RA1000 Series
V2. 0
User's Manual for Update

Contents

■ Overview

This manual includes functions that have been added and updated for the program update. Also read the user manuals for the RA1000 Main Instrument and Amp Units.
The functions added and updated are as follows.

1. Rendering on Monitor during Memory Wait
    Waveform monitor can now operate during memory acquisition.

2. Gauge Factor Setup in Strain Amps
    DC and AC strain amp gauge factor correction is now possible.

3. Scale Printing
    In addition to printing normal scales, a function to print the middle scale by channel was added for waveform printing.

4. X-Y Function
    X-Y Monitor functions are expanded.
    ・ Enables rendering on the input X-Y monitor during sample filing recording
    ・ Expands the input X-Y monitor display function (Trace ON/OFF)
    ・ Adds the function of cursor display ON/OFF
    ・ Changes print annotation
    ・ Adds the X-Y monitor start key

5. Status at Initialization
    Defaults have been changed.
        Memory output range: 100% against the trigger center
        User setup of waveform printing segmentation   Channel balancing and auto-segmentation
        Format type   Quick (Logical format)

6. Others
    ・ Supports 1.3 GB MO media
    ・ Supports anti-aliasing filter during the sample filing.
    ・ Makes screen key operation be common.
    ・ Makes copy output range setting be common
    ・ Allocates the setup for waveform print segmentation in the [DISP/REC] Short tray screen.
    ・ Memory backup filing save operation
    ・ Adds memory data save function after operation processing
    ・ Extension of the output file of the calculation result
    ・ Allows collective setup for FFT/RMS Amp
    ・ Changes monitor display mode (from XOR to OR)
    ・ Supports a maximum filing speed of 200μs in a PC card filing
    ・ Adds 5 mm for the grid size
    ・ Changes frame size setup for waveform recording segmentation to 5 mm
    ・ Communication command which deletes annotation text

1. Monitor Display during Memory Wait

Input waveform monitor is now available even during the memory acquisition wait (Trigger detection wait). The waveform monitor has the following restrictions for displaying speed.
- Waveform display is conducted at the same speed as the sampling speed when the sampling speed is 200 μs or slower.
- If the sampling speed is faster than 200 μs, the waveform display is conducted at a speed of 200 μs, and there is a message reading "No Sync:200 μs Input". This message indicates that the waveform rendering on the screen is not synchronized with the acquisition speed (sampling speed).

2. Setup of Gauge Factor for Strain Amp

The gauge factor correction for the DC and AC strain amps do not necessitate physical conversion. By setting the gauge factor, the measurement data in the main instrument is automatically corrected. (For Digital Display and Trigger Level)
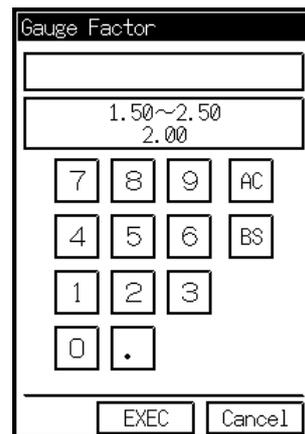
2.1. *Gauge Factor Setup*

The gauge factor can be modified in the gauge factor setup field in the [Extend] tab in the [Detail] window in [AMP]. (The [Extend] tab is available only in the DC and AC strain amp channels.) The gauge factor for the measurement data that has already been recorded can also be changed in the [CHANNEL] window after the data display on the screen.

Pressing the setup entry key displays the setup values inversely. Changing the setup value is available by turning the jog dial. Entering values directly via the 10-key window is also available.
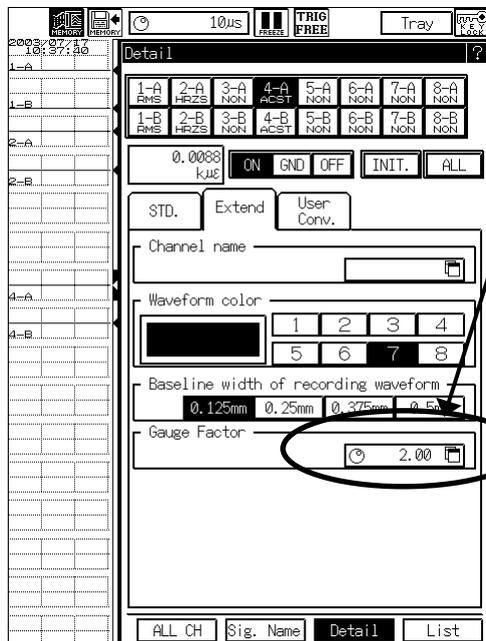
Setup range   1.50 to 2.50
Resolution   0.01
Default   2.00

Entry key for gauge factor setup

10 key for gauge factor setup

TIPS	If the data file created in previous versions (e.g. Version 1.9x or earlier) of RA1000 is referenced by the recent version (e.g. Version 2.0 or later), the gauge factor is set to 2.0.
TIPS	If the data file created in this version (e.g. Version 2.0 or later) of RA1000 is referenced by previous versions (e.g. Version 1.9x or earlier), the gauge factor will not correctly convert. The gauge factor is regarded as 2.0.

2.2. Gauge Factor Representation

Gauge factor is now indicated as GF. The gauge factors are displayed in the following portion. (e.g. GF = 2.00)
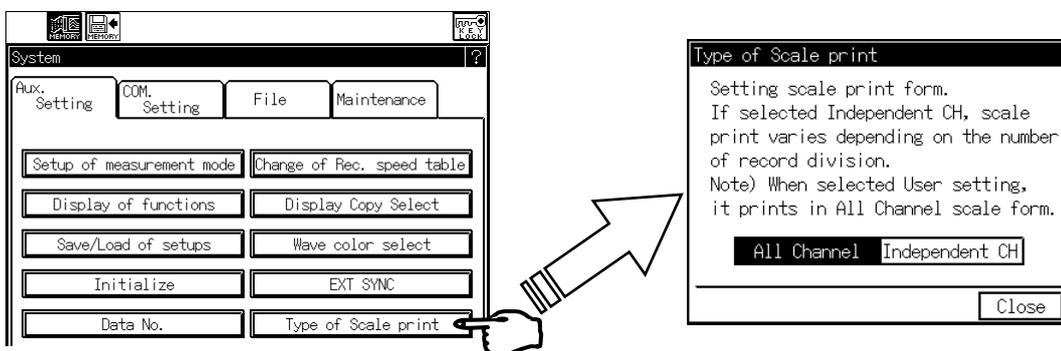
- ・ Setup list display, in the Amp Extend tab
- ・ Channel annotation print
- ・ Amp information block in the CSV file

3. Scale Print

A function to print the middle scale by channel was added to the scale printing function for waveform printing.

