

Portable Multi Logger ZR-RX40

User's Manual



Introduction

This manual provides information regarding functions, performance and operating methods that are required for using the ZR-RX40.

When using the ZR-RX40, be sure to observe the following:

The ZR-RX40 must be operated by personnel knowledgeable in electrical engineering.

To ensure correct use, please read this manual thoroughly to deepen your understanding of the product.

Please keep this manual in a safe place so that it can be referred to whenever necessary.

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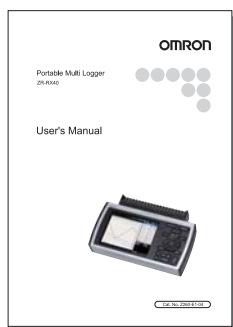
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Type of Manuals

The manuals of the ZR-RX40 series consist of the following.

Select the manual suitable for your purpose and read it before starting operation.

Manual packaged in the product (brochure)



User's Manual (this manual)

The basic information to use the ZR-RX40 series is described, such as the information for safe and correct use, confirmation of the package, procedure from connection to measurement, and the information of functions and specifications of the ZR-RX40 series.

Manuals contained in the utility CD-ROM (pdf data)



Software Manual

Information for installing PC software, basic operation, explanation of screen and setting methods is described.

Two PC software manuals are contained:

- Special PC software "Wave Inspire RX"
- Basic PC software "Smart Viewer RXW"

User's Manual (this manual)

- Information for safe and correct use
- Before use: connection and wiring in details, language change of display, etc.
- Procedure in details for setting and measurement
- Specifications of the ZR-RX40 series and accessories
- Other information which is required for the use of the ZR-RX40 series

User's Manual

APPLICATION CONSIDERATIONS
(Please Read)

BEFORE USE

1

SETTINGS AND MEASUREMENT

2

SPECIFICATIONS

3

APPENDIX

4

Portable Multi Logger
ZR-RX40

READ AND UNDERSTAND THIS DOCUMENT

Please read and understand this document before using the products. Please consult your OMRON representative if you have any questions or comments.

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Meanings of Signal Words

The following signal words are used in this manual.



WARNING

Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

Meanings of Alert Symbols

The following alert symbols are used in this manual.



Indicates the possibility of explosion under specific conditions.



Indicates the possibility of electric shock under specific conditions.



Indicates prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.



Indicates general prohibitions for which there is no specific symbol.

Alert Statements in this Manual

The following alert statements apply to the products in this manual. Each alert statement also appears at the locations needed in this manual to attract your attention.

WARNING

This product cannot be used for directly or indirectly detecting human bodies to ensure safety.

Do not use this product as a human body protection device.



Serious hazard may occur in rare occasions due to ignition, rupture or combustion of the lithium battery contained in this product.

Never disassemble, deform under pressure, heat or incinerate this product.



Serious hazard may occur in rare occasions due to ignition, rupture or combustion.

Never disassemble, deform under pressure, heat or incinerate the lithium ion battery pack ZR-XRB1 (GRAPHTEC: B-517).



CAUTION

Injuries from electric shock may occur in rare occasions as the result of disassembly.

Never disassemble, deform under pressure or incinerate the main unit.



Hazard may occur from serious fire or electric shock.

Do not connect voltages exceeding the rated voltage to the signal input terminals.



Fire or hazard may occur in rare occasions from ignition, rupture or combustion.

Do not use battery packs other than ZR-XRB1.



Precautions for Safe Use

Be sure to observe the following items as they are very important to ensure safety.

1. Installation environment

- Do not store or use in locations where the temperature exceeds the rated range.
- Do not use in locations where the relative humidity exceeds the 30 to 80 %RH range.
- Do not use in locations subject to steam.
- Do not use in flammable or explodable gas environment.

2. Power supply and wiring

- Do not connect voltages exceeding the rated voltage to signal cables.
- Be sure to check the polarity of the signals when connecting the signal cables.
- When using the battery pack, be sure to read the cautions on the battery pack carefully for correct usage.
- Be sure to use only the specified battery pack.
- Be sure to use only the AC cable and the AC adapter provided as standard accessories.
- Do not connect power supplies exceeding the rated voltage to the AC adapter.
- Be sure to turn off the power supply when connecting to the input terminals.
- Do not touch the input terminals during measurement.

3. Installation category

- The ZR-RX40 conforms to the IEC60664-1 installation category I, and must not be used under the environment of the installation category II, III and IV.

4. Others

- Dispose of this product as industrial waste.
- If there are any troubles, stop usage immediately, turn off the power supply and contact OMRON branch or sales office.

Precautions for Correct Use

Please observe the following precautions to prevent inoperability, misoperation of the product or negative effects on the performance and the device.

1. Installation Location

Do not install this product in the following locations.

- Locations where the temperature exceeds the rated range
- Locations where severe changes in temperature occur (where condensation occurs)
- Locations subject to corrosive or flammable gases
- Locations subject to dust, salt or iron powder
- Locations subject to direct shock or vibration
- Locations subject to direct sunlight or near heating devices
- Locations where water, oil or chemical products may be splashed
- Locations subject to strong magnetic fields or strong electric fields

2. Power supply, connecting and wiring

- The cables should be wired apart from high-tension or power lines.
Malfunction or damage may occur due to induction.
- After wiring, check the adequacy of power supply voltage, miswiring such as overvoltage/load short-circuiting and adequacy of load current before turning on the power supply.
Malfunction may occur due to miswiring and such.
- Always turn off the power supply when attaching or removing peripheral devices.
Attaching or removing of peripheral devices with the power supply on can cause malfunction or data corruption.

3. Installation

- Do not cover the vent hole when using this product.
Leave at least 30cm of installation space around this product.
The generated heat may cause malfunction or damage.
- When measuring temperature, install the product so that the input terminals are not subject to severe changes in temperature by wind or sunlight.
It may cause calculation errors.
- Do not install this product in a slanted or vertical position.
- Connect the GND terminal for safe measurement. This product must also be grounded when sharing a common ground level with other devices.

4. Warm up

- For stable measurement, wait at least 30 minutes after turning on the power supply before using.

5. Handling

- Be sure to take backups of captured data in your PC. The captured content may be altered or lost due to misuse or malfunctions during usage.
- Do not drop or apply strong impact or force to the product.
It may cause malfunction of the monitor or the main unit.

6. Maintenance

- Do not use thinner, benzene, acetone or kerosene to clean this product.
- Calibration should be performed periodically to maintain measurement accuracy.

Checking the Accessories

Item	Remarks	Quantity
Standard Set ZR-RX40A	Main unit	1
	AC adapter/AC cable	1
	User's Manual (this manual)	1
	Utility disk (CD-ROM)	1
	• Special PC software "Wave Inspire RX" (tryout)	
	• Basic PC software "Smart Viewer RXW"	
	• User's Manual PDF files (this manual)	
	• "Wave Inspire RX" Software Manual PDF files	
	• "Smart Viewer RXW" Software Manual PDF files	

Editor's Note

■ Meaning of Symbols

Menu items that are displayed on the ZR-RX40's LCD screen, and windows, dialog boxes and other GUI elements displayed on the PC are indicated enclosed by brackets "[]".

■ Visual Aids

Important

Indicates points that are important to achieve the full product performance, such as operational precautions.

Note

Indicates application procedures.



Indicates pages where related information can be found.

MEMO

CONTENTS

1. BEFORE USE

Features	16
Part Names and Functions	17
Connecting the Power Cable	18
Connecting to an AC Power Supply	18
Connecting to a DC Power Supply	19
Connecting the Analog Input Terminal	21
Terminal Configuration and Signal Types	21
Connection diagram	21
Connecting the Logic Input Terminal	22
Attaching USB Memory Device	24
Inserting a USB Memory Device	24
Connecting to a PC	25
Connection Using a USB Cable	25
LAN Connection	26
Using the Battery Pack	27
Mounting the Battery Pack	27
Charging the Battery	28
Connecting the Humidity Sensor	29
Mounting and Removing the Terminal Unit	30
To Remove	30
To Mount	31
Mounting the Extension Terminal Base Set	32
Set Contents	32
To Mount	32
Mounting the 20 Channel Extension Terminal Set	34
Set Contents	34
To Mount	34
Precautions to Observe When Performing Measurement	37
Noise Countermeasures	38
Setting the Date and Time	39
How to Recharge the Rechargeable Battery	39
How to Set the Date and Time	39
Changing the Display Language	40

2.SETTINGS AND MEASUREMENT

Window names and functions	42
Key Operation	44
(1) CH GROUP	44
(2) SPAN/TRACE/POSITION	45
(3) TIME/DIV	46
(4) MENU	46
(5) QUIT (LOCAL)	46
(6) Direction keys	47
(7) ENTER	47
(8) FAST FORWARD key (KEY LOCK)	47
(9) START/STOP (USB Drive Mode)	48
(10) REVIEW	49
(11) DISPLAY	50
(12) CURSOR (ALARM CLEAR)	51
(13) FILE	51
(14) NAVI	52
Operation Modes	53
(1) Free Running	53
(2) Capturing	54
(3) Dual View Replaying	54
(4) Replaying	55
Setting Menus	56
(1) AMP settings	56
(2) DATA settings	61
(3) TRIG settings	64
(4) USER settings	69
(5) Interface settings	70
(6) OTHR settings	72
(7) Other menus	75
WEB Server Function	87

3.SPECIFICATIONS

Standard Specifications	94
Standard Specifications	94
Main Functions	96
Accessory/Option Specifications	98
PC Software	98
Battery Pack ZR-XRB1	99
Humidity Sensor ZR-XRH1	99
External Dimensions	100

4.APPENDIX

Error Messages and Countermeasures	102
List of Error Messages	102
List of File Error Messages	103
Index	105
Revision History	108

BEFORE USE

Features	16
Part Names and Functions	17
Connecting the Power Cable	18
Connecting the Analog Input Terminal	21
Connecting the Logic Input Terminal	22
Attaching USB Memory Device	24
Connecting to a PC	25
Using the Battery Pack	27
Connecting the Humidity Sensor	29
Mounting and Removing the Terminal Unit	30
Mounting the Extension Terminal Base Set	32
Mounting the 20 Channel Extension Terminal Set	34
Precautions to Observe When Performing Measurement	37
Noise Countermeasures	38
Setting the Date and Time	39
Changing the Display Language	40

Features

The ZR-RX40 (with color monitor and internal memory) are compact, lightweight, multi-channel data loggers.

ZR-RX40 are provided with 20 channels as a standard measurement feature, or can be extended up to 200 channels by attaching additional terminal sets.

ZR-RX40 is equipped with an internal flash memory, and attaching USB memory device also allows you to directly capture a large volume of data to USB memory device.

Furthermore, the data loggers are equipped with USB and Ethernet interfaces to a PC to enable system configurations according to your application.

The Ethernet feature includes WEB and FTP server functions which allow monitoring from a remote location and data transfer.

Input

- Adoption of a pluggable M3 screw type input terminal facilitates wiring.
- The ZR-RX40 is provided with 20 channels as a standard measurement feature, or can be extended up to 200 channels by attaching additional terminal sets.
- All channels are isolated, enabling measurement of signals of different references.

Display & Operation

- With the ZR-RX40's 5.7-inch TFT color liquid crystal display, you can confirm the waveforms of measured data and each channel's settings at a glance.
- Easy operation is achieved through a straightforward menu structure and key allocation which resembles mobile phones.

Data Capture

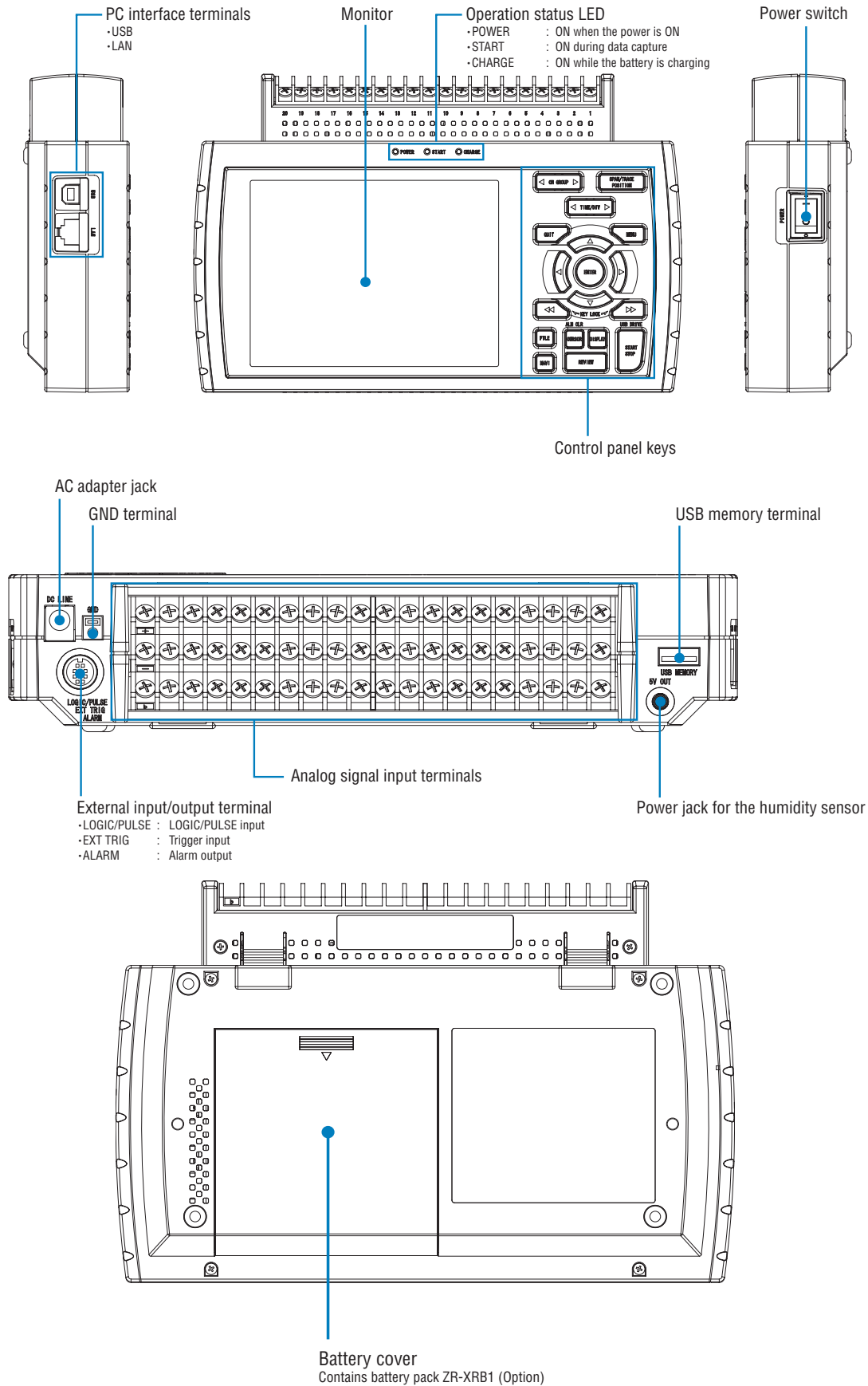
- Data can be directly captured and maintained in the internal or USB memory device.
- Internal memory used for the built-in memory maintains captured data even after the power is turned off.
- The Internal memory can be used with disk images thus multiple data items can be maintained.

Data Control & Processing

- The PC software provided lets you set conditions and monitor data on a PC.
- The USB drive mode function enables the ZR-RX40's internal memory to be recognized as an external drive by your PC. (Connect the ZR-RX40 to your PC and turn on the power supply to the ZR-RX40 while holding down the [START] key.)
- Captured data can be read from the PC software to files and displayed for processing.
- Data can be transferred off-line to a computer using USB memory device.
- The WEB server function enables control and monitoring from a remote location without using dedicated software.
- The FTP server function enables handling internal memory and USB memory data from a PC.
- Measurement data can be backed up to an FTP server using the FTP client function.
- Time information can be adjusted through the NTP client function.

Part Names and Functions

This section describes the names and function of parts of the ZR-RX40.



Connecting the Power Cable

This section describes how to connect the power cable and turn on the power. The connection method will vary depending on the type of power supply used.

