DST-i

PC Oscilloscope Software Instruction Manual

DENSO CORPORATION

Preface

Thank you for purchasing DST-i "set with an oscilloscope".
Before using this product, read these instructions carefully so that you can use it correctly and safely.

The PC oscilloscope software should be the software for DST-i (hereinafter referred to as DST-i) model with an oscilloscope.
DST-i model without an oscilloscope and hardware other than DST-i cannot be used.
An SD memory card (optional) is required to use the PC oscilloscope software.

Safety Instructions

- This product is intended for the use by a properly trained automotive technician. The following safety instructions should be adhered to prevent harm to the user and/or the vehicle.
- Since a variety of work procedures, technologies, tools, parts, etc. as well as technician's skill are used and involved in the diagnosis and maintenance/service of vehicle, various results are predicted and it is impossible to provide a comprehensive set of advice and safety messages that can cover all cases. Therefore, it is the responsibility for an automotive technician to have an adequate knowledge of the diagnosis system. It is also important to perform work appropriately and to ensure your safety and the safety of those around you, as well as to maintain the safety of the vehicle to be diagnosed and the relevant devices to perform appropriate diagnosis and maintenance.
- The precondition for use of the DST-i is that a user has sufficient knowledge of vehicle diagnostics and the operation of the DST-i to safely use this product.

This document uses symbols for warnings, cautions, and prohibitions. These symbols and their meanings are as follows. Please make sure you fully understand the meanings of these symbols before reading the rest of this document.

⚠ **WARNING**	Indicates an item for which incorrect handling can result in a major accident involving death or serious injury.
⚠ **CAUTION**	Indicates an item for which incorrect handling can lead to injury or damage to property. Under certain conditions, more serious consequences may result.
⊘ **PROHIBITED**	Indicates a prohibited method of handling.
❗ **MANDATORY**	Indicates a mandatory method of handling.

WARNING and CAUTION for handling this product

⚠ WARNING

- Perform diagnostics and repair work according to the precautions included in "For safe diagnostics".

  Reference: Page v For safe diagnostics (Safety Instructions)

- Refer to safety instructions and diagnosis procedures for the vehicle to be diagnosed and to those provided by the manufacturer of devices before using this product, and adhere to those instructions.

  Failure to obey the precautions could result in an accident.

- Do not perform any work while the vehicle is being driven.

  Doing so could result in an accident.

- Route the cable so it does not tangle with the technician or the operation control unit.

  Failure to do so could result in an accident.

- Always observe the following rules. Failure to do so can result in abnormal heat generation, fire, explosion, or electric shock.

  - Do not disassemble or alter this product.

  - Do not connect this product to anything with voltage exceeding the ratings of this product.

  - Do not connect the probe to any parts with voltage exceeding the ratings of this product.

⚠ CAUTION

- Use wheel chocks to block the wheels prior to working on the vehicle.
  Failure to do so could result in an accident.
- When working in low visibility areas, for example under the vehicle, always make the vehicle ignition switch OFF to ensure that the vehicle cannot be moved.
  Failure to do so could result in an accident.
- When you start the engine or move the vehicle, make sure everyone is clear of the vehicle.
- More than 100 V is generated in the ECU and injector. Be careful not to be shocked by this high voltage.
- Before removing any parts, disconnect the negative battery cable.
- Turn the vehicle ignition switch OFF before connecting or disconnecting the connector or the electric terminal of the vehicle unless otherwise specified.
  Failure to do so may cause damage on the vehicle side electric circuit.
- Wear safety glasses and protective clothing during work near any rotating parts.
  Parts can be thrown out by the rotating engine, resulting in an accident.
- Do not remove the radiator cap unless the engine is cool.
  Doing so will result in being splashed with high temperature and pressurized engine coolant.
- Do not touch high temperature areas such as exhaust system, manifold, engine, radiator, etc. with bare hands.
  Failure to do so may cause a burn injury.
- Wear gloves when touching and handling the high-temperature engine and parts.
- Do not route the cable of this product over the engine compartment, especially if the engine is running.
  Failure to follow this instruction could result in an accident where the cable and your clothes are caught in the belt and pulley.
- Do not work anywhere that water could come in contact with the equipment.
- Do not drop this tool or cause it to have a strong impact.
- Do not lift or drag the DST-i by holding the cable connected to the DST-i. Hold the body of the DST-i when moving or installing it.
- Do not apply any load causing stress to the connector connected to this product.
  Failure to do so could result in an accident.
- Before use, inspect for foreign material or pin breakage in each connector of this product.

For safe diagnostics

- Do not place any metal tools on the battery.
- Do not create any sparks near the battery.
  Failure to do so may cause ignition of battery gas.
- Keep a lit cigarettes, sparks, open flames and other ignition sources away from the vehicle and the battery.
- Be sure to turn the ignition switch OFF, turn the headlight and other accessories OFF before disconnecting the negative battery cable.
- Remove personal accessories such as rings, bracelets and watches prior to working near the battery.
  Failure to do so could result in an accident.
- Technicians handling the battery and technicians near the battery must wear safety glasses and protective gloves.
- If splashed with battery fluid, wash the effected area with soapy water for 10 minutes, then proceed to a medical facility for further treatment.
- Do not rub or touch your eye directly while work near the battery.
  Failure to do so may cause a burn injury on your eye and skin from the battery fluid.
- Do not allow connection between the "+" and "-" of the battery terminals with jumper cable/wire or a tool.
- Do not ground an electric terminal that is or may be a part of the electric system.
  Failure to do so may cause the damage of vehicle side electric circuit.
- Make sure the working area has exhaust gas ventilation or is well ventilated to prevent exhaust gas poisoning.
  The engine exhaust gas contains odorless lethal gas, which may cause death or severe illness due to breathing the exhaust.
- Do not use this product in an environment that accumulates explosive vapor, such as an underground location or a closed room.
- Do not smoke, strike a match or use a lighter during work.
  Failure to do so may cause ignition of battery gas or explosive gas.
- Do not use a flammable spray or a flushing spray during usage of the DST-i.
- Have a fire extinguisher capable of extinguishing a gasoline, chemical or electrical fir in case of an accidental fire.
- All technicians must wear safety glasses and protective clothing.
  Fuel, oil vapor, high temperature vapor, poisonous emission gas, acid, refrigerant and other foreign substances may be emitted due to failure and malfunction of the vehicle system.
- When connecting or disconnecting the oscilloscope probe or ground cable to this product, ensure correct orientation of the connector and gently insert it.
  If the connector is connected in the wrong orientation, inserted or pulled out at the wrong angle, there is a risk of damaging the connector terminal and this may cause the DST-i to malfunction.
- Do not pull on the cable, hold on the connector section to disconnect the cable.
  Pulling on the cord section can break the wires in the cable.

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1 Before Use

1-1 PC requirements

In order to use this product, a PC with following operating environments is required.

- OS: Microsoft Windows XP(SP2), Vista(32 bit), 7(32 bit, 64 bit)
- CPU: Intel Pentium M at least 1.2 GHz
- RAM: at least 1 GB (Windows XP: at least 512 MB)
- Hard disc: at least 200 MB space.
  * Separate space in the hard disc is required to store data.

  Reference: Page 3 Approximate size of free space required (Reference) (Chapter 1 Before Use/Checking the PC before use)
- Display resolution: Min. 1024 x 768 dots
- With USB 2.0 interface as standard
- Internet Explorer 5.5 or later version should be installed.
- Internet access (Broadband internet connection is recommended)

1-2 Preparing an SD memory card

For using this product, an SD memory card installed with DST-i oscilloscope software is required.

1. Prepare an SD memory card installed with DST-i oscilloscope software.

NOTE

- Refer to the following download site for how to install DST-i oscilloscope software.
  http://www.ds3.denso.co.jp/dst-i/setup/
- The SD memory card after installation of DST-i oscilloscope software can only be used to the DST-i that was used for installation.
  If you use more than one DST-i, it is necessary to record the combination of correct DST-i and SD memory card.

1-3 Installing the software on the PC

Before using this product, it is necessary to install the DST-i setup software and PC oscilloscope software on the PC. The PC oscilloscope software requires the DST-i setup software of at least Ver.1.3.0.

1. Install the DST-i setup software on the PC.

NOTE

- Refer to the following download site for how to confirm the version of the DST-i setup software and how to install it.
  http://www.ds3.denso.co.jp/dst-i/setup/

2. Install the PC oscilloscope software on the PC.

NOTE

- Refer to the following download site for how to install the PC oscilloscope software.
  http://www.ds3.denso.co.jp/dst-i/setup/

1-4 Checking the PC before use

It is recommended to check the free space in the hard disc, power saving settings and security software on the PC before using.

■ Hard disc free space

Check the free space available in the hard disc for storing waveform data observed and measurement data recorded for long durations.

NOTE

- The minimum free space required depends on the size of the files to be stored on the hard disc.
- Check if the free space is sufficient or not by referring to the table shown below.

  If the free space in the hard disk is limited, only part of the data will be stored.

  Also, it can cause reduction in performance of the PC.

Approximate size of free space required (Reference)

	Maximum file size (Per saving occasion)	Free space required
Measurement data	Approx. 1.1 GB	At least approx. 4 GB

■ Power saving setting

Disable all power saving settings (including stand-by mode, quiescent mode and sleep mode).

NOTE

- Check the power supply setting of the PC, and if enabled for power saving settings, disable stand-by mode, hibernate mode, sleep mode and other power saving modes.
- How settings are confirmed and the names of the settings may vary depending on the PC or OS.
- Use of the PC oscilloscope software while the PC enabled for power saving setting can cause disconnection of USB communication.

  Prolonged non-usage of the PC during measurement may cause unsuccessful data recording.

■ Security software

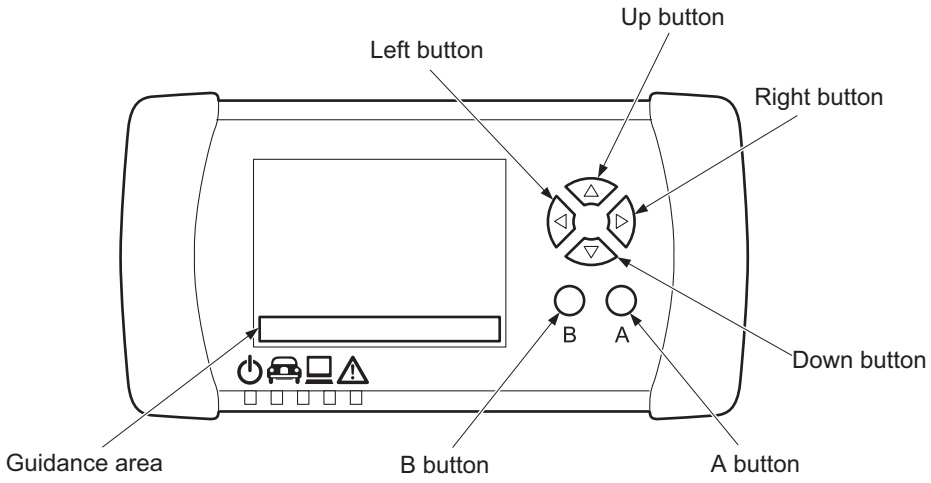
Make sure that the PC has security software that prevents unauthorized data access.

NOTE

- If the PC has security software, it may not be possible to save data to an SD memory card or external hard disc.

1-5 Basic operation

The DST-i has six operation buttons.



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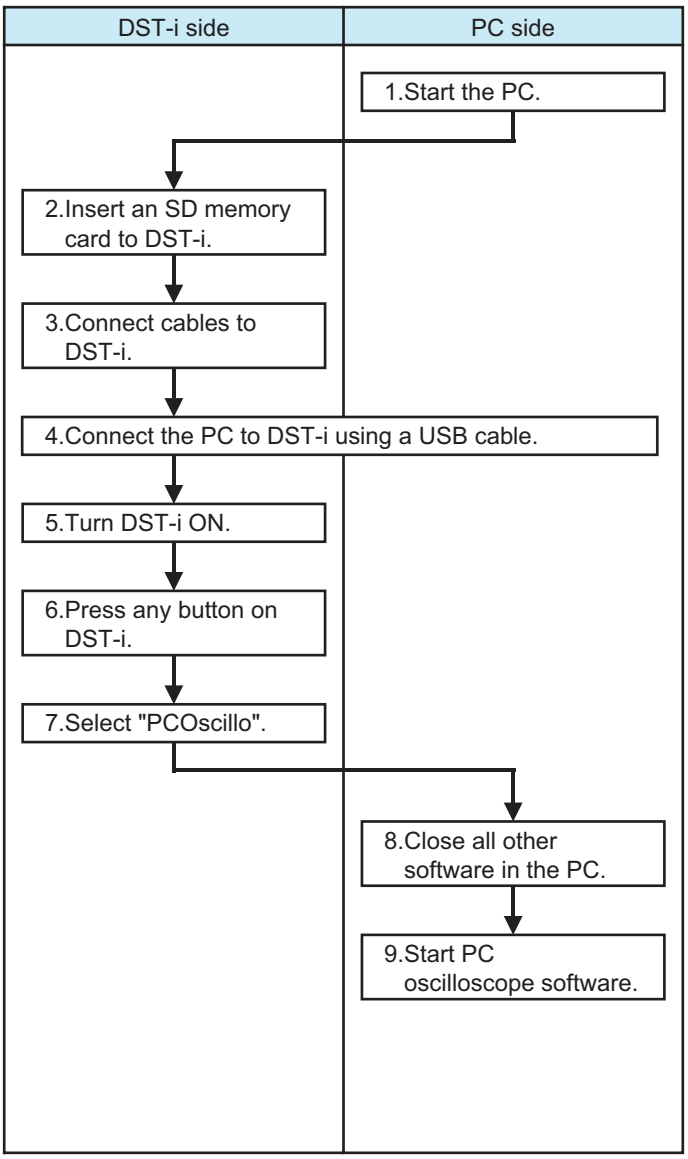
The function of each button varies depending on the screen.
In the lower portion of the screen is a guidance area explaining how to operate the system.
Operate using the information displayed in the guidance area.

1-6 Starting

Starting flow

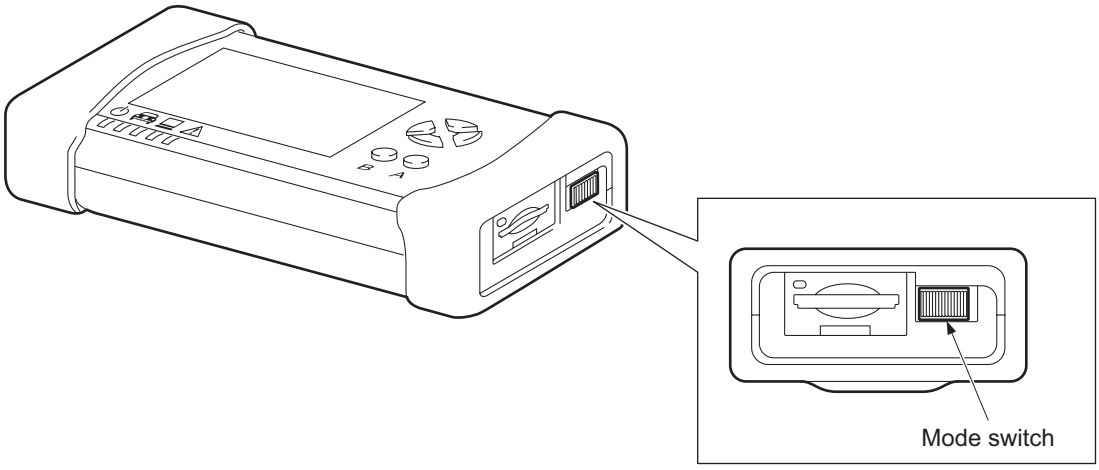
Use of the PC oscilloscope software requires setting up of DST-i.



Preparing DST-i

NOTE

- If an oscilloscope function has been used for a single DST-i, turn the DST-i mode switch OFF once.



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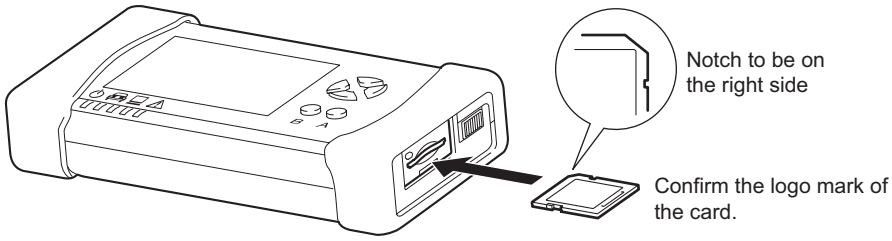
1. Insert an SD memory card installed with DST-i oscilloscope software to the DST-i unit.

NOTE

- Refer to the "Instruction manual for DST-i hardware with oscilloscope" for the details of the SD memory card.
- Refer to the following download site for how to install DST-i oscilloscope software.
  http://www.ds3.denso.co.jp/dst-i/setup/



Compatible cards	
SD	SDHC

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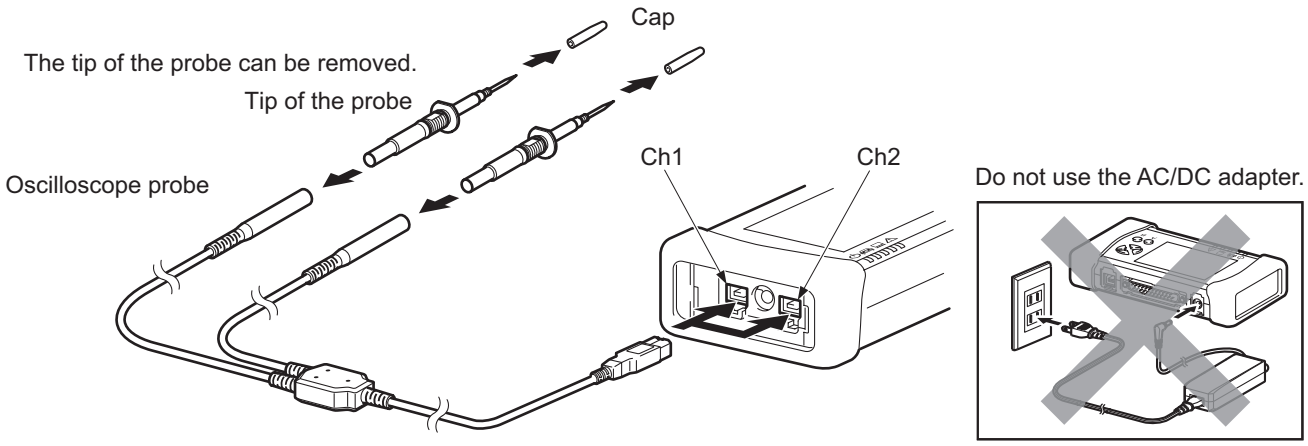
2. Connect cables used for oscilloscope functions to DST-i.

NOTE

- Refer to the "Instruction manual for DST-i hardware with oscilloscope" for how to connect cables.
- When using the DST-i oscilloscope software, do not use the AC/DC adapter.
  Otherwise, the correct value is not measured.



Connect the oscilloscope probe to Ch1 or Ch2.
The probe can be connected to both Ch1 and Ch2.

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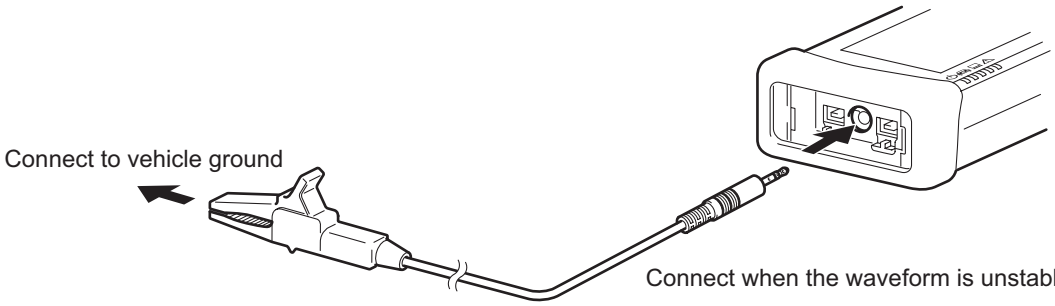

Connect when the waveform is unstable due to electronic noise.

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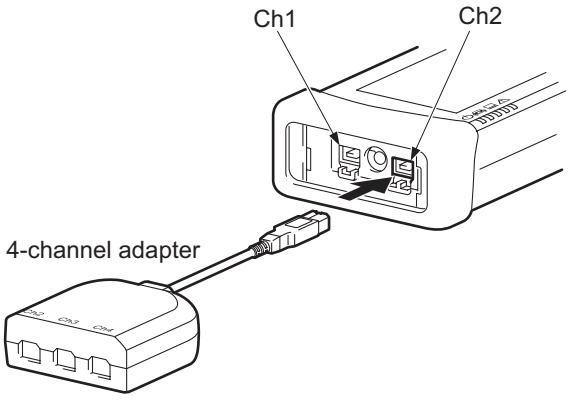
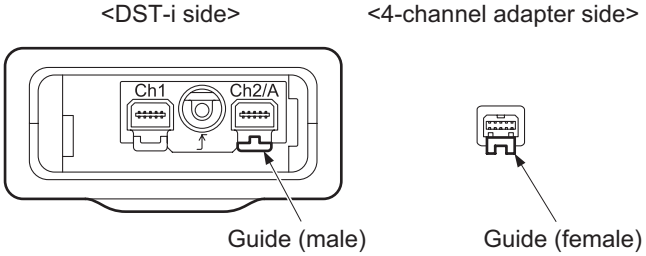
<Optional products>



Connect the 4-channel adapter to Ch2.
The connector may only be connected to Ch2.

About the guides



Line up the male and female portions of the guide when connecting the connector.
*It cannot be connected to Ch1.

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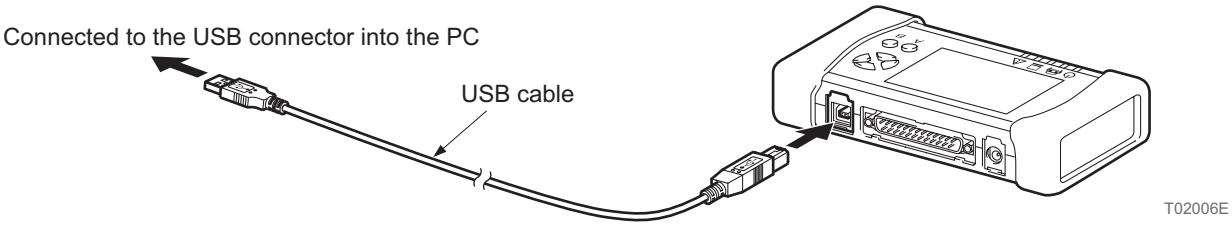
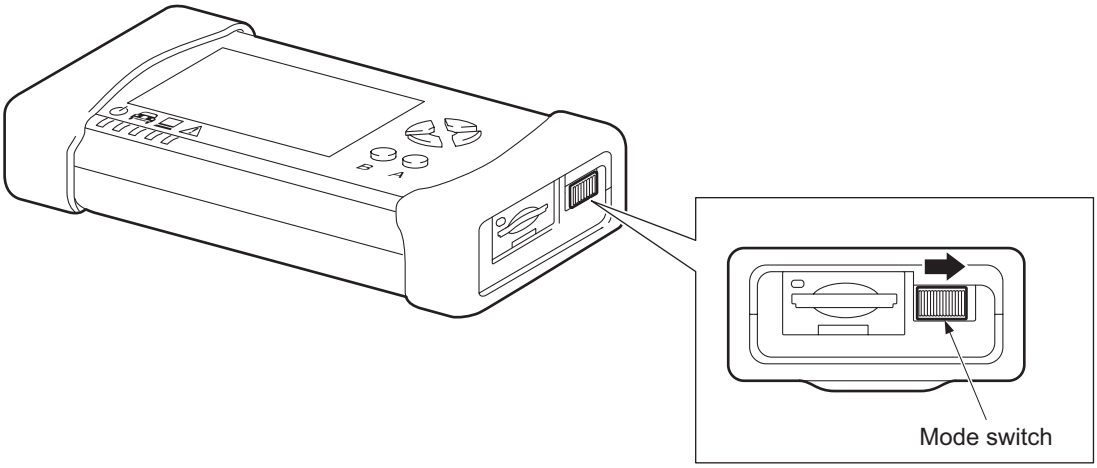
3. Connect DST-i and the PC using a USB cable.

NOTE

- Bluetooth connection the PC oscilloscope software cannot be operated in Bluetooth connection.
- Refer to the "Instruction manual for DST-i hardware with oscilloscope" for how to connect a USB cable.



4. Turn the DST-i mode switch ON.
The opening screen is displayed.

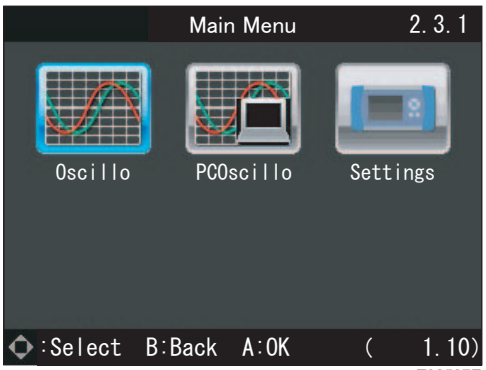


Opening screen

NOTE

- Turning the mode switch ON makes the power indicator of DST-i turned to green.

5. Press any button while the opening screen ON.
The main menu screen is displayed.



Main menu screen

NOTE

- When pressing any button shows the error screen, refer to the following page.
Reference: Page 11 When the error screen is shown (Chapter 1 Before Use/Starting/Preparing DST-i)

The following table shows the functions that can be selected in the main menu screen.

Function	Description
Oscillo	Observes waveform of signals inputted to each channel on the DST-i screen, when an oscilloscope probe is connected to DST-i.
PCOscillo	Observes waveform of signals inputted to each channel on the PC screen, when an oscilloscope probe is connected to DST-i.
Settings	Changes and customizes DST-i settings.

6. Select "PCOscillo" in the main menu screen and press the "A" button.
The PC oscilloscope mode screen is shown and the system is now in stand-by mode for using the PC oscilloscope software.

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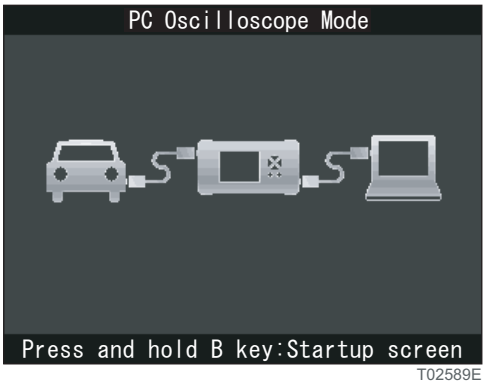
PC oscilloscope mode screen

The screen turns into a communication screen when communication has been established between the PC and DST-i.

NOTE

- Leave the DST-i screen as it is during PC oscilloscope software in use.