## *3.1. Scale Printing Format Setup*

Setup changes are now available in the setup window of [Type of Scale Print] of the [Aux. Setting] tab.

All channel: Conventional scale is printed. Only the upper limit is printed.
Independent CH: Scales including the middle scale are printed in for each channel.

3.2. Sample Printing Format

| 1-A: | 250.00[| V] |
| 1-B: | 100.00[| mV] |

| 1-A: | -250.00[| V] |
| 1-B: | -100.00[| mV] |

[All Channel]   [Independent CH]
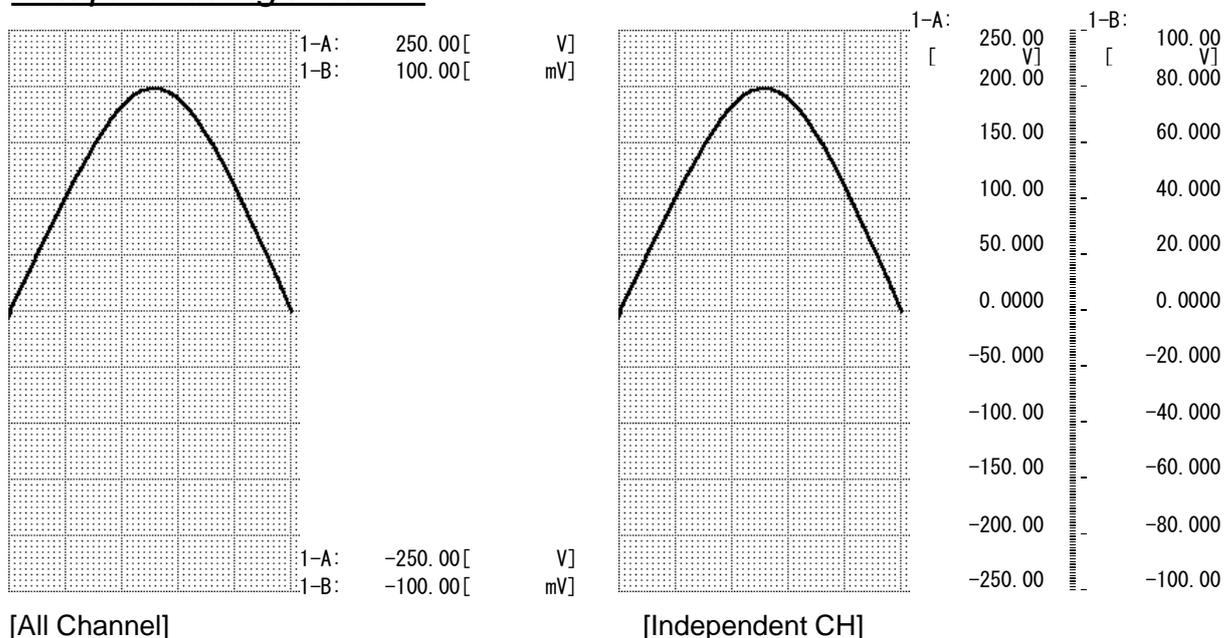
> **TIPS** If the A4 compression is selected and the waveform recording segmentation is "User Setup", the scale is printed in the [All Channel] format.

> **TIPS** If you choose [Independent Channel], the middle grids are printed and much recording paper is used. Choose the [All Channel] format to reduce paper use.

3.3.   *Communication Commands*

Change and readout of the scale printing format setup is now available using communication commands.

SSM (Set Scale Mode)		<RS-232C><GP-IB>
Function	Sets scale print format for waveform printing	
Input format	SSM P1 (Delimiter)	
Parameter	<table><tr><td>P1</td><td>Scale print format</td></tr><tr><td>1</td><td>All channel</td></tr><tr><td>2</td><td>Independent CH</td></tr></table>	
Description	Equivalent to [Scale Print Format] in the [Auxiliary Setup] tab in [System]	

