" window below is displayed.



- button Delete data files for which the checkboxes have been selected.
- button Select the checkboxes of all data files to target them for deletion.
- button Close the "Delete Data Files" window.

(3) Select the checkboxes of files to be deleted, and then click the button.

(4) When the message below is displayed, click the button to delete the files.



(5) The deletion-target files are deleted.

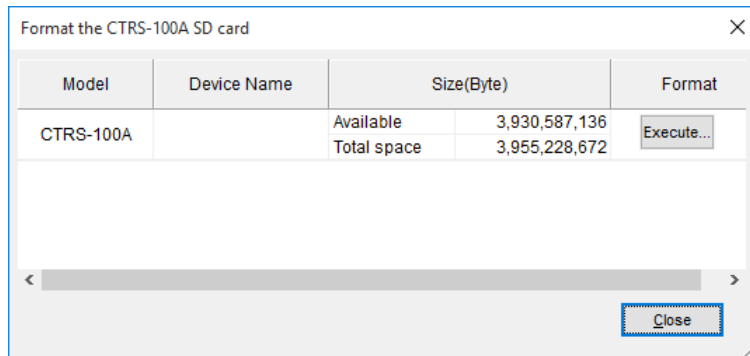
1 1-3 Formatting the SD Card

This section explains how to format the CTRS-100A SD card.

■ Operating method

(1) Select the "File" - "Format the CTRS-100A SD Card" menu item.

(2) The "Format the CTRS-100A SD Card" window below is displayed.



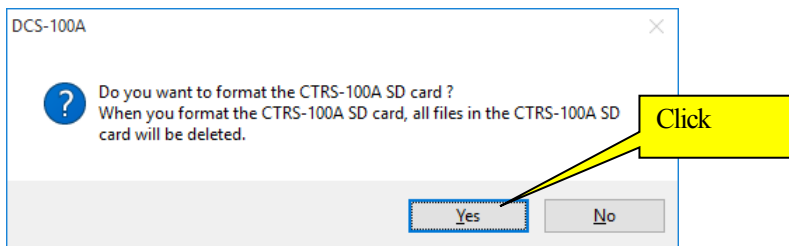
button

Format the CTRS-100A SD card.

button

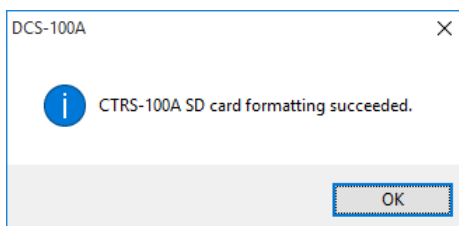
Close the "Format CTRS-100A SD Card" window.

(3) Click the button to display the message below, and then click the button.



(4) The card is formatted.

(5) When formatting is successful, the message below is displayed.



1 2 SAVING AND READING MEASUREMENT CONDITION FILES

This chapter explains how to save and read measurement condition files.

1 2-1 Saving Measurement Condition Files As...

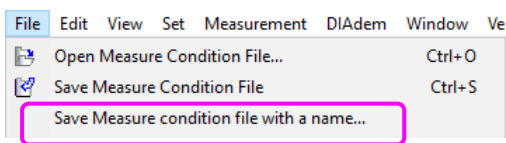
This section explains how to save the current measurement conditions as a measurement condition file (extension: C1H).

To make measurements by using the same conditions as last time, the measurement condition file can be read to set all the measurement conditions at once.

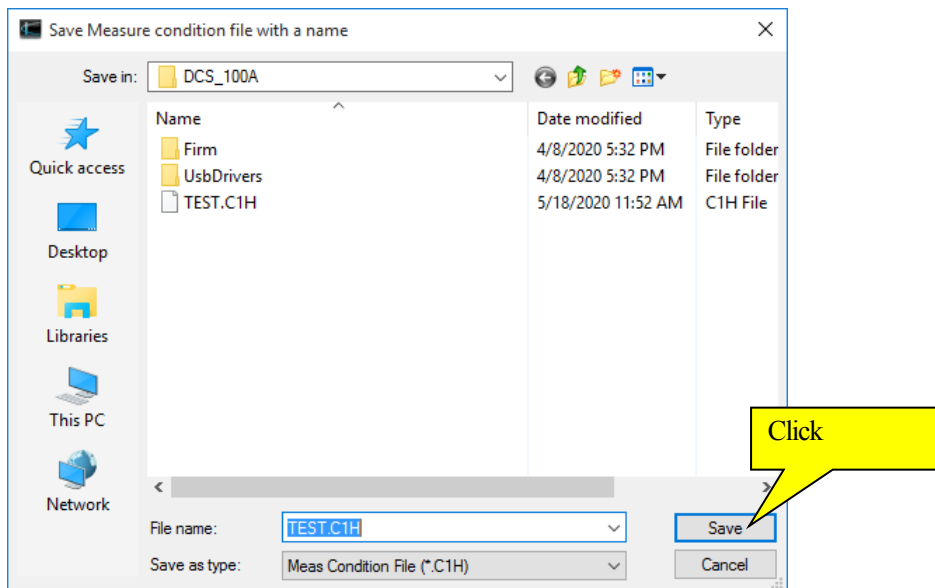
The following conditions are saved: the environment setting conditions, channel conditions, measurement conditions, graph/number display conditions, and four-arithmetic-operation conditions (if using the corresponding option).