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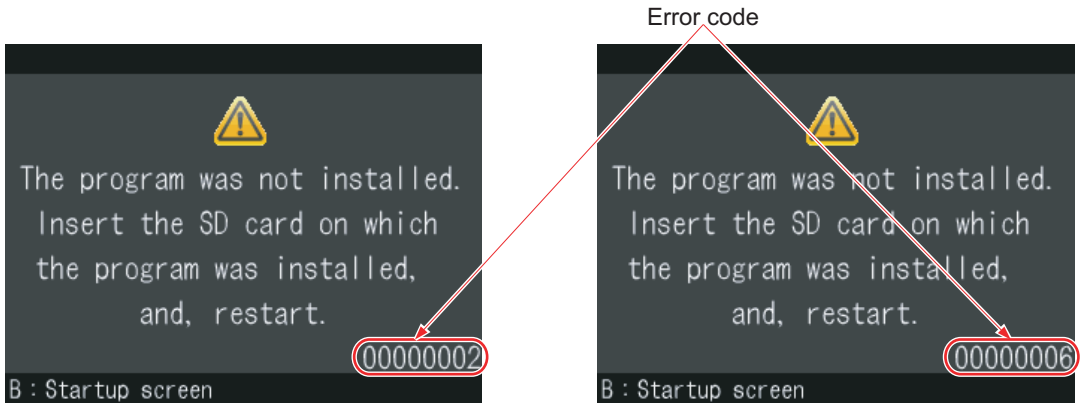
Communication screen

NOTE

- If an error screen is shown after selecting "PCOscillo" and pressing the "A" button, refer the following page.
  Reference: Page 11 When the error screen is shown (Chapter 1 Before Use/Starting/Preparing DST-i)
- Press and hold the "B" button to return to the opening screen.

■ When the error screen is shown

If the error screen is displayed when one of the buttons is pressed in the opening screen, or when "PCOscillo" is selected and the "A" button is pressed in the main menu screen, these are the possible causes for this.



Error screen (In opening screen)

Error screen (In main menu screen)

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NOTE

- Each error code in the lower right of the screen is assigned to the following causes.

◆ Error code: 00000002

Possible cause	Check Item
The SD memory card does not have DST-i oscilloscope software installed.	Install DST-i oscilloscope software to the SD memory card.
The SD memory card is defective.	Format the SD memory card and re-install DST-i oscilloscope software. If the error screen is still shown, use another SD memory card.

◆ Error code: 00000006

Possible cause	Check Item
The combination of DST-i and SD memory card is incorrect.	Use the DST-i that was used for installing DST-i oscilloscope software. Or re-install DST-i oscilloscope software to the SD memory card.

NOTE

- If any other error codes are displayed, please contact your distributor.

Starting the PC oscilloscope software

1. Start the PC.

2. Prepare DST-i.

> **NOTE**
> - To prepare the DST-i, refer to the following page.
> *Reference: Page 6 Preparing DST-i (Chapter 1 Before Use/Starting)*

3. Close all application software other than the PC oscilloscope software.

> **NOTE**
> - Use of the PC oscilloscope software simultaneously with other application software can affect the performance of the PC.

4. Double click the "DST-i Oscilloscope" icon on the desktop screen to start the PC oscilloscope software.
The message screen is displayed.

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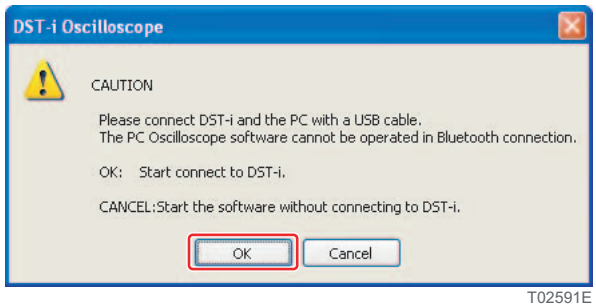
DST-i Oscilloscope icon



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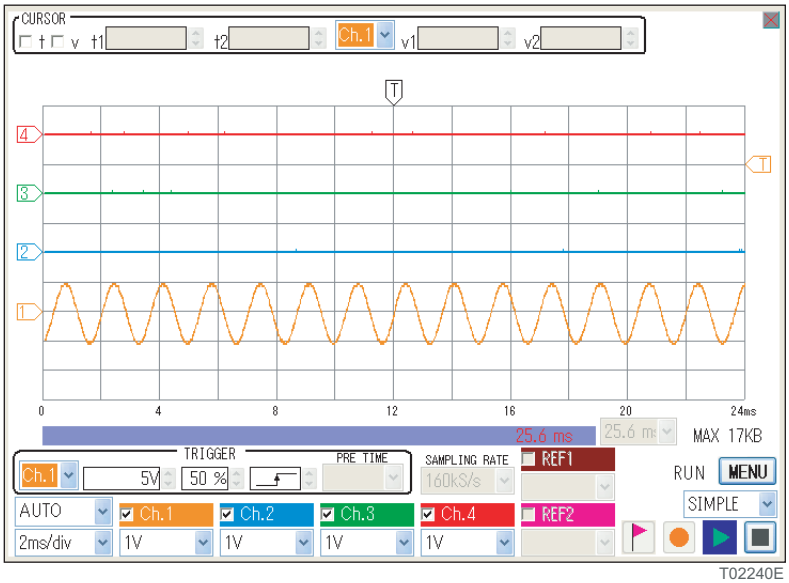
Message screen

5. Click the "OK" button on the message screen.
The waveform observation screen is displayed.



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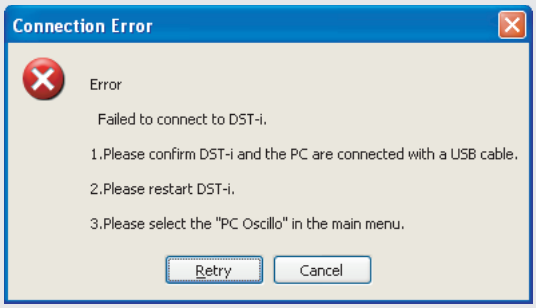
Waveform observation screen

NOTE

- If the DST-i and the PC are not connected with a USB cable, or when DST-i is not in PC oscilloscope mode, the following message is displayed.

  Please confirm that DST-i and the PC are connected.

  If the DST-i setup software is not installed, pleased install it on the PC.

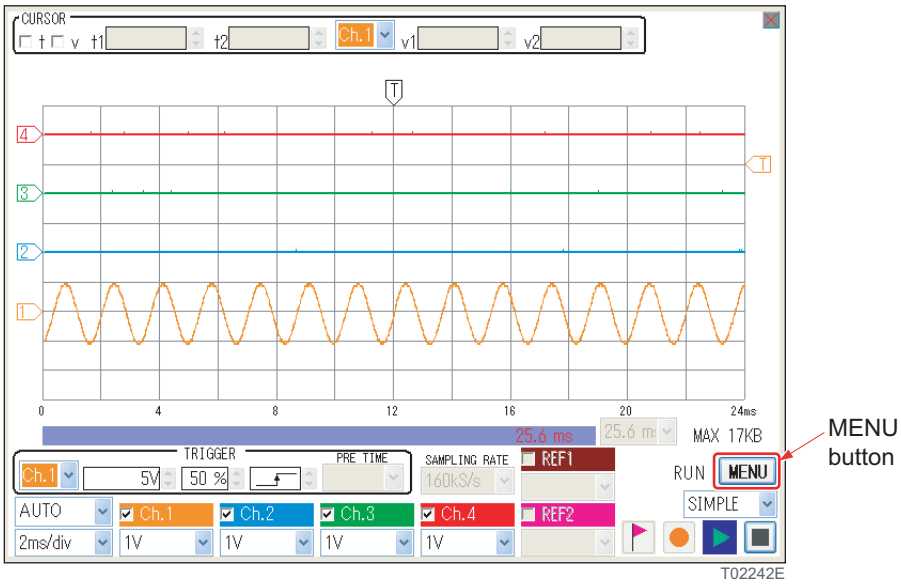


Connection error screen T02592E

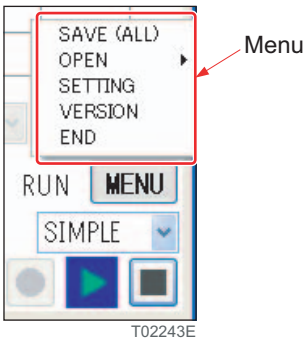
1-7 Ending

Ending the PC oscilloscope software

1. Click the "MENU" button in the lower right of the waveform observation screen.
A menu is displayed.



Waveform observation screen

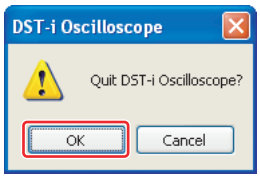


Menu

2. Click "END" in the menu.
The ending confirmation screen is displayed.

NOTE

- The oscilloscope software can also be closed by clicking or in the upper right of the screen.



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Ending confirmation screen

3. Click "OK" on the ending confirmation screen.
The oscilloscope software screen closes.

Ending DST-i

1. Turn the DST-i mode switch OFF.

2. Disconnect the USB cable from DST-i.

3. Disconnect cables used for oscilloscope functions from DST-i.

NOTE

- Refer to the "Instruction manual for DST-i hardware with oscilloscope" for how to disconnect the cables.

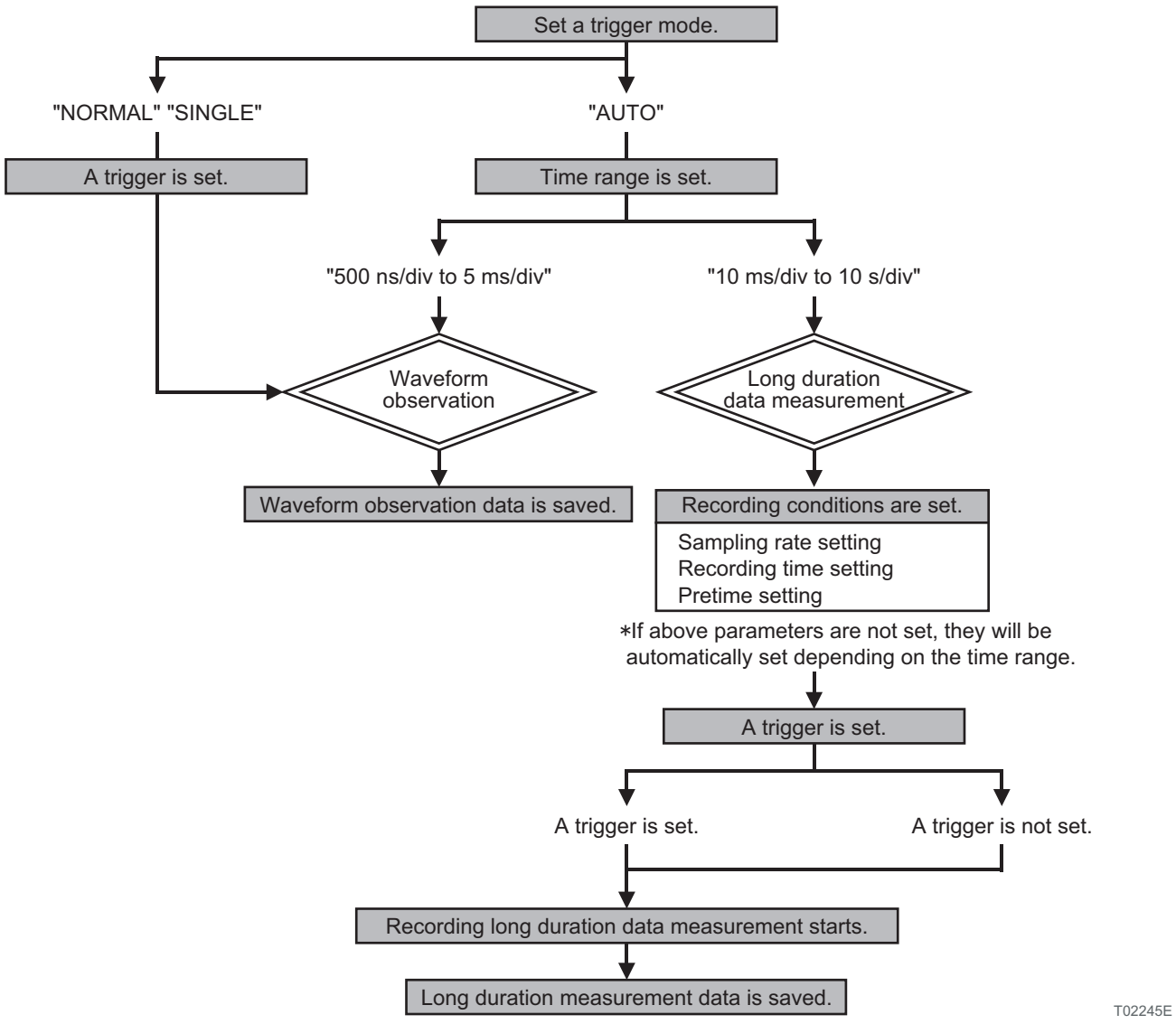
2 Functions of the PC Oscilloscope Software

2-1 Functions

The PC oscilloscope software has two functions : "Waveform observation" and "Long duration data measurement".

Function	Waveform observation	Long duration data measurement
Details of function	Allows observation of signal waveform as an oscilloscope and saving the observation data to the PC.	Long duration waveform measurement data can be saved in the PC. Sampling rate can be set and waveform taken can be zoomed up for analysis.
Setting conditions	Trigger mode (Time range): • AUTO(500 ns/div to 5 ms/div) • NORMAL • SINGLE	Trigger mode (Time range): • AUTO(10 ms/div to 10 s/div)
Screen	1-screen display (real time displaying)	Long duration displaying (as per recording time setting) Recording time: 3.2 sec to 40 hrs.

■ Operation Flow



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Waveform observation functions

The following table shows operation and setting of waveform observation functions.

Function	Operation and setting	Refer to:
Waveform observation	Stop/Start	Page 20
	Waveform display/non-display switching	Page 23
	Voltage range setting	Page 24
	Ground position setting	Page 25
	Time range setting	Page 26
	Trigger setting	Page 27
	Saving data	Page 56

Long duration data measurement functions

The following table shows operation and setting of long duration data measurement functions.

Function	Operation and setting	Refer to:
Long duration data measurement	Sampling rate setting	Page 40
	Recording time setting	Page 42
	Pretime setting	Page 43
	Trigger setting	Page 45
	Saving data	Page 56

3 Operation of the PC Oscilloscope Software

NOTE

- The following explanation uses a screen that observes 4 channel waveforms using a 4-channel adapter set.
  The default condition of this product allows waveforms for 2 channels only.

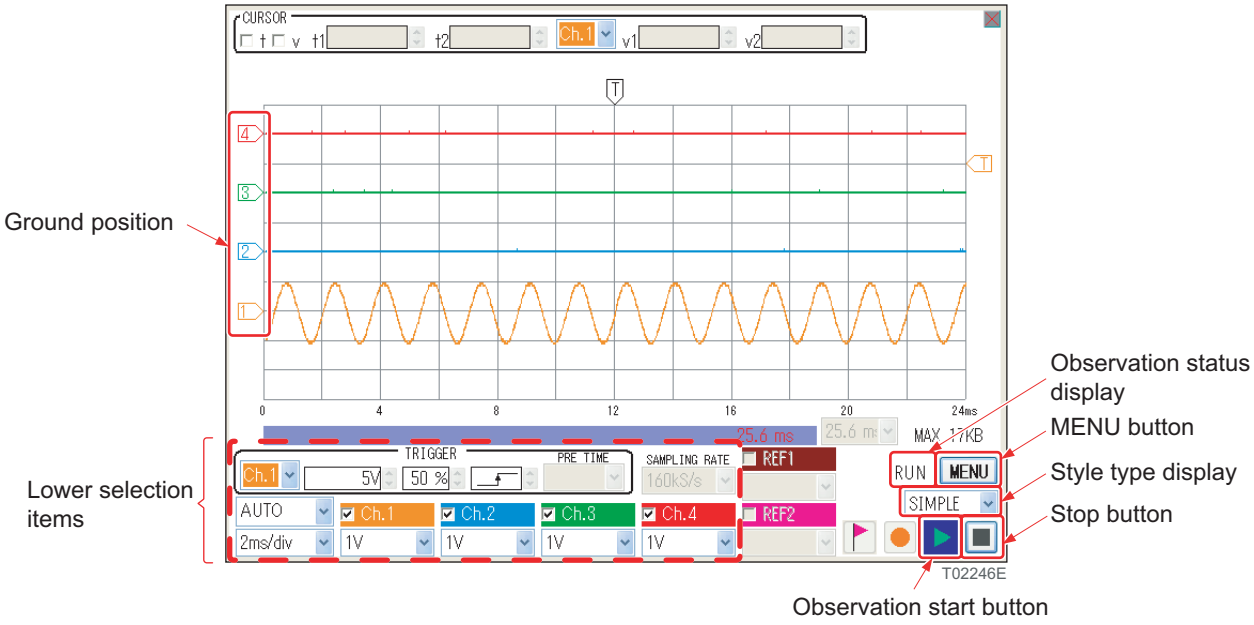
3-1 Waveform observation

This screen is used to observe the inputted waveforms.

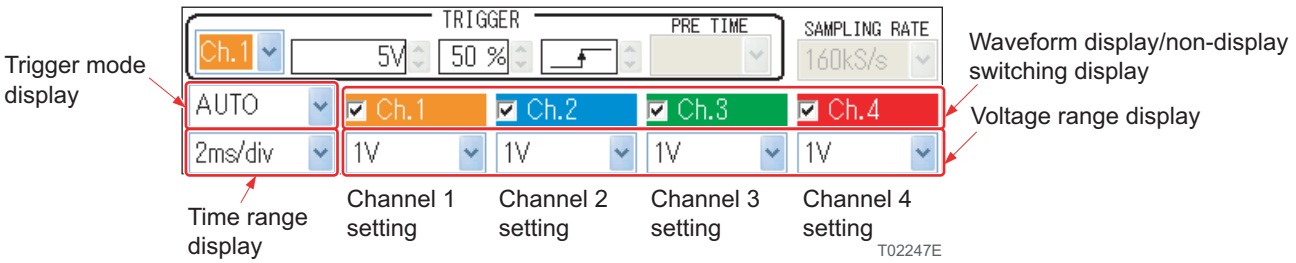
Screen configuration

The following figures show screen examples and the parts of the screen.

■ Waveform observation screen



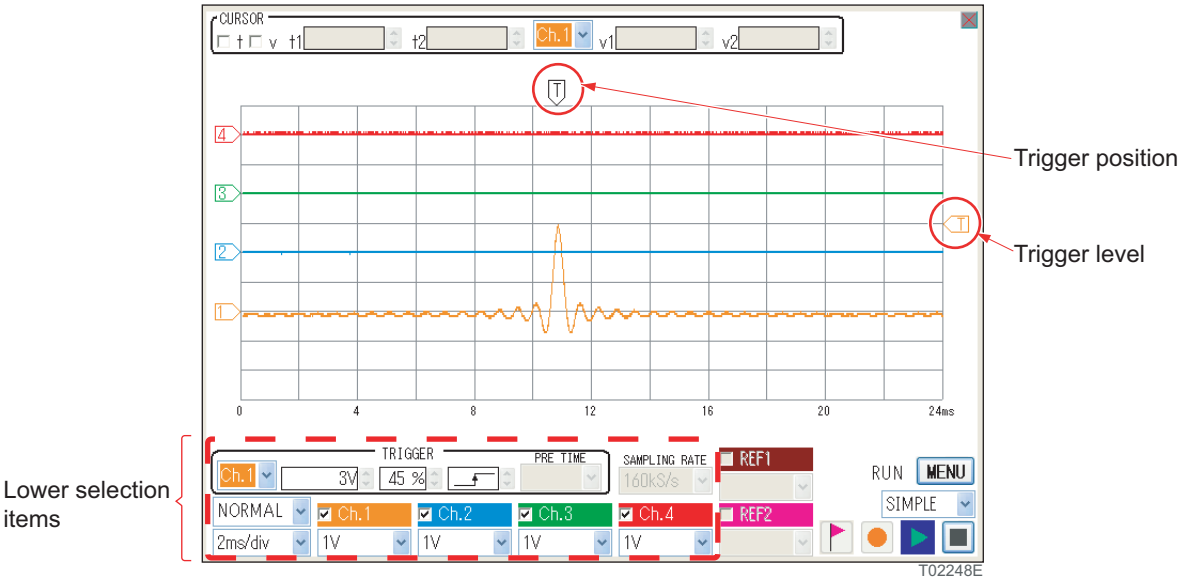
<Lower selection items>



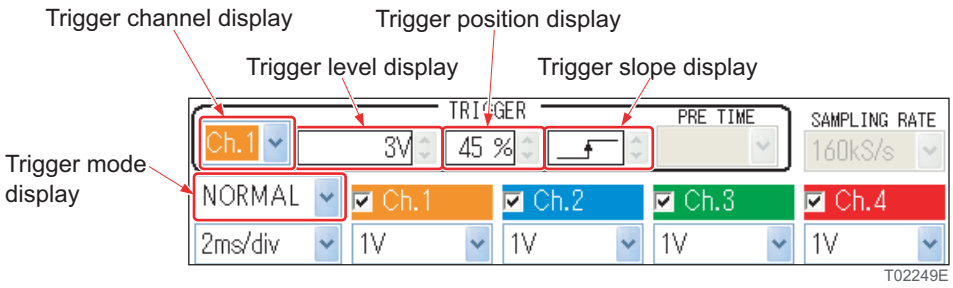
NOTE

- Refer to the following for "Style type display".
  Reference: Page 86 Waveform style setting (Chapter 3 Operation of the PC Oscilloscope Software/System setting)

■ Trigger setting screen

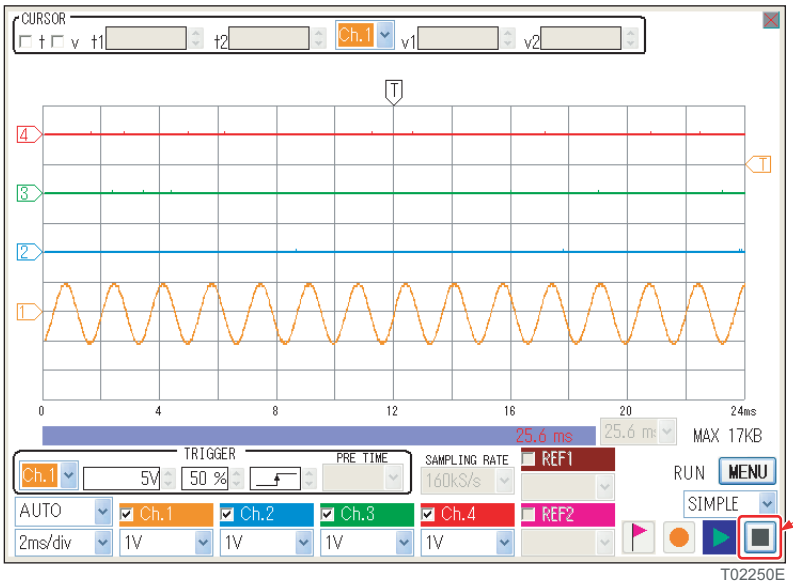


<Lower selection items>

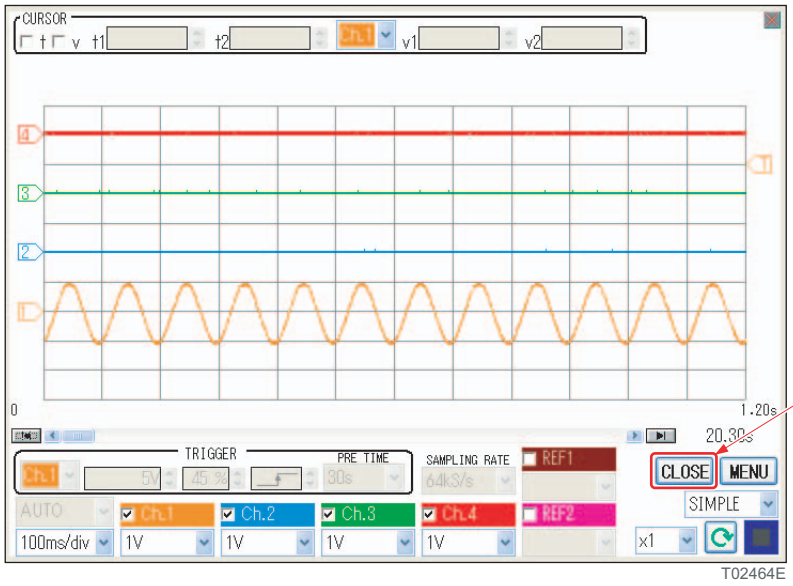


Stopping/Starting

1. Click the "Stop" button in the lower right of the waveform observation screen.
The waveform observation stops and the data replay screen is displayed.

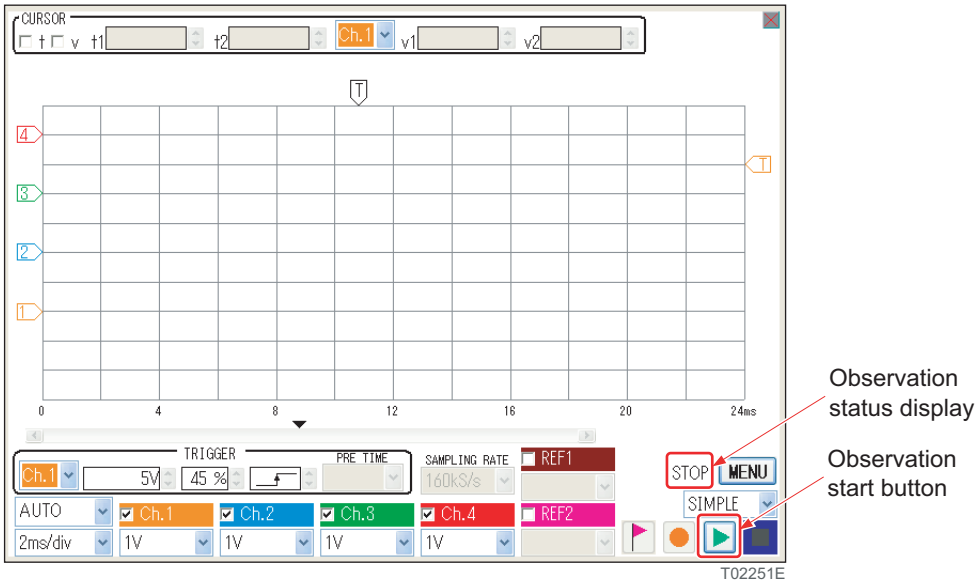


Waveform observation screen



Data replay screen

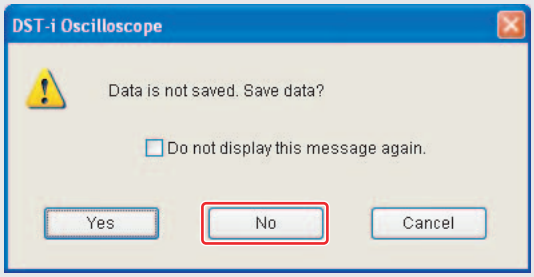
2. Click the "CLOSE" button in the lower right of the data replay screen.
The waveform observation screen that is stopped is displayed.



Waveform observation screen (Observation in suspend)

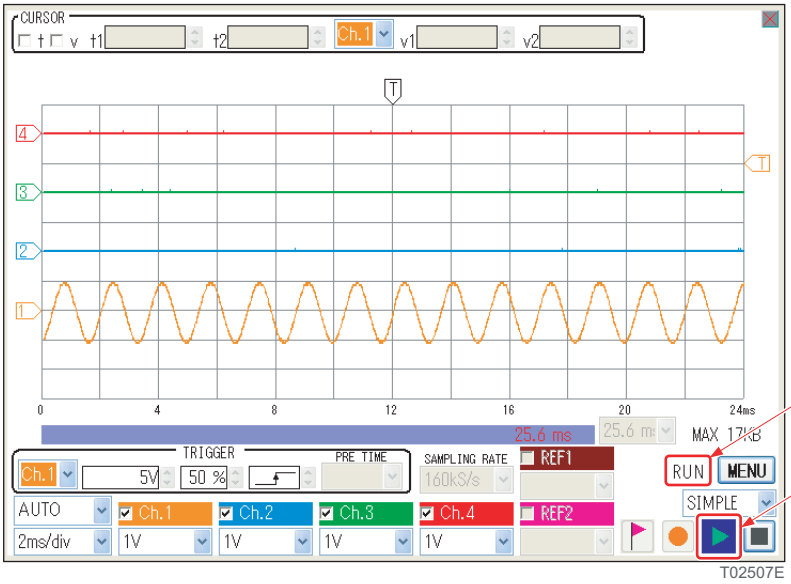
NOTE

- Waveform displayed in the data replay screen can be saved.
  Refer to the following for the data saving.
  Reference: Page 56 Saving data (Chapter 3 Operation of the PC Oscilloscope Software)
- If you do not save the data, click the "CLOSE" button in the lower right of the data replay screen and click "No" in the save confirmation message screen.
  The screen returns to the waveform observation screen.
  If the save confirmation message screen is not set to be displayed, it will not be displayed.