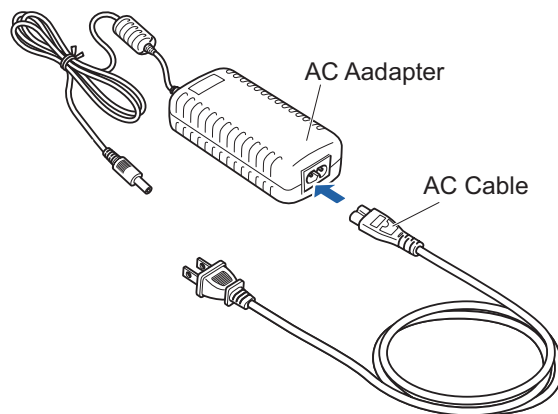
Connecting to an AC Power Supply

Use the AC cable and AC adapter that are provided as accessories.

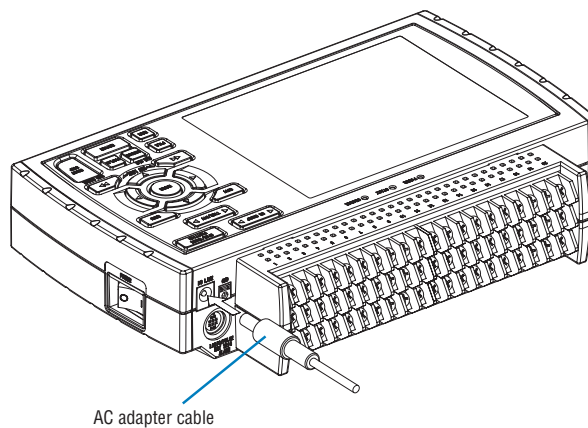
Important

Be sure to use only the AC cable and the AC adapter provided as standard accessories.

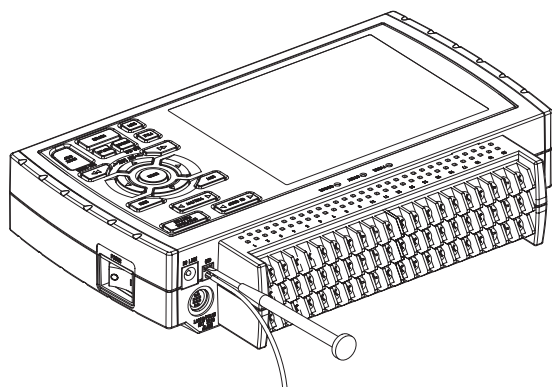
- 1 Plug the AC cable into the AC adapter.**



- 2 Connect the output side of the AC adapter to the AC adapter connector.**



- 3** Using the flat-blade screwdriver, press against the minus (-) button above the GND terminal, while connecting the grounding cable to the ZR-RX40. Connect the other end of the cable to ground.



Note

The grounding cable is not provided as a standard accessory and must be prepared separately.
[Recommended Cord Diameter: AWG18/UL1007]

- 4** Plug the AC cable into the mains power outlet.

- 5** Press the power switch on the ZR-RX40 to the ON side to turn on the power.

Important

Connect the GND terminal for safe measurement. The ZR-RX40 must also be grounded when sharing a common ground level with other devices.

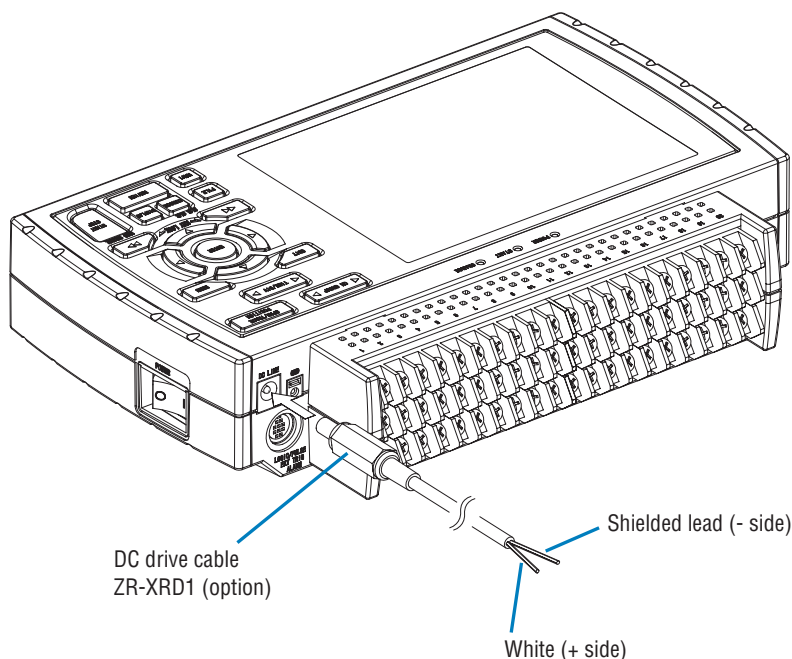
Connecting to a DC Power Supply

Use the DC cable (option: ZR-XRD1).

Important

Be sure to use the separately sold DC cable (ZR-XRD1). Do not apply voltages exceeding the rated voltage (8.5 to 24 VDC).

- 1** Connect the DC output side to the power supply connector on the ZR-RX40.



2 Connect the DC input side to the DC power supply.

Important

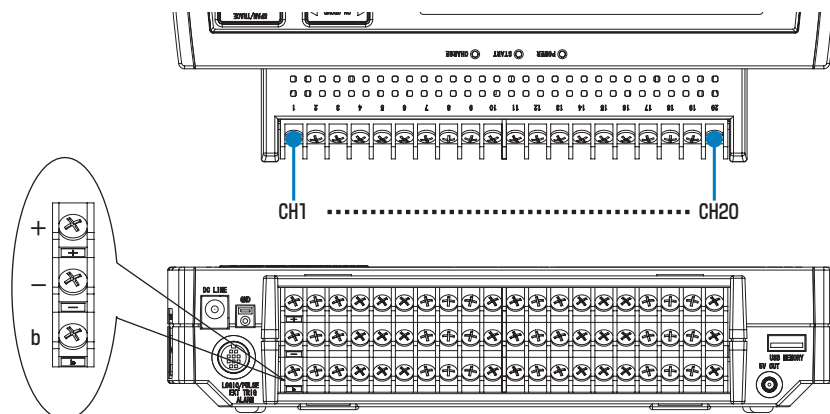
Be sure to check the polarity of the power supply when connecting the DC cable.

3 Press the power switch on the ZR-RX40 to the ON side to turn on the power.

Connecting the Analog Input Terminal

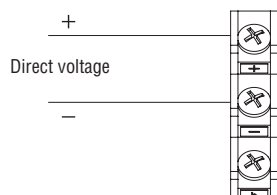
This section describes how to connect the analog input terminal.

Terminal Configuration and Signal Types

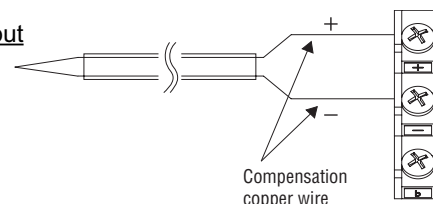


Connection diagram

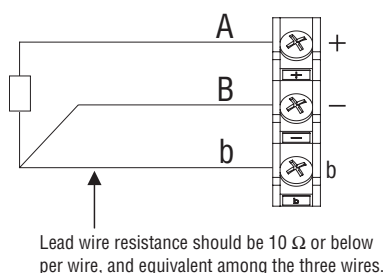
Direct voltage input



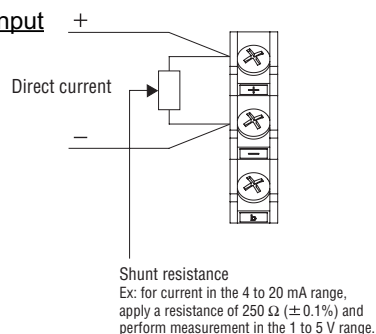
Thermocouple input



Resistance temperature detector input



Direct current input



+ High-voltage terminal (terminal for high-voltage input signals)

- Low-voltage terminal (terminal for low-voltage input signals)

b Dedicated terminal when connecting resistance temperature detector

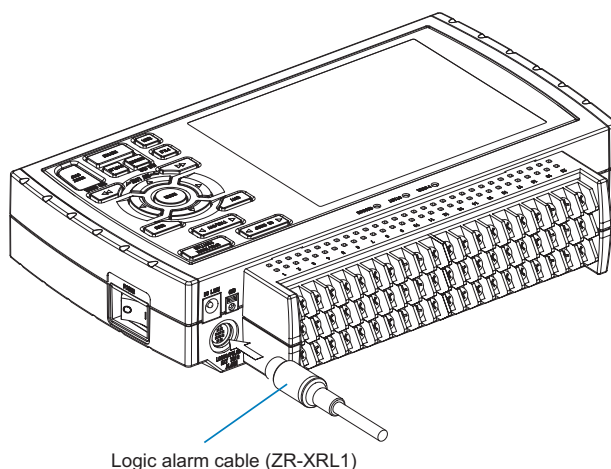
*Resistance temperature detector input terminals A (+) and B (-) are isolated within each channel. Terminal b is shorted within all channels.

Item	Description
Input configuration	Isolated input, scanning
Analog voltage	20, 50, 100, 200, 500 mV/F.S.; 1, 2, 5, 10, 20, 50 V/F.S.; 1-5V
Thermocouples	K, J, E, T, R, S, B, N, W (WRe 5-26)
Resistance temperature detector	PT100, JPT100, PT1000 (IEC751)

Connecting the Logic Input Terminal

The logic alarm cable (ZR-XRL1) enables logic/pulse input, external trigger input, and alarm signal output.

Connect the logic alarm cable (ZR-XRL1) to the external input/output terminal as shown below.

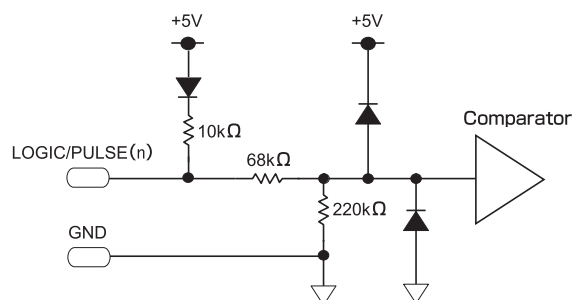


Logic/Pulse Specifications

Item	Description
Number of input channels	4
Input voltage range	0 to +24V max. (single-ended ground input)
Threshold level	Approx. +2.5V
Hysteresis	Approx. 0.5 V (+2.5 to +3 V)

*Switch between logic and pulse input.

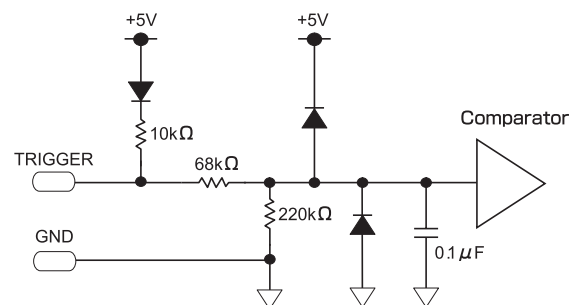
Internal Equivalence Circuit



Trigger Input Specifications

Item	Description
Number of input channels	1
Input voltage range	0 to +24V max. (single-ended ground input)
Threshold level	Approx. +2.5V
Hysteresis	Approx. 0.5 V (+2.5 to +3 V)

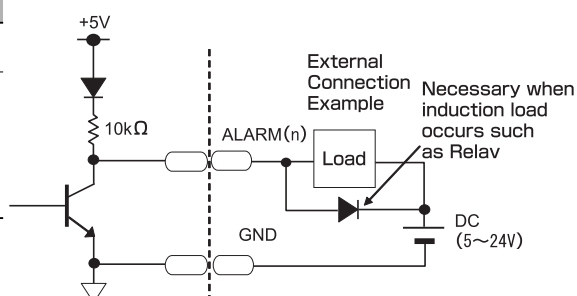
Internal Equivalence Circuit



Alarm Output Specifications

Item	Description
Number of output channels	4
Output format	Open collector output +5 V, 10 KΩ pull-up resistance Contact capacity 5 V to 24 V, 100 mA or below

Internal Equivalence Circuit and Example of Wiring Connection

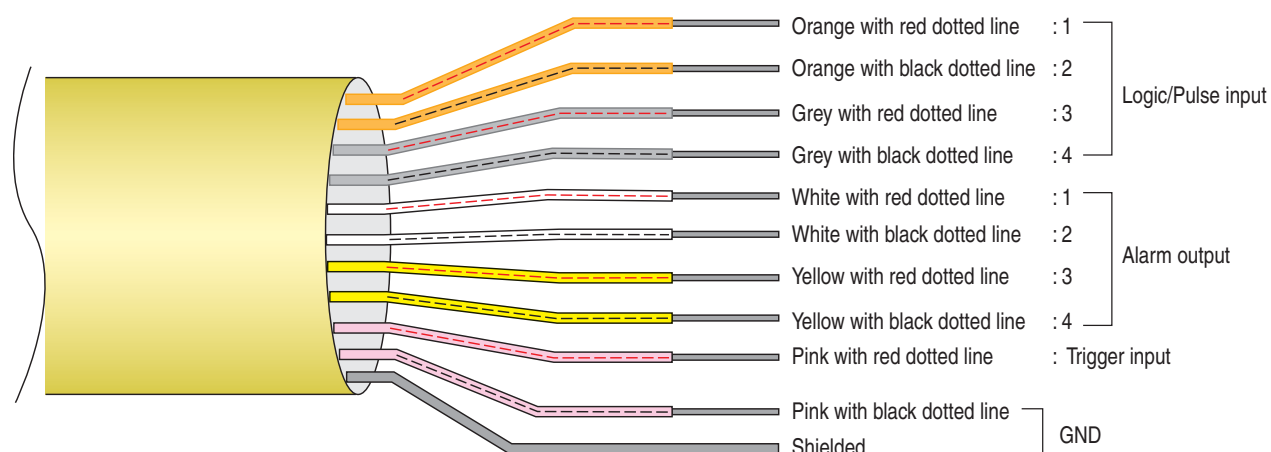


Wiring

Cable tips are bare tips. Perform wiring for the necessary functions.

Signal Name	Channel Number	Wire Color
Logic/Pulse output	1	Orange with red dotted line
	2	Orange with black dotted line
	3	Grey with red dotted line
	4	Grey with black dotted line
Alarm output	1	White with red dotted line
	2	White with black dotted line
	3	Yellow with red dotted line
	4	Yellow with black dotted line
Trigger input		Pink with red dotted line
GND		Pink with black dotted line
		Shielded

*Switch between logic and pulse.

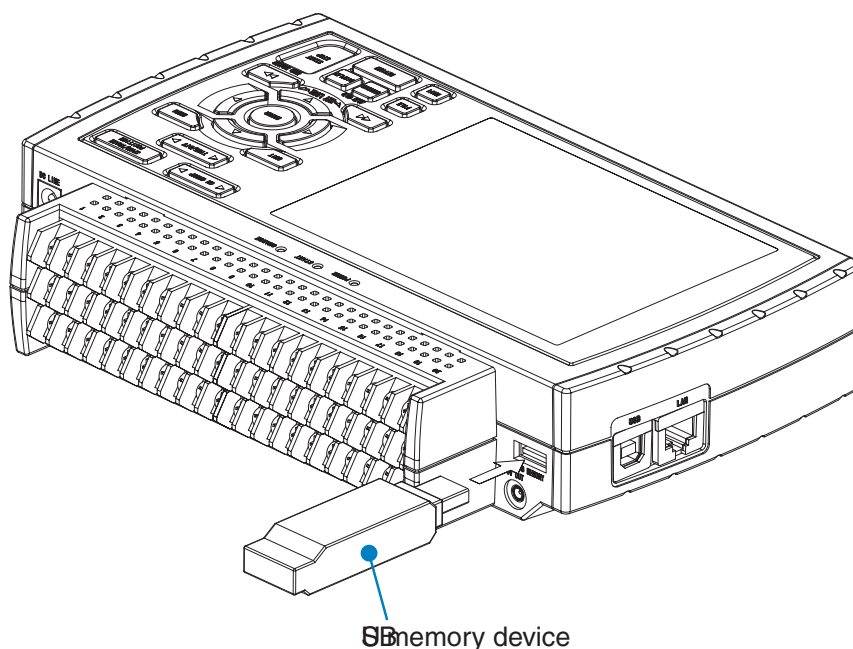


Attaching USB Memory Device

Attaching USB memory device to the ZR-RX40 allows you store measured data directly.