■ Operating method

- (1) Select the "File" - "Save Measure condition file with a name" menu item to open the "Save Measure condition file with a name" window.



- (2) In the "Save Measure condition file with a name" window, select a folder, enter the file name, and then click the **Save** button.



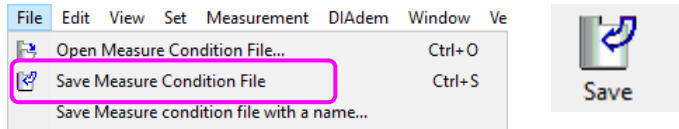
1 2-2 Saving Measurement Condition Files

This section explains how to save the current measurement conditions to an existing measurement condition file (extension: C1H).

■ Operating method

Do one of the following to save the measurement condition file:

- Select the "File" - "Save Measure Condition File" menu item.
- Select the "Save" icon on the toolbar.



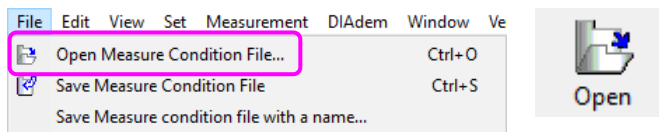
1 2-3 Opening Measurement Condition Files

This section explains how to read a previously saved measurement condition file (extension: C1H).

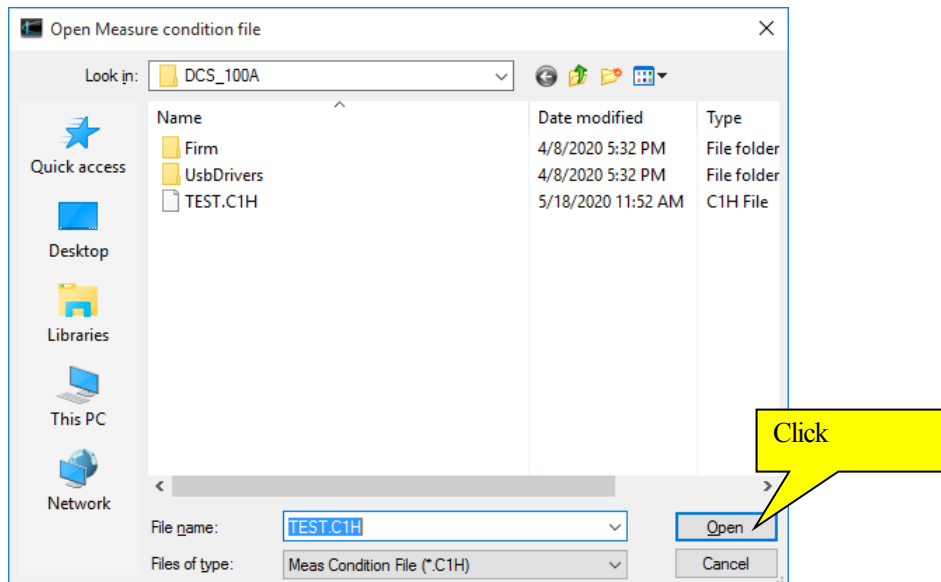
■ Operating method

(1) Do one of the following to open the "Open Measure condition File" window:

- Select the "File" - "Open Measure Condition File" menu item.
- Select the "Open" icon on the toolbar.



(2) In the "Open Measure condition File" window, select the folder and file name, and then click the **Open** button.



1 3 SAVING AND READING CTRS-100A CONDITION FILES

This chapter explains how to save and read CTRS-100A condition files (extension: SET).

By using the CTRS-100A to read CTRS-100A condition files created by using DCS-100A, various conditions can be set.

CTRS-100A condition files include environment-setting conditions, channel conditions, and measurement conditions.

However, please note that the window display conditions for this software are not included.

CTRS-100A condition files can only be saved if the data-file saving location is "CTRS-100A SD card".

The data-file saving location can be changed in the "General" window of the "Set Environment" window.

(See "4-1 General".)

If multiple units are connected with DCS-100A, one CTRS-100A condition file is created for each when the file is saved. In addition, when CTRS-100A condition files are read, one is read for each unit.