Save confirmation message

3. Click the "Observation start" button in the lower right of the waveform observation screen, while observation is stopped.
Waveform observation resumes and the observation status display turns to "RUN".



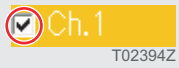
Waveform observation screen (Resume observation)

Waveform display/non-display switching

1. Click the check box at the left of waveform display/non-display switching display in the lower selection items of the waveform observation screen.
If it is not checked, the voltage range display is grayed out.

NOTE

- To show the waveform, check the box.



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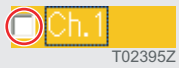
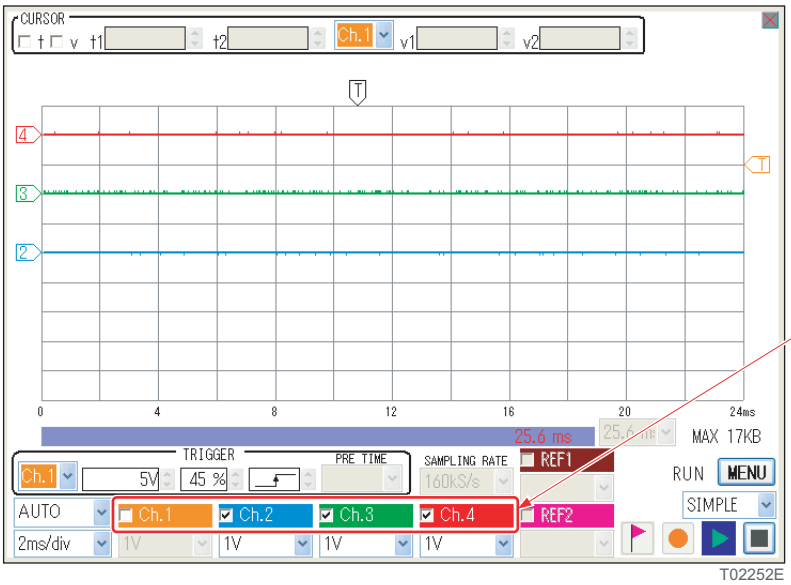
- To hide the waveform, uncheck the box.



T02395Z



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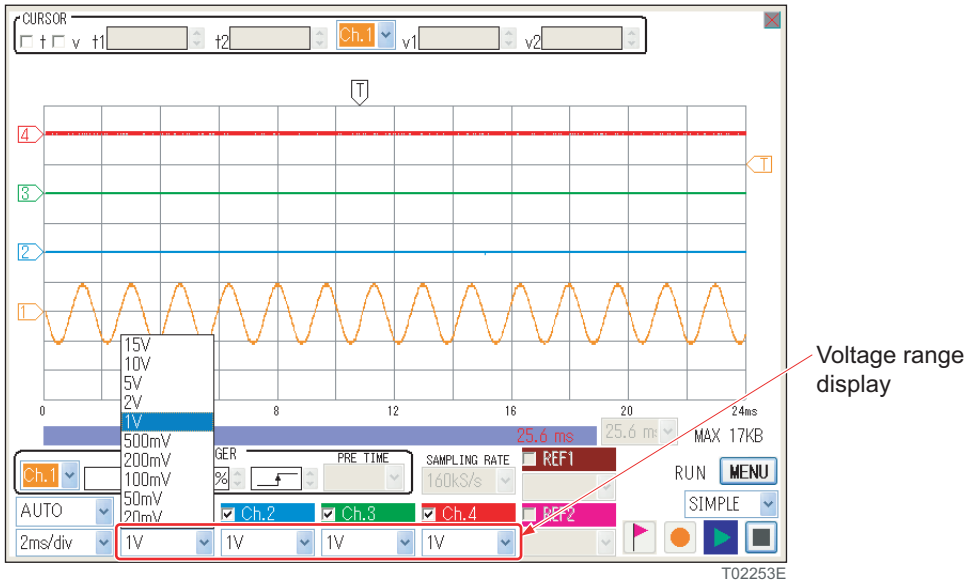
Waveform observation screen

Voltage range setting

1. Click the ▼ button on the right side of the voltage range display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

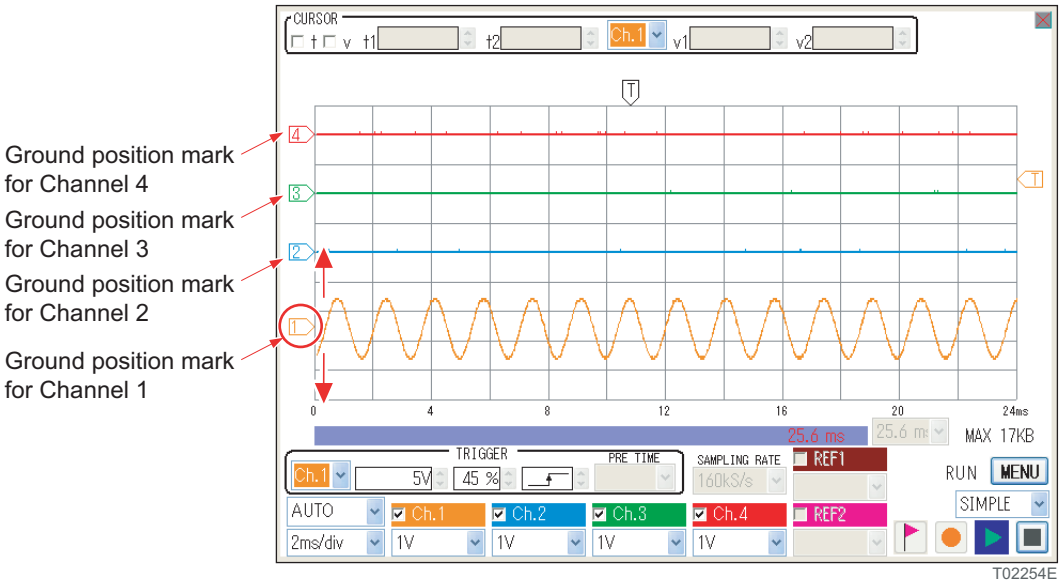
2. Select the value of the voltage range in the pull down menu.
The voltage range display in the waveform observation screen turns to the set voltage range.

Ground position setting

1. Set the ground position by dragging and moving the ground position mark up and down in the waveform observation screen.
The ground position mark moves in the waveform observation screen in real time.

NOTE

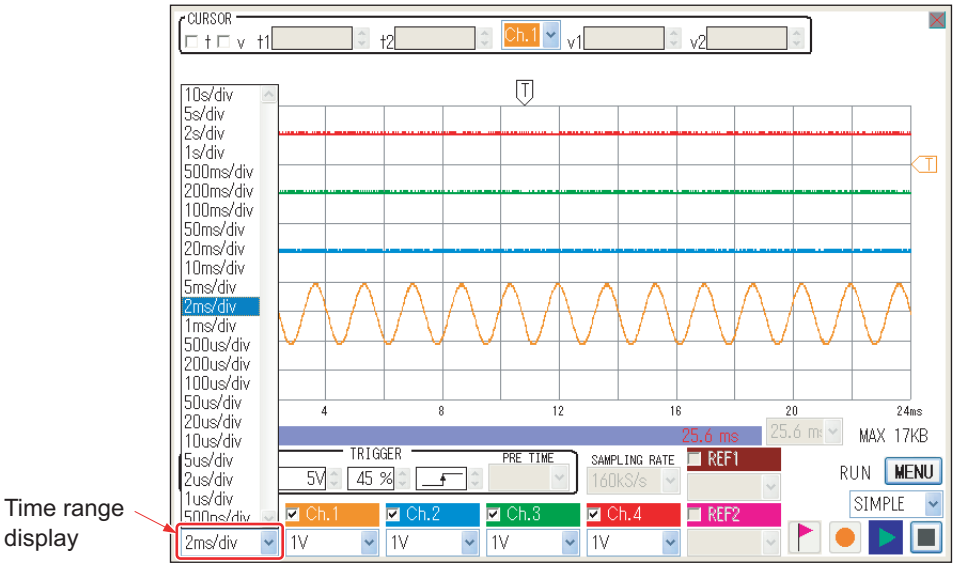
- Move the ground position mark for Channel 1 to change the ground position of Channel 1.



Waveform observation screen

Time range setting

1. Click the ▼ button on the right side of the time range display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

2. Select the value of the time range in the pull down menu.
The time range display in the waveform observation screen turns to the set time range.

Trigger setting

Various settings related to trigger can be made.

- Trigger mode setting
- Trigger channel setting
- Trigger level setting
- Trigger position setting
- Trigger slope setting

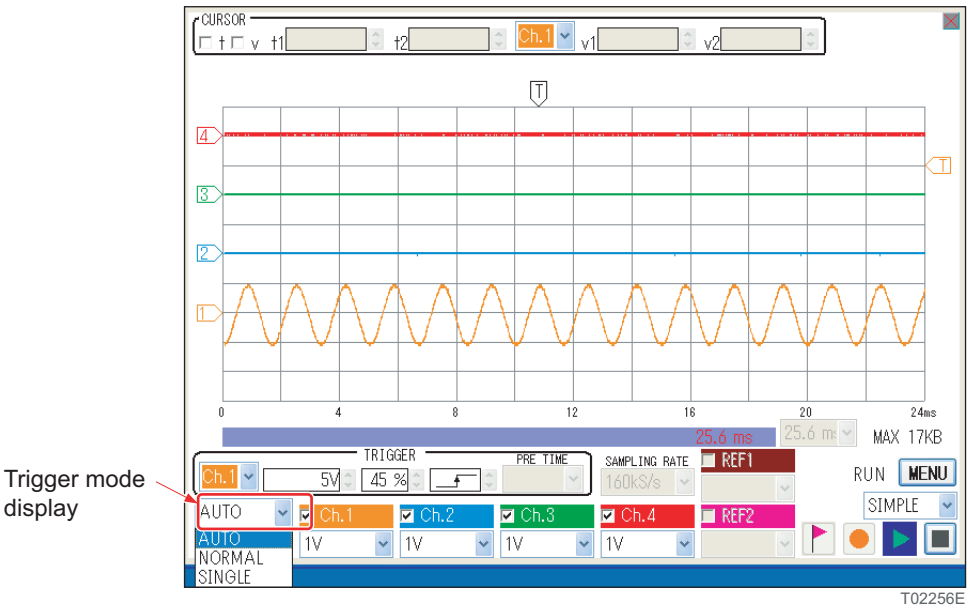
■ Trigger mode setting

Trigger mode can be set.

◆ Setting items

Item	Description
AUTO	Renews the waveform after the designated trigger conditions are detected or after a certain time elapses. Setting the time range from 10 ms/div to 10 s/div allows long duration data measurement.
NORMAL	A waveform is displayed every time the designated trigger conditions are met. Under the conditions that no triggers can be set, no waveform will be shown. In the upper right of the screen, "Waiting Trigger" is displayed.
SINGLE	Stops the trigger after displaying a waveform when designated trigger conditions are first met. Under the conditions that no triggers can be set, no waveform will be shown. In the upper right of the screen, "Waiting Trigger" is displayed.

1. Click the ▼ button on the right side of the trigger mode display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



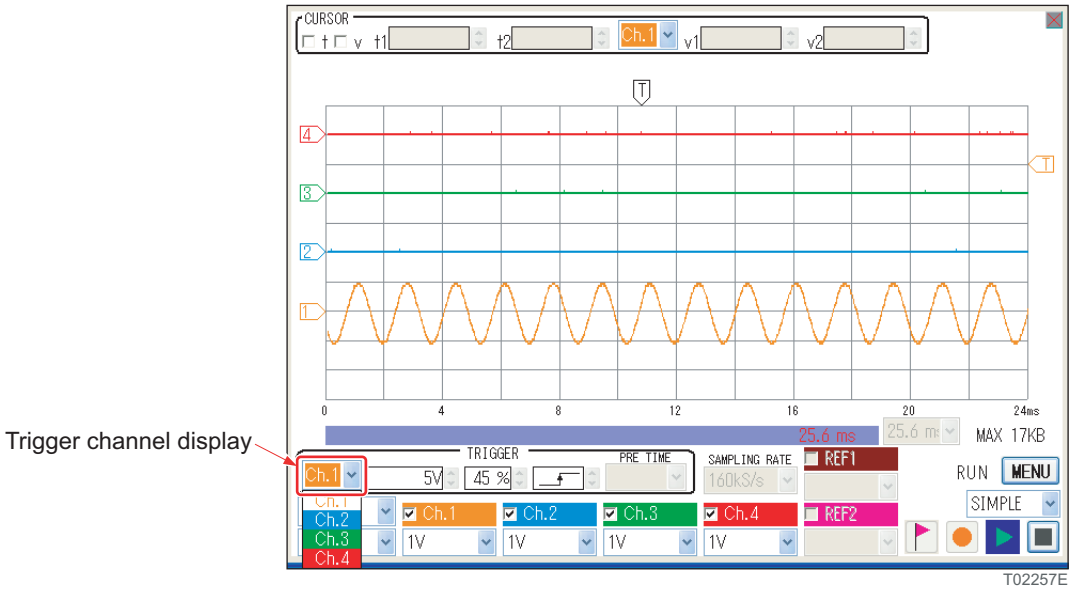
Waveform observation screen

2. Select a trigger mode in the pull down menu.
The trigger mode display in the waveform observation screen turns into the mode selected.

■ Trigger channel setting

Trigger channels are switched over.

1. Click the ▼ button on the right side of the trigger channel display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

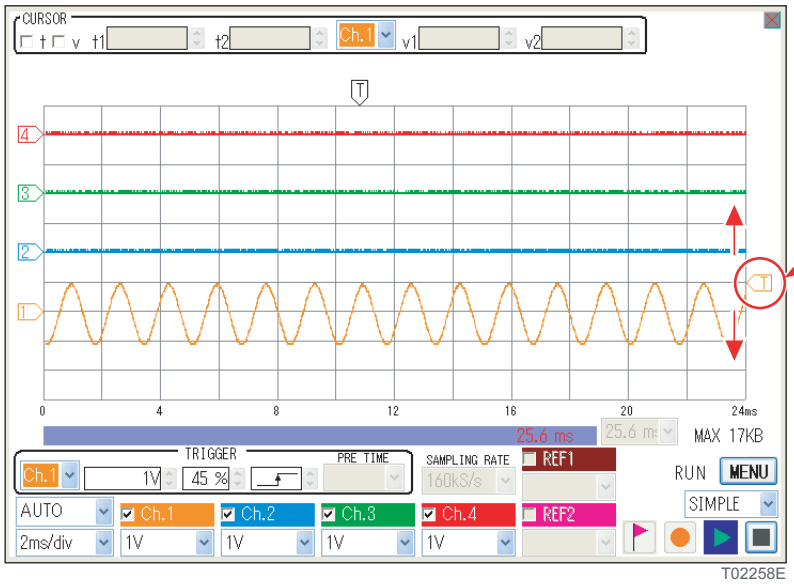
2. Select a trigger channel in the pull down menu.
The trigger channel display in the waveform observation screen turns into the channel selected.

■ Trigger level setting

A trigger level for a selected trigger channel is set.

1. Set the trigger level by dragging and moving the trigger level mark up and down in the waveform observation screen.

The trigger level mark moves in the waveform observation screen in real time.
The trigger level display in the waveform observation screen turns into the value as set.

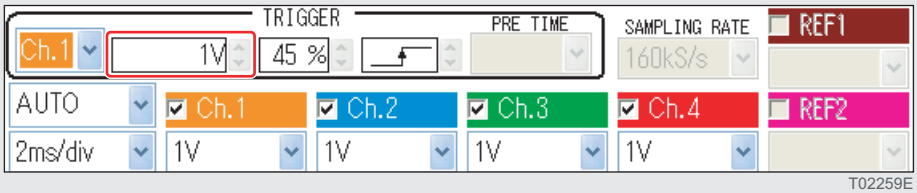


Waveform observation screen

NOTE

- Trigger levels can be changed by pressing the ▲ and ▼ buttons on the right side of the trigger level display in the lower selection items of the waveform observation screen.

  Pressing ▲ button makes the value larger, while ▼ button makes it smaller.



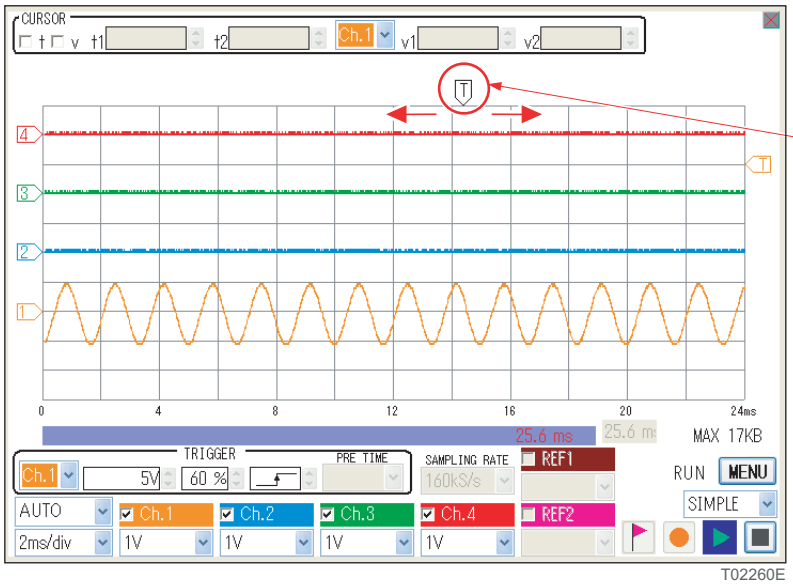
Waveform observation screen (Lower selection items)

■ Trigger position setting

Trigger position for selected trigger channels is set.

1. Set the trigger position by dragging and moving the trigger position mark right and left in the waveform observation screen.

The trigger position mark moves in the waveform observation screen in real time.
The trigger position display in the waveform observation screen turns into the value as set.

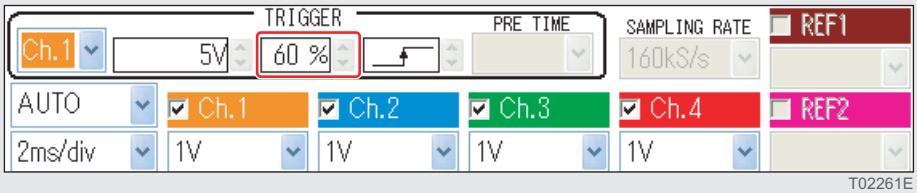


Waveform observation screen

NOTE

- Trigger positions can be changed by pressing the ▲ and ▼ buttons on the right side of the trigger position display in the lower selection items of the waveform observation screen.

  Pressing ▲ button makes the value larger, while ▼ button makes it smaller.

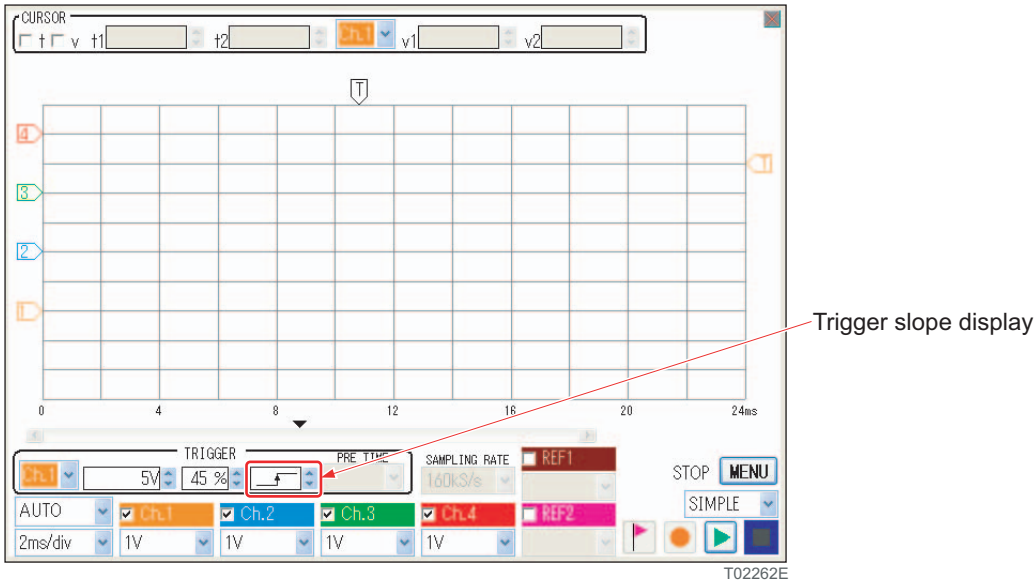


Waveform observation screen (Lower selection items)

■ Trigger slope setting

This switches the trigger slope for selected trigger channels.

1. Click the ▲ or ▼ button on the right side of the trigger slope display in the lower selection items of the waveform observation screen.
The trigger slope display in the waveform observation screen turns into the slope as selected.



Waveform observation screen

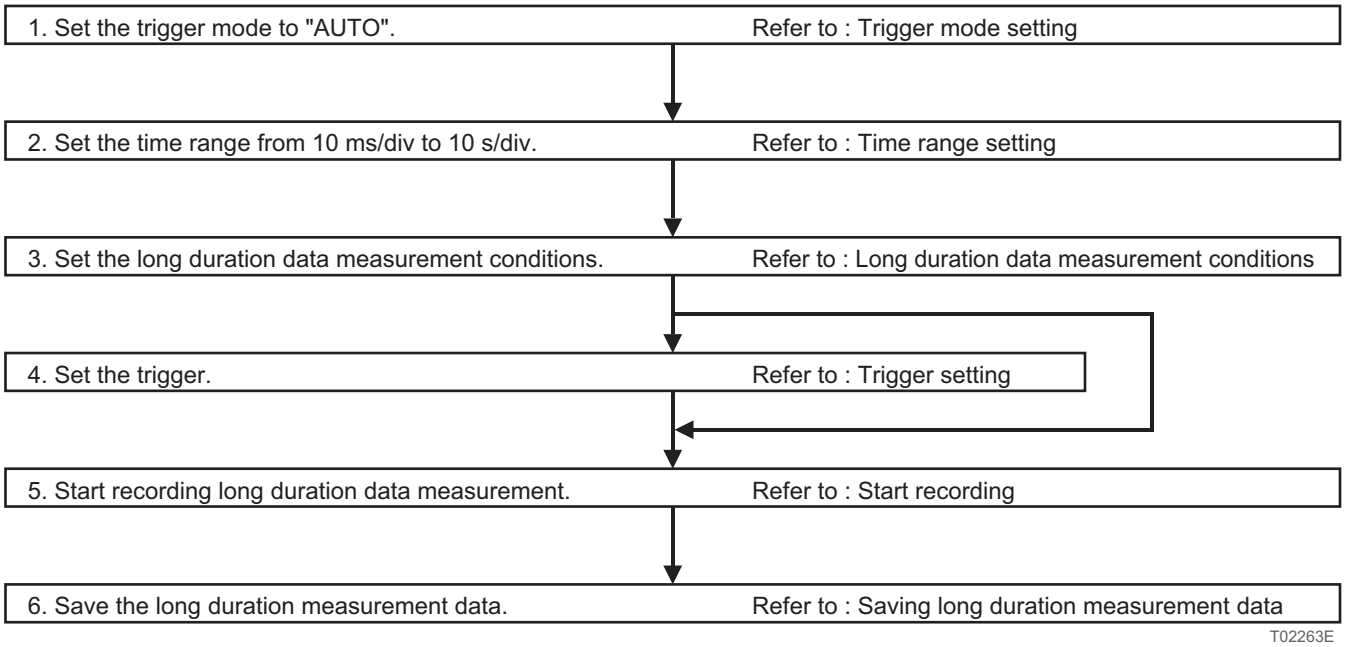
3-2 Long duration data measurement

Long duration waveform measurement data can be saved in the PC.
Setting trigger mode to AUTO and time range to 10 ms/div to 10 s/div allows measuring a long duration data measurement.

NOTE

- Check the free space available in the PC before actually performing long duration data measurement.
  Reference: Page 3 Approximate size of free space required (Reference) (Chapter 1 Before Use/Checking the PC before use)

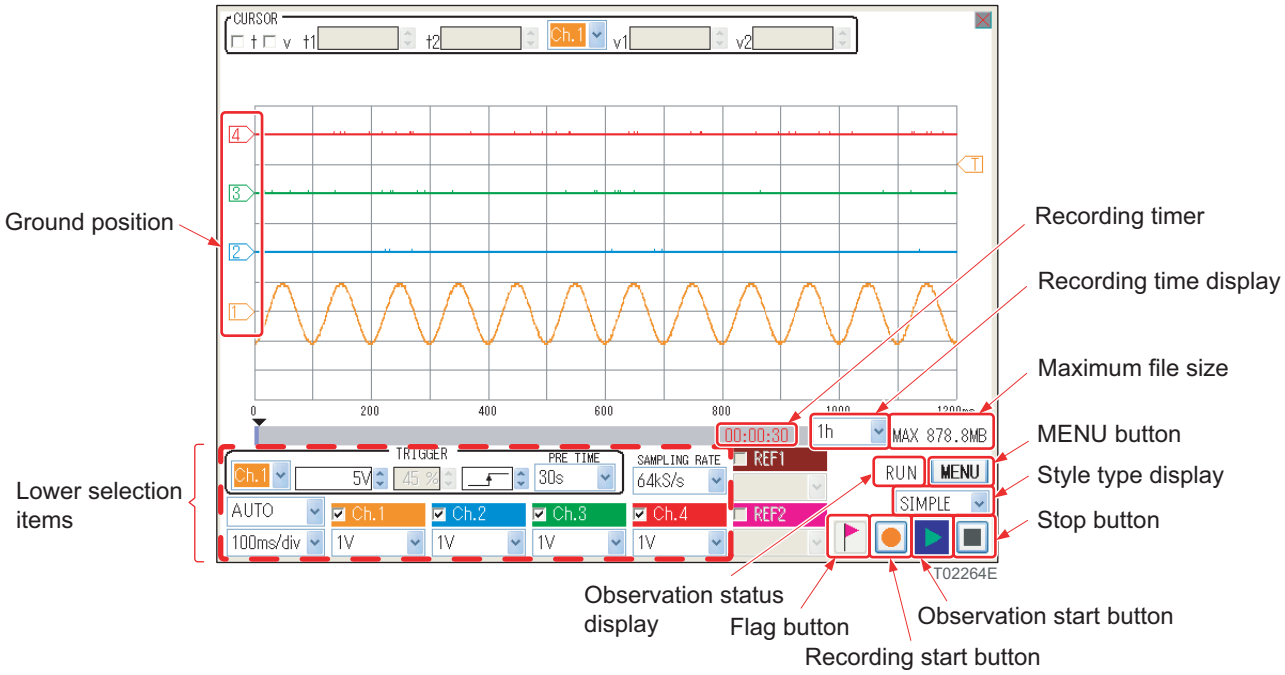
Long duration data measurement flow



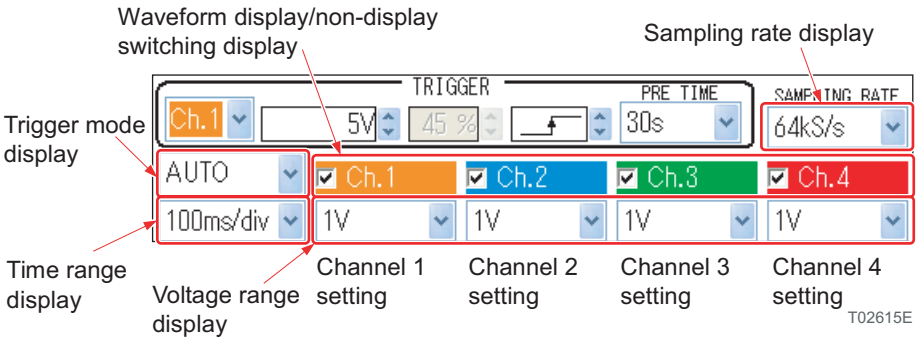
Screen configuration

The following figures show screen examples and the parts of the screen.