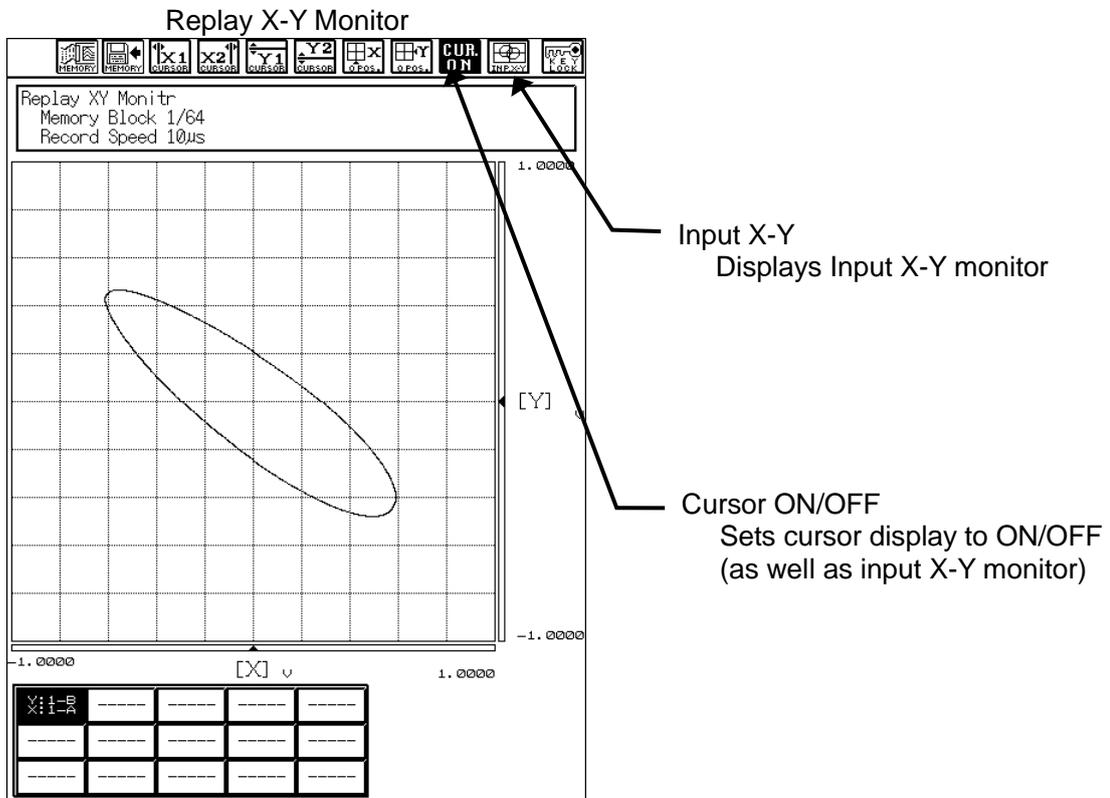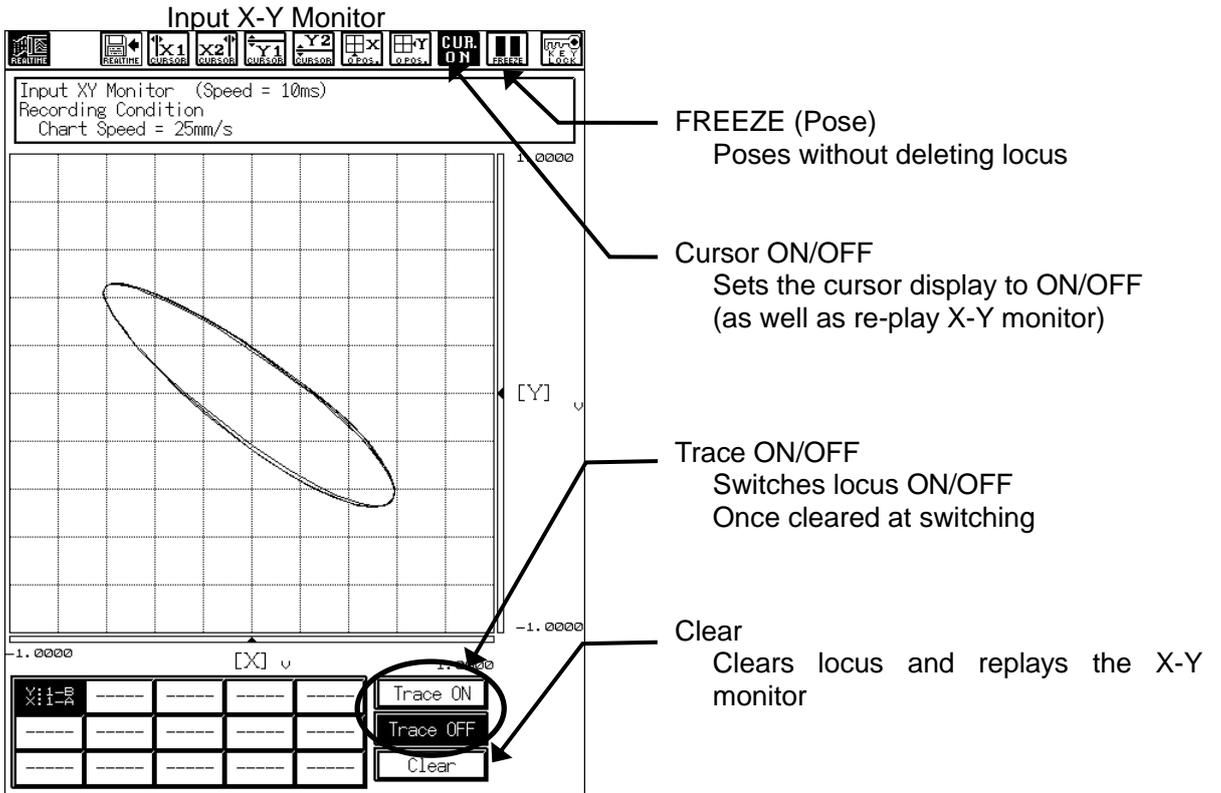| ISM (Inquire Scale Mode)		<RS-232C><GP-IB>
Function	Outputs setup status of scale print format of wavefrom print	
Input format	ISM (Delimiter)	
Output format	A1 (Delimiter)	
Answer	<table><tr><td>A1</td><td>Scale print format</td></tr><tr><td>1</td><td>All channel</td></tr><tr><td>2</td><td>Independent CH</td></tr></table>	

4. X-Y Function

4.1.   *Input X-Y Monitor Display during Sample Filing Data Acquisition*

The X-Y monitor can now be displayed even when the condition is in Filing Mode, [Sample] data format, and the X-Y monitor. (In this condition, screen was set to waveform monitor formerly.)
Other functions have been modified as follows.

- The screen is cleared for a moment upon starting recording. After that, the X-Y monitor is displayed until acquisition is completed.

- Immediately after acquisition is completed, the X-Y screen changes to the replay X-Y screen.

- If the sampling speed is 10 ms or slower, the rendering is conducted at the same speed as acquisition.

- If the sampling speed is faster than 10 ms, which is over the real-time rendering speed, acquisition speed and rendering are asynchronous.

- Rendering is conducted in 10 ms other than in the Sample Filing Mode.