The name of the CTRS-100A condition file is as follows:

CTRS-100A	CTRS-100A condition file name
Standalone (one unit), master (synchronous operation)	CTRS100A_0.SET
Slave 1 (synchronous operation)	CTRS100A_1.SET
Slave 2 (synchronous operation)	CTRS100A_2.SET
Slave 3 (synchronous operation)	CTRS100A_3.SET

1 3- 1 Using CTRS-100A Condition Files

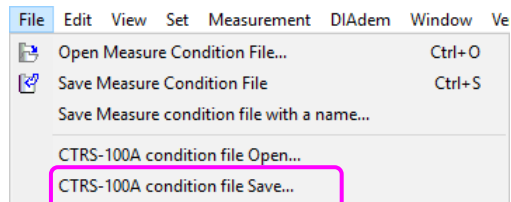
- (1) In DCS-100A, specify each condition in line with the test.
- (2) Insert an SD card into the PC's SD card drive.
- (3) Use DCS-100A to save the CTRS-100A condition file (extension: SET) to the SD card's root folder.
- (4) Insert the SD card to which the CTRS-100A condition file has been saved into the CTRS-100A.
- (5) Press the "READ" button on the remote control unit to read the CTRS-100A condition file and apply the specified conditions to the CTRS-100A with DCS-100A.

1 3-2 Saving CTRS-100A Condition Files

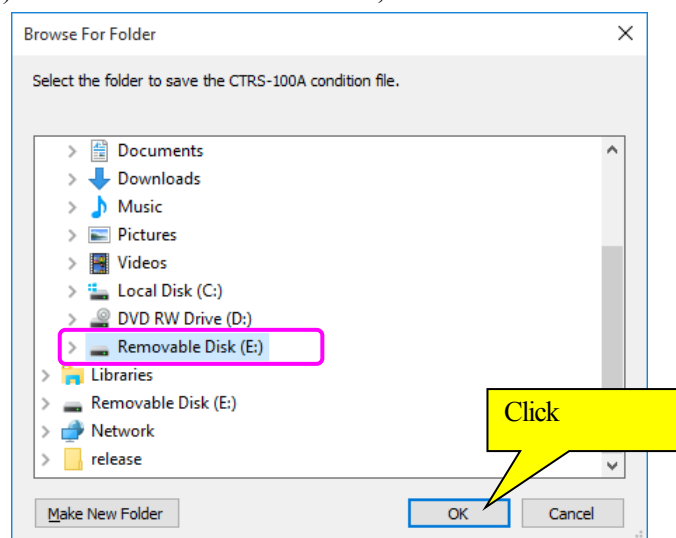
This section explains how to save the current conditions to a CTRS-100A condition file (extension: SET).

■ Operating method

(1) Select the "File" - "CTRS-100A condition file Save" menu item.



(2) In the "Browse For Folder" window, select the SD card's root folder.



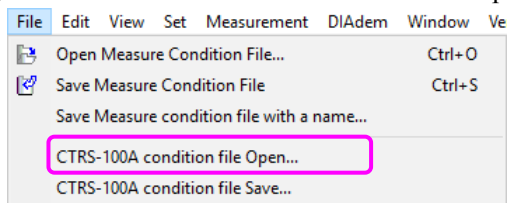
(3) The measurement condition file is saved to the selected SD card root folder.

1 3-3 Opening CTRS-100A Condition Files

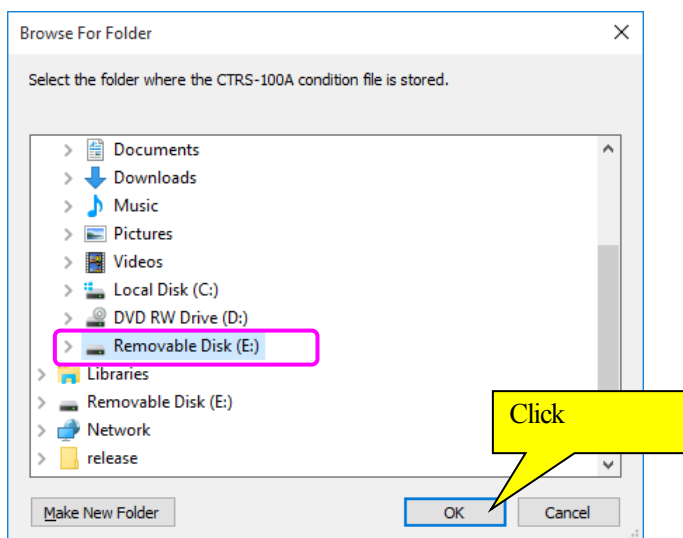
This section describes how to read CTRS-100A condition files (extension: SET).

■ Operating method

(1) Select the "File" - "CTRS-100A condition file Open" menu item.