■ Long duration data measurement screen



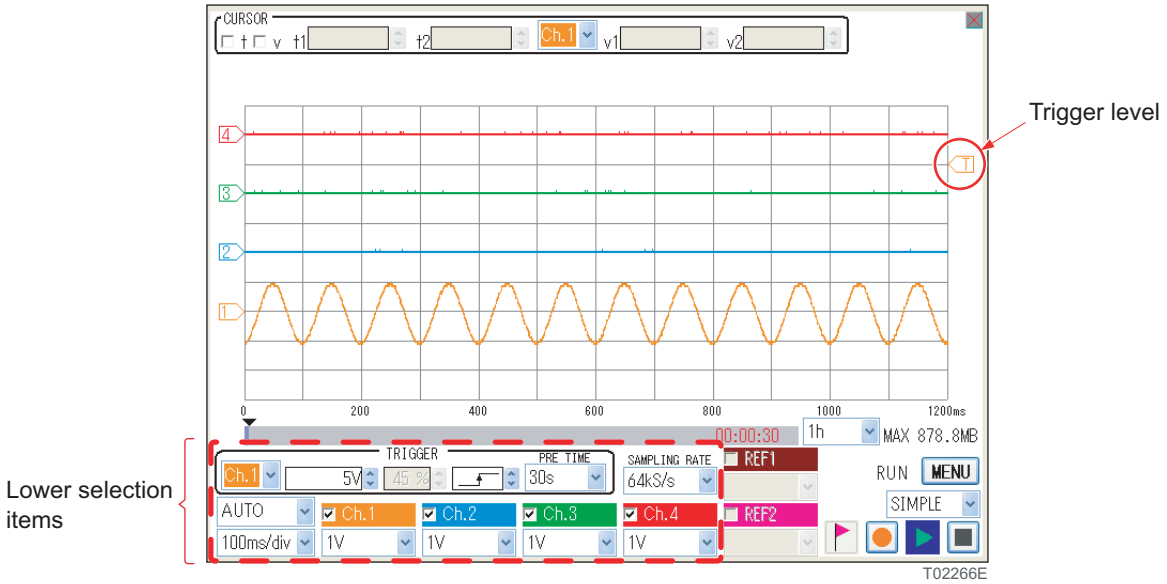
<Lower selection items>



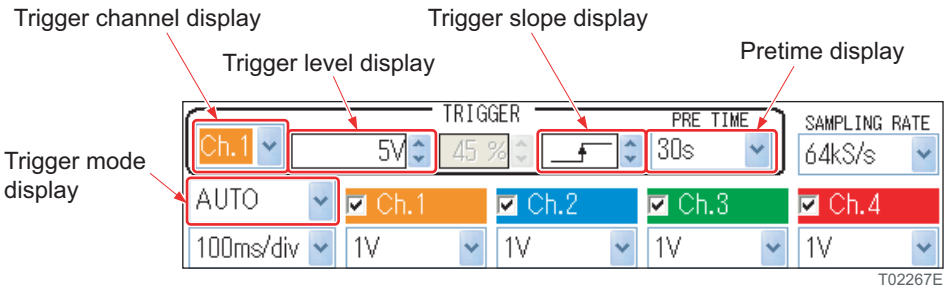
NOTE

- Refer to the followings for "Style type display".
  Reference: Page 86 Waveform style setting (Chapter 3 Operation of the PC Oscilloscope Software/System setting)

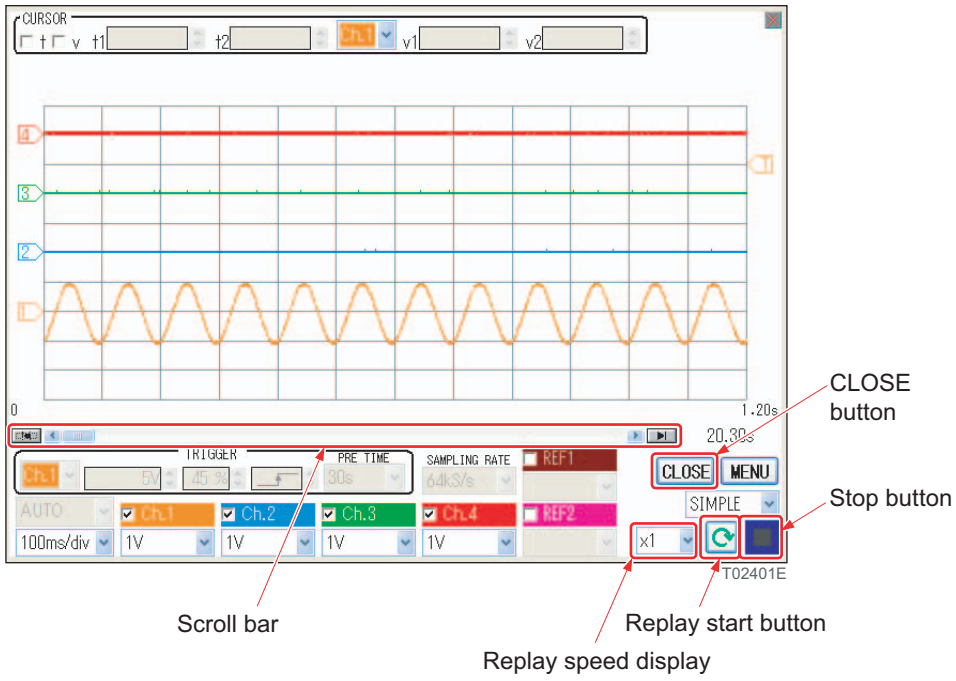
■ Trigger setting screen



<Lower selection items>

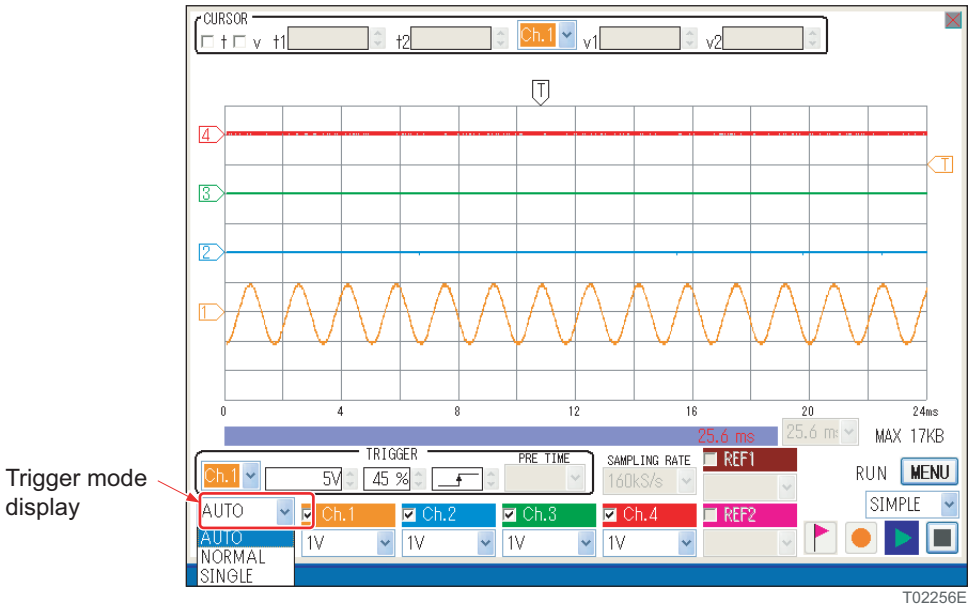


■ Replaying/Saving screen



Trigger mode setting

1. Click the ▼ button on the right side of the trigger mode display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.

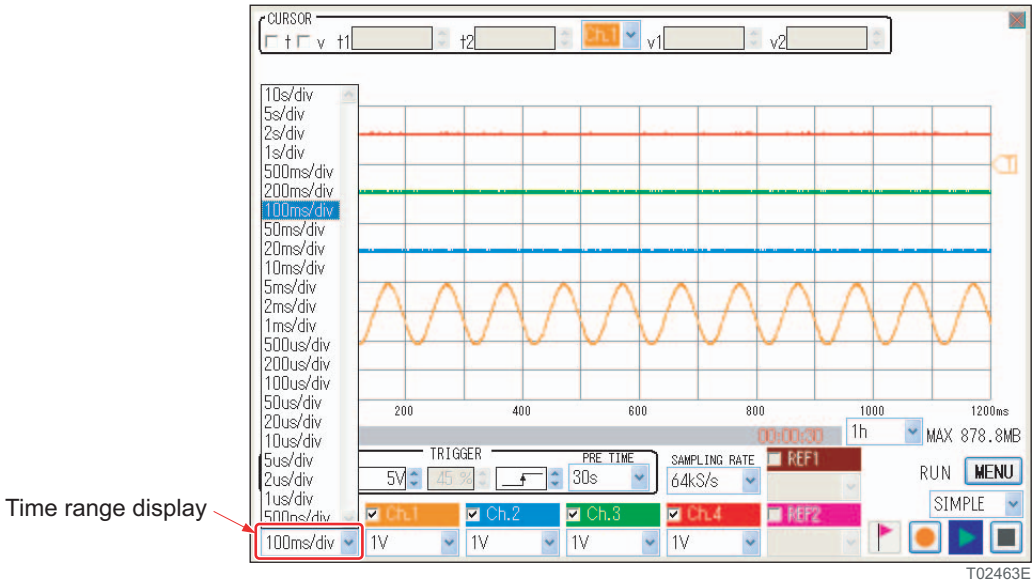


Waveform observation screen

2. Select "AUTO" in the pull down menu.
The trigger mode display in the waveform observation screen turns to "AUTO".

Time range setting

1. Click the ▼ button on the right side of the time range display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

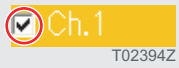
2. Select 10 ms/div to 10 s/div in the pull down menu.
The time range display in the waveform observation screen turns to the set time range.

Waveform display/non-display switching

1. Click the check box at the left of the waveform display/non-display switching display in the lower selection items of the waveform observation screen.
If it is not checked, the voltage range display is grayed out.

NOTE

- To show the waveform, check the box.



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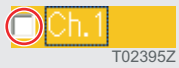
- To hide the waveform, uncheck the box.



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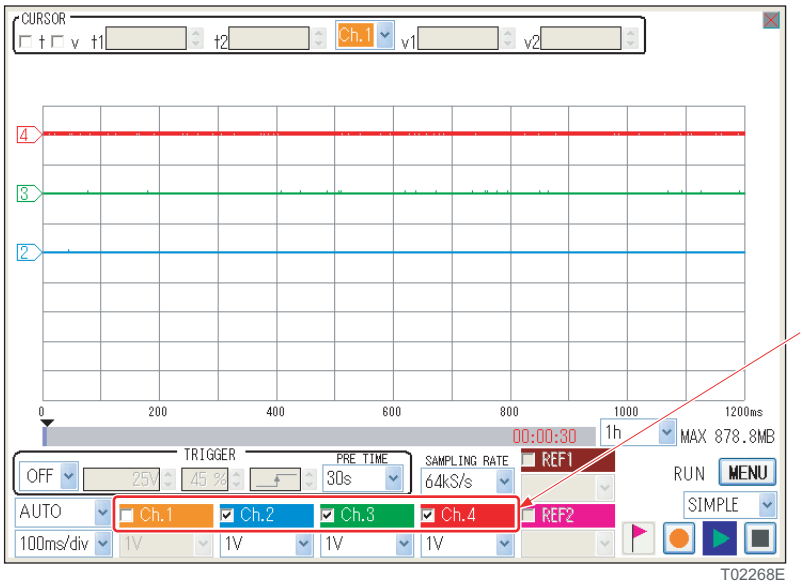

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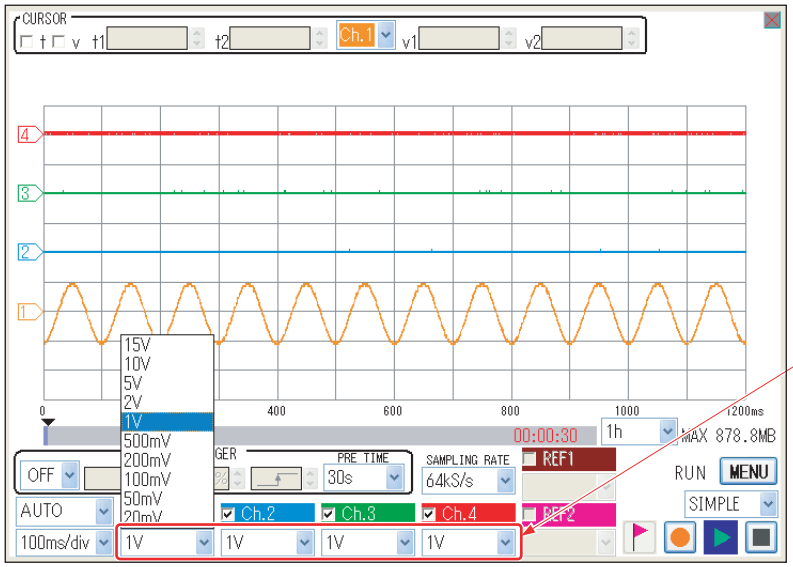
Waveform display/ non-display switching display

Waveform observation screen

Voltage range setting

1. Click the ▼ button on the right side of the voltage range display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

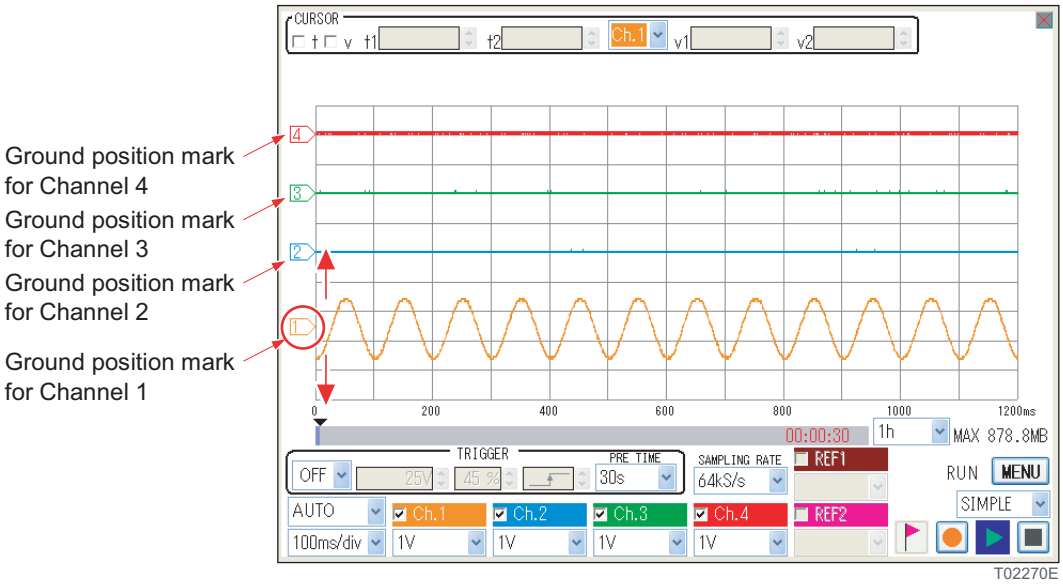
2. Select the value of the voltage range in the pull down menu.
The voltage range display in the waveform observation screen turns to the set voltage range.

Ground position setting

1. Set the ground position by dragging and moving the ground position mark up and down in the waveform observation screen.
The ground position mark moves in the waveform observation screen in real time.

NOTE

- Move the ground position mark for Channel 1 to change the ground position of Channel 1.



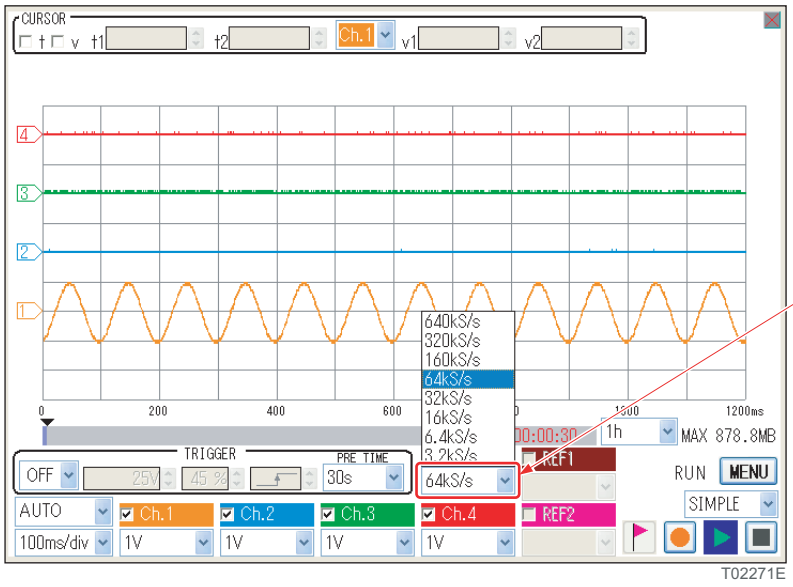
Waveform observation screen

Setting conditions for recording long duration data measurement

This screen allows setting of various recording conditions for long duration data measurement.

■ Setting sampling rate

1. Click the ▼ button on the right side of the sampling rate display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

2. Select a sampling rate in the pull down menu.
The sampling rate display in the waveform observation screen turns into the set sampling rate.

◆ Sampling rate, Recording time and measurement data file size

Sampling rate	Maximum recording time (per 1 recording)	Maximum file size (per 1 recording)
1.6 kS/sec.	40 hrs.	Approx. 880 MB
3.2 kS/sec.	20 hrs.	Approx. 880 MB
6.4 kS/sec.	10 hrs.	Approx. 880 MB
16 kS/sec.	5 hrs.	Approx. 1.1 GB
32 kS/sec.	2 hrs.	Approx. 880 MB
64 kS/sec.	1 hr.	Approx. 880 MB
160 kS/sec.	13.1 sec.	Approx. 8 MB
320 kS/sec.	6.5 sec.	Approx. 8 MB
640 kS/sec.	3.2 sec.	Approx. 8 MB

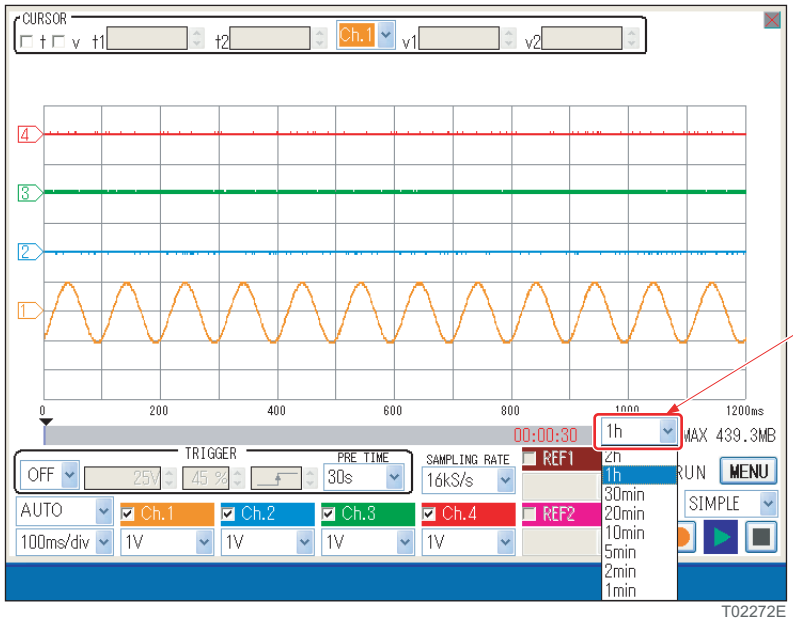
NOTE

- Sampling rates shown in the pull down menu differs depending on the set time range.
- Recordable time differs depending on the sampling rate.
  The bigger the number, the greater the detail of the recorded data and the shorter the recording time is.

■ Recording time setting

Recording time can be set for long duration data measurement with the sampling rate of 64 kS/s to 1.6 kS/s.

1. Click the ▼ button on the right side of the recording time display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

2. Select a recording time in the pull down menu.
The recording time display in the waveform observation screen turns to the set recording time.

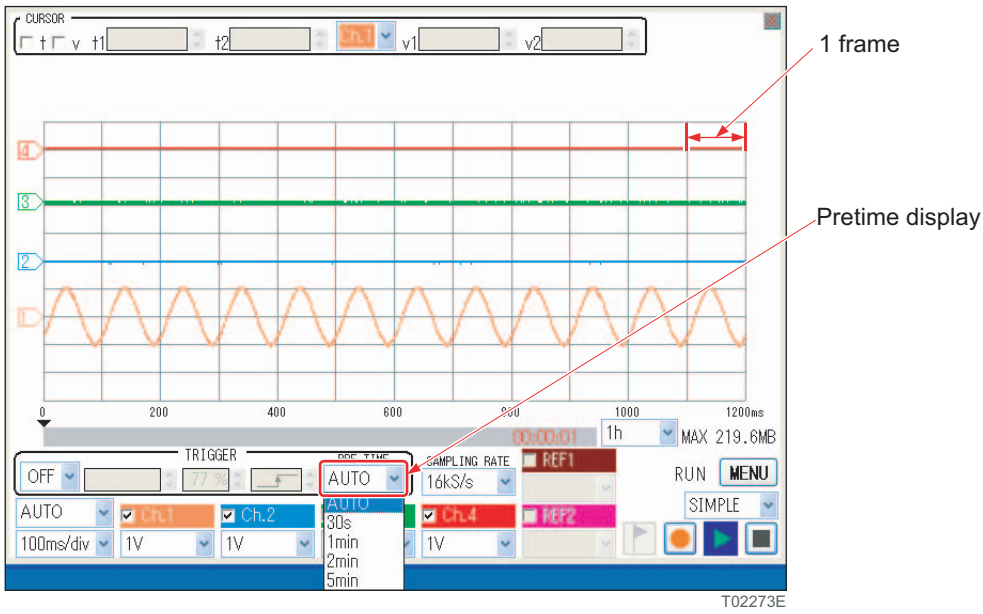
NOTE

- Recording time shown in the pull down menu differs depending on the set sampling rate.

■ Pretime setting

A long duration data measurement starts when the recording start button is pressed, or when the set trigger conditions are met.
This software is able to record data taken before the start of recording. The data located before the start of recording is called a "pretrigger".
The recording time for a pretrigger is referred to as "pretime" and the "pretime" is a settable parameter. This is called "pretime setting".
Pretime can be set for long duration data measurement with a sampling rate of 64 kS/s to 1.6 kS/s.

1. Click the ▼ button on the right side of the pretime display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

2. Select a pretime in the pull down menu.
The pretime display in the waveform observation screen turns to the set time.

NOTE

- If "AUTO" is selected as pretime, the time per one screen (12 frames of the set time range) will be pretime.
- Pretime shown in the pull down menu differs depending on the set sampling rate.
- The pretime that can be set differ depending on the time range.

Start recording

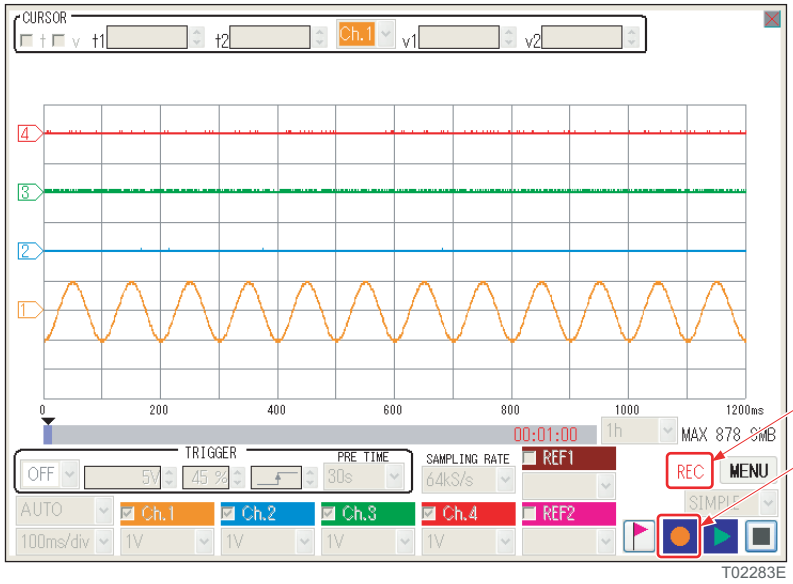
Long duration measurement data can be saved to the PC.

NOTE

- When the sampling rate is set to "640 kS/s to 160 kS/s", recording starts automatically.
- When setting the sampling rate "64 kS/s to 1.6 kS/s", there are two ways to record the data.
  - To record without a start trigger
  - To record with a start trigger

<To record without a start trigger>

1. Click the "Recording start" button in the lower right of the waveform observation screen.
Start recording long duration data measurement with the observation status display turned into "REC".



Waveform observation screen

<To record with a start trigger>

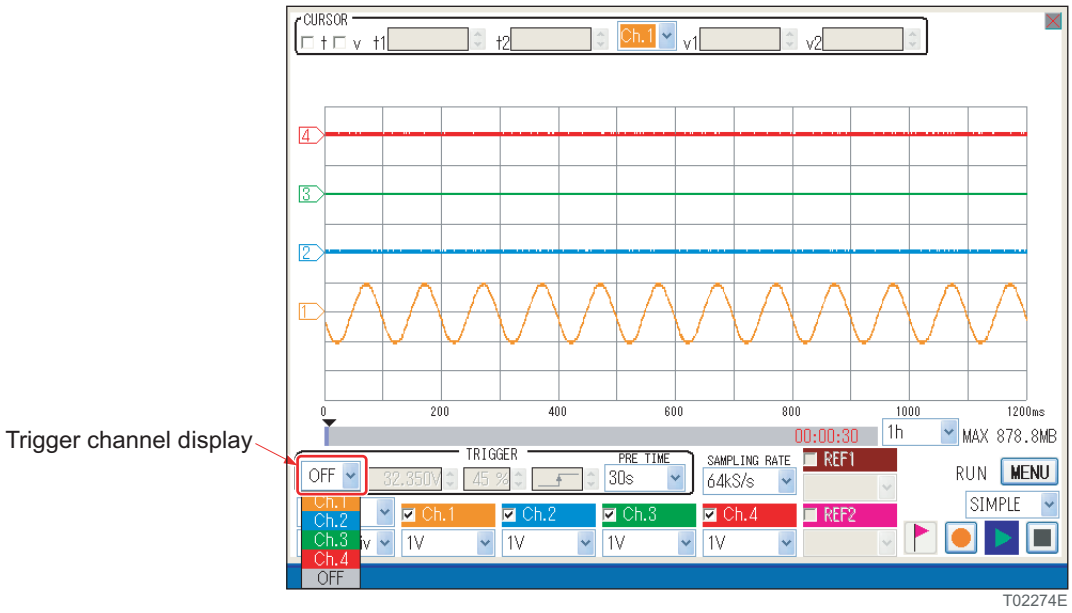
Various setting related to trigger can be made for long duration data measurement with a sampling rate of 64 kS/s to 1.6 kS/s.