Inserting a USB Memory Device

Attach the USB memory device to the USB memory terminal.



Important

<Specifications of supported USB memory>

- Power source : +5 V
- Power consumption : 250 mA or below
- Capacity : No limit (except each file must be within 2 GB)

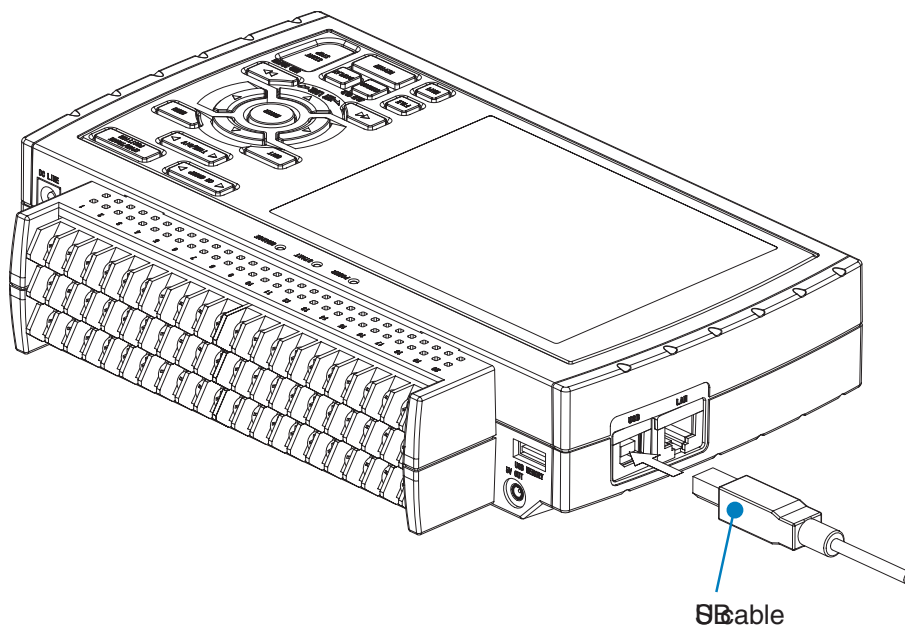
* USB memory device with security functions such as fingerprint authentication cannot be used.

Connecting to a PC

Use the USB, LAN Interface to connect the ZR-RX40 to a PC.

Connection Using a USB Cable

Use the USB cable to connect the ZR-RX40 to a PC.



Note

If the USB cable is used, install the USB driver in your PC.



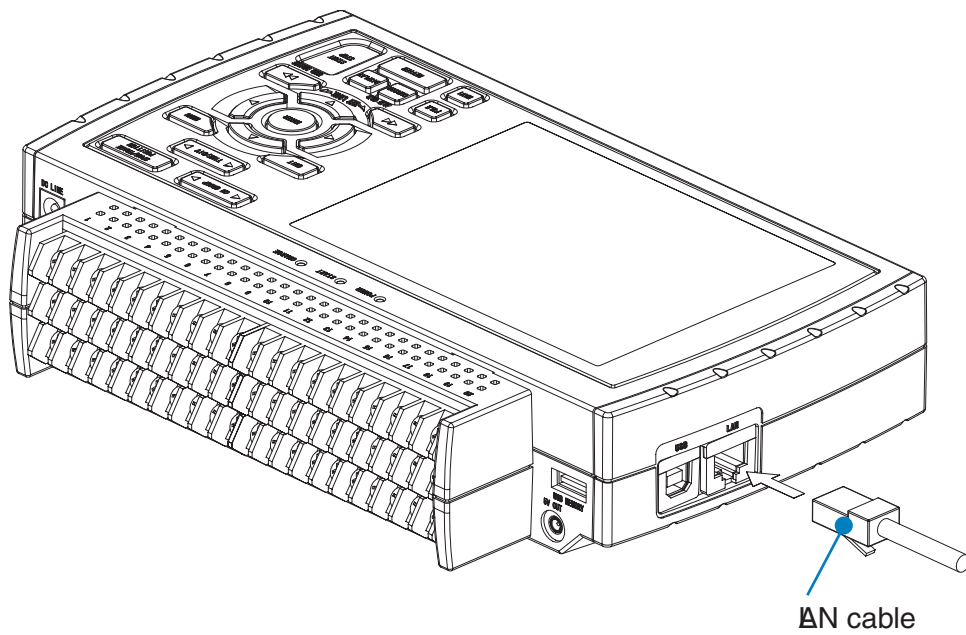
"Installing the USB driver" in the Software Manual

Note

The USB connector is adjacent to the LAN connector. Make sure the cable is inserted into the correct connector.

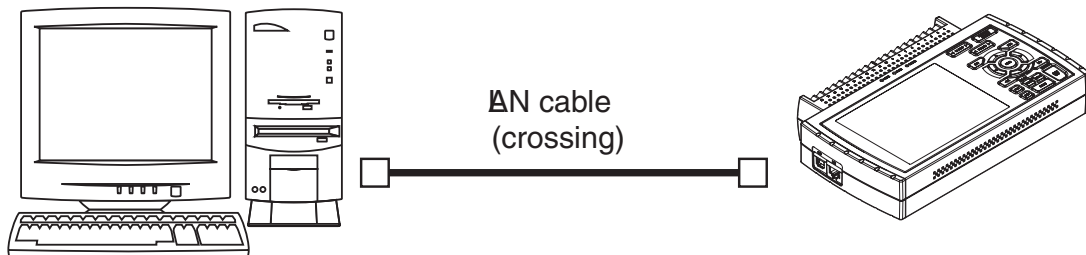
LAN Connection

Use a LAN cable to connect the ZR-RX40 to a PC.

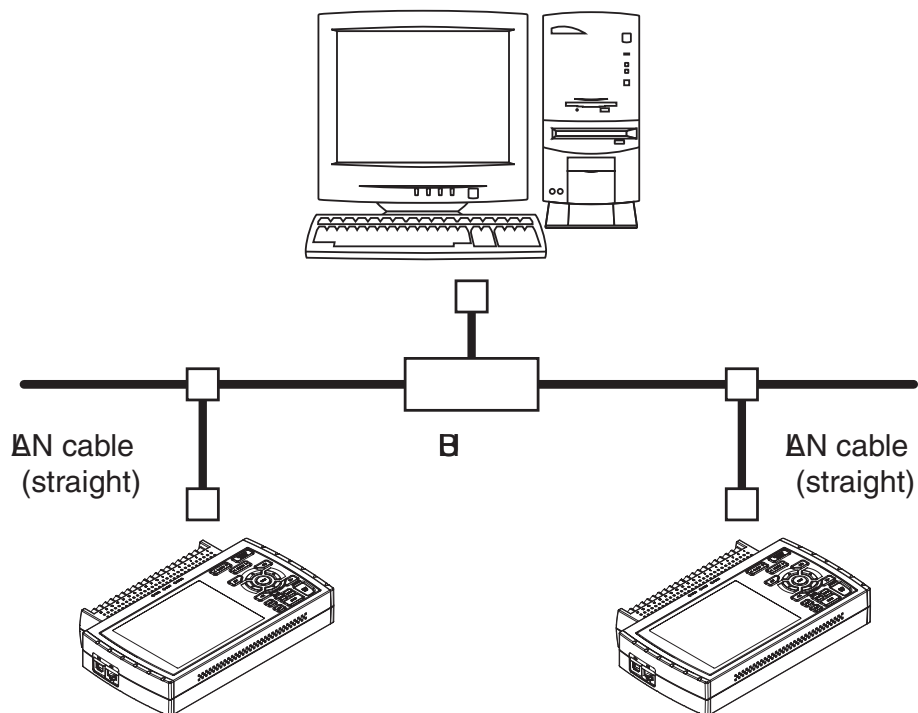


Cable Types

- Use a crossing cable when connecting directly to a PC, without using a hub.



- Use a straight cable when using a hub.

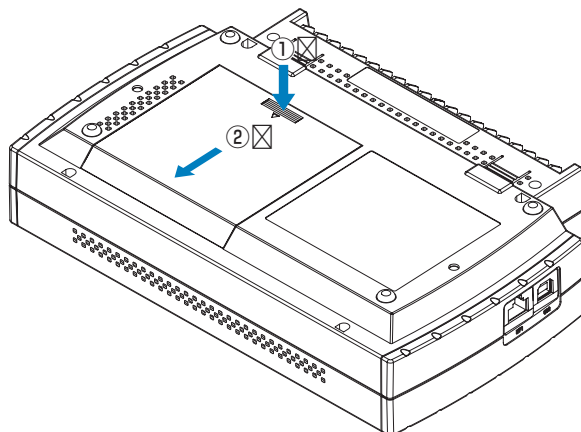


Using the Battery Pack

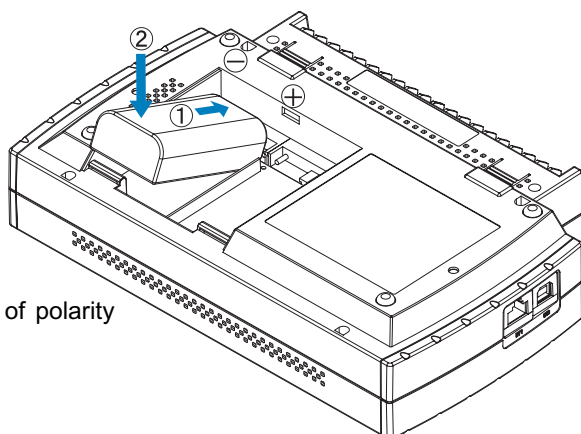
Be sure to use the dedicated battery pack (option: ZR-XRB1).

Mounting the Battery Pack

- 1** While lightly pushing the grip of the battery cover, slid the cover in the direction indicated by the arrow.



- 2** Attach the battery pack (ZR-XRB1).



Attach the battery with care of polarity and insertion direction.

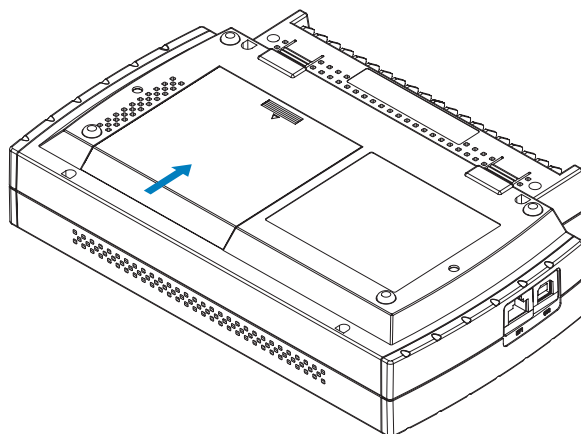
Note

Either one or two battery packs can be attached.
To connect one pack, connect to either one of the connectors.
Attaching two battery packs allows longer operational time.

Note

When attaching two battery packs, make sure the battery levels are equivalent.
Do not use a new battery with an old battery at the same time.
When attaching two battery packs, make sure the remaining amount are same.
If you are not sure about the amount, charge each battery and then attach full-charged two battery packs.

3 Attach the battery cover.



Charging the Battery

Note

Expected time required for charging:


- battery pack x 1: approx. 4 hours
- battery pack x 2: approx. 8 hours

The battery pack is charged by mounting it in the ZR-RX40, attaching AC adapter to the ZR-RX40.

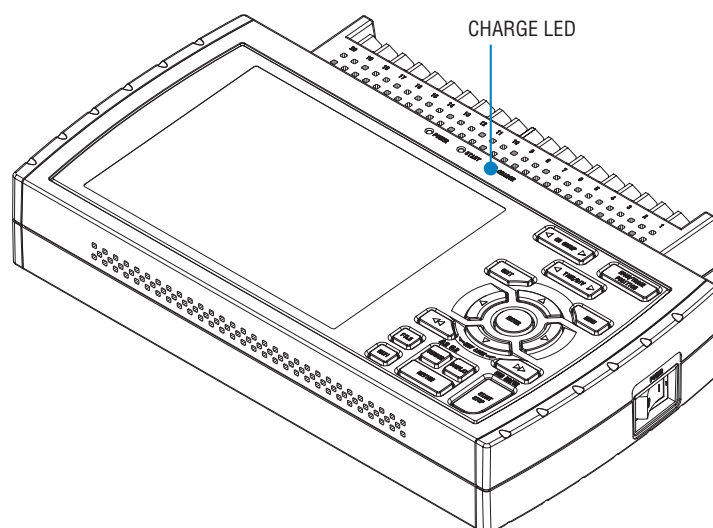
1 Mount the battery pack in the ZR-RX40.

 "Mounting the Battery Pack" p.27

2 Turn on the power to the ZR-RX40.

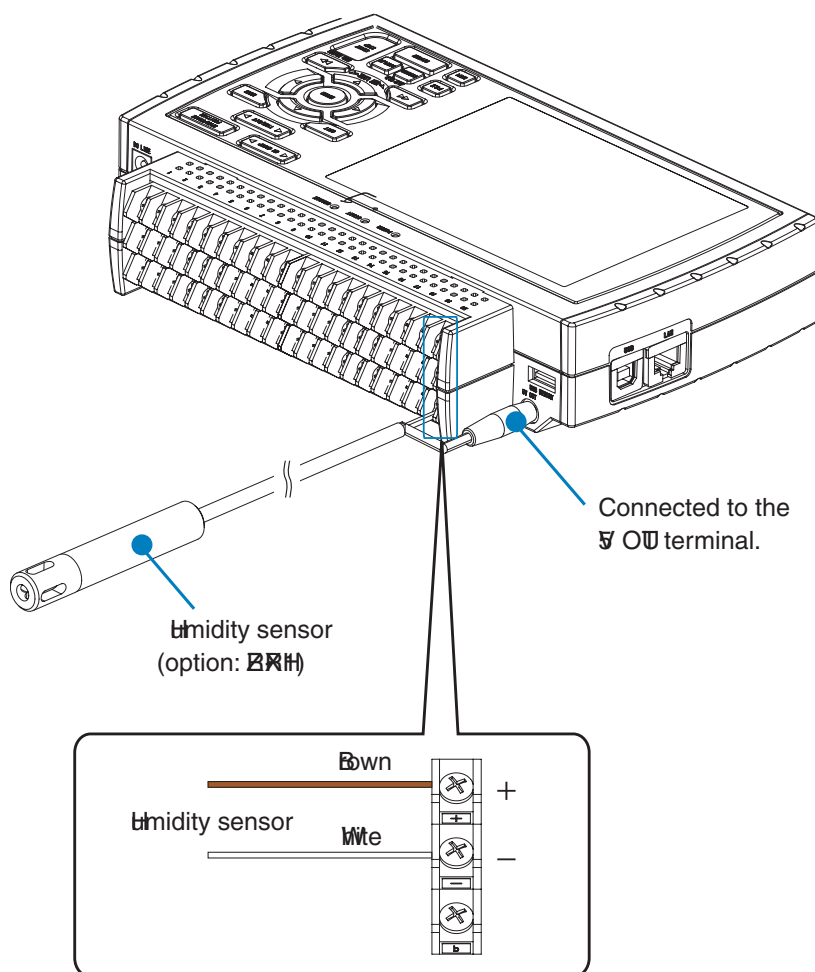
 "Connecting the Power Cable" p.18

The CHARGE LED lights.



Connecting the Humidity Sensor

Connect the + and - lead wires of the humidity sensor (option: ZR-XRH1) to the desired terminals, and then insert the round connector into the 5V OUT connector on the ZR-RX40.