(2) In the "Browse For Folder" window, select the SD card's root folder.



(3) The measurement condition file is read from the selected SD card root folder.

1 4 SPECIFYING, READING, AND INITIALIZING INTERNAL CTRS-100A PARAMETERS

1 4- 1 Specifying Internal CTRS-100A Parameters

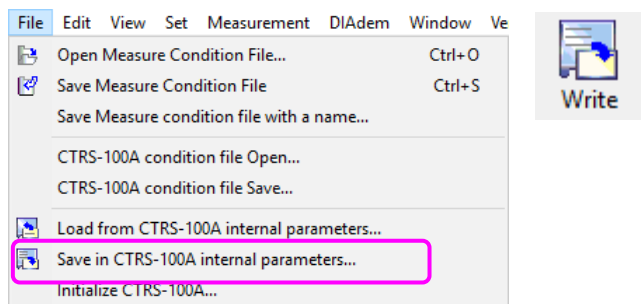
This section explains how to specify the current measurement conditions as internal CTRS-100A parameters. The following conditions are set: environment-setting conditions, channel conditions, and measurement conditions.

The internal CTRS-100A parameters can only be set if the data-file saving location is "CTRS-100A SD card". The data-file saving location can be changed in the "General" window of the "Set Environment" window. (See "4-1 General".)

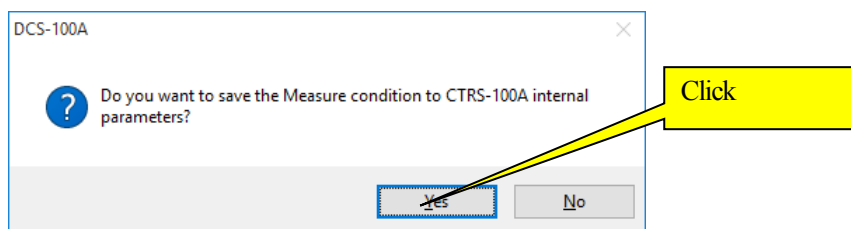
■ Operating method

(1) Do one of the following:

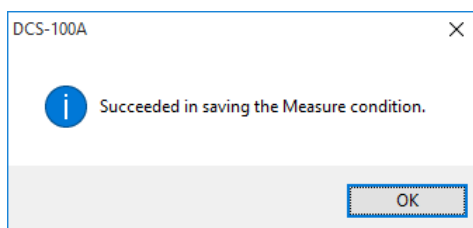
- Select the "File" - "Save in CTRS-100A internal parameters" menu item.
- Select the "Write" button on the toolbar.



(2) When the message below is displayed, click the button.



(3) When the measurement conditions are specified as internal CTRS-100A parameters, the message below is displayed.



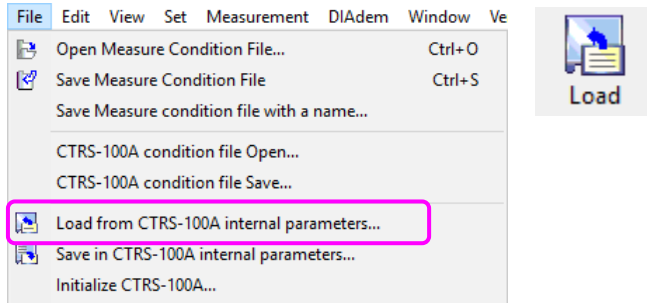
1 4-2 Reading from Internal CTRS-100A Parameters

This section explains how to read the measurement conditions from the internal CTRS-100A parameters.

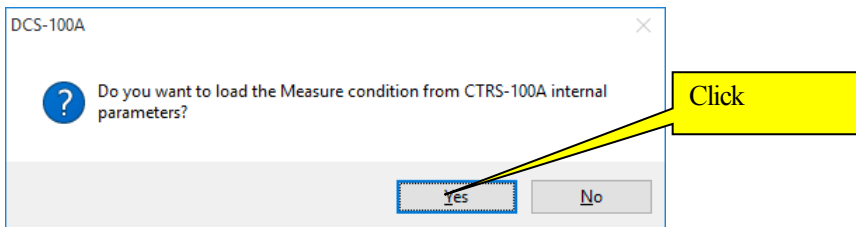
■ Operating method

(1) Do one of the following:

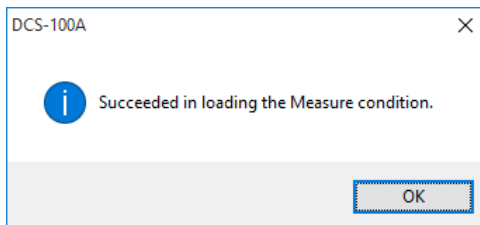
- Select the "File" - "Load from CTRS-100A internal parameters" menu item.
- Select the "Load" button on the toolbar.