4.2.   X-Y Monitor Function

New display functions have been added to the input/replay X-Y monitor screen.

Input X-Y Monitor

FREEZE (Pose)
Poses without deleting locus

Cursor ON/OFF
Sets the cursor display to ON/OFF
(as well as re-play X-Y monitor)

Trace ON/OFF
Switches locus ON/OFF
Once cleared at switching

Clear
Clears locus and replays the X-Y monitor

Replay X-Y Monitor

Input X-Y
Displays Input X-Y monitor

Cursor ON/OFF
Sets cursor display to ON/OFF
(as well as input X-Y monitor)

4.3. _Input Monitor Start Key_

The [X-Y Monitor] key has been added to the [X-Y Print] tab in the [DISP/REC] details tray.
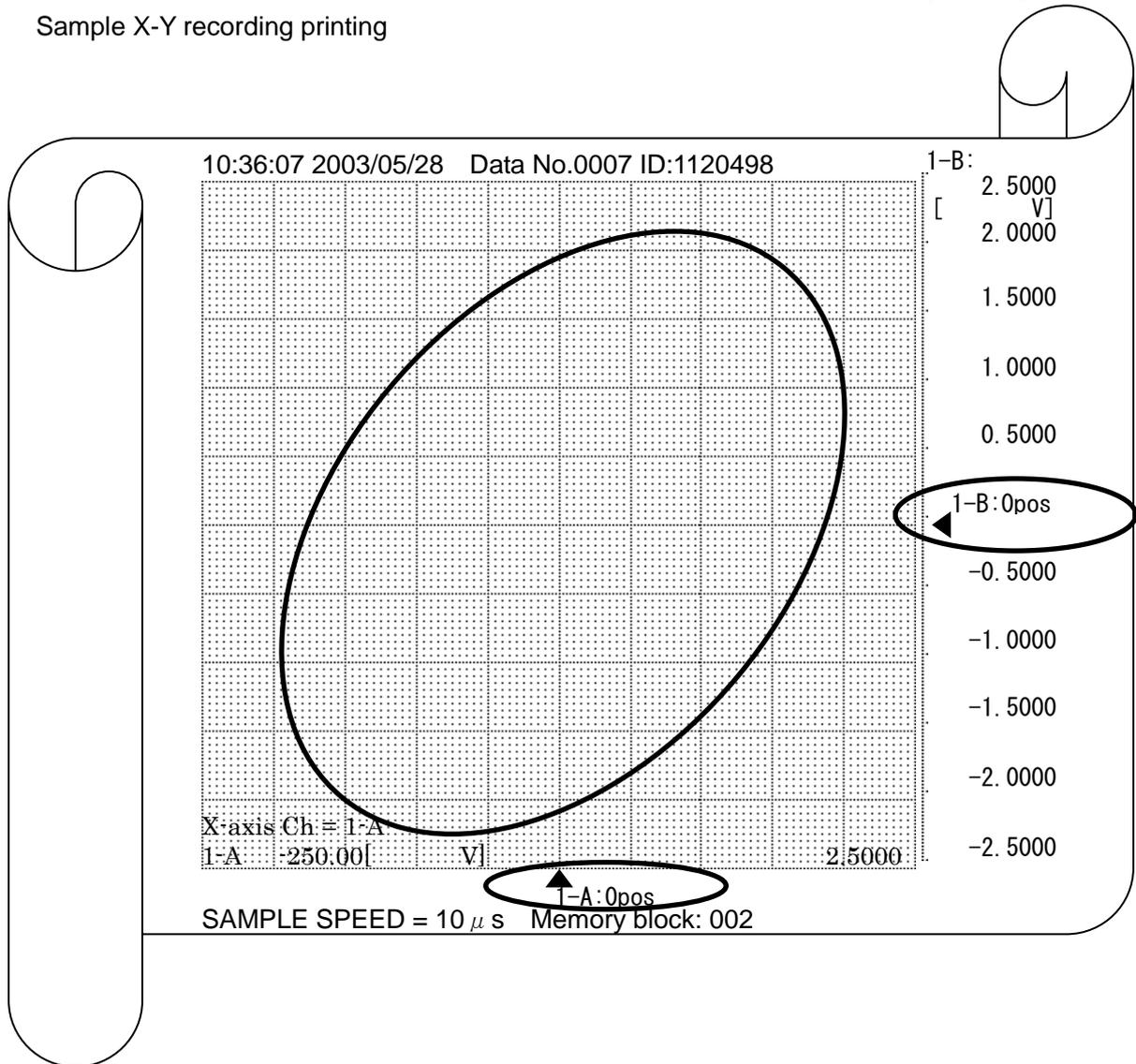
You can use the X-Y monitor immediately after the setup for the X-Y recording.
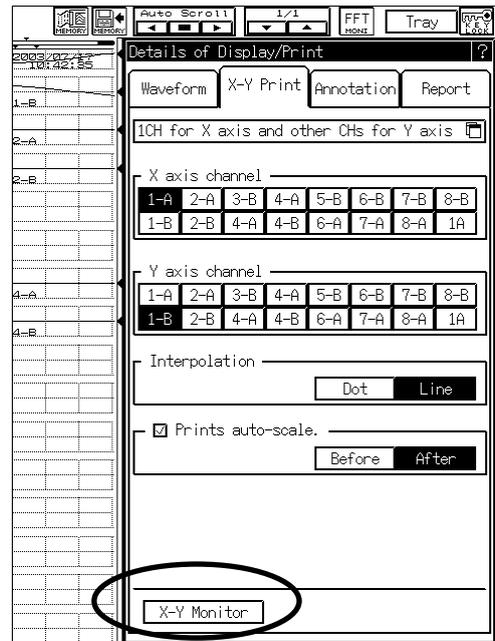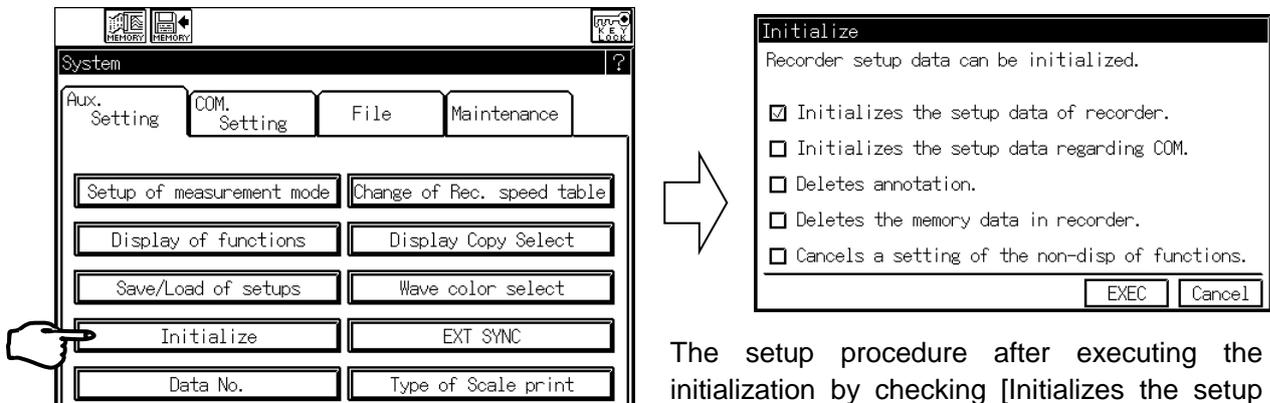