1 BEFORE USE

Mounting and Removing the Terminal Unit

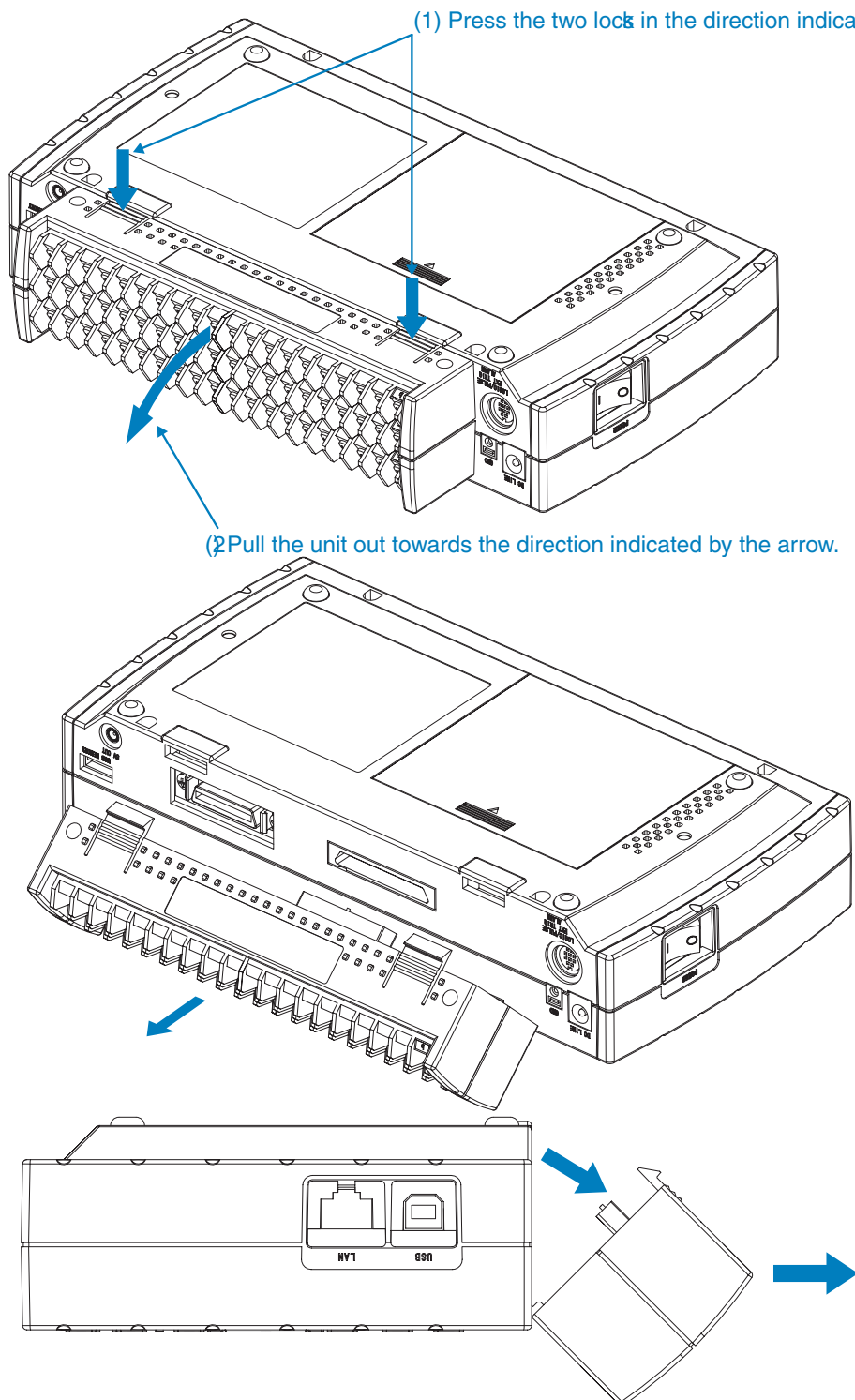
Remove and mount terminal units as shown below.

Important

Make sure the ZR-RX40's power is OFF when removing or mounting terminal units.

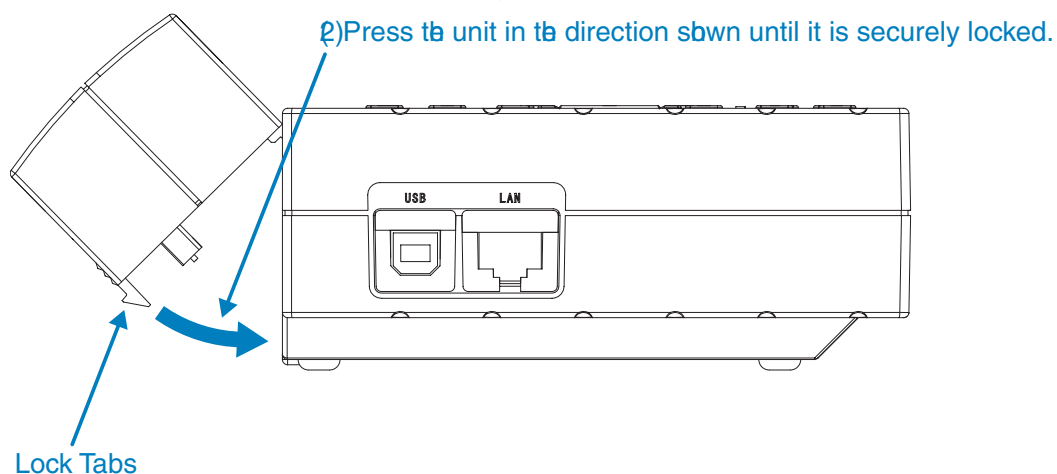
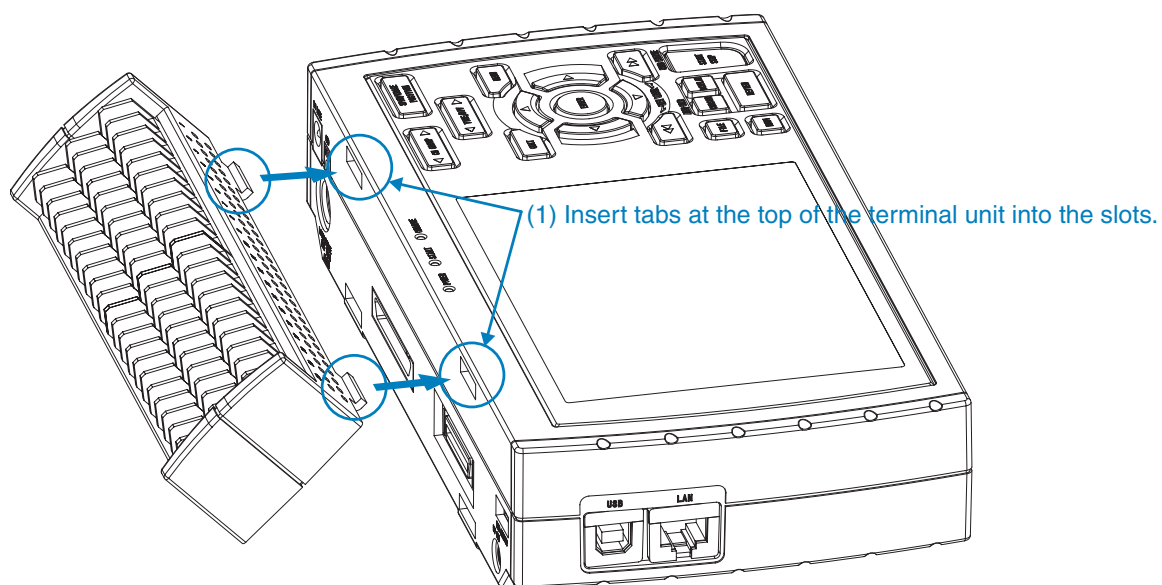
To Remove

Pull the terminal unit out towards the direction indicated by the arrow while pressing the two locks at the bottom of the unit.



To Mount

Insert the tabs at the top of the terminal unit into the slots of the ZR-RX40, and push in the unit until the lock tabs at the bottom of the unit are securely locked.



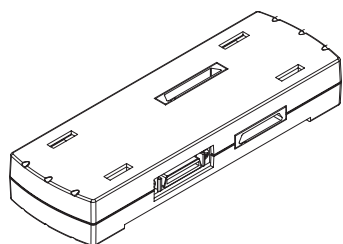
Mounting the Extension Terminal Base Set

Mount the extension terminal base set (ZR-XRE1) as shown below.

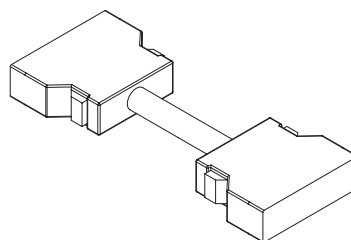
Important

Make sure the ZR-RX40's power is OFF when mounting the extension terminals.

Set Contents




Extension Terminal Base Unit : 1

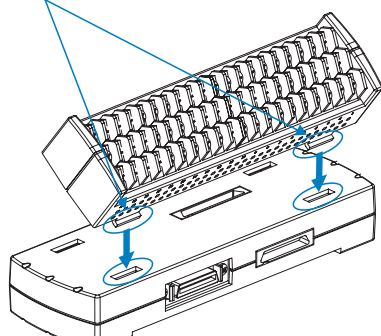


Extension Terminal Cable : 1

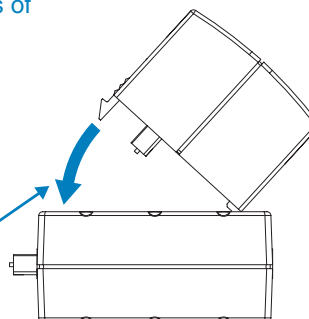
To Mount

- 1** Remove the terminal unit mounted to the ZR-RX40 ( p.26).
- 2** Insert the tabs at the top of the terminal unit into the slots of the extension terminal base unit, and push in the unit until the lock tabs at the bottom of the unit are securely locked.

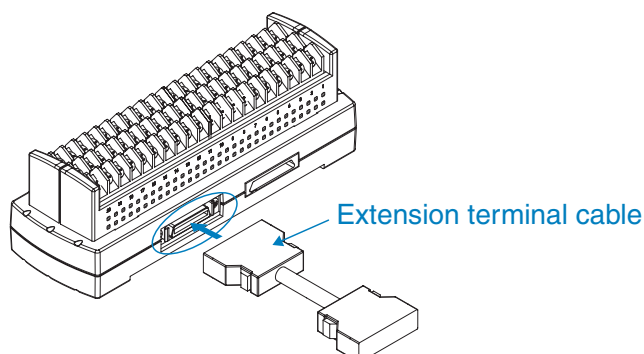
(1) Insert tabs at the top of the terminal unit into the slots of the extension terminal base unit.



(2) Press the unit in the direction shown until it is securely locked.

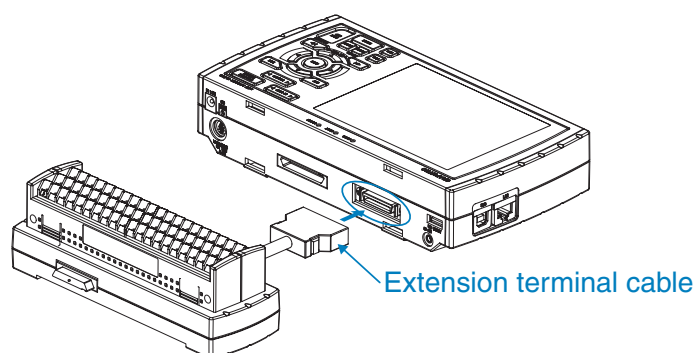


- 3** Connect the extension terminal cable to the extension terminal base unit.
* Press in the cable until it is securely locked.



4 Connect the other end of the extension terminal cable to ZR-RX40.

* Press in the cable until it is securely locked.



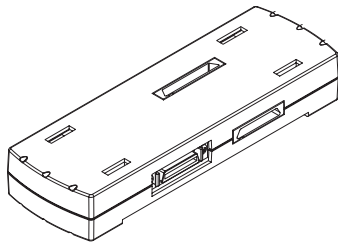
Mounting the 20 Channel Extension Terminal Set

Mount the 20 channel extension terminal set (ZR-XRT1) as shown below.

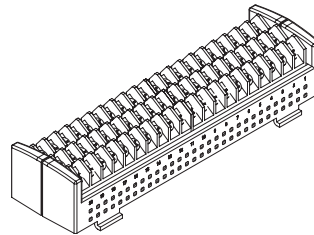
Important

Make sure the ZR-RX40's power is OFF when mounting the extension terminals.

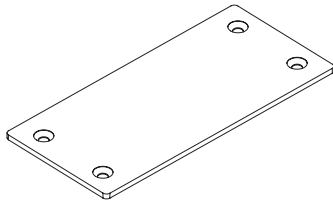
Set Contents



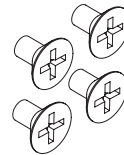
Extension Terminal Base Unit : 1



20 Channel Terminals : 1



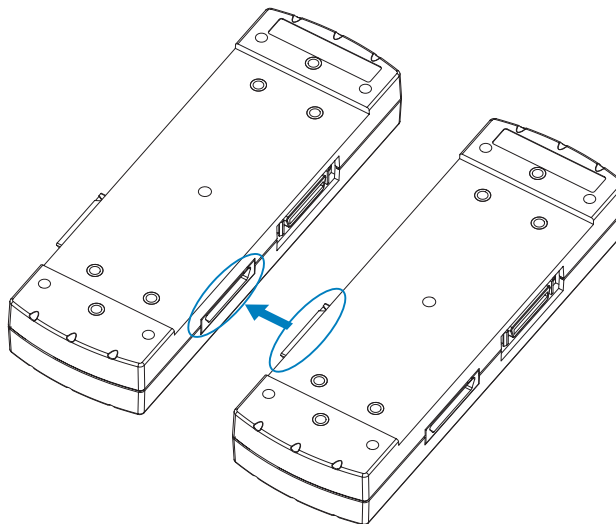
Connection Plate : 1



M4 x 6 Flat Head Screw : 4

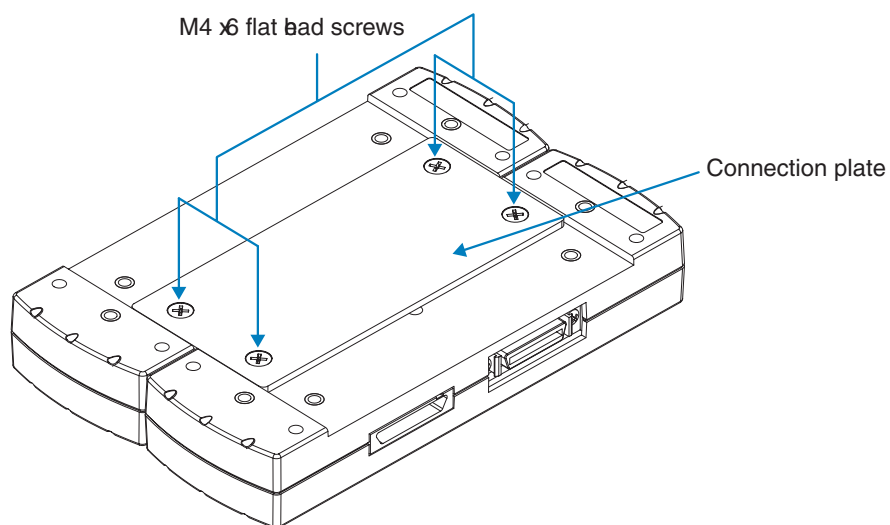
To Mount

- 1** Connect the extension terminal base unit connectors.



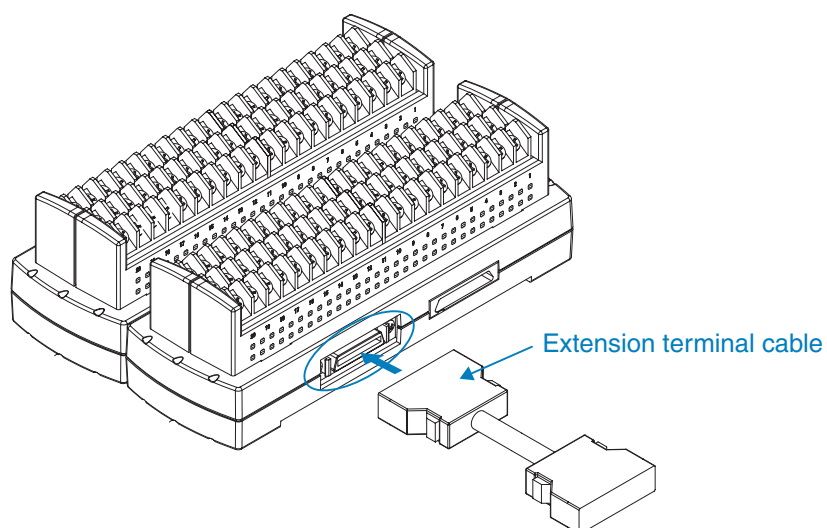
2 Screw on the connection plate using attached screws.