(2) When the message below is displayed, click the button.



(3) When the measurement conditions are read from the internal CTRS-100A parameters, the message below is displayed.



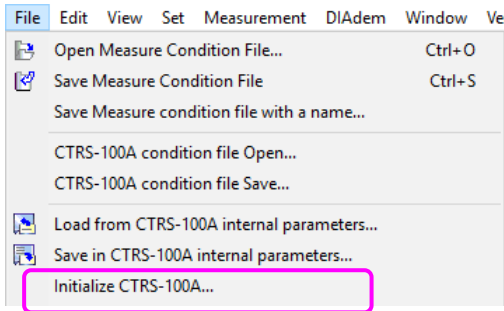
1 4-3 Initializing the CTRS-100A to the Factory Settings

This section explains how to initialize the CTRS-100A to the factory settings.

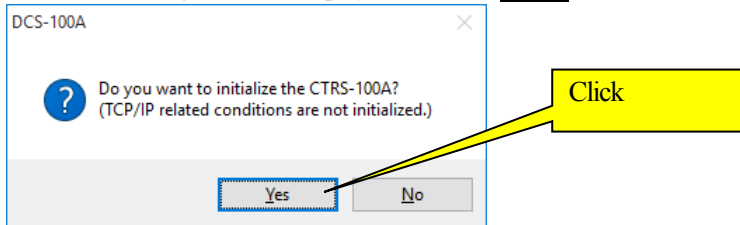
When the CTRS-100A is initialized to the factory settings, the measurement conditions, channel conditions, and obtained balance values are initialized.

■ Operating method

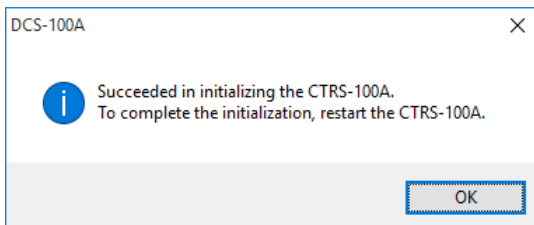
- (1) Select the "File" - "Initialize CTRS-100A" menu item.



- (2) When the message below is displayed, click the **Yes** button.



- (3) When the message below is displayed, restart the CTRS-100A to finish initializing it.



NOTE

Even if the CTRS-100A is initialized to the factory default settings, the SSID and security key of the Wireless LAN unit will not be initialized.

To initialize the SSID and security key of the Wireless LAN unit, see the separate manual INSTRUCTION MANUAL CTRS-100A Hardware.

1 5 APPENDIX

1 5-1 Limits on the Number of Measurement Channels Due to the Sampling Frequency

The maximum number of measurement channels (the maximum number of measurable channels per CTRS-100A unit) is limited depending on the currently selected sampling frequency as shown by the tables below.

Maximum number of measurement channels = 100,000 / sampling frequency

Sampling frequency (125 series)	Maximum number of measurement channels
100k	1
50k	2
20k	5
10k	10
5k	20
2k or less	32

Sampling frequency (2n series)	Maximum number of measurement channels
65,536	1
32,768	3
16,384	6
8,192	12
4,096	24
2,048 or less	32

NOTE

The maximum sampling frequency is 2kHz when CAN data recording is performed by synchronous operation saved on a PC.

If the error message " Redording stopped. The monitor data was discontinuously recorded." is displayed during redoring, lower the sampling frequency.

1 5-2 Limits on Saving Measurement Data to the CTRS-100A SD Card

Measurement mode	Manual	Manual (Set Record Data)	Interval	Analog Trigger, Ext Trigger, Manual Trigger Complex Trigger CAN Trigger
Maximum number of units that can be connected	Four units			
Sampling frequency	Limited depending on the number of measurement channels (See 13-1.)* ¹			
Number of measurement channels	Limited depending on the sampling frequency (See 13-1.)			
Number of repetitions	Fixed to one	Setting range* ²		
Repeated recording	Not possible	Possible (recording time: 5 seconds or more)	Not possible	
CAN data recording	Possible			
GPS data recording	Possible			
Date and time file name specification	Possible			
Maximum data file size	Up to 4 GB			
Pause-recording function	Possible* ³	Not possible		
Balance execution	Possible during monitoring or while recording is paused (not possible when stopped or recording)		Only during monitoring (not when stopped or recording)	
Offset zero	Only during monitoring (not when stopped or recording)		Only during monitoring (not when stopped or recording)	
DCS-101A Video recording (web camera)	Possible (sampling frequency: 10 kHz or less, number of repetitions: fixed to 1)		Not possible	
DCS-101A Calculation processing (arithmetic operations)	Not possible			
DCS-101A FFT analysis	Possible (sampling frequency: 10 kHz or less)			

*1. In the channel condition settings, if the low-pass filter item is set to "Auto" (if the anti-aliasing filter is on), the sampling frequency is limited to 100 Hz or more.