4.4. _X-Y Recording Print_

The channel numbers are now printed at the zero positions in the X-Y recording printing.

Sample X-Y recording printing

5. Initialization

The defaults have been modified to the values typically used and demanded by users.
You can initialize the value with the [Initialize] menu in the [Aux. Setting] tab in [SYSTEM].

The setup procedure after executing the initialization by checking [Initializes the setup data of recorder.] changed as follows.

5.1. *User-Set Waveform Print Segmentation*

Defaults for waveform print segmentation have been modified and change depending on the current channel installation.

- Number of waveform segmentations
    Waveforms are segmented according to the number of valid channels of input units.
    If there are six valid channels, the waveforms are segmented into six.
- Frame size
    All frame sizes are set to a uniform size.
- Channel Display
    Channels are allocated from the upper frame one by one.

> **TIPS** By changing the setup for waveform print segmentation and user setup of [Number of W/F Print Div.], the adjustment of the related setup for [Frame Size] and [Displayed CH] is performed as during initialization.
> If there are more valid channels than the number of waveform print segmentation, however, more than one channel is allocated.

5.2. *Output Range Setup*

The default has been changed to [100% with Respect to Trigger Center].

> **TIPS** The default was 50% before, which means that all the data is not output. This time, to avoid misunderstanding, the percentage has been changed to 100%.

5.3. *Formatting Types*

The default has been changed to [Quick] (Logical format).

> **TIPS** If [Normal] (Physical formatting) is performed by mistake, control will be unavailable for long time. For this reason, the default has been changed to [Quick], which has a short processing time.

> **TIPS** For the first time to use the media, it is necessary to execute a [Normal] physical formatting with this unit. In the media, which was formatted in the other equipment, it may cause of same trouble.

6. Others

6.1. Supporting 1.3 MB MO media

From the update of this time, 1.3 GB MO media can be used. (except built-in MO unit.)

6.2. Anti-aliasing Filter at Sample Filing

The anti-aliasing filter of the FFT Amp can now be used during the Sample Filing acquisition. Thanks to this function, it is possible to eliminate aliasing that is generated when the data recorded in the Sample Filing is analyzed through FFT.

The following restrictions are now imposed when the filing data format is changed to [Peak].
- The anti-aliasing filter is set to invalid and released.
- A confirmation window opens to actively release the anti-aliasing filter.

To set the anti-aliasing filter, use the [STD] tab screen after selecting the FFT Amp channel in the [Detail] screen in [AMP].

6.3. Unifying Screen Key Operation

Tray types that are opened with the Screen key become common in [Short] and [Detail]. If the [Detail] screen is displayed by switching the tray in one screen, all screen keys show the [Detail] screen. (Same as in the Short tray.)   In the condition of tray nothing (all the screen monitors), it gets to display short tray.

The default is now set to the Short tray. (At initialization and after startup)

When pushing the same key, Tray switches over like the following table.

Screen	Changing operation
AMP	"All CH", "Signal name", "Details", "No tray"
Trigger	"Short", "Details", "No tray"
ACQ SPEED	"Short", "Details", "No tray"
CHANNEL	"All CH", "Signal name", "Details", "No tray"
DATA	"Short", "No tray"
SEARCH	"Short" *It is not in the changing*
DISP/REC	"Short", "No tray"
COPY SET	"Short" *It is not in the changing*
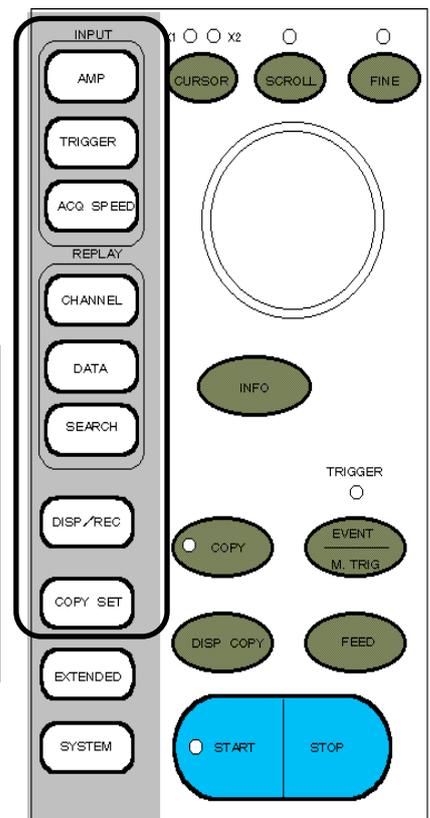
6.4.   Unifying Output Area Setup

The time axis range setup for the output of recorded data, [Auto Output], and [Manual Output] (output with the [Copy] key) is now continuous.