* Recommended screw torque: 14 kgf/cm



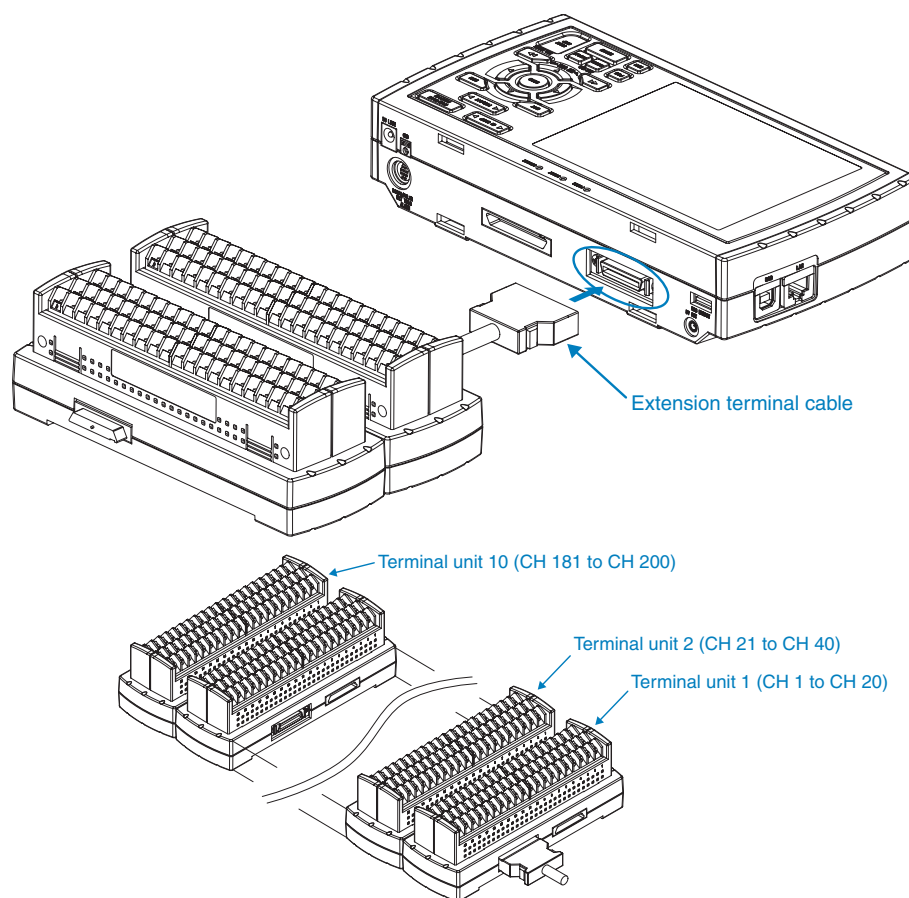
3 Connect the extension terminal cable to the extension terminal base unit.

* Press in the cable until it is securely locked.



4 Connect the other end of the extension terminal cable to ZR-RX40.

* Press in the cable until it is securely locked.



Important

When connecting additional terminals, make sure they are added in a continuous manner. Any terminals omitted will prevent subsequent terminals from being recognized.

Precautions to Observe When Performing Measurement

Please be sure to read the following carefully in order to prevent electric shocks or shorts.

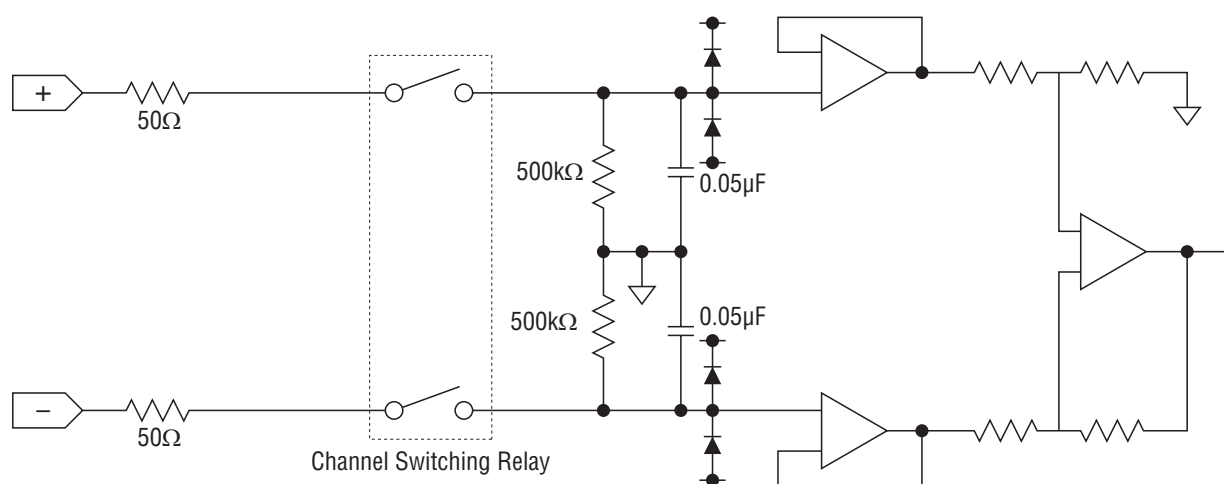
Note

Electric shock or damage to the instrument may occur. Do not input voltages exceeding the rated voltage to the analog input terminal.

Important

- Be sure to use only the AC cable and the AC adapter provided as standard accessories. Do not connect power supplies exceeding the rated voltage to the AC adapter.
- Do not input measurement voltages exceeding the rated voltage to the analog input terminal.

Input Circuit Diagram for Analog Input (Voltage, Thermocouples)



Important

Capacitors have been incorporated into the input circuit to increase the noise elimination capability.

After voltage measurement, when the inputs have been disconnected, there will still be some electric charge remaining. Before starting another measurement operation, short-circuit the + and - terminals to enable self-discharge.

The ZR-RX40 has a scan system.

While in the status (open) in which signals are not input to the input terminal, measured results may be influenced by signals from other channels.

In such a case, turn OFF the input setting or short circuit +/-.

When being used for measurement, measured results are not influenced by other channels.

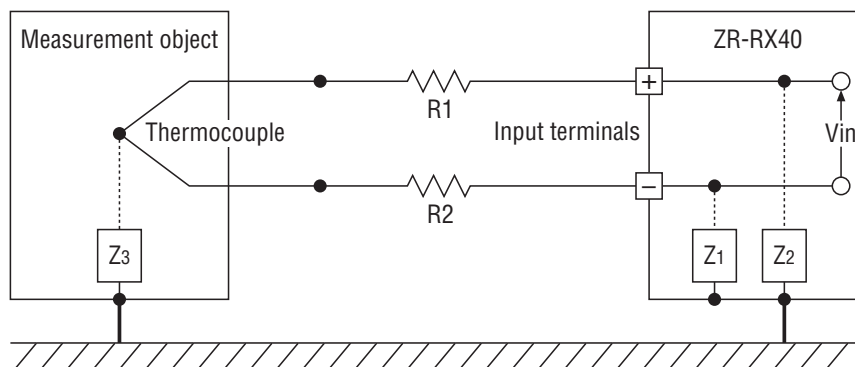
Noise Countermeasures

Connect the ground wire in the following method if the measured values are unstable due to noise.

Connect the ZR-RX40's GND to ground.

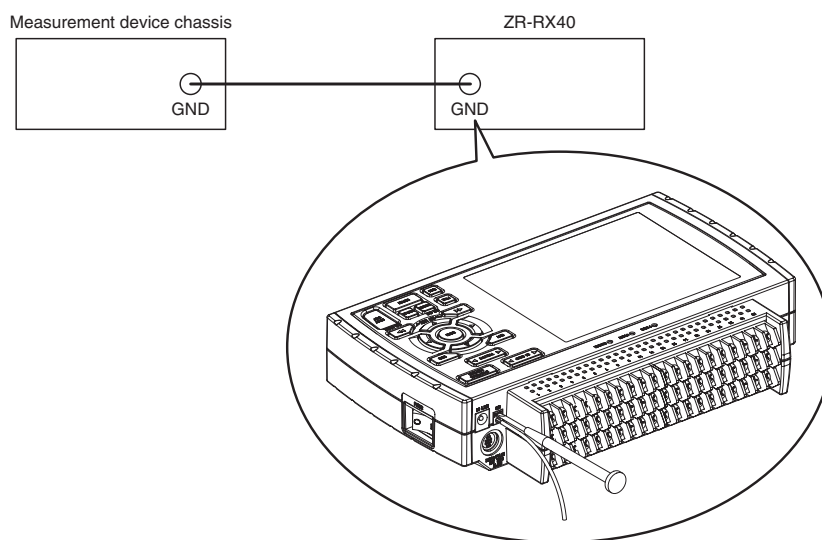
Be sure to connect the chassis GND of the object to be measured.

It may become effective by ensuring that the chassis GND wire of the measurement object is connected to a good ground.



Connect the signal chassis GND and the ZR-RX40's chassis GND.

Use a short, thick lead to connect the chassis GND of the measurement object to the ZR-RX40's chassis GND. It will become even more effective if the ground potentials are the same.



Note

- The effects of the digital filter function will vary depending on the number of terminal channels and sampling speed.
- If measured values fluctuate due to noise, set the sampling speed to a value which enables the digital filter function.

For details on the setting method, see on p.72.

In the AMP Settings menu, set Filter to any setting other than OFF.

Set the sampling interval which enables ZR-RX40 digital filter (see table below).

Set the AC line frequency in the "OTHR" menu.

For details on the setting method, see on p.72.

Setting the Date and Time

The ZR-RX40 includes a rechargeable internal battery for backup.

If you are using the ZR-RX40 for the first time, charge the internal rechargeable battery and then make the date and time settings.

Note


If the ZR-RX40 is not used for a period of approximately six months, the internal rechargeable battery may be discharged and the date and time may revert to the initial settings. If this happens, recharge the battery before using the ZR-RX40.

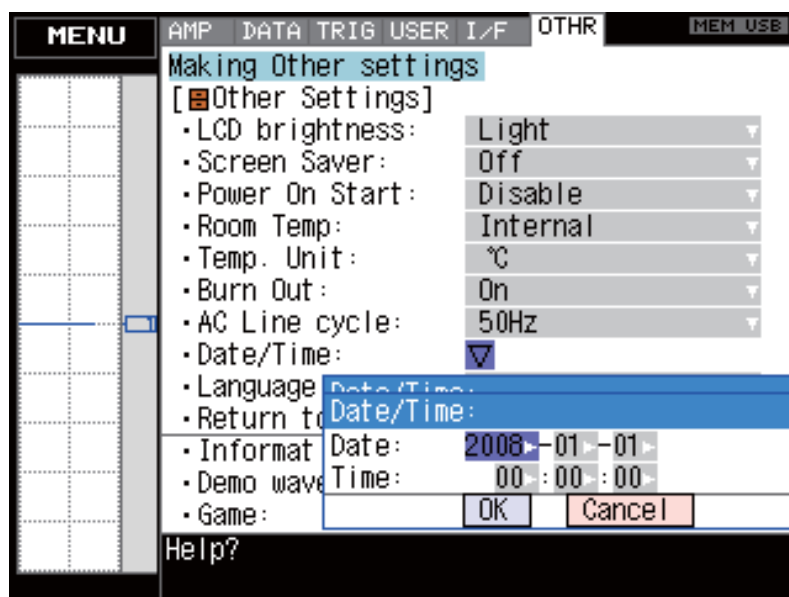
How to Recharge the Rechargeable Battery

Connect the ZR-RX40 and the AC power supply, turn on the power switch, and then leave the ZR-RX40 connected for at least 24 hours.

How to Set the Date and Time

Press the [MENU] key, display the "OTHR" screen, and then set the date and time at the Date/Time Settings sub-menu.

 For details, see "Date/Time" on p.72.



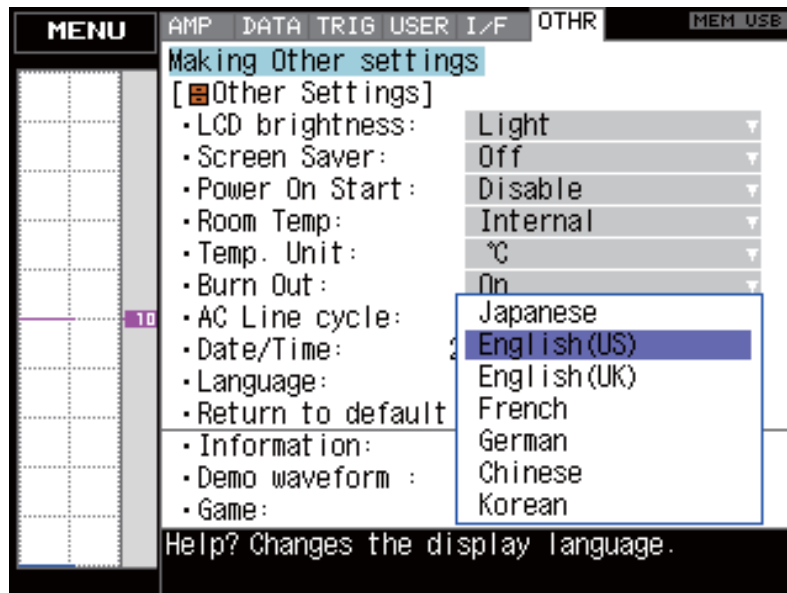
Changing the Display Language

You can choose the language displayed on the screen. The default display language is set to English when the ZR-RX40 is shipped overseas.

ZR-RX40A: Japanese

ZR-RX40A-E,-U,-B,-CHRO: English

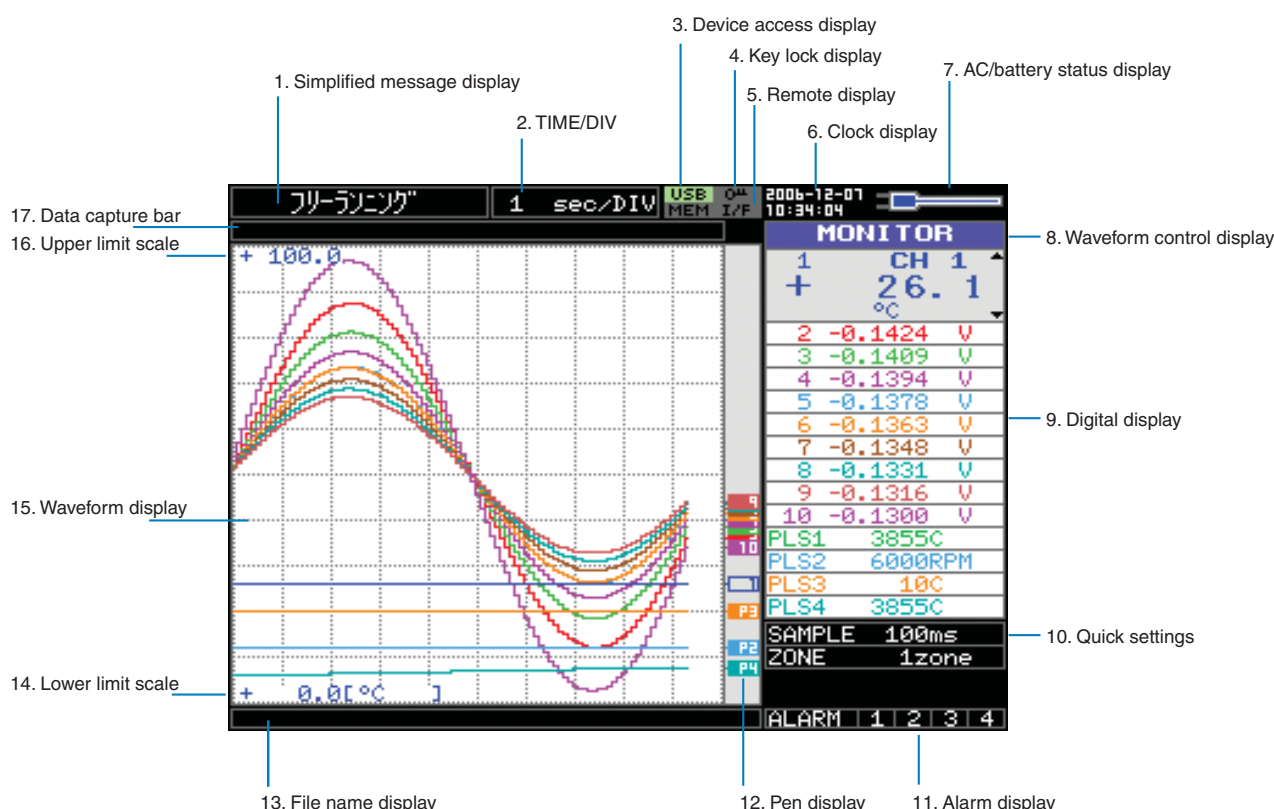
To change the display language, see the instructions in "OTHR:Language".