*2. If the number of file number digits is 3, the setting range is zero to 999 (999 times if zero is specified).

If the number of file number digits is 4, the setting range is zero to 9999 (9,999 times if zero is specified).

If the number of file number digits is 5, the setting range is zero to 99999 (99,999 times if zero is specified).

*3. This cannot be used if performing DCS-101A video recording.

This cannot be used if performing CAN data recording or GPS data recording.

NOTE

If there is no analog channel to measure, "Manual", "Manual (Set Recorded Data)", "Interval", "Analog Trigger", "Ext Trigger", "Manual Trigger", and "Complex Trigger" cannot be selected.
If there is no signal (CAN channel) to measure, "CAN Trigger" cannot be selected.

	Point ZERO (manual) measurement		Interval (GPS synchronization) measurement
Measurement mode	Point ZERO (Manual)	Point Zero (Manual n. of Data)	Interval(GPS sync)
Maximum number of units that can be connected	Four units		
Sampling frequency	Limited depending on the number of measurement channels (See 13-1.)* ¹		
Number of measurement channels	Limited depending on the sampling frequency (See 13-1.)		
Number of repetitions	Fixed to one	Setting range* ²	
Repeated recording	Not possible	Possible (recording time: 5 seconds or more)	Not possible
CAN data recording	Possible		
GPS data recording	Possible		
Date and time file name specification	Possible		
Maximum data file size	Up to 4 GB		
Pause-recording function	Not possible		
Balance execution	Possible during monitoring or while recording is paused (not possible when stopped or recording)		Only during monitoring (not when stopped or recording)
Offset zero	Only during monitoring (not when stopped or recording)		Only during monitoring (not when stopped or recording)
DCS-101A Video recording (web camera)	Possible (sampling frequency: 10 kHz or less, number of repetitions: fixed to 1)		Not possible
DCS-101A Calculation processing (arithmetic operations)	Not possible		
DCS-101A FFT analysis	Possible (sampling frequency: 10 kHz or less)		

*1. In the channel condition settings, if the low-pass filter item is set to "Auto" (if the anti-aliasing filter is on), the sampling frequency is limited to 100 Hz or more.

*2. If the number of file number digits is 3, the setting range is zero to 999 (999 times if zero is specified).

If the number of file number digits is 4, the setting range is zero to 9999 (9,999 times if zero is specified).

If the number of file number digits is 5, the setting range is zero to 99999 (99,999 times if zero is specified).

NOTE

If there is no analog channel to measure, "Manual", "Manual (Set Recorded Data)", "Interval", "Analog Trigger", "Ext Trigger", "Manual Trigger", and "Complex Trigger" cannot be selected.
If there is no signal (CAN channel) to measure, "CAN Trigger" cannot be selected.

1 5-3 Limits on Saving Measurement Data to a PC Folder

Measurement mode	Manual	Manual (Set Record Data)	Interval	Analog Trigger
Maximum number of units that can be connected	Four units			
Sampling frequency	Limited depending on the number of measurement channels (See 1 3 - 1 .)* ¹			
Number of measurement channels	Limited depending on the sampling frequency (See 1 3 - 1 .)			
Number of repetitions	Fixed to one	Setting range:1 to 9999, 65,535 times if zero is specified		
Repeated recording	Not possible	Possible (not possible if recording time is 5 seconds or higher and performing CAN recording or GPS recording)	Not possible	
CAN data recording	Possible (one CAN input unit for recording, If using synchronouse operation, sampling frequency: 5 kHz or less)		Not possible	
GPS data recording	Possible		Not possible	
Date and time file name specification	Not possible			
Maximum data file size	Recording is possible as long as there is hard disk space remaining.			
Pause-recording function	Possible* ²		Not possible	
Balance execution	Possible during monitoring or while recording is paused (not possible when stopped or recording)		Only during monitoring (not when stopped or recording)	
Offset zero	Only during monitoring (not when stopped or recording)		Only during monitoring (not when stopped or recording)	
DCS-101A Video recording (web camera)	Possible (sampling frequency: 10 kHz or less, number of repetitions: fixed to one)		Not possible	
DCS-101A Calculation processing (arithmetic operations)	Possible (sampling frequency: 10 kHz or less)			
DCS-101A FFT analysis	Possible (sampling frequency: 10 kHz or less)			

*1. In the channel condition settings, if the low-pass filter item is set to "Auto" (if the anti-aliasing filter is on), the sampling frequency is limited to 100 Hz or more.

*2. This can be used if the number of repetitions is 1. This cannot be used if performing DCS-101A video recording or arithmetic processing.
This cannot be used if performing CAN data recording or GPS data recording.