- Manual output setup (Setup in the [ACQ SPEED] screen) and automatic output now link together.

- Setup of [O/P Disp. Region of replay monitor.] and [Output between cursors.] are regarded as [Output whole recorded data.], however, because they are invalid in automatic output.
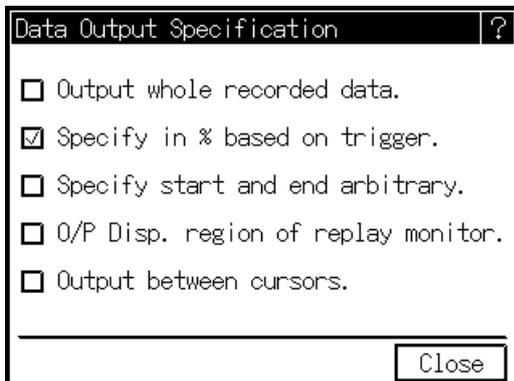
The Data Output Specification Setup window

You cannot specify items in [O/P Disp. Region of replay monitor.] and [Output between cursors.] under the condition of [Auto Output]

Also, in the setting of [Specify start and end arbitrary],, the specification value sometimes becomes the actual recording range outside.
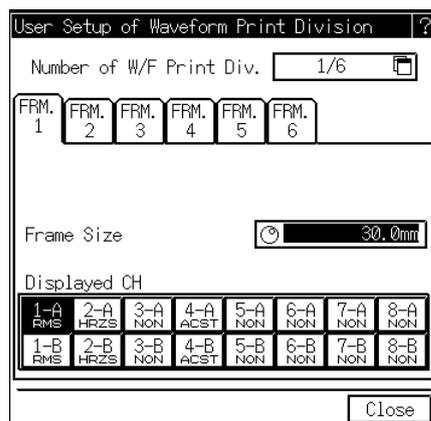In this case, the output area is different from the setting.

6.5.   Waveform Segmentation Key in [Display/Recording] Short Tray Screen

Waveform recording segmentation on the Short tray is now possible.
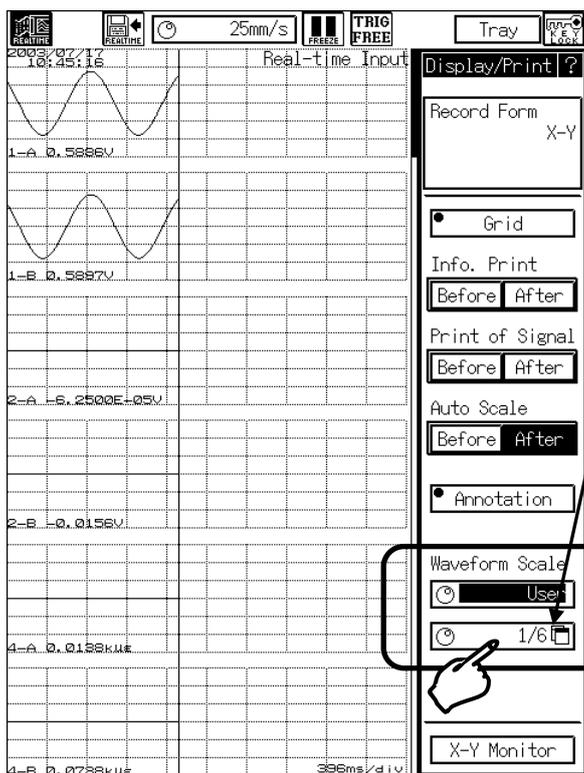
You can change the number of waveform segmentation with a job dial.
[User], [1/1], [1/2], [1/4], [1/8], and [1/16]

TIPS

When opening "User setup of Waveform Print division" screen from short tray, the reflection by the monitor becomes with the time to have closed a screen.
To setting with confirming the effect, open a setting screen from " detailed tray ".

6.6. *Memory backup filing save operation*

The operation became able to be limited by the existence or non-existence of the trigger detection when automatically saving the data, after memory acquisition.
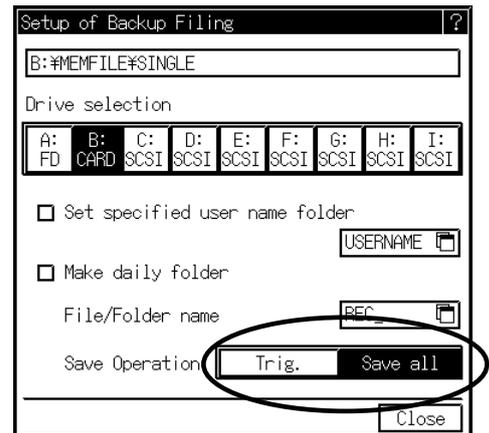
Save Operation is "Trig":
    Save only the memory block, which detected a trigger.
Save Operation is "Save all"
    It saves all of the memory blocks, which were included irrespective of the trigger detection.

The default becomes the setting of "Save all".