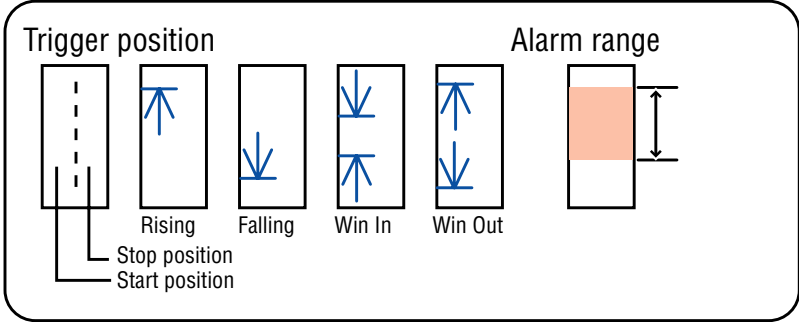
SETTINGS AND MEASUREMENT

Window names and functions	42
Key Operation	44
Operation Modes	53
Setting Menus	56
WEB Server Function	87

Window names and functions

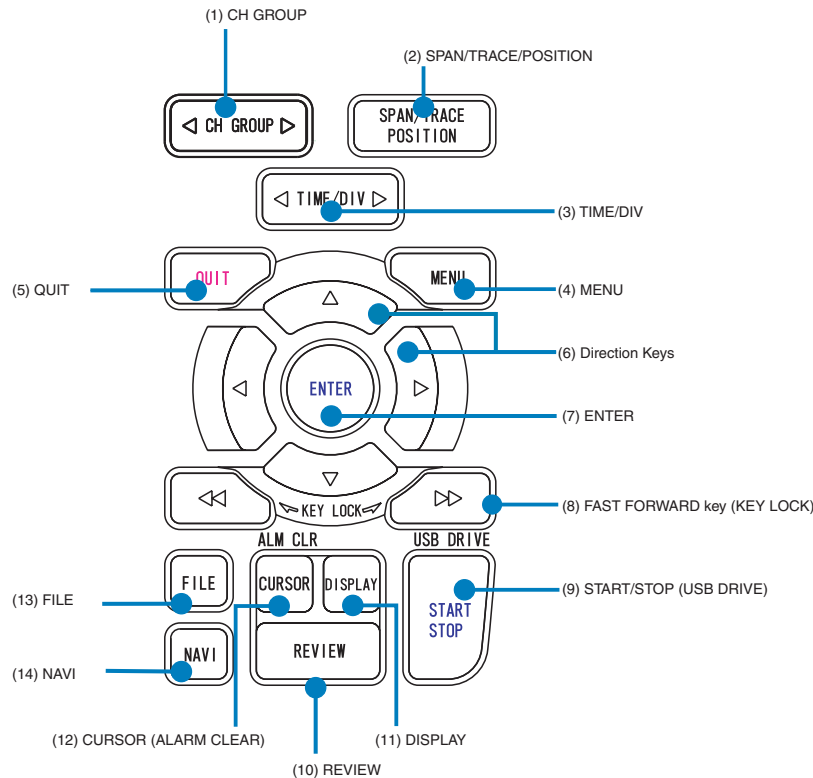


Item	Description
1. Simplified message display:	Displays the operation status.
2. Time/DIV display:	Displays the current time scale.
3. Device access display:	Turns red when USB memory is accessed. When the internal memory is being accessed, the MEM lamp turns red.
4. Key lock display:	Displays the key lock status. (Yellow = Locked)
5. Remote display:	Lit when the ZR-RX40 is in remote mode. (Yellow = Remote mode)
6. Clock display:	Displays the current date and time.
7. AC/battery status display:	Displays the icon when AC power is used and indicates the level when the battery is used. <div data-bbox="619 1563 1426 1800" data-label="Figure"> <p>AC/battery indicator</p> <ul style="list-style-type: none"> During AC supply operation High Mid Low Few </div>
8. Waveform control display :	Displays the mode when using the [SPAN/TRACE/POSITION] key to control the waveform.
9. Digital display:	Displays the input value of each channel. Use the ∇/Δ key to select the channel you want to activate (enlarged display). The waveform of the active channel is displayed at the top.
10. Quick settings:	Displays items available for easy operation. Use the ∇/Δ key to activate the Quick setting area and the $\triangleleft/\triangleright$ key to change values.

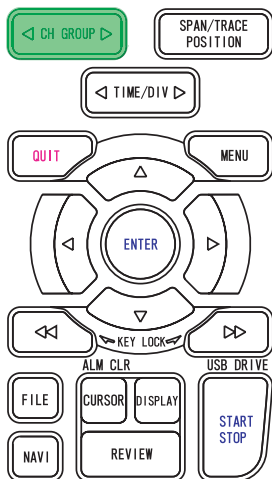
Item	Description
11. Alarm display:	Displays the alarm output terminal status. (Red = Alarm generated issued)
12. Pen display:	<p>Displays the position of each channel signal, trigger and alarm range.</p>  <p>The diagram illustrates the Pen display layout. On the left, under 'Trigger position', there are four vertical rectangles. The first has a dashed line with labels 'Stop position' and 'Start position'. The second is labeled 'Rising' with an upward arrow. The third is labeled 'Falling' with a downward arrow. The fourth is labeled 'Win In' with an upward arrow. To its right is another rectangle labeled 'Win Out' with a downward arrow. On the right, under 'Alarm range', there is a vertical rectangle with an orange shaded top portion and a double-headed arrow indicating the range.</p>
13. File name display:	Displays the name of the file used to capture data.
14. Lower limit scale:	Displays the lower limit scale of the currently active channel.
15. Waveform display:	Displays the waveform of the input signal.
16. Upper limit scale:	Displays the upper limit scale of the currently active channel.
17. Data capture bar:	Indicates the remaining capacity of the capture media during data capture. During replay, indicates information about the displayed position.

Key Operation

This section describes key operation.



(1) CH GROUP



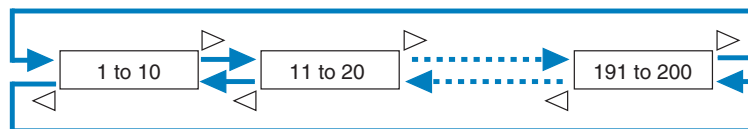
Press this key to switch to the next group consisting of 10 channels.

Press the ◀ side to switch to the group consisting of the next 10 channels with a smaller number.

Press the ▶ side to switch to the group consisting of the next 10 channels with a larger number.

Pressing this key can switch among the following items.

- Switch channels of the digital display area
- Switch channels of the AMP settings
- Switch channels of the trigger/alarm level settings
- Switch channels of the calculation display

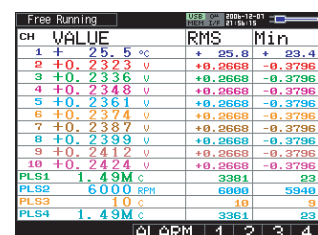
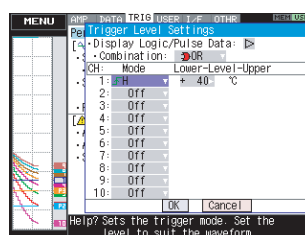
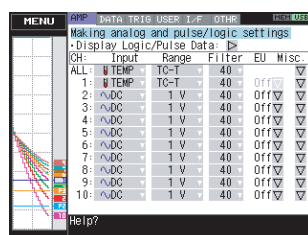
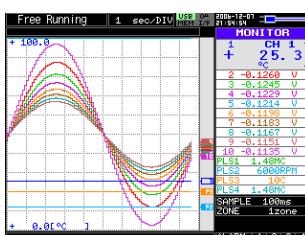


MONITOR

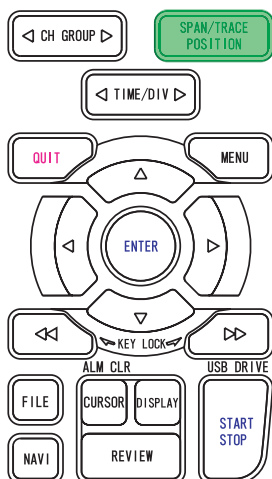
AMP settings

Level settings

Digital screen



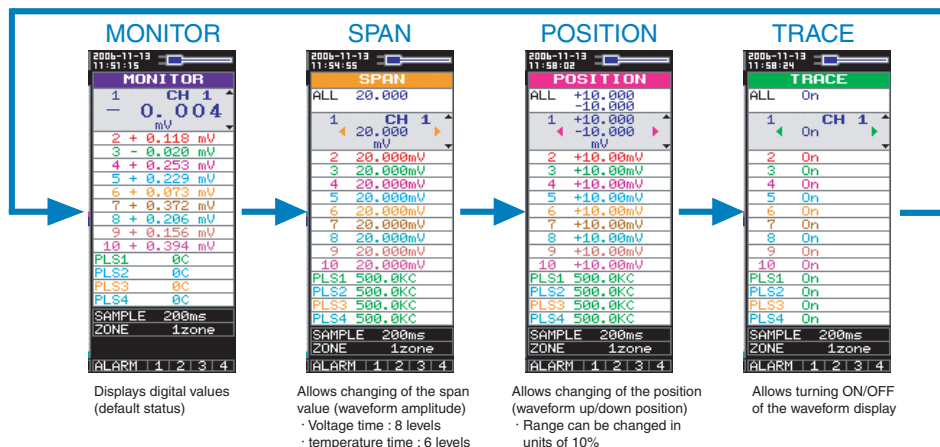
(2) SPAN/TRACE/POSITION



Switches the display in the digital display.

Used to change the settings related to waveform display during Free Running (when stopped), data capture and data replay.

Pressing this key will switch displays as shown below.



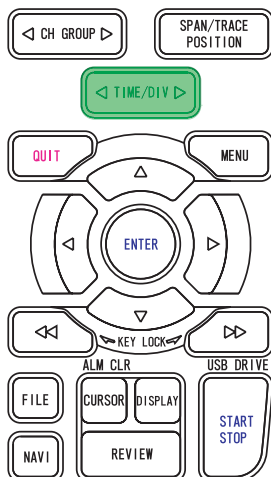
Setting Procedure

- 1 Select the item you want to change ([SPAN/TRACE/POSITION] key).
- 2 Use the ∇/Δ keys to switch the channels, and $\triangleleft/\triangleright$ keys to change the setting values.
When ALL is set, setting values for CH1 is reflected on other channels.

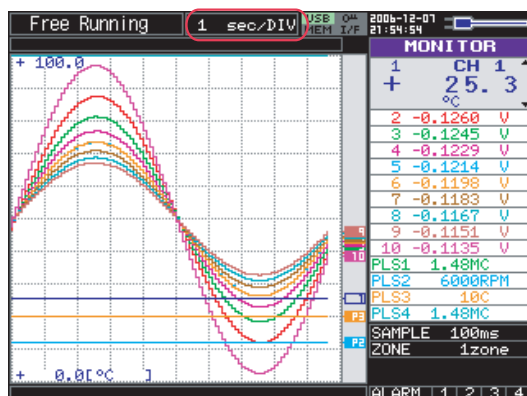
Note

* When CH1 is OFF, ALL cannot be set.

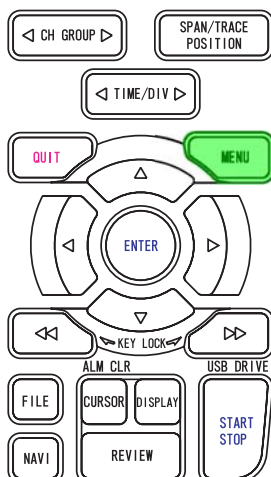
(3) TIME/DIV



Press the left/right key of the [TIME/DIV] key to change the time axis display width.

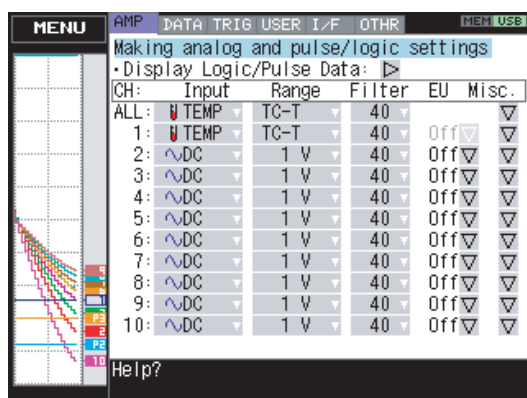


(4) MENU

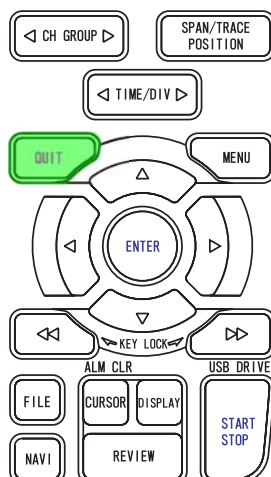


Open the settings window to capture data. For details on settings, see "3.4 Setting Menus".

p.56



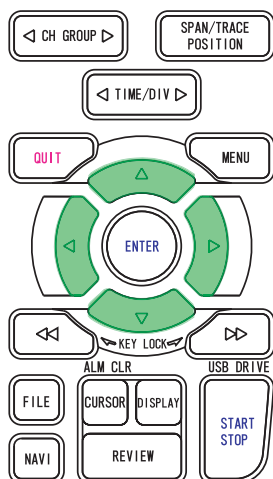
(5) QUIT (LOCAL)



This key is primarily used for the following operations.

- To cancel a setting during menu configuration.
- To return to the MONITOR window when the SPAN/TRACE/POSITION window is displayed.
- To cancel remote status (in which keys are disabled) through interface control.
- To close the menu screen.
- To quit data replay.
- To return the Enlarged Waveform Screen/Digital + Calculation Display Screen to the Waveform + Digital Screen.

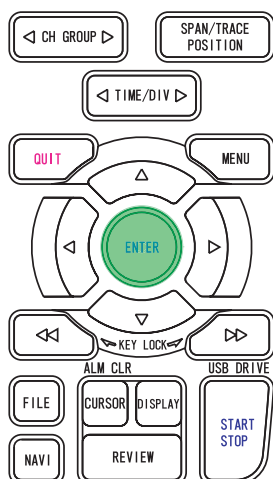
(6) Direction keys



This key is primarily used for the following operations.

- To move a menu or setting item during menu configuration.
- To move the cursor during replay.
- To move the active channel in the Waveform + Digital screen (up/down keys).
- To change the setting of SPAN/TRACE/POSITION (left/right keys).

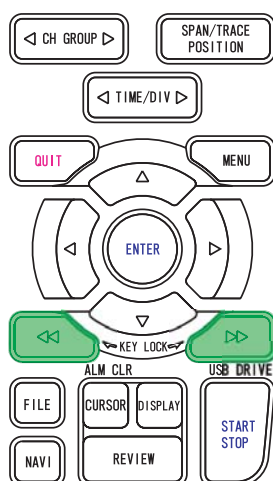
(7) ENTER



This key is primarily used for the following operation:

- To finalize setting items during menu configuration or open submenus.

(8) FAST FORWARD key (KEY LOCK)



This key is primarily used for the following operations.