- Trigger channel setting
- Trigger level setting
- Trigger slope setting

■ Trigger channel setting

Trigger channels are switched over.

1. Click the ▼ button on the right side of the trigger channel display in the lower selection items of the waveform observation screen.
A pull down menu is displayed.



Waveform observation screen

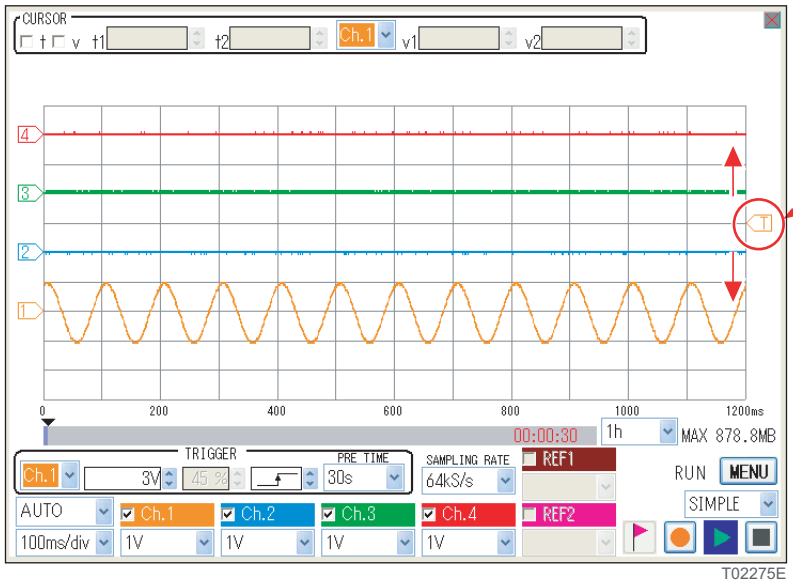
2. Select a trigger channel in the pull down menu.
The trigger channel display in the waveform observation screen turns into the channel selected.

■ Trigger level setting

A trigger level for a selected trigger channel is set.

1. Set the trigger level by dragging and moving the trigger level mark up and down in the waveform observation screen.

The trigger level mark moves in the waveform observation screen in real time.
The trigger level display in the waveform observation screen turns into the value as set.

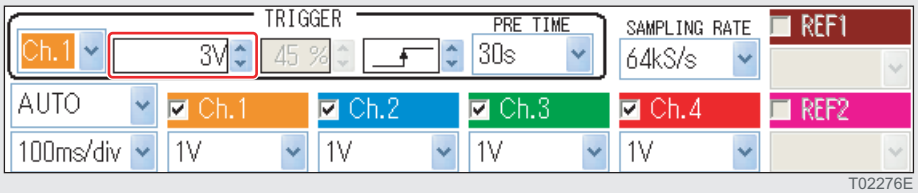


Waveform observation screen

NOTE

- Trigger levels can be changed by pressing the ▲ and ▼ buttons on the right side of the trigger level display in the lower selection items of the waveform observation screen.

  Pressing ▲ button makes the value larger, while ▼ button makes it smaller.

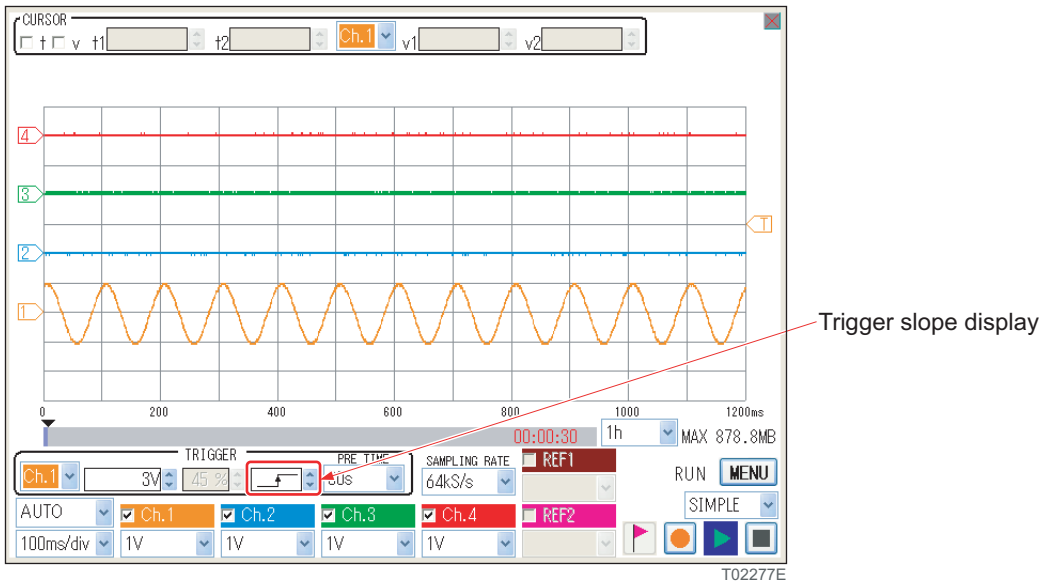


Waveform observation screen (Lower selection items)

■ Trigger slope setting

This switches the trigger slope for selected trigger channels.

1. Click the ▲ or ▼ button on the right side of the trigger slope display in the lower selection items of the waveform observation screen.
The trigger slope display in the waveform observation screen turns into the slope as selected.



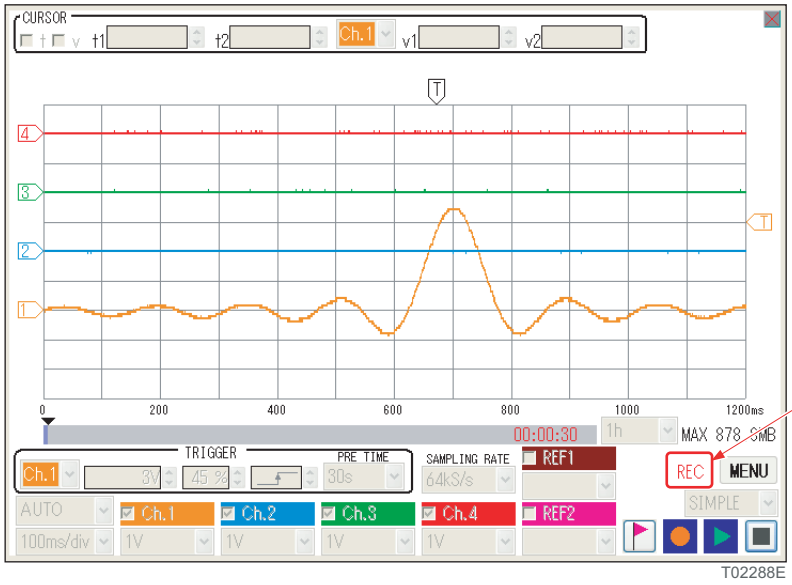
Waveform observation screen

■ Start recording

1. Click the "Recording start" button in the lower right of the waveform observation screen.
The system is now in the state of waiting for detecting a trigger, the observation status display turns into "WAIT" and "Waiting Trigger" is shown in the upper right of the screen.

Waveform observation screen

Upon detecting a condition of a trigger for starting measurement, recording of measurement data starts with the observation status display turned to "REC".



Observation status display

Waveform observation screen

Stop recording

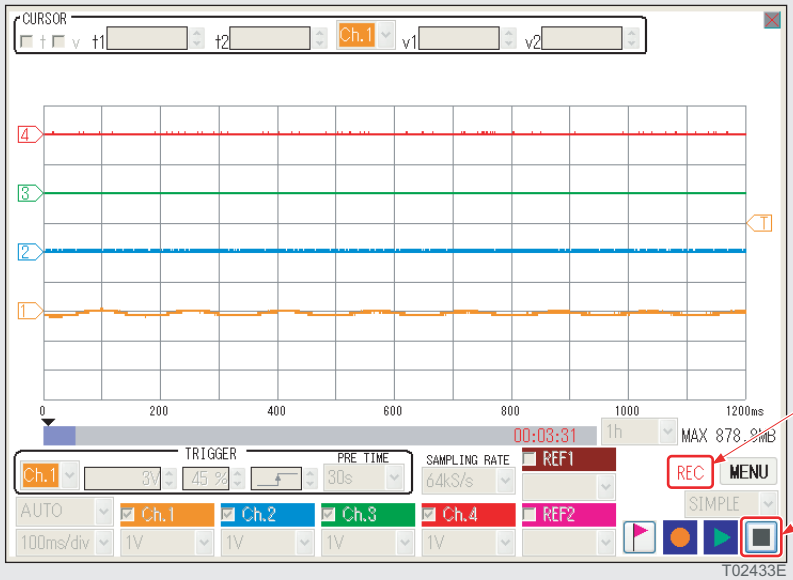
1. After the set recording time elapses, the screen turns into the long duration measurement data replay screen.
The recorded data is tentatively named "temp.log".

Long duration measurement data file name

Long duration measurement data replay screen

NOTE

- Even before reaching the recording time set, clicking "Stop" button can save the data recorded up to the time the button is clicked.



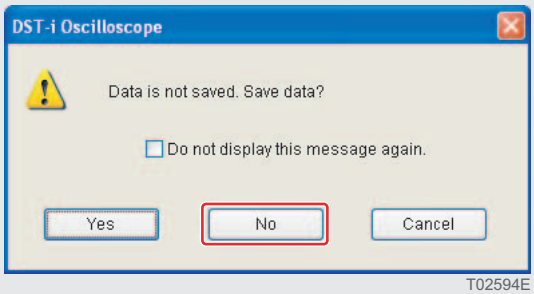
The "REC" display becomes the "CLOSE" button after the "Stop" button is clicked.

Stop button

Waveform observation screen

- If you do not save the data, click the "CLOSE" button in the lower right of the data replay screen and click "No" in the save confirmation message screen.

  The screen returns to the waveform observation screen.
  If the save confirmation message screen is not set to be displayed, it will not be displayed.



Save confirmation message

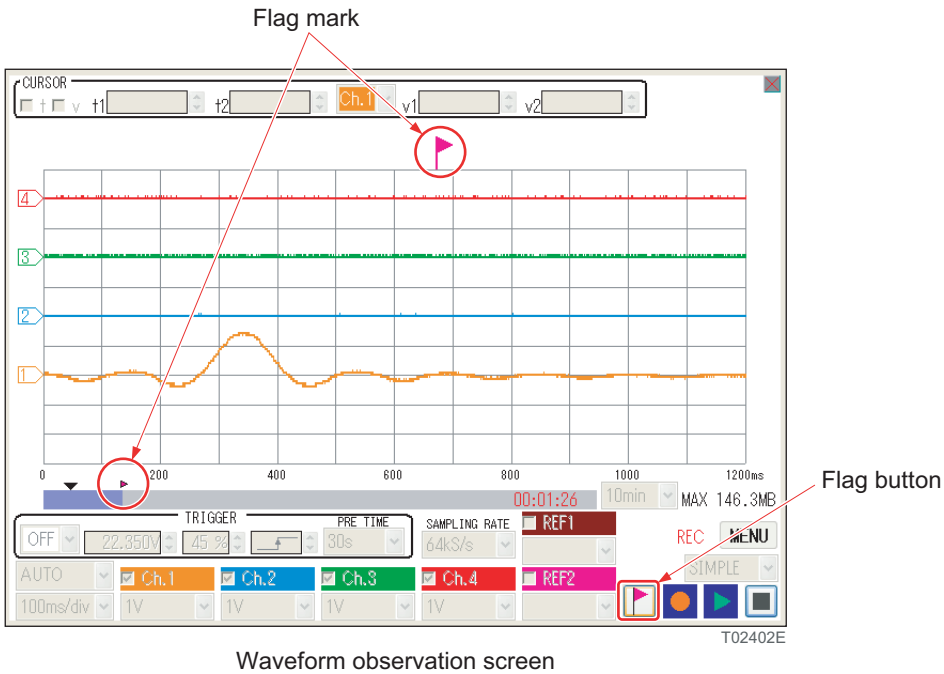
Marking (flag) function

Pressing "Flag" button while doing long duration data measurement shows a flag mark on the long duration measurement data replay screen.

NOTE

- When setting the sampling rate as "640 kS/s to 160 kS/s", a flag mark cannot be shown.

1. Click the "Flag" button in the lower right of the waveform observation screen after the start of recording for long duration data measurement.
A flag mark is displayed in the upper of the waveform observation screen and in the upper of the scroll bar.



Waveform observation screen

NOTE

- A maximum of fifty flag marks can be displayed.

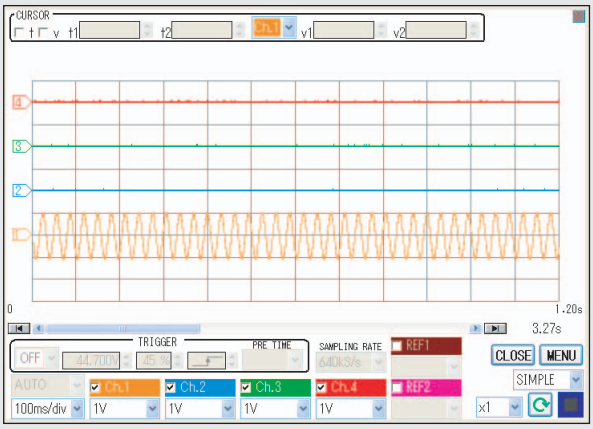
Replaying a long duration measurement data

NOTE

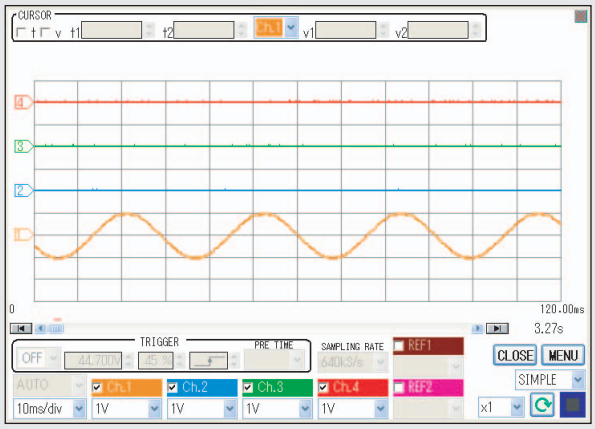
- A waveform recorded for long duration data measurement can be zoomed up and displayed by changing the time range.

  Refer to the following for how to set the time range.

  Reference: Page 36 Time range setting (Chapter 3 Operation of the PC Oscilloscope Software/Long duration data measurement)



Before zoomed up



After zoomed up

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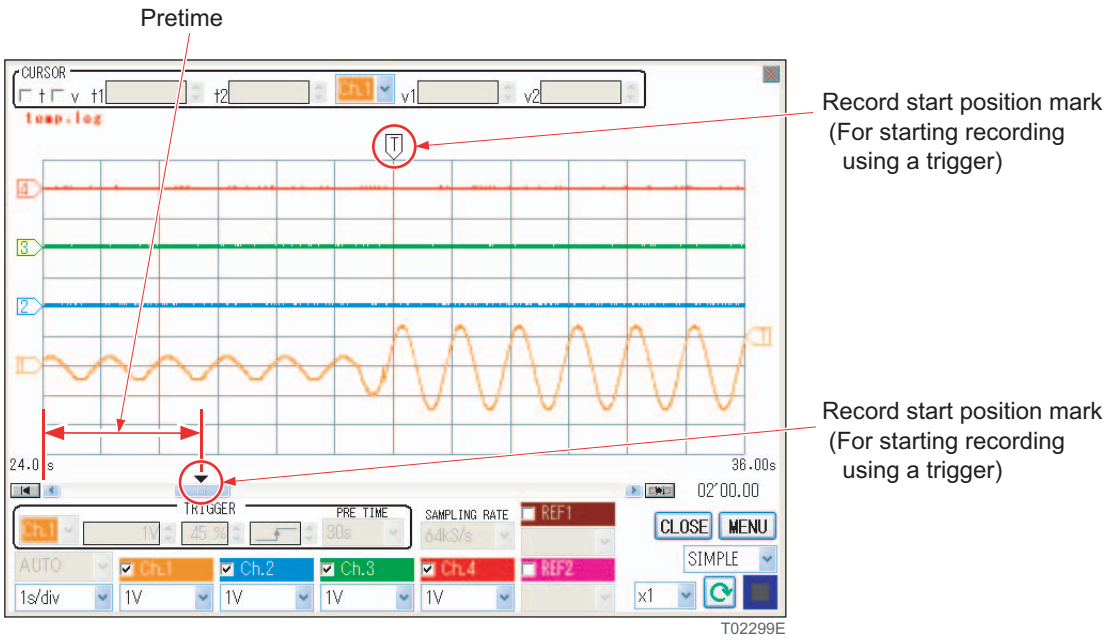
1. Use a scroll bar in the long duration measurement data replay screen to designate the replay start position.

NOTE

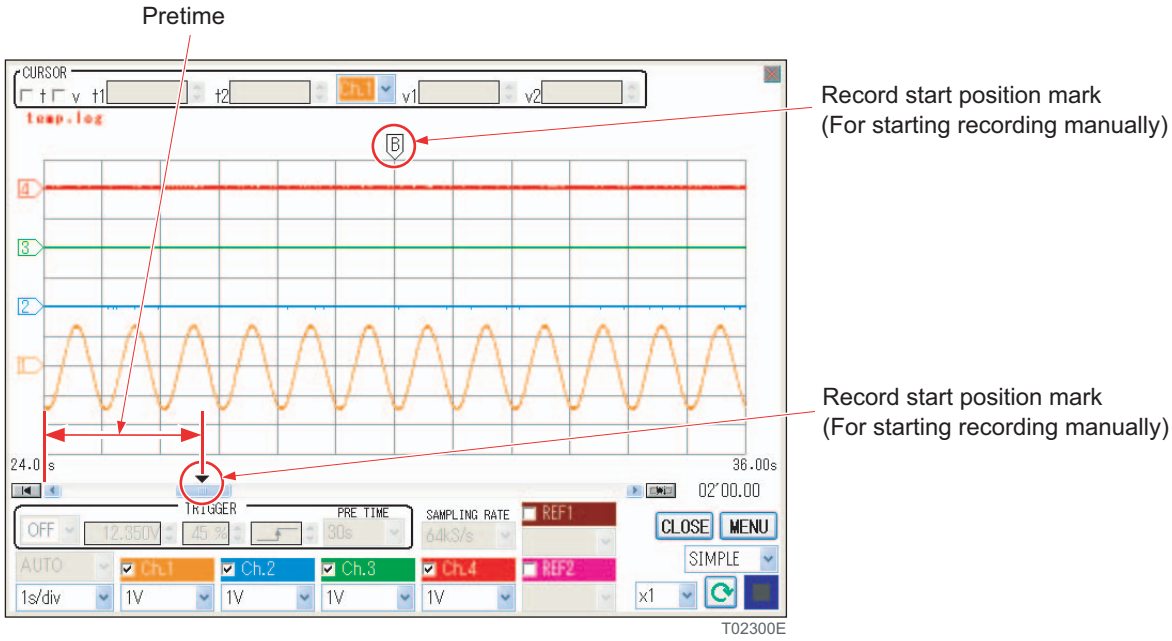
- Pressing ⏮ and ⏭ buttons allows the replay start position changed as follows.

  By pressing ⏮ button, the replay start position returns to the recording start position and the left end of the scroll bar in that order.

  By pressing ⏭ button, the replay start position proceeds to the recording start position and the right end of the scroll bar in that order.
- It moves to flag position if any flag marks have been set using the marking function.



Long duration measurement data replay screen
(Start recording using a trigger)

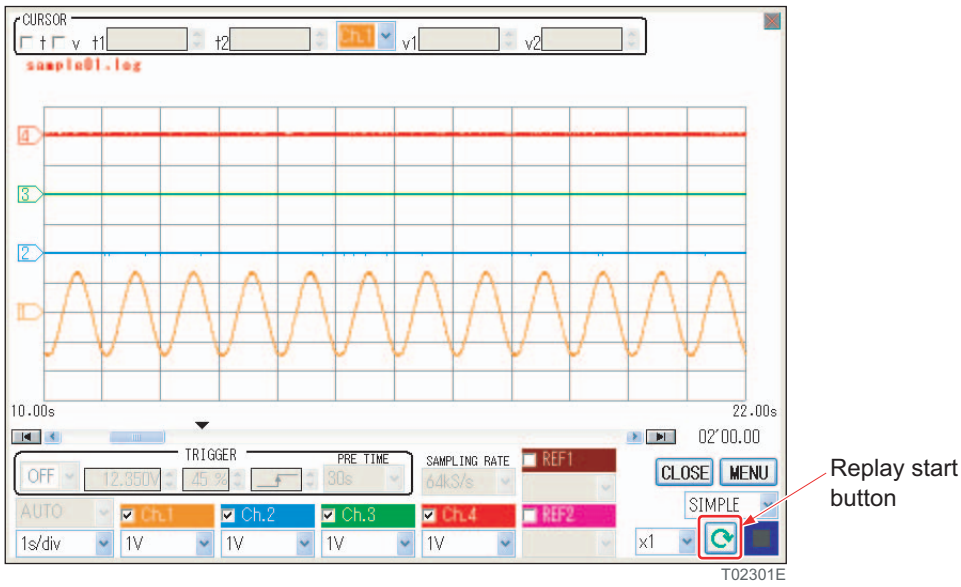


Long duration measurement data replay screen
(Start recording manually)

2. Click the "Replay start" button in the long duration measurement data replay screen.
A measurement data is replayed automatically from the replay start position designated.

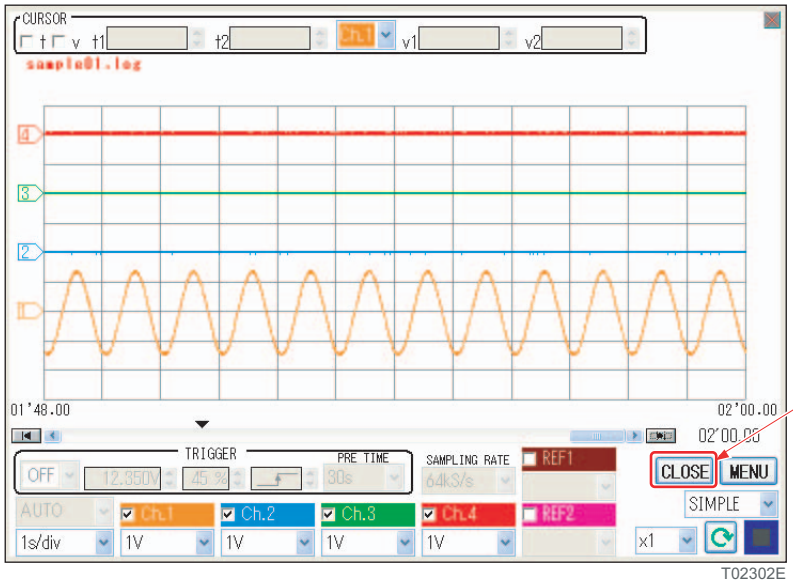
NOTE

- Pressing ▶ and ◀ buttons enable to move the measurement data manually.
  ▶ button makes the data proceed and ◀ button makes the data return.



Long duration measurement data replay screen

3. Click the "CLOSE" button in the lower right of the long duration measurement data replay screen.
The screen returns to the waveform observation screen.



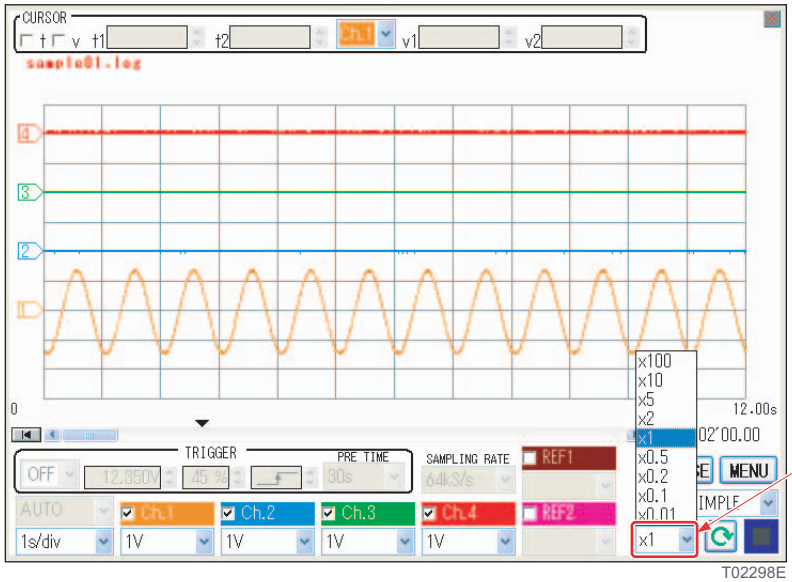
CLOSE button

Long duration measurement data replay screen

■ Replay speed setting

Replay speed for a long duration measurement data can be set.

1. Click the ▼ button on the right side of the replay speed display in the lower selection items of the long duration measurement data replay screen.
A pull down menu is displayed.



Replay speed display

Long duration measurement data replay screen

2. Select a replay speed in the pull down menu.
The replay speed display in the long duration measurement data replay screen turns to the set replay speed.

3-3 Saving data

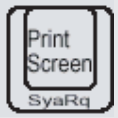
A waveform observation data and a long duration measurement data can be saved in the PC.

NOTE

- Check the free space available in the PC before actually saving waveform data.

  Reference: Page 3 Approximate size of free space required (Reference) (Chapter 1 Before Use/Checking the PC before use)
- Use a print screen function as a standard function of Windows to save a screen capture data of the waveform observation screen.
- Refer to the instruction manual of the PC for the details of print screen function.

  <An example of a Print Screen key>

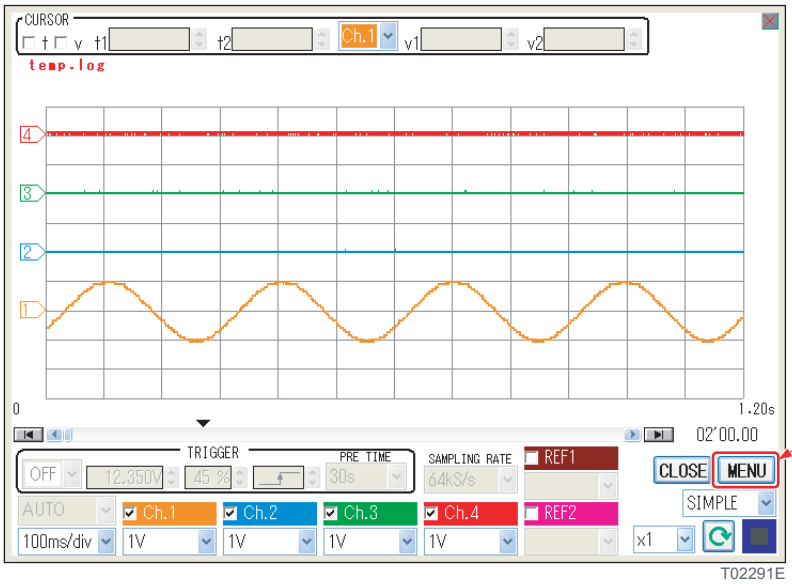
  

  T02396Z

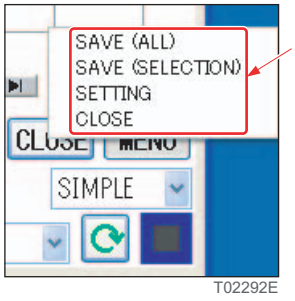
  Depending on the type of the PC, the image and operating method of the print screen key vary.
- Data saving methods
  - For saving all data
  - For saving a selected range
- After saving all data, data can be retrieved and the selected range can also be saved.