6.7. *Original Data Saving after Auto Operation Processing*

In the secondary processing result file save, which is performed after the automatic secondary processing (operation) immediately after the memory acquisition completion, the original data (memory data before processing) can be saved as well as the secondary processing result. The [Memory 2nd Process.] window in the [EXTENDED] screen is used for setup.
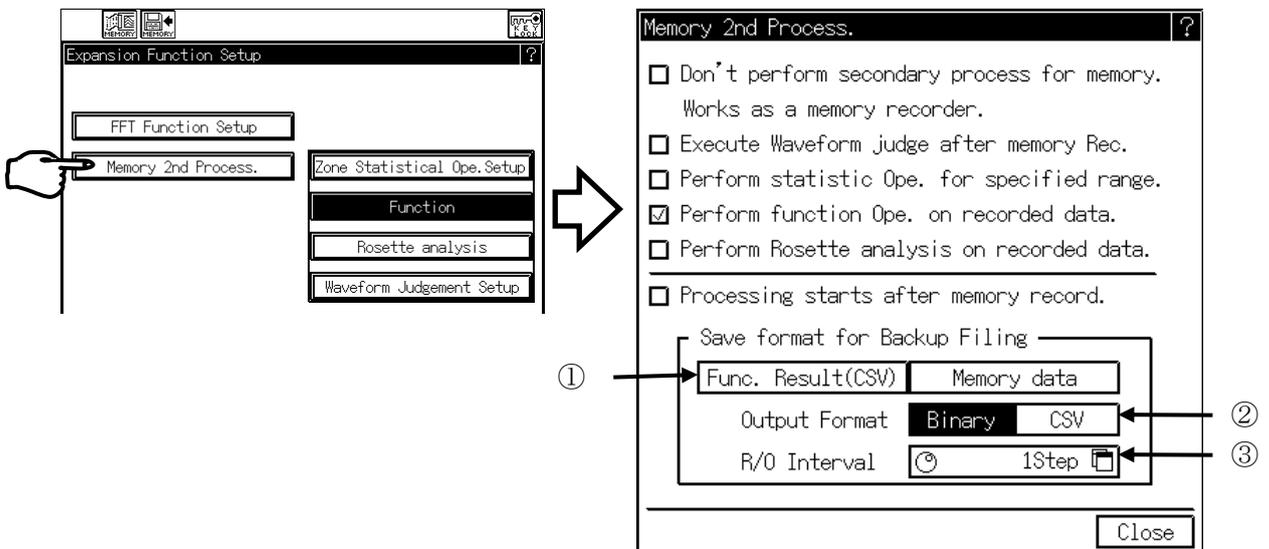
1. File save contents
    Saving operation results and original data is independently available, but setting both to OFF is prohibited. In the default, only [Func. Result (CSV)] is ON.

2. Output format
    You can now set the original data (memory acquisition data) saving format.
    Selection between [Binary] and [CSV] is now available.

3. Readout interval
    You can now set the readout interval (number of steps) when saving the original data (memory acquisition data) in the CSV format.

TIPS   Readout of this setup with communication commands is not available.

6.8. Extension of the output file of the calculation result

It changed into CLC from CSV to distinguish the file extension when outputting the result of the section statistic calculation, the function calculation to the file from the CSV file save of the including data.

| TIPS | When referring to the CSV file of the calculation result, which has extension CLC with the Windows personal computer, the extension must be changed. |

6.9. Collective Setting of Vibration Amp

Collective setup for functions related to the vibration sensor mode in FFT and RMS amps is now available. The following parameters should be set.

1. Sensor setup
2. Sensor sensitivity of amp-embedded sensor
3. Charge sensor sensitivity
4. Charge converter sensitivity
5. Units for range
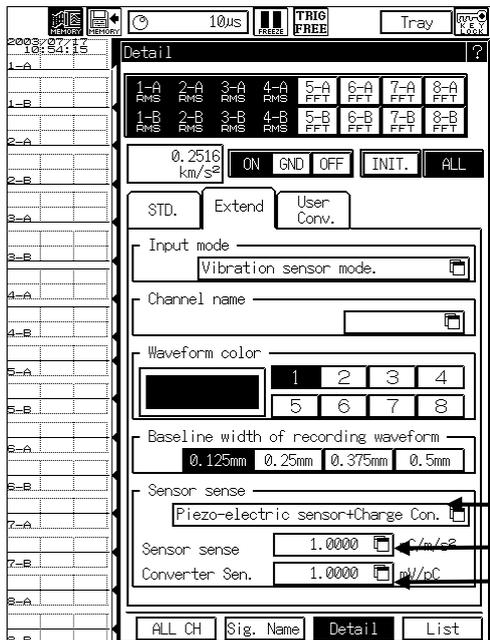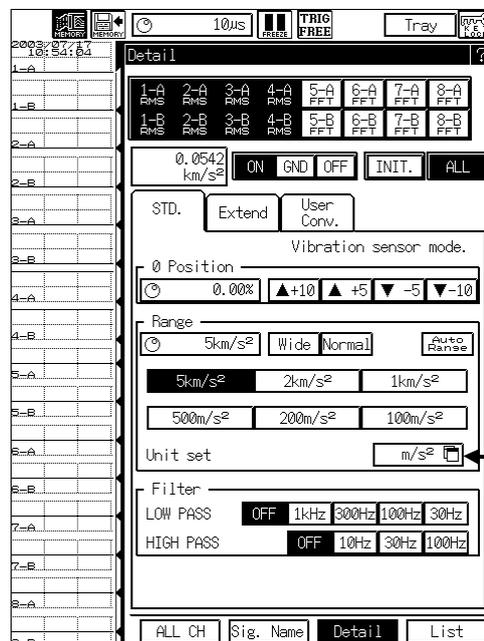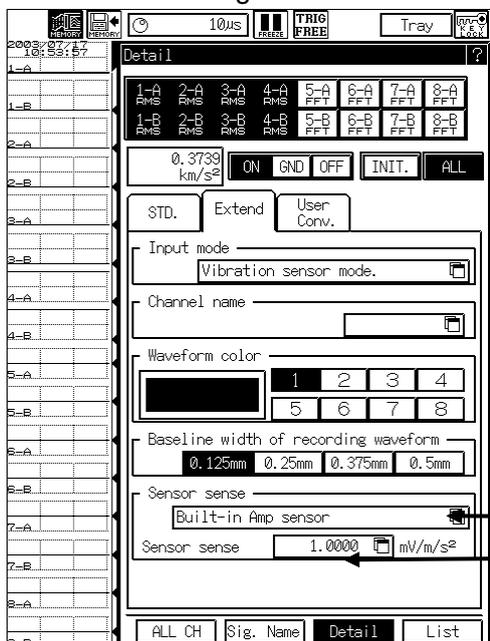
6.10.   Waveform Monitor Rendering Mode Change

If two waveforms overlap, the waveform may disappear depending on the color combination. To avoid this situation, the rendering mode has changed from XOR to OR in order to avoid

> **TIPS**   Characters may not be recognized when a waveform overlays the characters on the screen.