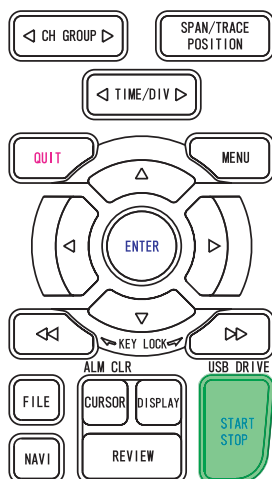
- To move the cursor at high speed during replay.
- To change the operation mode in the file box.
- To set key lock. (Hold down the left/right FAST FORWARD key for at least two seconds. Press again to unlock.)

A password for canceling the key lock can be specified.



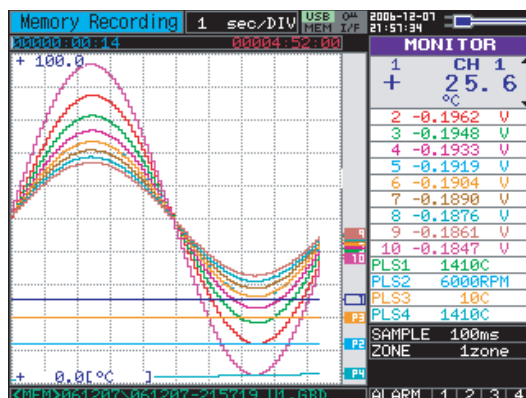
"To cancel key lock by password" p.48

(9) START/STOP (USB Drive Mode)



Press this key to start or stop capture.

- During Free Running, starts capture.
- During capture, stops capture.



- Press this key while turning the power ON to access USB DRIVE Mode.

In USB Drive Mode, the internal memory is recognized by the PC as external storage media.

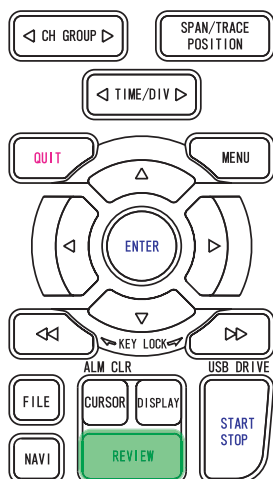
USB Drive Mode Operation Procedure

- 1** Use a USB cable to connect the ZR-RX40 and a PC.
(When the USB driver has not been installed, install it as described in the Software Manual "Installing the USB Driver".)
- 2** Connect the USB device to the ZR-RX40.
- 3** While pressing the ZR-RX40 [START/STOP] key, turn the power ON.
- 4** The external storage media is recognized by the PC and data exchange becomes possible.



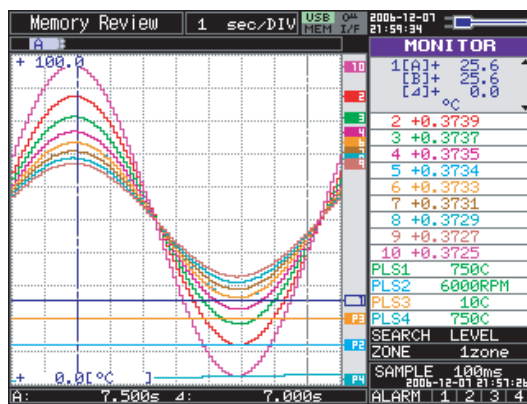
If the USB device is not connected, the internal memory is recognized as the external storage media.

(10) REVIEW

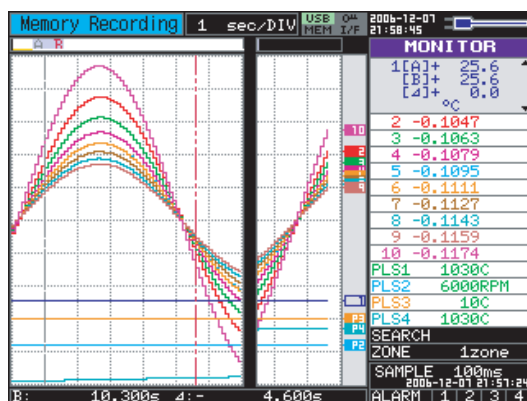


This key is used to replay captured data.

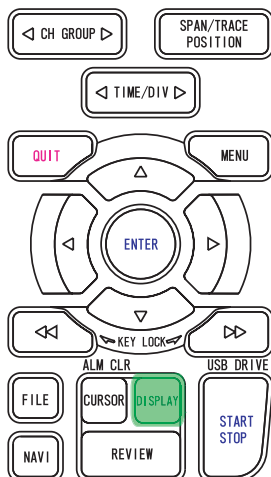
- During Free Running, replays captured data.
The screen used to specify the data replay source file appears; specify the file you want to replay.



- While capturing data, recently captured data is replayed in two windows.



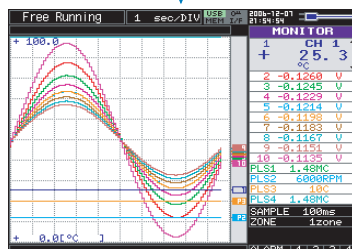
(11) DISPLAY



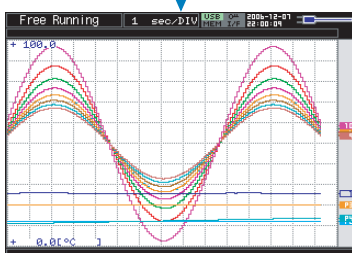
This key is used to switch the window mode.

You can switch the window mode during Free Running (when stopped) and Capturing.

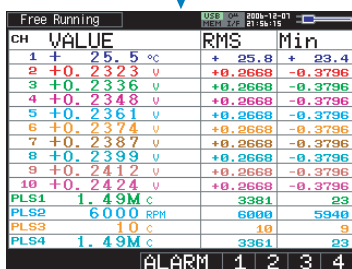
Pressing this key switches the window display as follows:



<Waveform + Digital Screen>
Default

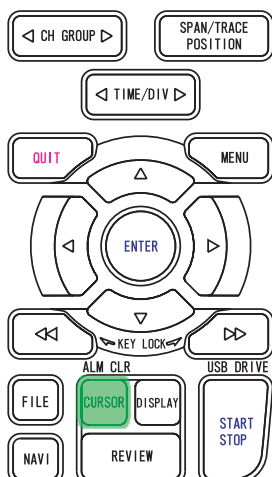


<Expanded Waveform screen>
Displays the waveform in full screen mode.



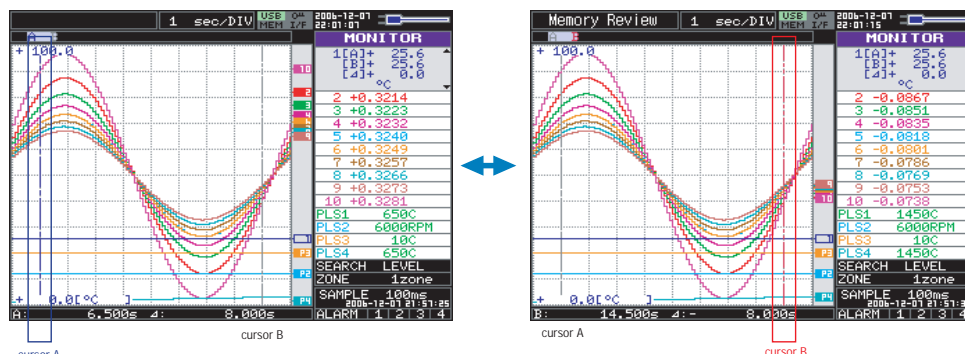
<Digital + Calculation Display screen>
Displays digital values and calculation results in large text.
* Calculation results are added up in real time.

(12) CURSOR (ALARM CLEAR)



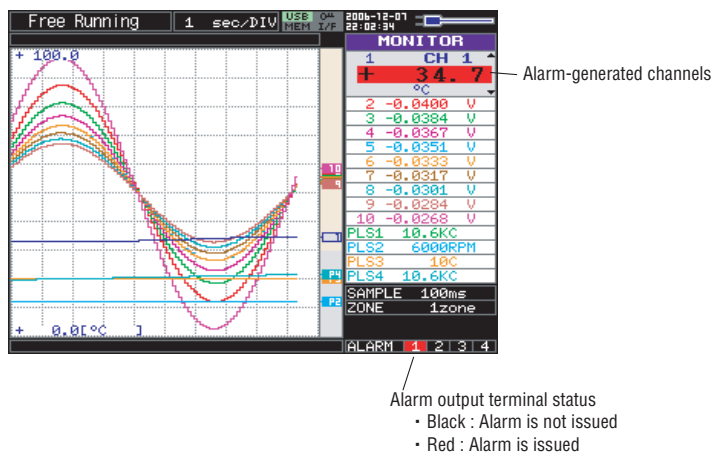
<When replaying captured data>

This key is used to toggle between cursors A and B during replay.

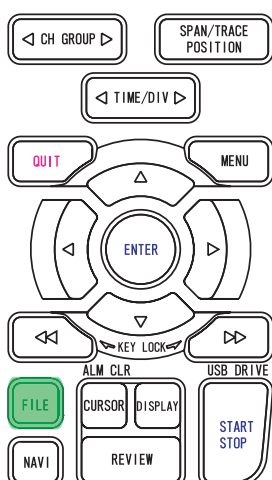


<When alarm generated>

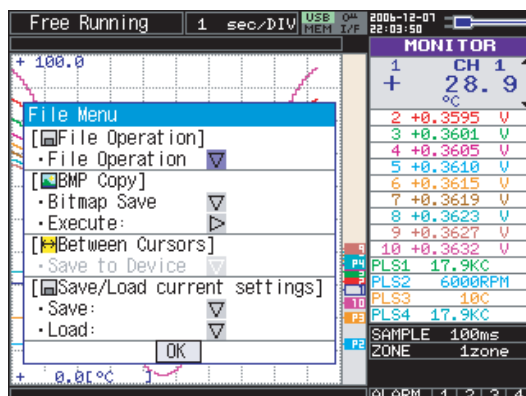
When the alarm setting is "Hold generated Alarm", the maintained alarm is cleared.



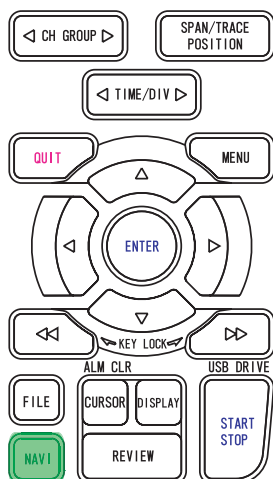
(13) FILE



- This key is use for operations related to the Internal memory and USB device (copy and delete).
- Copies the window.
- Saves data between cursor A and cursor B during replay (can be set during replay only).
- Saves the settings currently in use or loads settings.
- Saves or reads the currently set condition into the USB device.

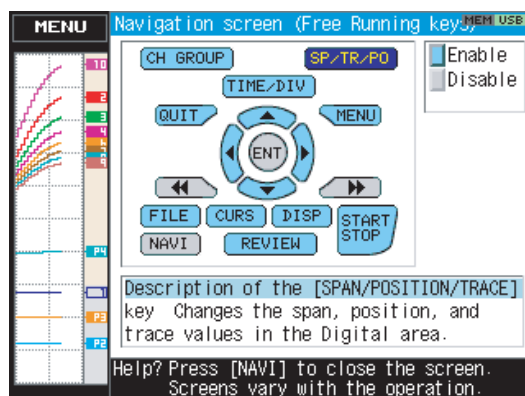


(14) NAVI

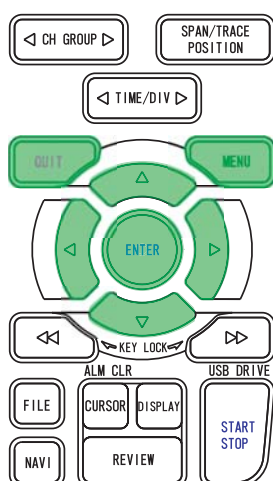


This key is used to display the key operation content during Free Running, capture or replay.

During display of the NAVI screen, an explanation of how the key is used is displayed in the window.



Basic Procedures Used in Settings



The following are basic operation procedures for settings.

- 1** Press the [MENU] key to open each menu.
- 2** Use the $\nabla \Delta$ $\triangleleft \triangleright$ key to move the cursor to the items you want to set.
- 3** Press the [ENTER] key to display a list of setting values.
- 4** Use the $\nabla \Delta$ $\triangleleft \triangleright$ key to select a setting value.
- 5** Press the [ENTER] key to confirm the value.

The above operation is the basic procedure that may be used for each setting.

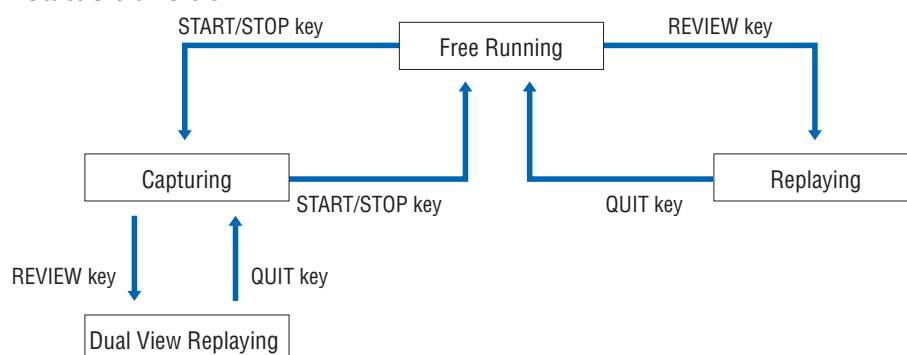
However, precise procedure may vary between setting items. Please follow the procedure indicated by each menu.

Operation Modes

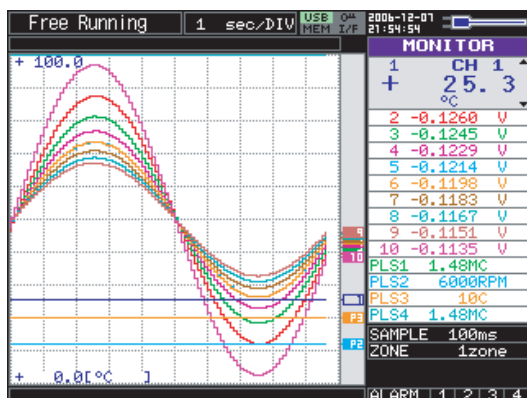
You can check the system operation status in the simplified message display.

operation	operation	simplified message display
Free Running	Start up status or data is not being captured	Free Running
Capturing	Data is being captured in the main memory or USB device.	Memory Recording USB Drv Recording
Dual View Replaying	The current waveform display and data on capturing is being replayed	Memory Recording USB Drv Recording
Replaying	Captured data is being replayed	Memory Review USB Drive Review

Operation status transition



(1) Free Running



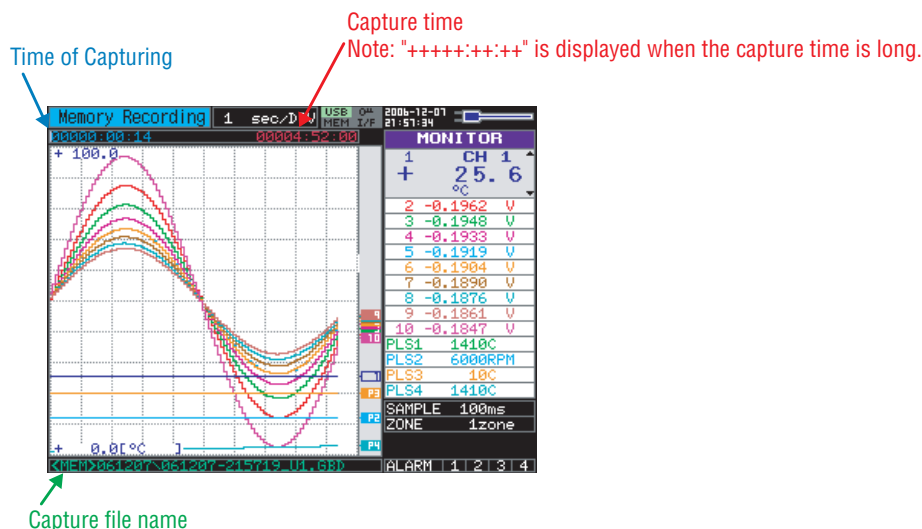
When in Free Running status, you primarily set up the system to capture data.