<For saving all data>

1. Click the "MENU" button in the lower right of the data replay screen.
A menu is displayed.

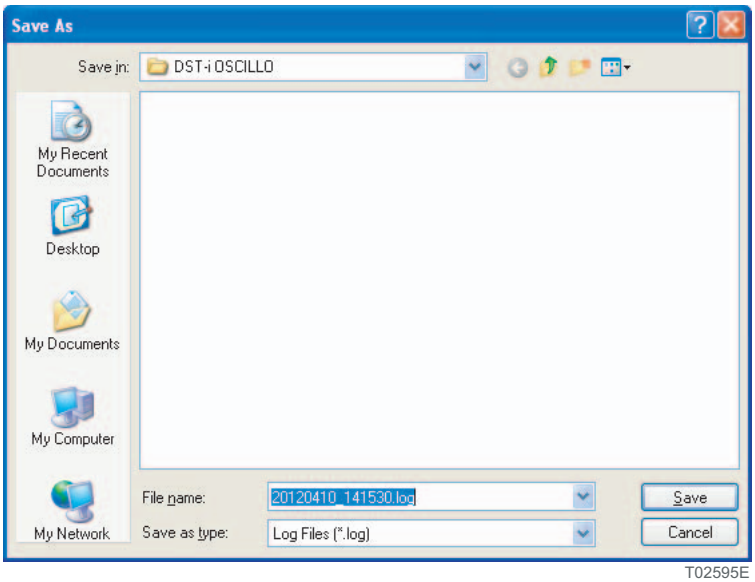


Data replay screen



Menu

2. Click "SAVE (ALL)" in the menu.
The data saving screen is displayed.



Data saving screen

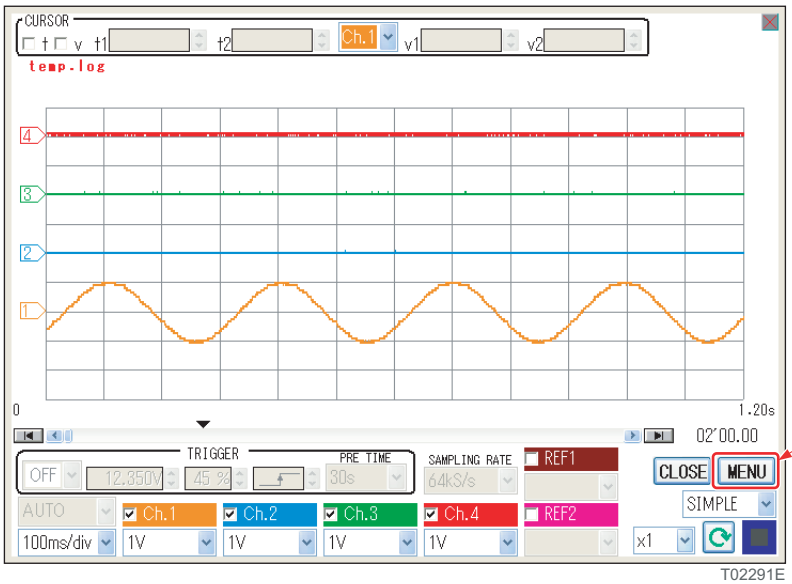
3. Designate a folder to which the data is to be saved and the data file name in the data saving screen and click "Save".
Data is saved into the designated folder.

NOTE

- In the default state, a data is saved into the following folder.
  C:¥Documents and Settings¥All Users¥Documents¥DST-i Oscilloscope¥DST-i OSCILLO
- Though the file is automatically named in the form of "Current date_hr., min., sec.log", it can be renamed as desired.

<For saving a selected range>

1. Click the "MENU" button in the lower right of the data replay screen.
A menu is displayed.



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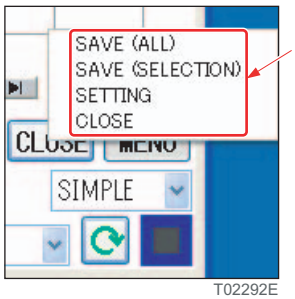
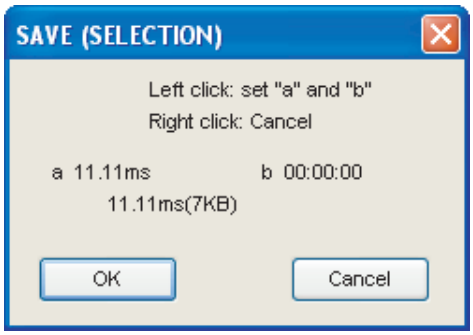
Data replay screen



T02292E

Menu

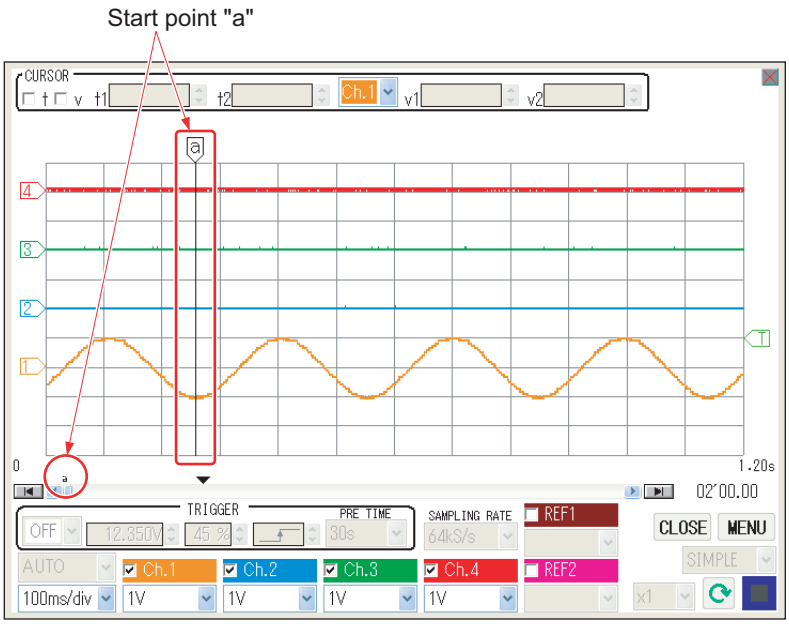
2. Click "SAVE (SELECTION)" in the menu.
The range selection screen is displayed.



T02596E

Range selection screen

3. Left click in the waveform displayed data replay screen to select the start point of the range to be saved.
Start point "a" is displayed both in the waveform and on the scroll bar.



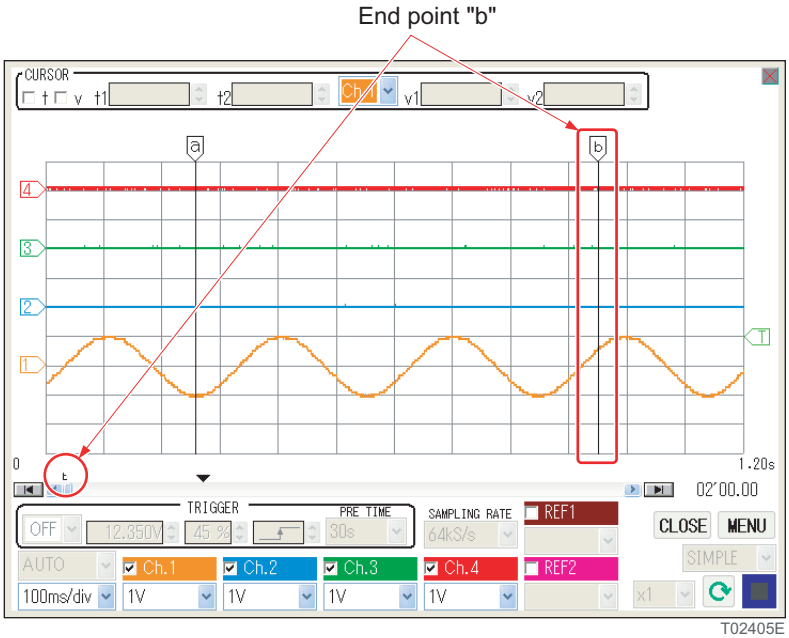
T02404E

Data replay screen

NOTE

- Right click the start point "a" to cancel it.

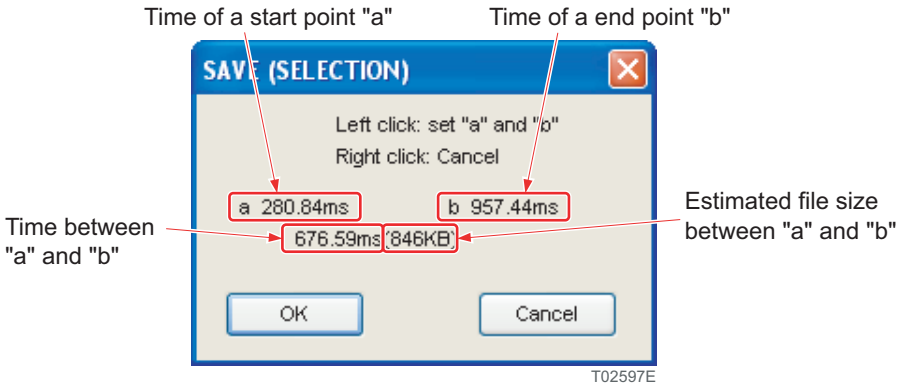
4. Left click in the waveform displayed data replay screen to select the start point of the range to be saved.
End point "b" is displayed both in the waveform and on the scroll bar with the estimated file size and time between "a" and "b" in the range selection screen.



Data replay screen

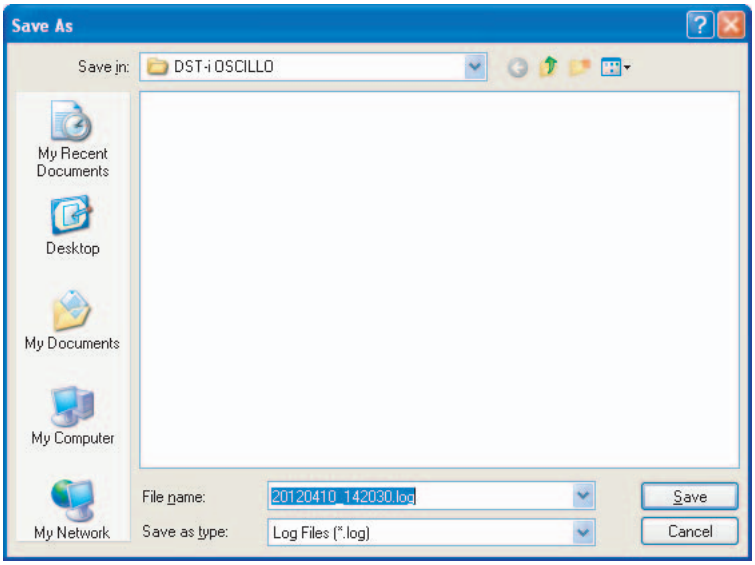
NOTE

- Right click the end point "b" to cancel it.



Range selection screen

5. Click "OK" in the range selection screen.
A data saving screen is displayed.



Data saving screen

NOTE

- When "Cancel" is clicked in the range selection screen, the screen returns to the original data replay screen after shutting down the selected range save.

6. Designate a folder to which the data is to be saved and the data file name in the data saving screen and click "Save".
Data is saved into the designated folder.

NOTE

- In the default state, a data is saved into the following folder.
  C:¥Documents and Settings¥All Users¥Documents¥DST-i Oscilloscope¥DST-i OSCILLO
- Though the file is automatically named in the form of "Current date_hr., min., sec.log", it can be renamed as desired.

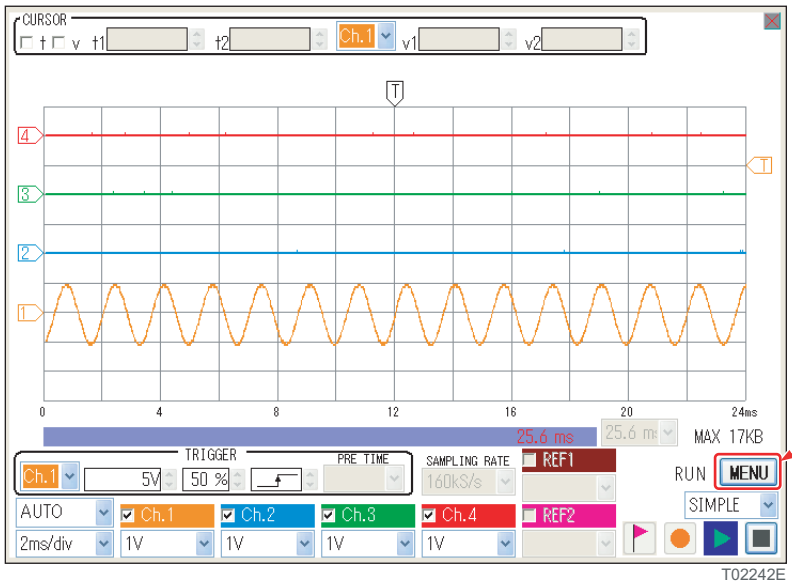
3-4 Retrieving data

Waveform observation data and a long duration measurement data saved in the PC as well as data saved using DST-i oscilloscope software can be retrieved, displayed and replayed.

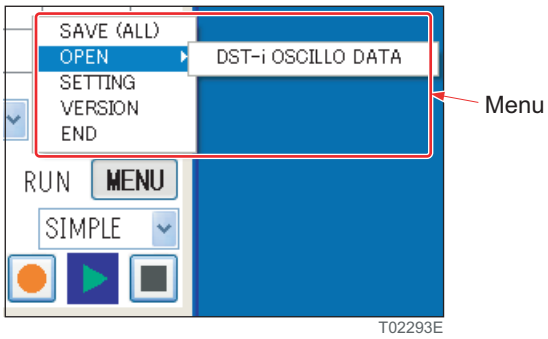
NOTE

- In the case the PC oscilloscope software is used to retrieve data saved to SD memory card using DST-i oscilloscope software, the data should be copied to the PC beforehand.

1. Click the "MENU" button in the lower right of the waveform observation screen.
A menu is displayed.

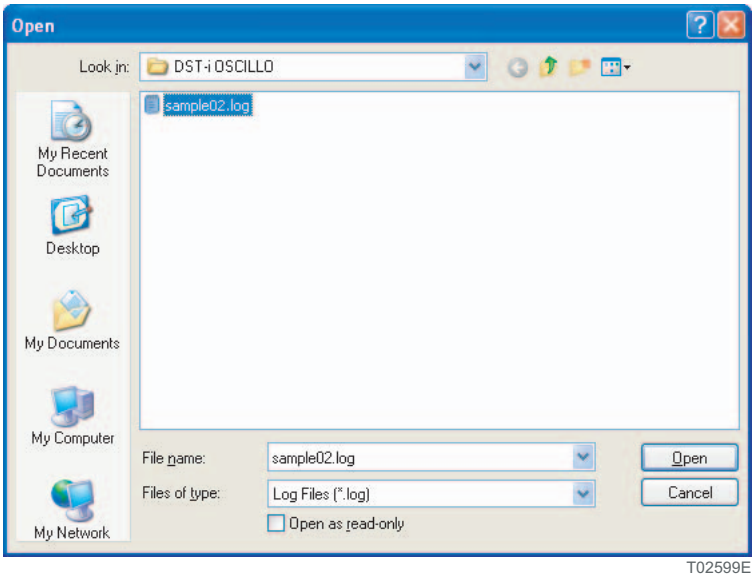


Waveform observation screen



Menu

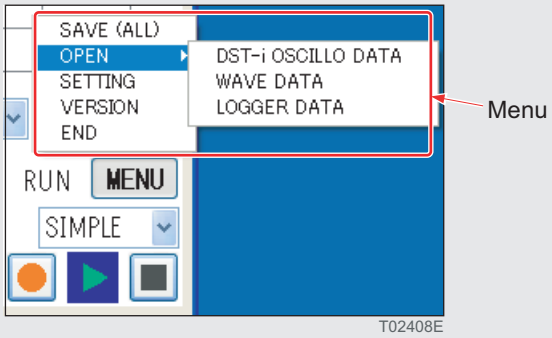
2. Select "OPEN" in the menu and click "DST-i OSCILLO DATA".
The file designation screen is displayed.



File designation screen

NOTE

- Only when "WAVE DATA" folder or "DATA LOGGER" folder storing a data obtained in Ver.0.20 are in a lower hierarchy is "WAVE DATA" or "LOGGER DATA" displayed on the menu.
  C:¥Documents and Settings¥All Users¥Documents¥PC Oscilloscope
- When retrieving obtained data in Ver.0.20 or older, select "WAVE DATA" or "LOGGER DATA" in the menu and designate a file.



Menu

3. Designate a folder in which the data is to be retrieved and the data file name in the file designation screen, and click "Open".
The data replay screen is displayed.

NOTE

- In the case that the file selected was not saved using the PC oscilloscope software or DST-i oscilloscope software, the following message is shown.

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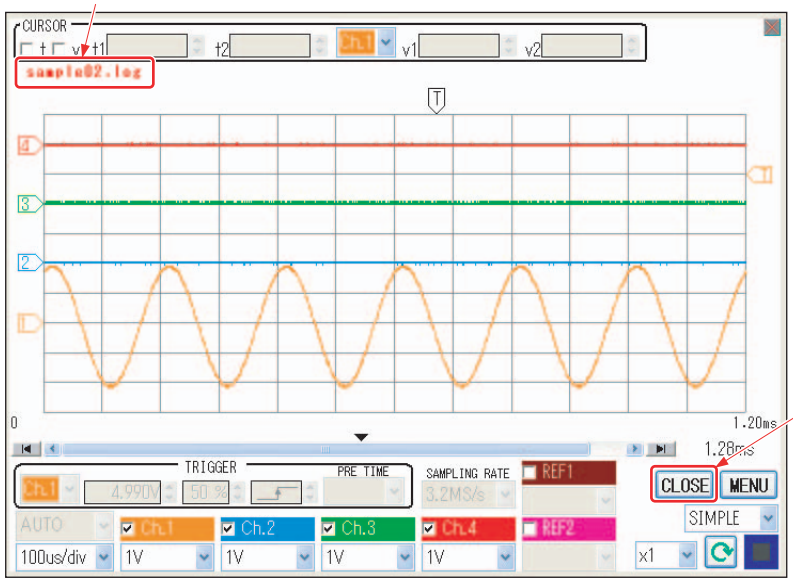
Retrieved file



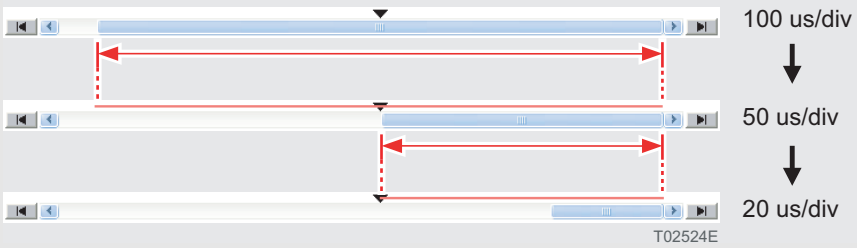
T02294E

CLOSE button

Data replay screen

NOTE

- In the data replay screen, a waveform can be displayed by modifying the setting for time range, waveform display/non-display switching, voltage range and ground position.
  How to set these parameters is the same as those set in the waveform observation screen.
- If the time range in the data replay screen is reset, a red line is displayed at the top of the scroll bar. The red line shows the waveform display range (scroll bar length) before the time range is reset.
  Ex.: When the time range of the retrieved file is changed from 100 us/div -> 50us/div ->20us/div.



T02524E

4. Click the "CLOSE" button in the data replay screen.
The screen returns to the waveform observation screen.

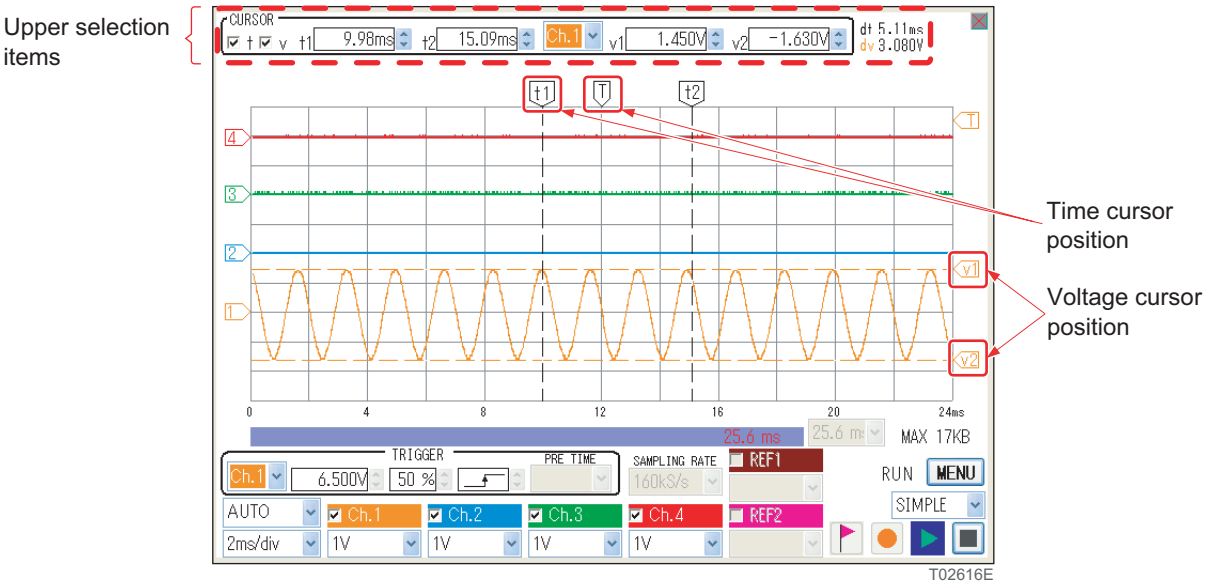
3-5 Measurement function

Voltage and time difference between any two points on the waveform observed can be measured.

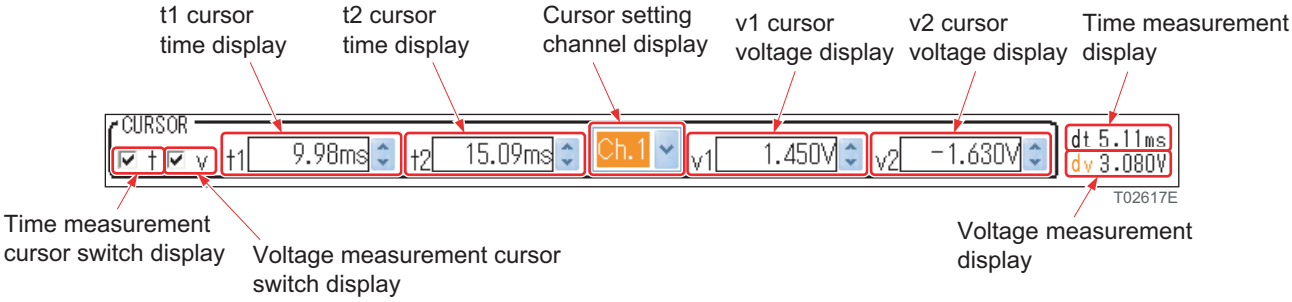
Screen configuration

The following figures show screen examples and the parts of the screen.

■ Screen related to measurement function

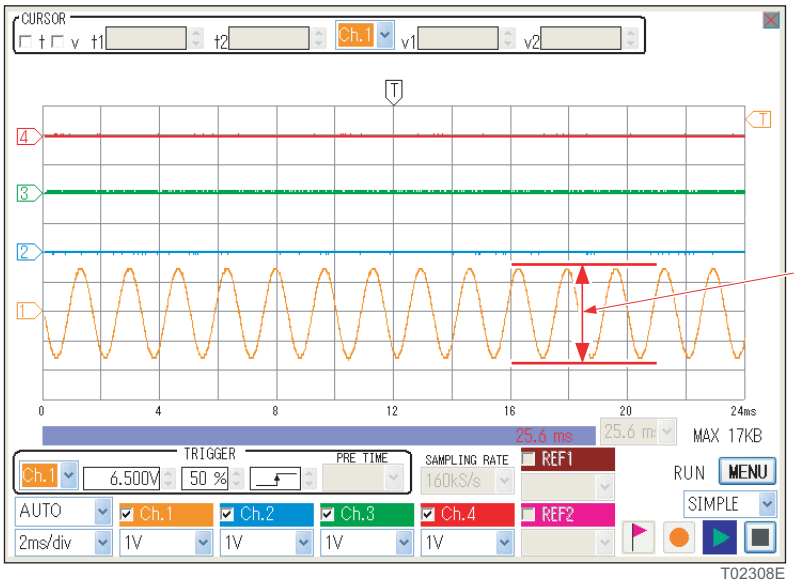


<Upper selection items>



Voltage measurement

The voltage difference between any two designated points can be measured on the waveform display.



Waveform observation screen

1. Click the check box at the left of the voltage measurement cursor switch display in the upper selection items of the waveform observation screen.
Two voltage cursors are displayed.

NOTE

- A voltage cursor consists of two lines used for measuring voltage and marks indicating the position of the lines ("v1" and "v2").
- To show the voltage cursor, check the box.

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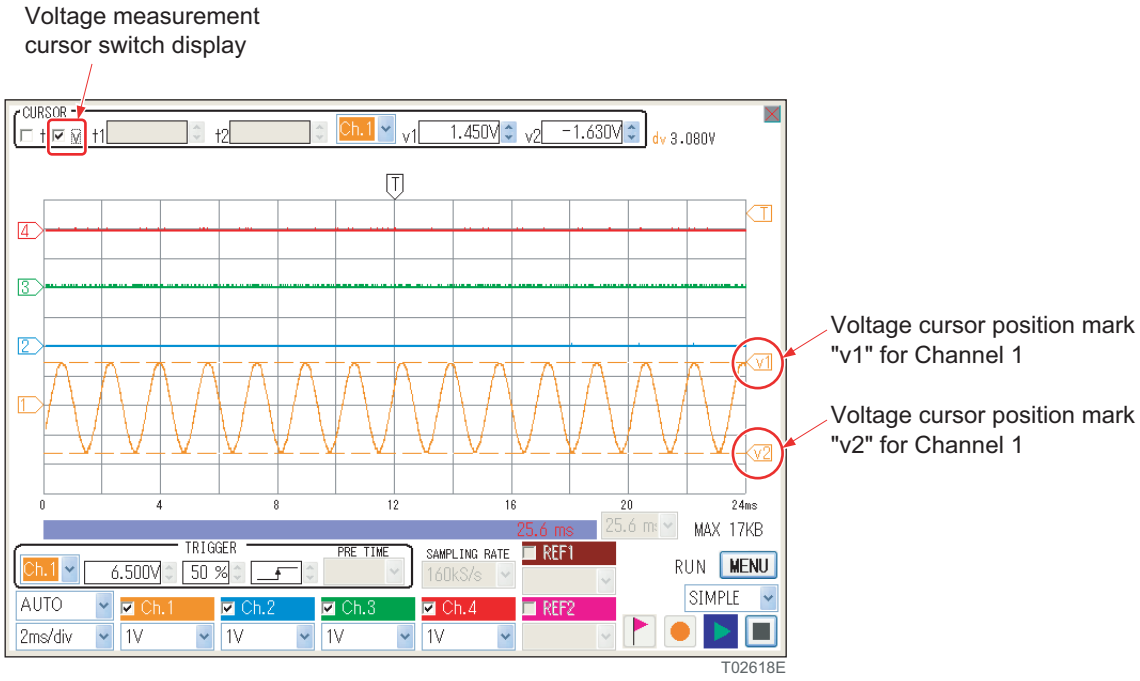
- To hide the voltage cursor, uncheck the box.