Measurement mode	Static measurement	
	Manual	Interval
Maximum number of units that can be connected	Four units	
Sampling frequency	Fixed to 1 kHz	
Number of measurement channels	No limits	
Number of repetitions	Fixed to one	Setting range: one to 9999, 65,535 times if zero is specified
Repeated recording	Not possible	
CAN data recording	Not possible	
GPS data recording	Not possible	
Date and time file name specification	Not possible	
Maximum data file size	Recording is possible as long as there is hard disk space remaining	
Pause-recording function	Not possible	
Balance execution	Only during monitoring (not when stopped or recording)	
Offset zero	Only during monitoring (not when stopped or recording)	
DCS-101A Video recording (web camera)	Not possible	
DCS-101A Calculation processing (arithmetic operations)	Possible	
DCS-101A FFT analysis	Not possible	

NOTE

- When connecting to a Wireless LAN, you cannot select "PC data file folder".
- If there is no analog channel to measure, "Manual (Set Recorded Data)", and "Analog Trigger" cannot be selected.

1 5-4 Limitations when Saving to Both the CTRS-100A SD Card and the PC Data

File Folder

Measurement mode	Manual	Manual (Set Record Data)
Maximum number of units that can be connected	Four units	
Sampling frequency	Limited depending on the number of measurement channels (See 1 3-1.) ^{*1}	
Number of measurement channels	Limited depending on the sampling frequency (See 1 3-1.)	
Number of repetitions	Fixed to one	
Repeated recording	Not possible	
CAN data recording	Not possible	
GPS data recording	Not possible	
Date and time file name specification	Not possible	
Maximum data file size	Up to 4 GB	
Pause-recording function	Not possible	
Balance execution	Only during monitoring (not when stopped or recording)	
Offset zero	Only during monitoring (not when stopped or recording)	
DCS-101A Video recording (web camera)	Not possible	
DCS-101A Calculation processing (arithmetic operations)	Not possible	
DCS-101A FFT analysis	Possible (sampling frequency: 10 kHz or less)	

*1. In the channel condition settings, if the low-pass filter item is set to "Auto" (if the anti-aliasing filter is on), the sampling frequency is limited to 100 Hz or more.

1 6 SPECIFICATIONS

This software is used to control the CTRS-100A with a PC, including measurement condition settings, data recording, numerical display, Y-Time graph display, file collection, and file conversion.

The PC and CTRS-100A communicate via a USB or LAN connection.

Number of units that can be connected	Up to four units (up to 128 analog channels)
Interfaces	LAN (100BAST-TX), USB
Recording	Measurement data is saved to the CTRS-100A SD card or a PC folder. If saving to the CTRS-100A SD card, the file will be saved as KS3. If saving to a folder on the PC, the file will be saved as KS3 or KS2 (01.06).
Channel conditions	Measurement ON/OFF, mode, range (any range can be entered), high-pass filter, low-pass filter, balance ON/OFF/NONE, input resistance check ON/OFF, burnout check ON/OFF, calibration constant, offset, cable correction value, offset zero value, unit, channel name, measuring range (any range can be entered), rated capacity, rated output, number of numerical digits to display, upper-limit check value, lower-limit check value, offset zero ON/OFF, TEDS user data, TEDS sensor serial number, TEDS sensor model, TEDS ROMID (any display items can be selected)
TEDS support	Reading TEDS information and automatically setting it to channel conditions
Input-over reset	Input-over judgments can be cleared.
Offset zero	The current measurement data can be substituted for the analog-channel offset zero value to set the apparent measurement data to zero.
Auto Range	Automatically setting the most appropriate measuring range.
Parameter setting and reading	The internal CTRS-100A parameters can be read and set.
Saving and reading measurement conditions files	Measurement conditions and numerical/graph display conditions can be saved to condition files (extension: C1H) and then read.
Saving and reading CTRS-100A condition files	Condition files (extension: SET) saved to the CTRS-100A SD card can be read or saved.
Collecting files	KS3 files and KC3 files on the CTRS-100A SD card are collected. (KS3 files can be converted to KS2 files and collected.)
Deleting files	KS3 files on the CTRS-100A SD card can be deleted.
Formatting the SD card	The CTRS-100A SD card can be formatted.
Environment settings	
Hardware configuration settings	Selecting the interface and setting the number of units that can be connected and equipment name
Communication checks	Confirming the CTRS-100A connection status and displaying the version
Equipment confirmation	The LED on the front of the CTRS-100A can be lit.
Other	Standard balance value, PAUSE ON/OF, and detailed hardware information display Remote control unit beep Wireless LAN unit frequency band, SSID, security key
For integrated CAN unit or GPS unit	
CAN data recording	CAN data for up to 1024 messages can be collected per unit. (CAN data is saved as a KC3 file.) * Up to one CAN input unit can be measured if saving to a folder on the PC.
CAN data output	Start output, stop output, interval output, manual output

For integrated GPS unit

Point ZERO (manual) measurement

Starts the manual measurement at 0 msec by using the time data, received from the GPS satellite.