6.11.   Supporting 200 µs Filing for PC Card

Up to a sampling speed of 200 µs is now available for the filing for the PC card. The recommended card is a flash memory card made by Hitachi.

6.12.   Grid Size of 5 mm

[5 mm] is added to the grid sizes for waveform printing. With this addition, if the frame size has odd-number divisions (1 division = 10 mm), the zero position can be adjusted to a grid.

> **TIPS**   The format for 5 mm is different between RA1200 and RA1300.

10 mm
Main grids + Sub grids

10 mm
Only main grids

5 mm
Main grids + Sub grids
(in RA1300)

5 mm
Only main grids
(in RA1300)

5 mm
Main grids + Sub grids
(in RA1200)

5 mm
Only main grids
(in RA1200)

Communication command (IGP/SGP) parameters and answer contents are now added. With these parameters and contents, it becomes possible to read out the setup values.

3 = 5 mm   Main grids + Sub-grids
4 = 5 mm   Only main grids

6.13. Waveform Recording Segmentation and Frame Size Setup

The steps for waveform recording segmentation user setup and frame size setup has changed from 10 mm to 5 mm.
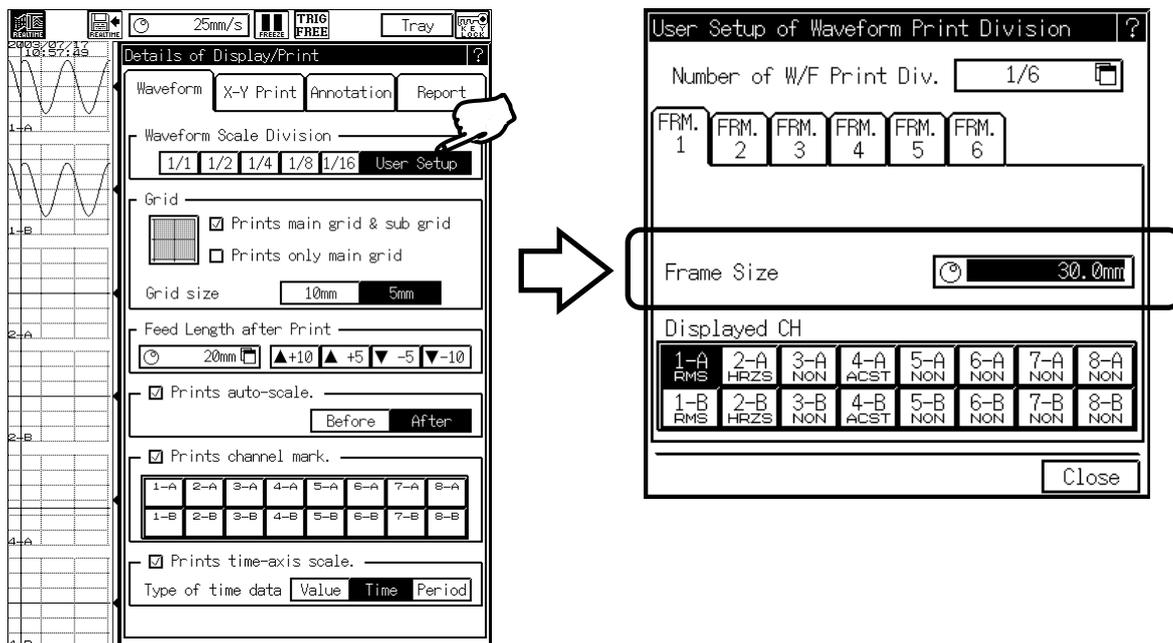
6.14. Communication command for delete annotation text

The text of User Page Annotation, User Channel Annotation, the measurement information, the signal name, the channel mark can be cleared by the communication command.

Command	ＴＣＰ (Text Clear Page annotation)
Function	Deletes the contents of User Page Annotation.
Input format	TCP P1(Delimiter)
Output format	E::(Delimiter)
Parameter	P1: Specifies the line to delete. [1-108]: Deletes only a specified line. A　　: Deletes all lines.

Command	ＴＣＬ (Text Clear Line annotation)
Function	Deletes the contents of User Channel Annotation.
Input format	TCL P1(Delimiter)
Output format	E::(Delimiter)
Parameter	P1: Specifies the line of channel to delete. [1-16]: Deletes only a specified channel.1=1A, 2=1B,…..16=8B A　　: Deletes all channels.

Command	ＴＣＴ (Text Clear Title)
Function	Deletes the text of the titles 1 and 2 of the report feature.
Input format	TCT P1(Delimiter)
Output format	E::(Delimiter)
Parameter	P1: Specifies the title to delete. [1or2]　: Deletes only a specified title.1=Title No.1, 2=Title No2 A　　　: Deletes all titles.

Command	ＴＣＤ (Text Clear heDer)
Function	Deletes the text of the measurement information.
Input format	TCD P1(Delimiter)
Output format	E::(Delimiter)
Parameter	P1: Specifies the line to delete. [1-108]: Deletes only a specified line. A　　: Deletes all lines.

Command	ＴＣＳ (Text Clear Signal name)
Function	Deletes the text of the signal name.
Input format	TCS P1(Delimiter)
Output format	E::(Delimiter)
Parameter	P1: Specifies the channel to delete. [1-16]: Deletes only a specified channel.1=1A, 2=1B,…..16=8B A　　: Deletes all channels.

Command	ＴＣＣ (Text Clear Channel mark)
Function	Deletes the text of the channel mark.
Input format	TCC P1(Delimiter)
Output format	E::(Delimiter)
Parameter	P1: Specifies the channel to delete. [1-16]: Deletes only a specified channel.1=1A, 2=1B,…..16=8B A　　: Deletes all channels.

7. Cautions

The environment setup file created in this version (Version 2.0) cannot be used in previous versions.

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