T02398Z



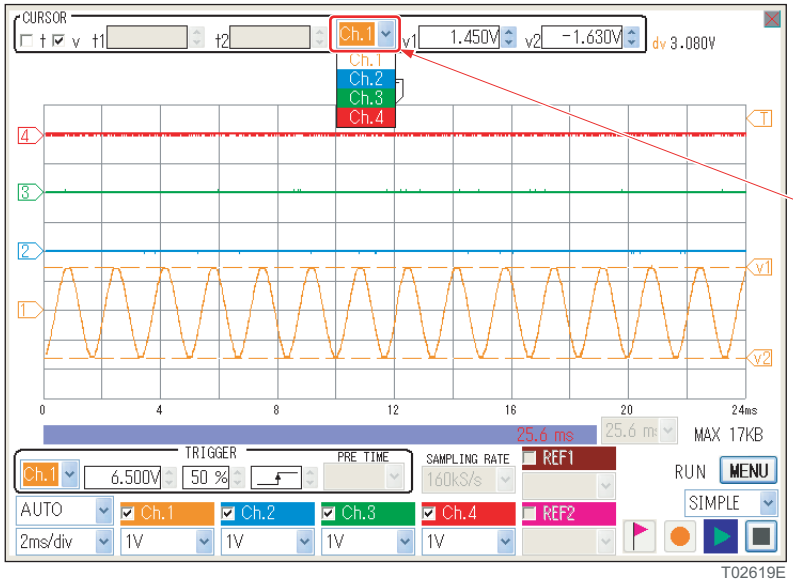
T02618E

Waveform observation screen

NOTE

- The above screen shows a voltage cursor position mark for Channel 1.
  Changing a cursor setting channel can show a voltage cursor position mark of the channel selected.

2. Click the ▼ button on the right side of the cursor setting channel display in the upper selection items of the waveform observation screen.
A pull down menu is displayed.

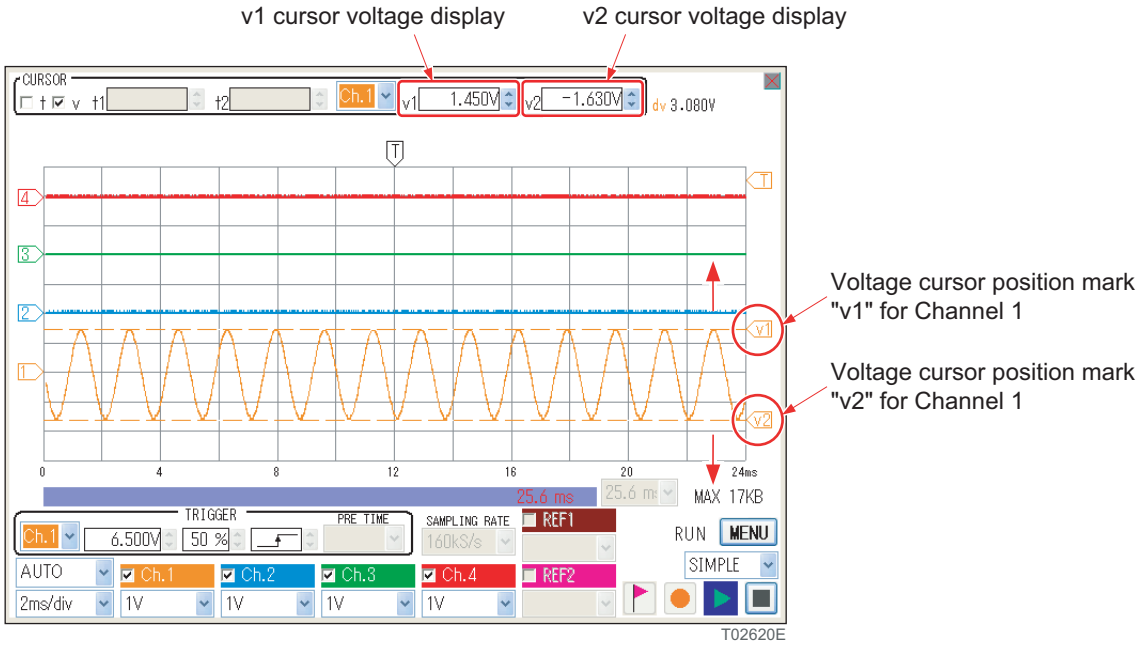


Cursor setting channel display

Waveform observation screen

3. Select a cursor setting channel in the pull down menu.
The cursor setting channel display in the waveform observation screen turns into the channel selected.

4. Set the positions for v1 cursor and v2 cursor by dragging and moving the voltage cursor position mark up and down in the waveform observation screen.
The voltage cursor position mark moves in the waveform observation screen in real time.
The v1 and v2 cursor voltage displays in the waveform observation screen turns into the value as set.



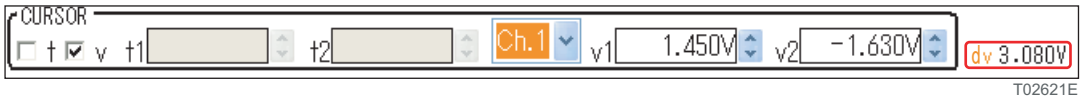
Waveform observation screen

NOTE

- Cursor voltage values can be altered using the ▲ and ▼ buttons on the right side of v1 and v2 cursor voltage displays in the upper selection items of the waveform observation screen.

  Pressing ▲ button makes the value larger, while ▼ button makes it smaller.

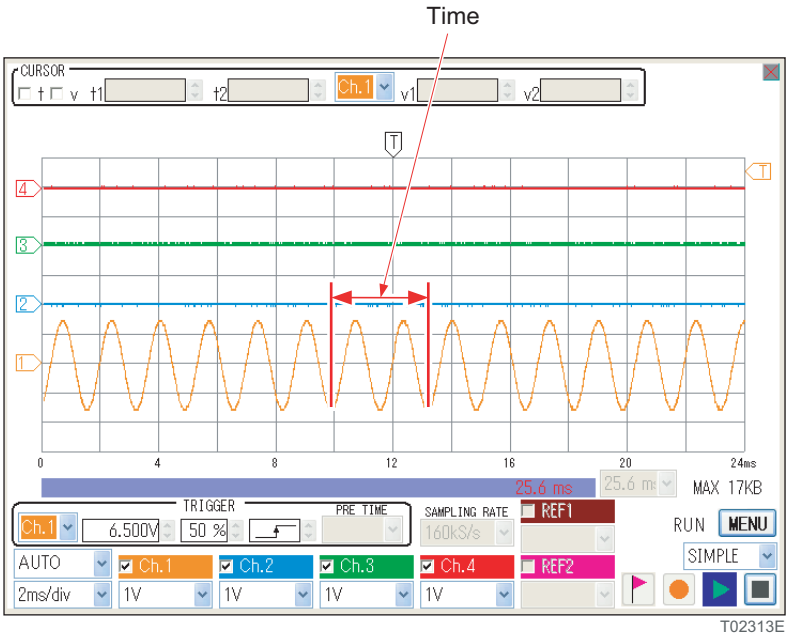
The voltage measurement results as per the voltage range for the channels under measurement are shown in the voltage measurement display in the waveform observation screen.
For the screen shown below, the voltage is set to 3.080 V.



Waveform observation screen (Upper selection items)

Time measurement

A time difference between any two designated points can be measured in the waveform display.



Waveform observation screen

1. Click the check box at the left of the time measurement cursor switch display in the upper selection items of the waveform observation screen.
Two time cursors are displayed.

NOTE

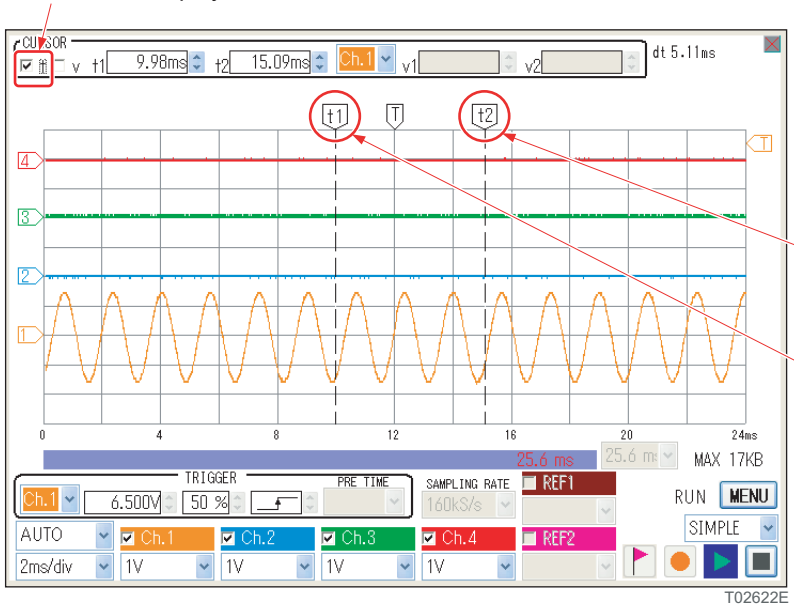
- A time cursor consists of two lines used for measuring time and marks indicating the position of the lines ("t1" and "t2").
- To show the time cursor, check the box.


T02399Z

- To hide the time cursor, uncheck the box.


T02400Z

Time measurement cursor switch display

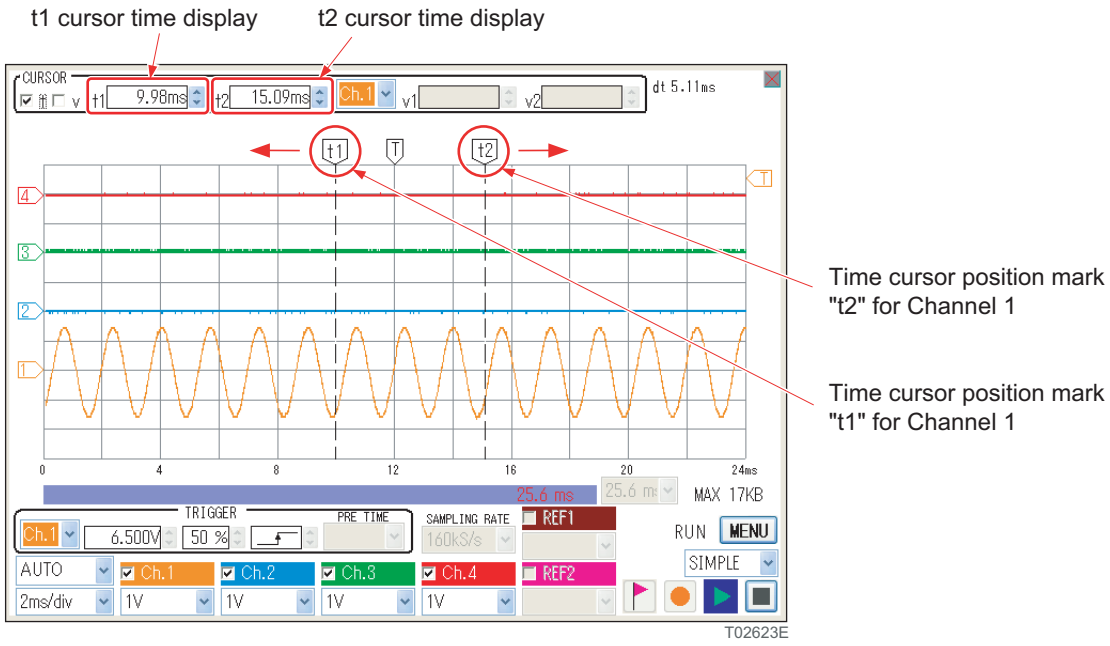


Time cursor position mark "t2" for Channel 1

Time cursor position mark "t1" for Channel 1

Waveform observation screen

2. Set the positions for t1 cursor and t2 cursor by dragging and moving the time cursor position mark right and left in the waveform observation screen.
The time cursor position mark moves in the waveform observation screen in real time.
The t1 and t2 cursor time displays in the waveform observation screen turns into the value as set.



Waveform observation screen

NOTE

- Cursor time values can be altered using the ▲ and ▼ buttons on the right side of t1 and t2 cursor time displays in the upper selection items of the waveform observation screen.

  Pressing ▲ button makes the value larger, while ▼ button makes it smaller.

The time measurement results are shown in the time measurement displays on the waveform observation screen.
For the screen shown below, the time is set to 5.11 ms.

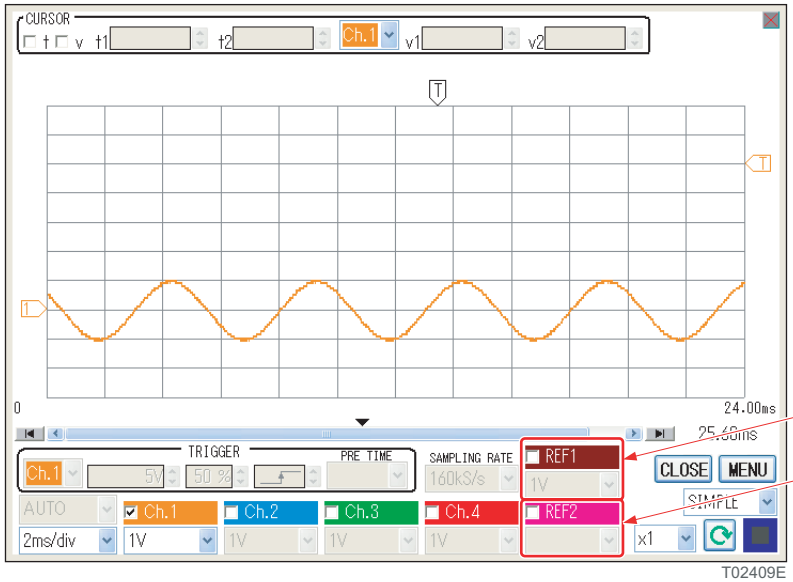
Waveform observation screen (Upper selection items)

3-6 Reference function

Waveforms can be compared to each other by displaying and allocating in the waveform observation screen as a reference waveform which is observed or measured in long duration data measurement.
A reference waveform can be saved as a reference file.

Reference waveform display

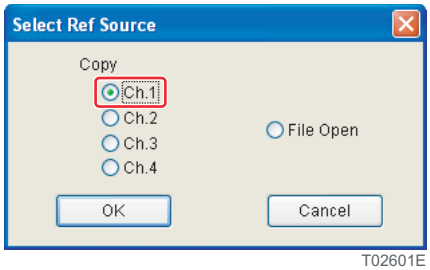
1. Display a waveform to be a reference waveform on the data replay screen and click the check box at the left of the reference waveform switch display 1 in the lower selection items of the screen.
Selection screen is displayed.



Data replay screen

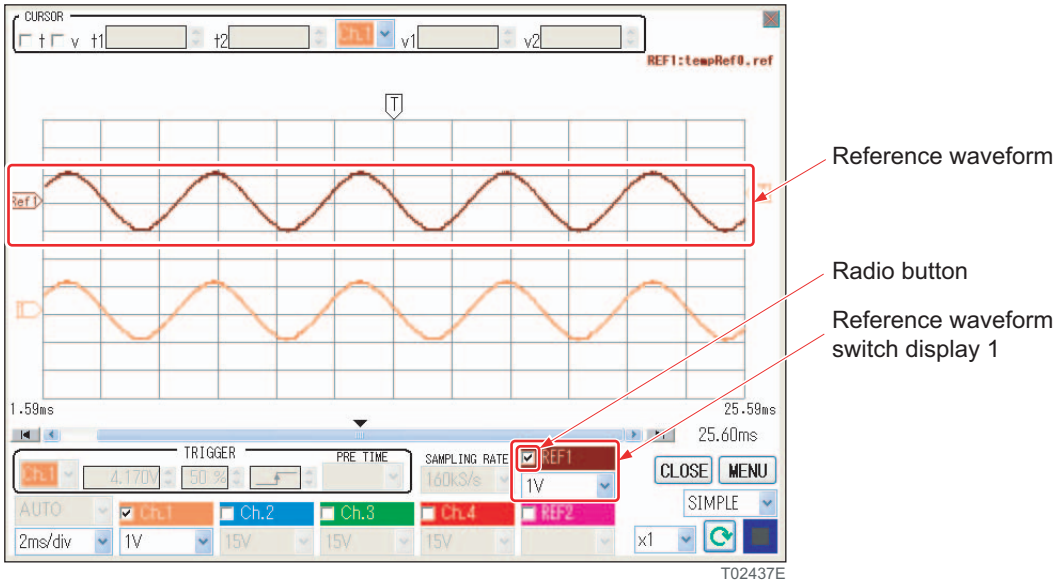
NOTE

- You can also perform the same operation on reference waveform switch display 2.
- The waveform displayed as a reference waveform is the one currently shown on the data replay screen.



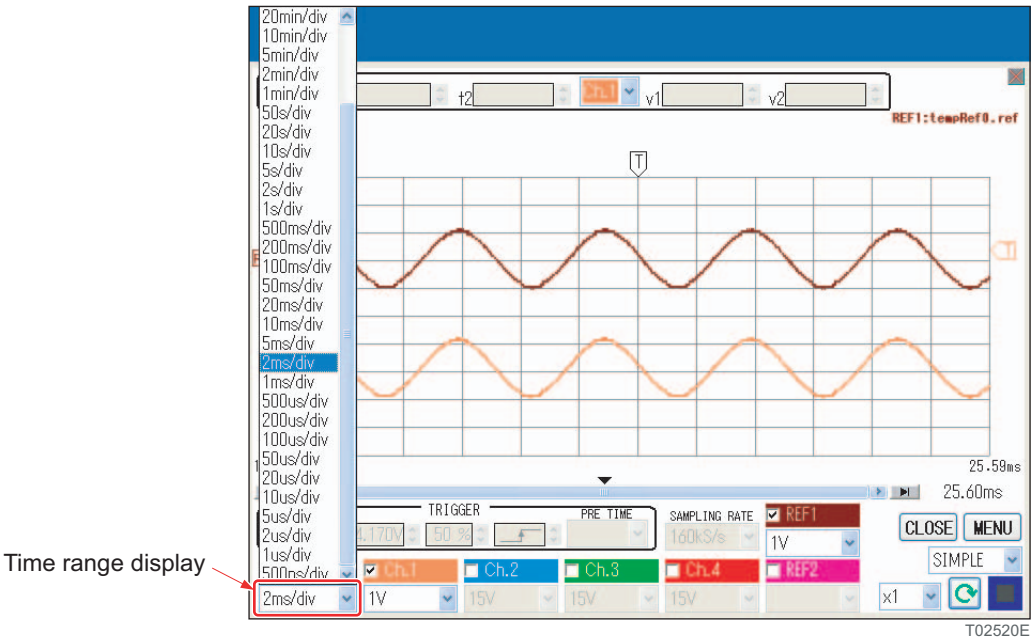
Selection screen

2. Select a radio button at the left of the reference waveform channel in the selection screen and click the "OK" button.
A reference waveform is displayed in the data replay screen.



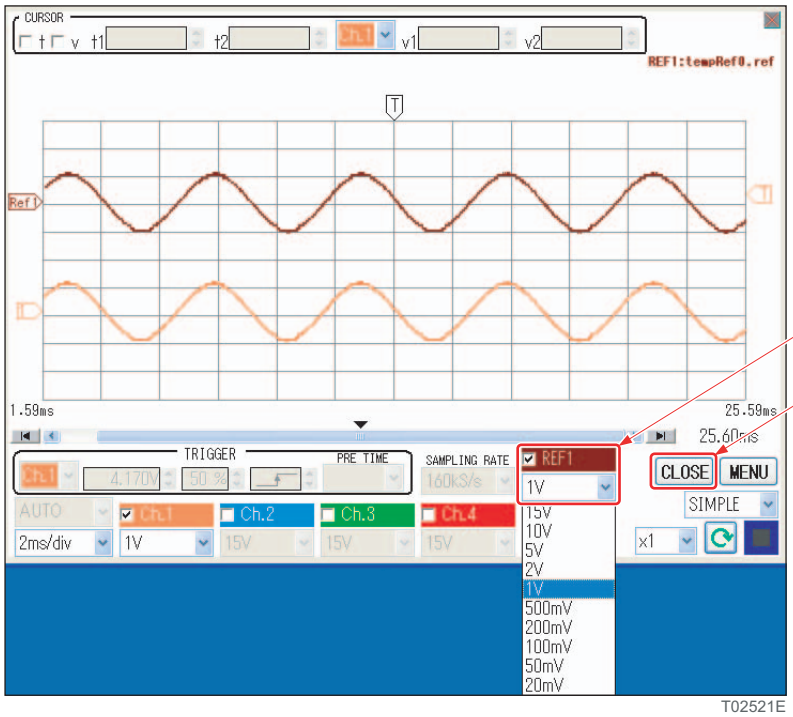
Data replay screen

3. Click the ▼ button on the right side of the time range display in the lower selection items in the data replay screen and set the time range.
The time range display in the data replay screen turns to the time range to be set.



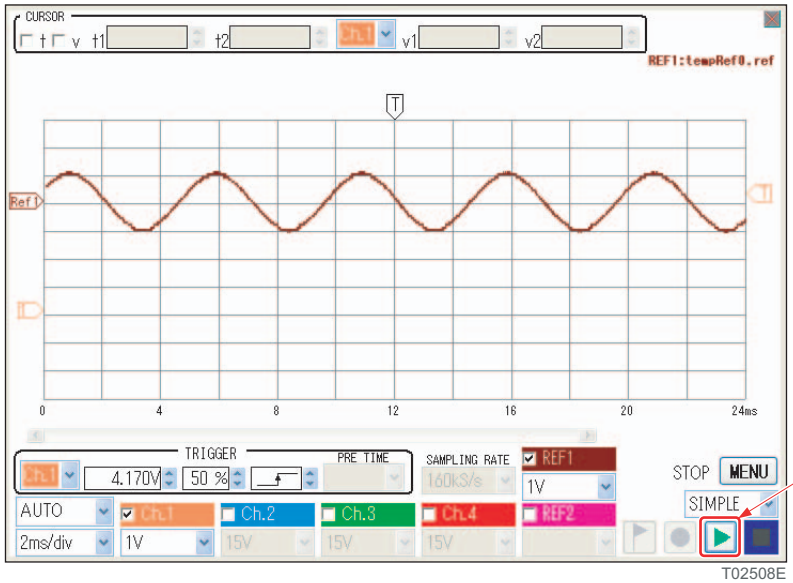
Data replay screen

4. Click the ▼ button on the lower side of the reference waveform switch display 1 in the lower selection items in the data replay screen and set the voltage range.
The reference waveform switch display 1 in the data replay screen turns to the set voltage range.



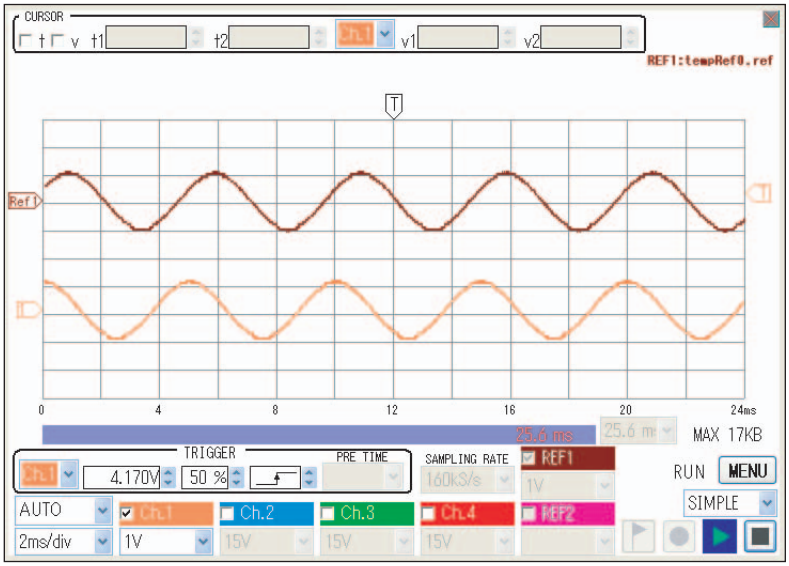
Data replay screen

5. Click the "CLOSE" button in the lower right in the data replay screen.
If a save confirmation message is displayed, save the data as necessary.
Waveform observation screen is displayed.



Waveform observation screen

6. Click the "Observation start" button in the lower right in the waveform observation screen.
Waveform observation is started displaying a reference waveform.

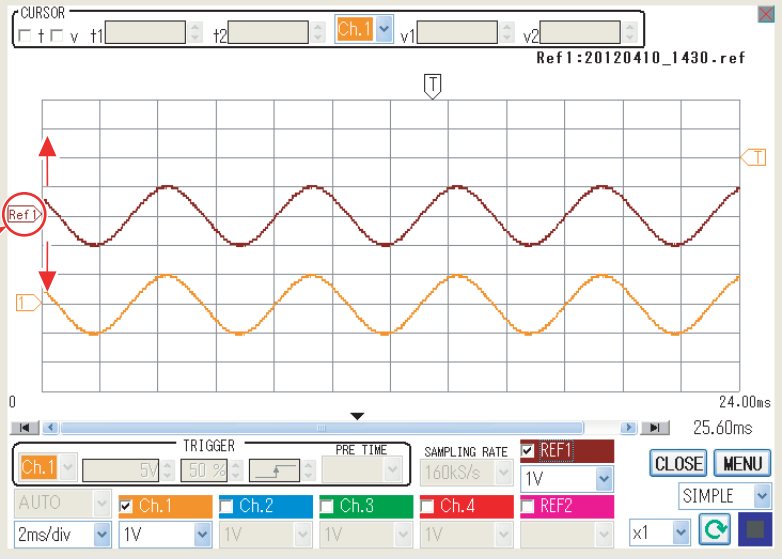


Waveform observation screen

NOTE

- A reference waveform and waveform under observation can be compared in real time.
- Time range cannot be changed.
- Reference waveform mark can be dragged and moved upward and downward.

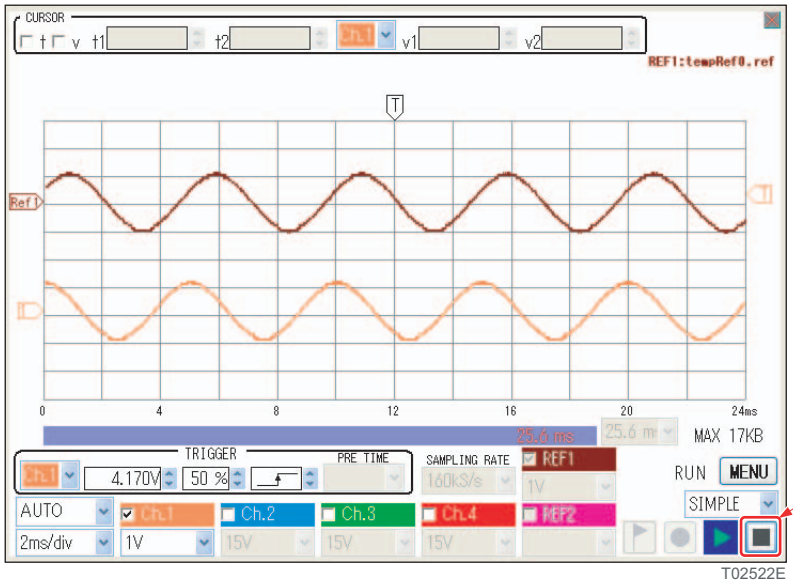
Reference waveform mark



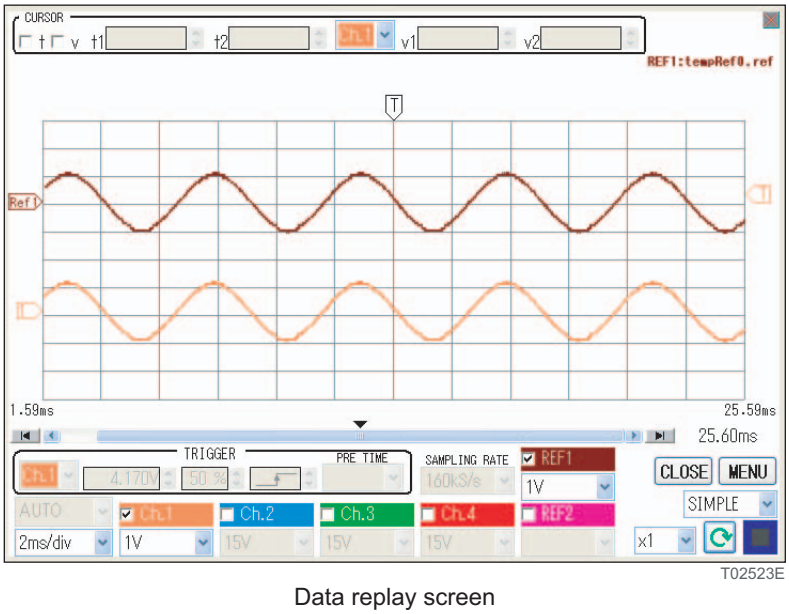
Data replay screen

Saving a reference file

1. Click the "Stop" button in the waveform observation screen displaying a reference waveform.
The data replay screen is displayed.