Interval (GPS synchronization) measurement

Starts the interval measurement at 0 msec by using the time data, received from the GPS satellite.

GPS data recording

Monitors/records the GPS data (latitude, longitude, speed, azimuth, etc.).
The DCS-100A saves the GPS data in the NMEA format.

Time correction

It is possible to correct the time of TRS-100A.

*When using GPS, it is necessary to implement it in the master.

For Point Zero (manual) measurement and Interval (GPS synchronization) measurement, the data is saved to the CTRS-100A SD card.

Measurement conditions when saving measurement data to the CTRS-100A SD card

Sampling frequency	1 Hz to 100 kHz (1/2/5 series, 2n series, external clock) * Limited depending on the number of measurement channels.
Recordable file size	Up to 4 GB per file can be recorded.
Measurement mode	Manual, Manual (Set Record Data), Interval, Analog Trigger, Ext Trigger, Manual Trigger, Complex Trigger, CAN Trigger * A separate CAN input unit is required to use CAN triggers.
Manual measurement	Recording can be performed from when REC is clicked until STOP is clicked or from when REC is clicked until the specified number of data items are recorded. The recording start date and time can be set.
Interval measurement	Recording can automatically be performed based on the specified recording start time and recording interval.
Trigger measurement	Recording can be started and stopped based on the specified Trigger conditions.
Common trigger conditions	
End trigger	Can be set.
Delay amount	Maximum of 524,288 data items for both start and end * The delay amount differs depending on the number of measurement channels.
Analog trigger conditions	
Trigger channel	Any master channel
Trigger level	Set by using a physical quantity.
Trigger slope	Rising, falling
External trigger conditions	
Trigger slope	Rising, falling
Manual trigger	
Complex trigger conditions	
Trigger source	Selected from the following: analog channels (any four master channels), external trigger, or manual trigger. Trigger sources can be logically evaluated by using AND/OR.
Trigger level	Set by using a physical quantity.
Trigger slope	Rising, falling
CAN trigger conditions	
Common CAN trigger conditions	
End trigger	Can be set.
Delay amount	Can be set (end only). 174,762 sec. max. (with measurement channel), 65,535 sec. max. (without measurement channel) * The delay amount will vary depending on the sampling frequency and number of measurement channels.
Manual trigger	
Analog trigger conditions	
Trigger channel	Any single master signal
Trigger level	Set by using a physical quantity.
Trigger slope	Rising, falling
Digital trigger conditions	
Trigger channel	Any single master signal
Trigger bit	Any single trigger channel bit
Trigger slope	Rising, falling, level
Complex trigger conditions	
Trigger source	Trigger channel (any eight master signals) An analog trigger and digital trigger can be set for each trigger channel. Logical decisions can be made using AND/OR on all trigger sources.

Repeated recording	Recording for a long time and then saving a specific number of data items (or saving whenever a specific interval of time passes) to a KS3 file.
	* Possible if the measurement mode is manual (number of recorded data items specified).
Data file	File name, file title, and appending rule (file number, recording start time), file number (3 to 5 digits)

Measurement conditions when saving measurement data to a PC folder

Sampling frequency	1 Hz to 100 kHz (1/2/5 series, 2n series, external clock) * Limited depending on the number of measurement channels. CAN data recording in synchronous operation:5 kHz or less
Recordable file size	Recording is possible as long as there is disk space for saving remaining.
Measurement mode	Manual, manual (number of recorded data items specified), interval, analog trigger
Manual measurement	Recording can be performed from when REC is clicked until STOP is clicked or from when REC is clicked until the specified number of data items are recorded.
Interval measurement	Recording can automatically be performed based on the specified recording start time and recording interval.
Analog trigger measurement	Recording can be started and stopped based on the specified trigger conditions.
End trigger	Can be set.
Delay amount	Maximum of 524,288 data items for both start and end * The delay amount differs depending on the number of measurement channels.
Trigger channel	Any channel
Trigger level	Set by using a physical quantity.
Trigger slope	Rising, falling
Static measurement	Each time recording is started, measurement data on which moving average processing has been performed (average-value data) is additionally saved to one CSV data file. * Possible if the measurement mode is manual or interval.
Repeated recording	Recording for a long time and then saving a specific number of data items (or saving whenever a specific interval of time passes) to a KS2 file. * Possible if the measurement mode is manual (number of recorded data items specified).
Data file	File name, file title, appending rule (file number fixed), file number (fixed to 4 digits)