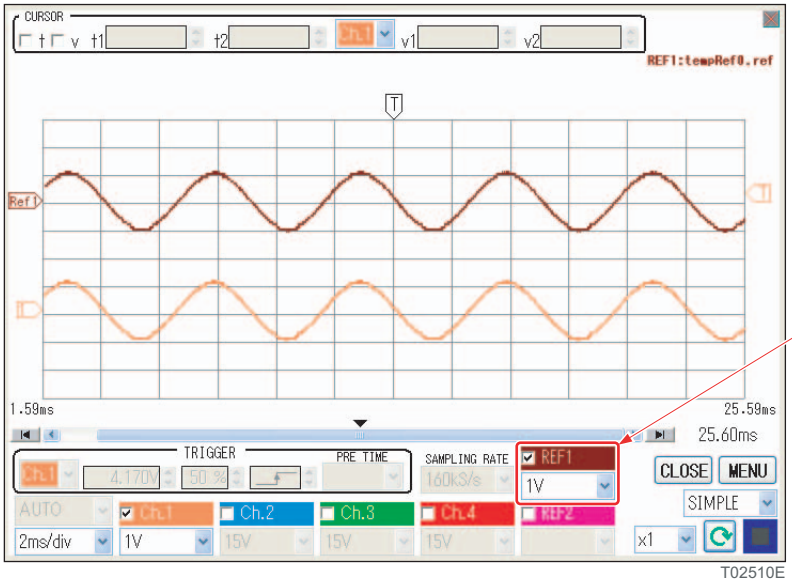


Waveform observation screen



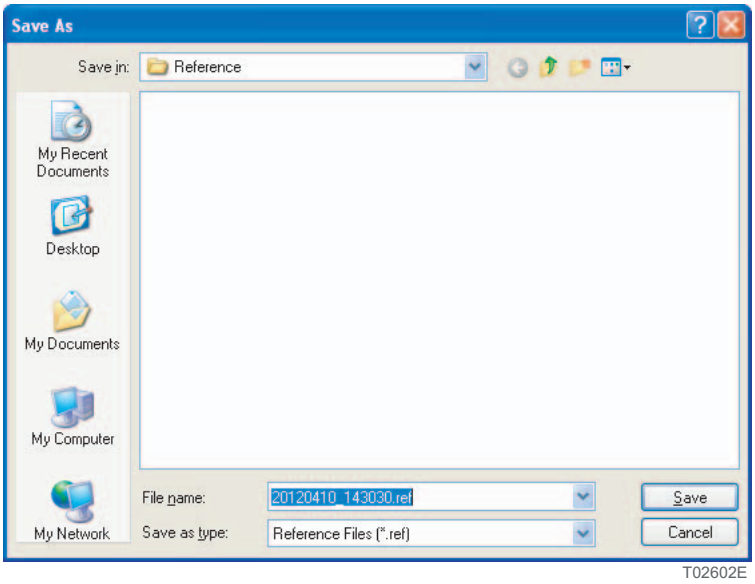
Data replay screen

2. Click the checked check box at the left of the reference waveform switch display 1 in the lower selection items in the data replay screen.
The data saving screen is displayed.



Reference waveform switch display 1

Data replay screen



Data saving screen

NOTE

- The data saving screen is not displayed if a reference file was opened to display the reference waveform.

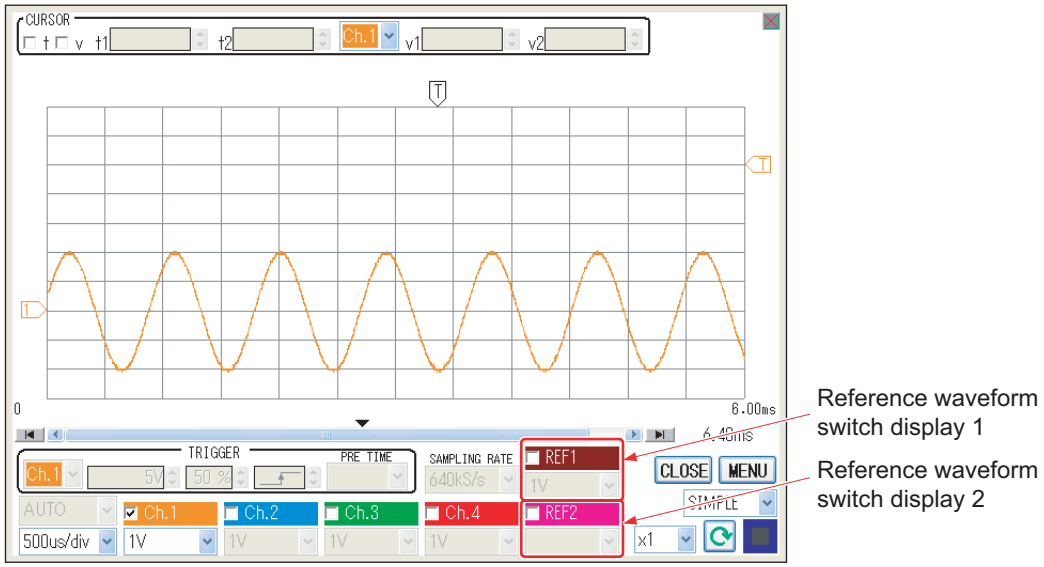
3. Designate a folder to which the data is to be saved and the data file name in the data saving screen and click "Save".
Data is saved into the designated folder.

NOTE

- In the default state, long duration data is saved to the following folder.
  C:¥Documents and Settings¥All Users¥Documents¥DST-i Oscilloscope¥Reference
- Though the file is automatically named in the form of "Current date_hr., min., sec.log", it can be renamed as desired.

Retrieving a reference file

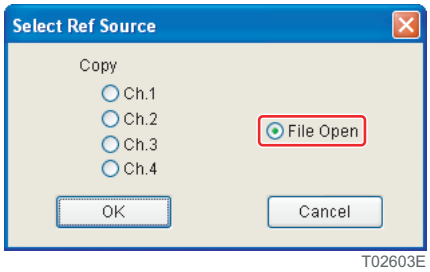
1. Click the check box at the left of the reference waveform switch display 1 in the lower selection items of the data replay screen.
The selection screen is displayed.



Data replay screen

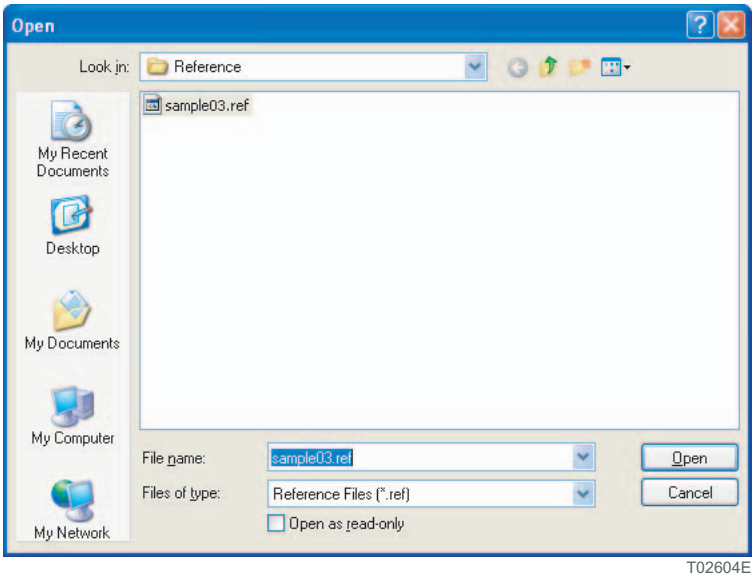
NOTE

- A reference file can be retrieved only when the observation is stopped.
- You can also perform the same operation on reference waveform switch display 2.
- Up to 2 reference waveforms can be shown on the screen simultaneously.
  To show the second waveform, click the check box at the left of the reference waveform switch display 2 and follow the procedures shown below.



Selection screen

2. Select a radio button at the left of "File Open" in the selection screen, and click the "OK" button.
The file designation screen is displayed.

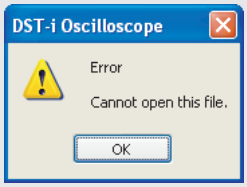


File designation screen

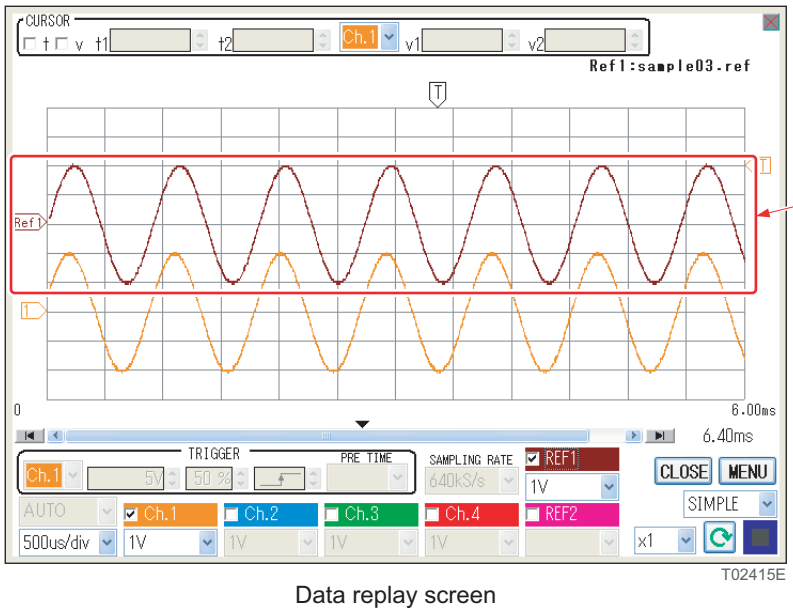
3. In the file designation screen, specify the data file and click "Open".
A reference waveform which is retrieved into the data replay screen is displayed.

NOTE

- If the file selected was not saved using the PC oscilloscope software, the following message is shown.



T02600E



Reference waveform

T02415E

Data replay screen

NOTE

- A reference waveform and waveform under observation can be compared in real time.
- Time range cannot be changed.

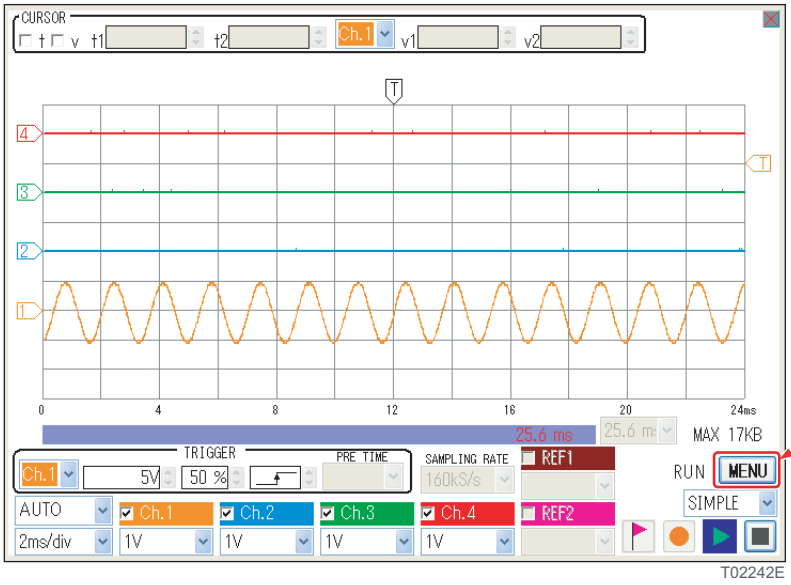
3-7 System setting

Setting of the PC oscilloscope software can be altered and customized.

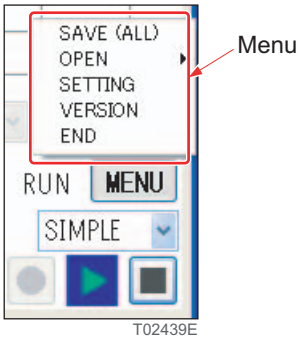
Screen color setting

In the screen color setting, colors of waveforms for each channel, and those of characters, background and grid lines on the screen can be altered.

1. Click the "MENU" button in the lower right of the waveform observation screen.
A menu is displayed.

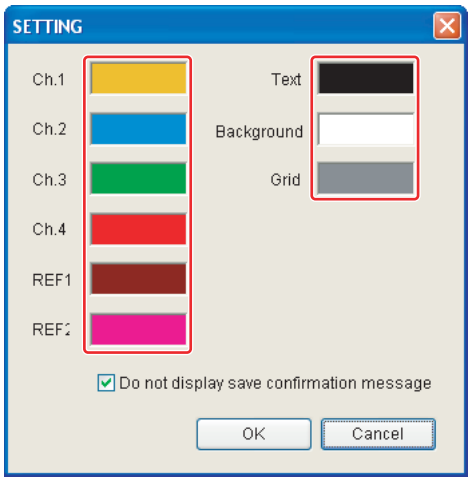


Waveform observation screen



Menu

2. Click "SETTING" in the menu.
The system setting screen is displayed.



System setting screen

3. Click a color of an item in the system setting screen whose color is to be changed.
The color selection screen is displayed.

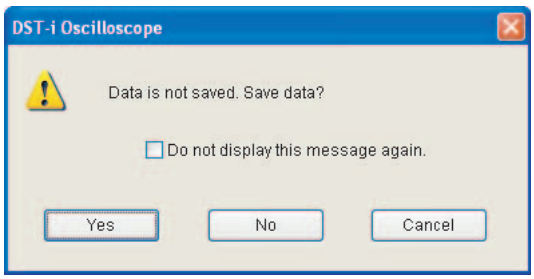
Color selection screen

4. Select a desired color on the color selection screen and click "OK".
The screen returns to the system setting screen.

5. Click "OK" on the system setting screen.
The screen returns to the waveform observation screen with the color as selected.

Save confirmation message display/non-display setting

The save file confirmation message is displayed when you click the "Close" button on the data replay screen without first saving the waveform data. The save file confirmation message display/non-display setting is used to specify whether or not to display the save file confirmation message.



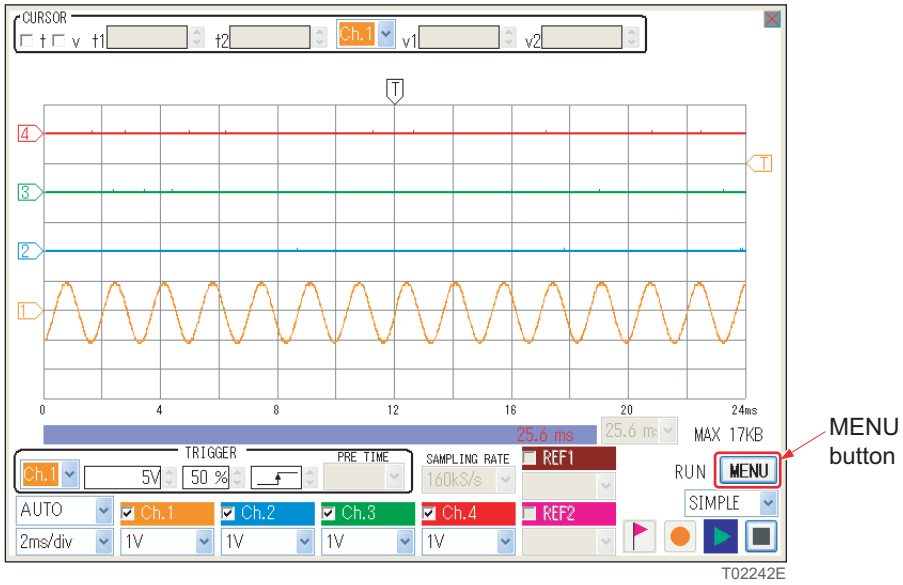
T02607E

Save confirmation message screen

NOTE

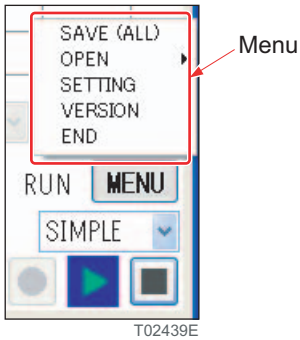
- If you check the check box in the save confirmation message screen, the save confirmation message screen will not be displayed.

1. Click the "MENU" button in the lower right of the waveform observation screen.
A menu is displayed.



T02242E

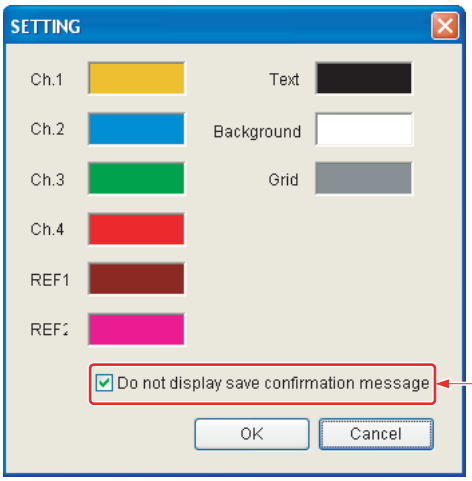
Waveform observation screen



T02439E

Menu

2. Click "SETTING" in the menu.
The system setting screen is displayed.



The "Save confirmation message screen" will not be displayed on the waveform observation screen if this box is checked.

System setting screen

3. Click the check box at the left of "Do not display save confirmation message" in the system setting screen, and click the "OK" button.
The screen returns to the waveform observation screen.
Subsequently, the save confirmation message screen is not displayed.

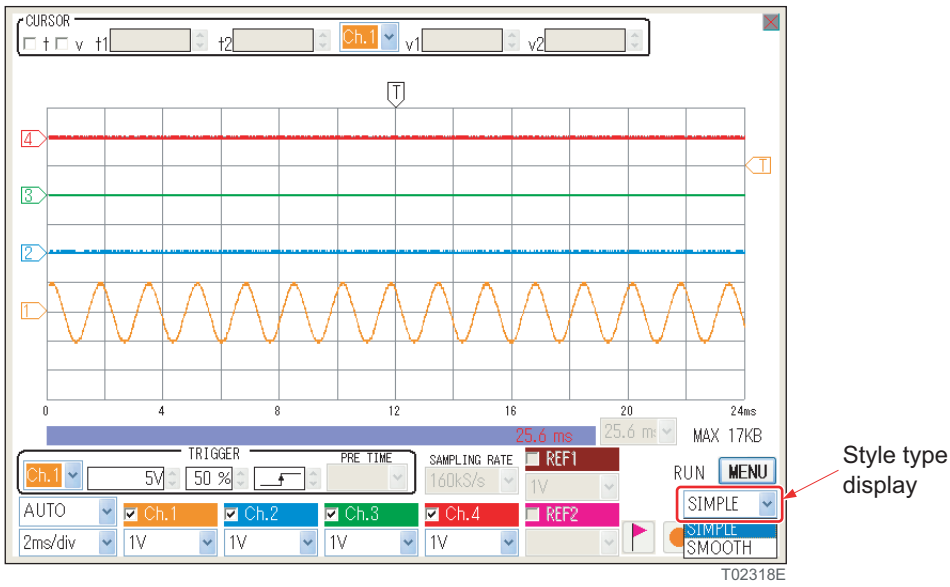
NOTE

- Uncheck the check box to display the save confirmation message screen again.

Waveform style setting

In the waveform style setting, different styles can be selected.
Zooming up a waveform on the screen of the PC sometimes shows the waveform in rough lines.
This system allows reversing such situations.

1. Click the ▼ button on the right side of the style type display in the lower right of the waveform observation screen.
A pull down menu is displayed.

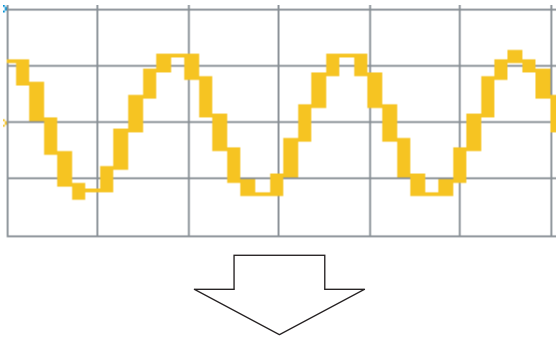


Waveform observation screen

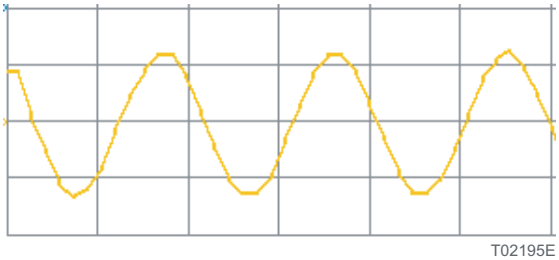
2. Select a style type in the pull down menu.
The waveform shown in the waveform observation screen turns to the set style type.

Example

・Before change: Style type - "SIMPLE"



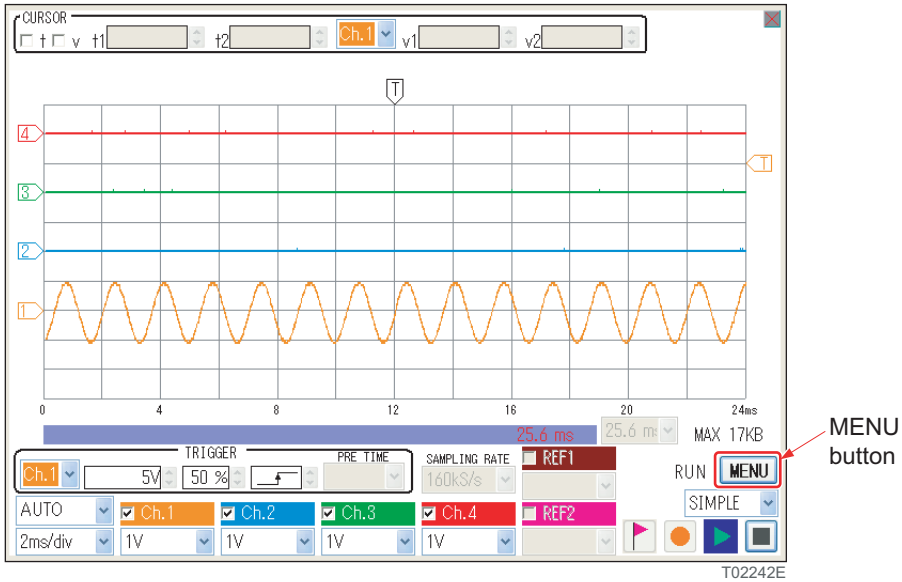
・After change: Style type - "SMOOTH"



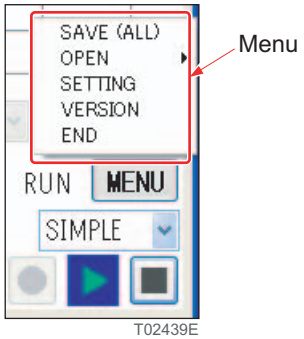
3-8 Version information display of the PC oscilloscope software

Version information of the PC oscilloscope software can be shown.

1. Click the "MENU" button in the lower right of the waveform observation screen.
A menu is displayed.

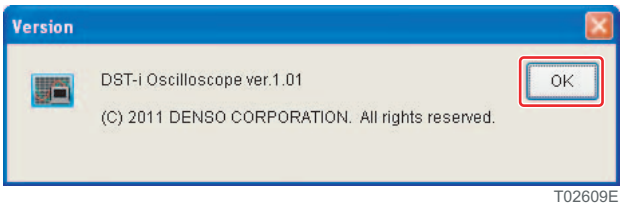


Waveform observation screen



Menu

2. Click "VERSION" in the menu.
The version information display screen of the PC oscilloscope software is shown.



Version information display screen

3. Click "OK" in the version information display screen.
The version information display screen closes.

4 Troubleshooting

4-1 If the screen freezes while using

If the PC freezes while using the PC oscilloscope software, perform the following procedures.

1. Close the PC oscilloscope software.
   If you cannot close your PC oscilloscope, please contact your distributor.
2. Turn the DST-i mode switch OFF.
3. Turn the DST-i mode switch ON to restart the software.
4. Use the procedures 5 to 6 to start DST-i.
   Reference: Page 9 Preparing DST-i (Chapter 1 Before Use/Starting)
5. Restart the PC oscilloscope software.
   If the PC still freezes, restart your PC and repeat the procedures 2 to 5.
   If the PC still freezes, please contact your distributor.

4-2 If the system message is displayed

Message	Description
Cannot open this file.	The file you tried to open was not saved with the PC oscilloscope software or the DST-i oscilloscope software. Select data that has been saved with the oscilloscope software.
Failed to connect to DST-i.	The PC is not connected with the DST-i. Follow the instructions on the screen and click the "Retry" button.
Failed to connect to DST-i. Stop the oscilloscope.	Connection between the PC and DST-i is lost during recording the measurement data. Save the measurement data recorded by then and check the connection with the PC and DST-i.
Connection error	Insufficient free space in the PC. Close other application software and click the "OK" button. Resume observation or measurement. If the same message is displayed again, restart the PC.
DST-i is already connected to other application.	Connection between the PC and DST-i cannot be established. Close other application software and click the "OK" button. Then, start the PC oscilloscope software.

5 Appendix

5-1 Relation between sampling rate and time range

	10 ms/div	20 ms/div	50 ms/div	100 ms/div	200 ms/div	500 ms/div	1 s/div	2 s/div	5 s/div	10 s/div
1.6 kS/sec.					○	○	○	○	○	○
3.2 kS/sec.				○	○	○	○	○	○	○
6.4 kS/sec.			○	○	○	○	○	○	○	○
16 kS/sec.		○	○	○	○	○	○	○	○	○
32 kS/sec.	○	○	○	○	○	○	○	○	○	○
64 kS/sec.	○	○	○	○	○	○	○	○	○	○
160 kS/sec.	○	○	○	○	○	○				
320 kS/sec.	○	○	○	○	○	○				
640 kS/sec.	○	○	○	○	○					

○ : Settable

: Setting disable

5-2 Relation between sampling rate, record time and pretime

	Settable record time	Settable pretime
1.6 kS/sec.	1 min. to 40 hrs.	30 sec. to 20 min.
3.2 kS/sec.	1 min. to 20 hrs.	30 sec. to 20 min.
6.4 kS/sec.	1 min. to 10 hrs.	30 sec. to 20 min.
16 kS/sec.	1 min. to 5 hrs.	30 sec. to 5 min.
32 kS/sec.	1 min. to 2 hrs.	30 sec. to 2 min.
64 kS/sec.	1 min. to 1 hr.	30 sec. to 2 min.
160 kS/sec.	13.1 sec.	
320 kS/sec.	6.5 sec.	
640 kS/sec.	3.2 sec.	

: Setting disable

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