You can check the current input signal as a waveform or digital values.

Operations available during Free Running

Measurement parameters settings	The [MENU] key is used to change various setting items in configuration menus.
SPAN/TRACE/POSITION	The [SPAN/TRACE/POSITION] key is used to change settings.
Display mode	The [DISPLAY] key is used to change the display mode.
File operations	The [FILE] key is used to perform file-related operations.
Data replay	The [REVIEW] key is used to replay captured data.

(2) Capturing



During data capture, data is captured into the Internal memory or USB device.

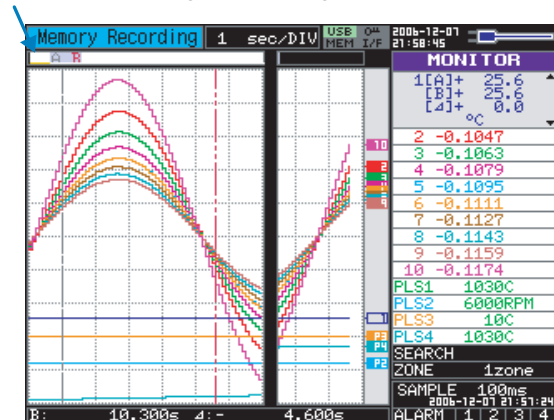
You cannot use the [MENU] key to change the setting.

Operations available during capture

SPAN/TRACE/POSITION	The [SPAN/TRACE/POSITION] key is used to change settings.
Display mode	The [DISPLAY] key is used to change the display mode.
Dual View replay	The [REVIEW] key is used to replay captured data in two windows at the same time.

(3) Dual View Replaying

Screen buffer usage rate (orange line)



You can replay data during capture.

Waveform on the right side is the current captured data and the left side is previously captured data. You can use the Direction keys (left/right) to move the cursor to captured data to check digital values.

Operations available during dual view replaying

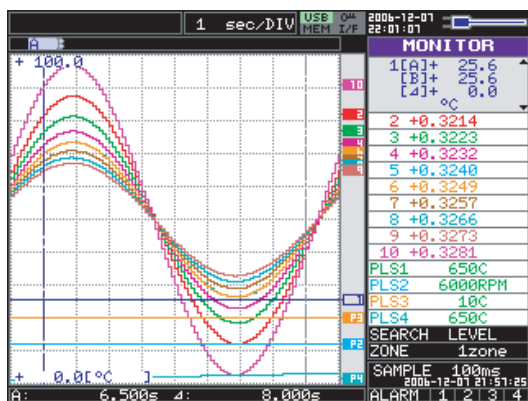
Moving cursor	The [CURSOR] key is used to switch between cursors A and B. The left/right or FAST FORWARD keys are used to move the cursors.
---------------	--

Important

Captured data can only be displayed for the double window buffer portion.

Dual view buffer capacity is 512 KB.

(4) Replaying



Displays captured data.

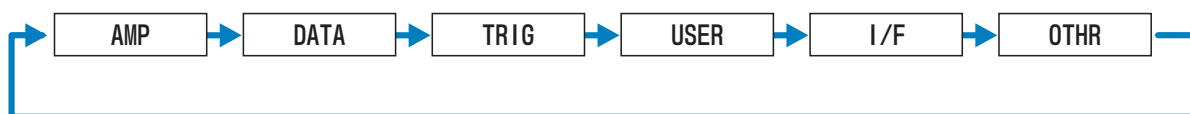
Available operation during replaying

SPAN/TRACE/POSITION	The [SPAN/TRACE/POSITION] key is used to change settings.
Menu operations during data replay	The [MENU] key is used to move the cursor, search data and replay set calculation.
Moving cursors	The [CURSOR] key is used to switch between cursors A and B. The left/right or FAST FORWARD keys are used to move the cursors
File operations	The [FILE] key is used to save the data between the cursors.

Setting Menus

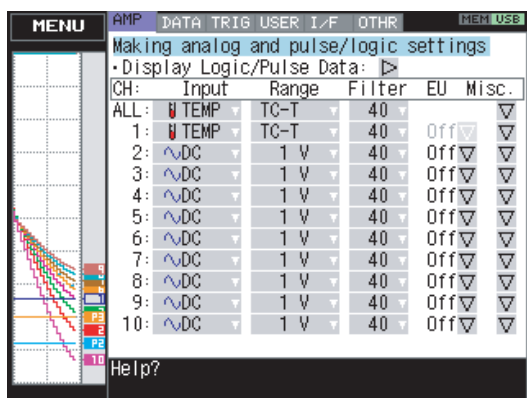
When you press the [MENU] key during Free Running, the following menu screens appear.

The menu screens are classified by the tab for each setting item.



(1) AMP settings

This menu is used to specify input signal-related settings.

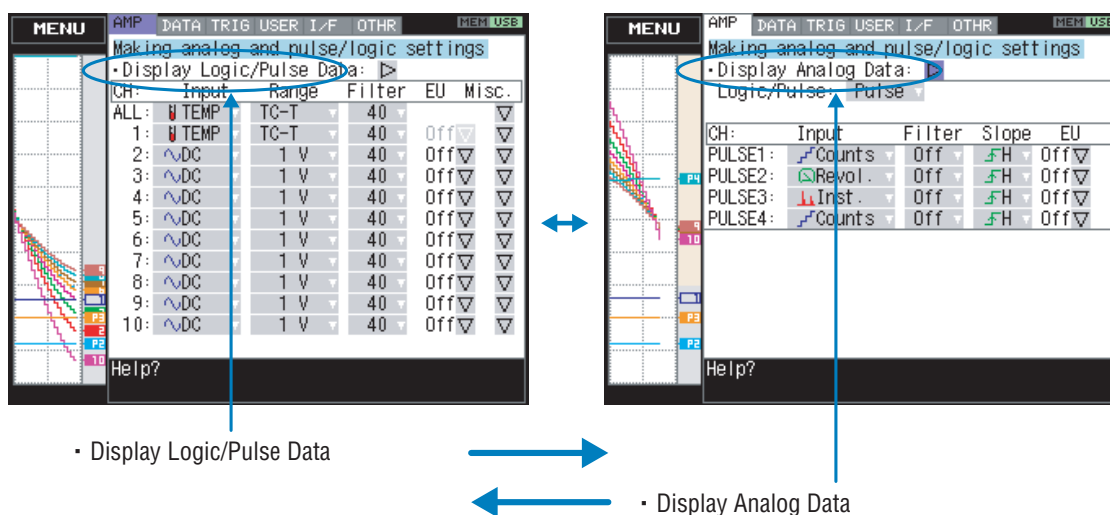


Setting		Selections available
Input		Off, Voltage, Temperature, Humidity Humidity: (CAUTION: The input range is compulsorily set to 1 V, and the scaling function set to ON. 0V→0%, 1V→100%)
Range		Voltage : 20, 50, 100, 200, 500 mV 1, 2, 5, 10, 20, 50, 1-5 V Temperature : TC-K, TC-J, TC-T, TC-R, TC-E, TC-B, TC-S, TC-N, TC-W, PT100, JPT100, PT1000
Filter		Off, 2, 5, 10, 20, 40
EU (Scaling settings)	Function	Off, On (effective when On has been selected)
	Lower – Upper	Settings
	Unit	Meas. Value (Upper/Lower)
		EU Value (Upper/Lower)
Misc.		Dec pt
		Unit
		Select
		Span setting (Span All Settings)
		Annotation setting
		Zero voltage adjustment
		Perform Auto Zero ADJ.
		Reset Auto Zero ADJ.
		[Zero point voltage value]

Setting	Selections available
Logic/Pulse	Off, Logic, Pulse
	Logic
	Filter: Off, On
	Pulse
	Input: Off, Revolution counts, Counts, Inst.
	Filter: Off, On
	Slope: H, L
	Scaling Function: Off, On
	Measured values settings
	EU output value settings
	Unit settings

Switching displays

Analog and logic/pulse can be switched as shown below.



Analog settings

When you use CH ALL to set an input range and filter, all channels are set to the same settings if the input is the same. Range is set only for the same input CHs.

Span All Settings, is set only for the same range CHs.

Note

ALL and Span All Settings are set only for the currently displayed group (per 10 channels).

Input..... Selects input condition.

- Off : No signal input is accepted.
- Voltage : Used for measuring direct-current voltage.
- Temperature : Used for measuring temperature.
- Humidity : Used for measuring humidity.

Range Specifies the range of signal input to be measured.

- Voltage : 20, 50, 100, 200, 500mV, 1, 2, 5, 10, 20, 50, 1-5V
- Temperature : TC-K, TC-J, TC-T, TC-R, TC-E, TC-B, TC-S, TC-N, TC-W, PT100, JPT100, PT1000

The available SPAN settings differ according to the measurement range.

The relationships between the measurement range and SPAN are as shown in the following chart.

<Voltage Ranges>

Range	Maximum SPAN	Minimum SPAN	Minimum Resolution
20mV	−22.000 to +22.000mV	0.200mV	0.001mV
50mV	−55.00 to +55.00mV	0.50mV	0.01mV
100mV	−110.00 to +110.00mV	1.00mV	0.01mV
200mV	−220.00 to +220.00mV	2.00mV	0.01mV
500mV	−550.0 to +550.0mV	5.0mV	0.1mV
1V	−1.1000 to +1.1000V	0.0100V	0.0001V
2V	−2.2000 to +2.2000V	0.0200V	0.0001V
5V	−5.500 to +5.500V	0.050V	0.001V
10V	−11.000 to +11.000V	0.100V	0.001V
20V	−22.000 to +22.000V	0.200V	0.001V
50V	−55.00 to +55.00V	0.50V	0.01V
1-5V	−5.500 to +5.500V	0.050V	0.001V

<Temperature Ranges>

Range	Maximum SPAN	Minimum SPAN (p-p)	Measurement Range	Minimum Resolution
K	−270 to +2000°C	50°C	−200 to +1370°C	0.1°C
J	−270 to +2000°C	50°C	−200 to +1100°C	
T	−270 to +2000°C	50°C	−200 to +400°C	
R	−270 to +2000°C	50°C	0 to +1600°C	
E	−270 to +2000°C	50°C	−200 to +800°C	
B	−270 to +2000°C	50°C	+600 to +1820°C	
S	−270 to +2000°C	50°C	0 to +1760°C	
N	−270 to +2000°C	50°C	0 to +1300°C	
W	−270 to +2000°C	50°C	0 to +2315°C	
PT100	−270 to +2000°C	50°C	−200 to +850°C	
JPT100	−270 to +2000°C	50°C	−200 to +500°C	
PT1000	−270 to +2000°C	50°C	−200 to +500°C	

<Humidity Range>

Range	Maximum SPAN	Minimum SPAN (p-p)	Minimum Resolution
	0 to +110%	1.0%	0.1%

Filter Sets the filter status.

Please set the filter to ON when there is likely to be noise in the input. Filter operation is on a moving average basis.

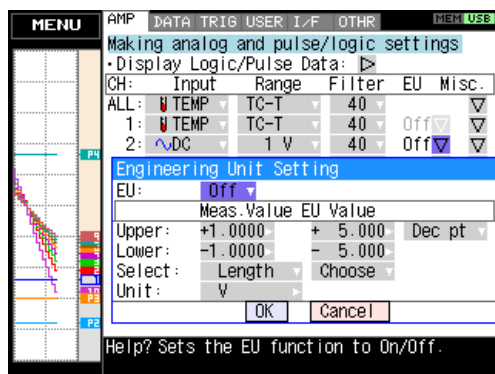
The average value of the set sampling count is used. If the sampling interval is set to 30 seconds or slower, the basis of average value which are sampled with the sub-sampling (30 seconds) is used.

Off, 2, 5, 10, 20, 40 times

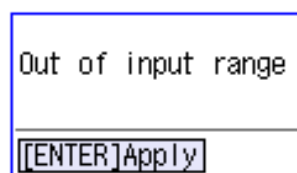
EU (Scaling) Scales the measured values and converts them to other units.

Function Sets the function to Off or On.

Upper, Lower, Unit Sets the EU function's conversion value and unit.



If this message appears, follow the instructions by reducing the number of digits to be output by one, or leaving the number of digits as is and changing the EU value.



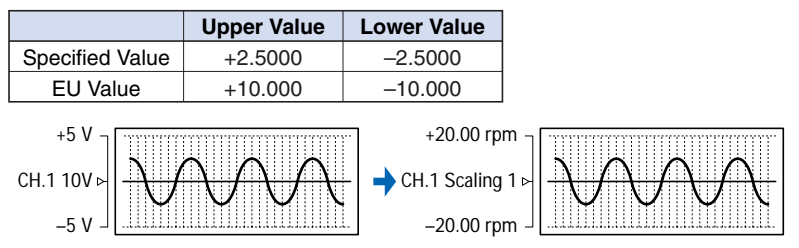
Note

The Scaling operation is calculated using a ratio of the Meas. Value or EU Output Value settings. "++++/----" is displayed when the converted value cannot be processed by ZR-RX40.

- (1) Meas. Value
Specifies the numeric value to be converted. Set two points, the Upper and Lower parameters.
- (2) EU Value
Specifies output after conversion. Set two points, the Upper and Lower parameters.
- (3) Dec pt
This parameter specifies the decimal point position of the numeral to be specified as the EU value(s).
- (4) Unit
Selects the converted unit, which can be specified as a user-defined character string consisting of alphanumerics. The Unit parameter can also be specified by selecting the Select Unit setting.
- (5) Select
Selects the type of engineering unit.
- (6) Choose
Selects the converted unit. The Unit displayed here is the type of unit selected by the Select setting.

To specify a unit that is not displayed here, specify a user-defined character string as the Unit setting. Moreover, the setting specified here is displayed as the Unit setting.

Setting Example



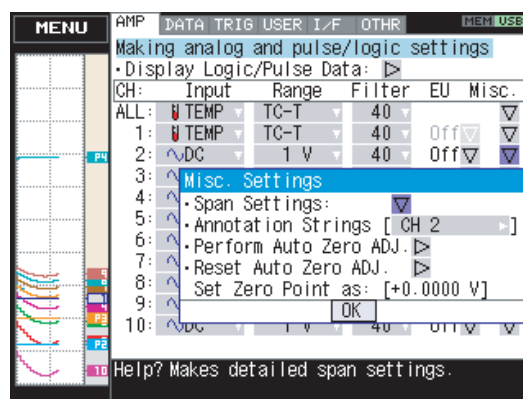
Misc..... SPAN settings : Set the detailed span for each channel.

Annotation Strings : Set a comment for each channel.

"Text input" p.81

Perform Auto Zero ADJ : Moves the current input voltage to zero position voltage value.

Reset Auto Zero ADJ : Cancels the zero position voltage value and displays input voltage.



Logic and Pulse settings

Logic/Pulse Switching..... Switches the digital input.

- Off : Digital input is disabled.
- Logic : Digital input is processed as logic signals.
- Pulse : Digital input is processed as pulse signals.

Filter..... Sets the filter for digital input.

- Off : Disables filter circuit for digital input.
 - On : Enables filter circuit for digital input.
- Filter is approximately 30 Hz (-3 dB).

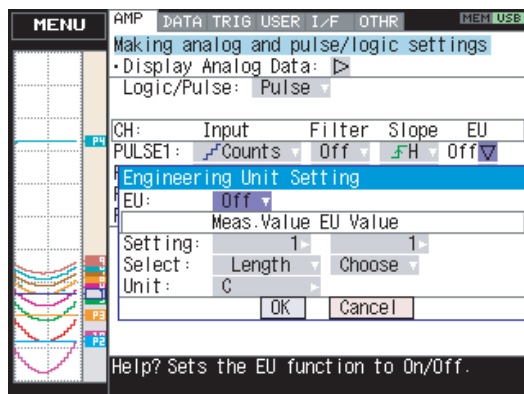
Pulse Input..... Sets the counting method of input pulse for each channel.

- Off : Pulse input is disabled.
- Revol. : Counts the number of pulses per second and displays the value multiplied by 60 as rpm values.
- Counts : Displays the cumulative number of pulses for each sampling interval from the start of measurement.
- Inst. : Displays the number of pulses for each sampling interval.

Pulse Slope..... Sets the slope (direction) to count the number of pulses.

- H : Counts the rising pulse.
- L : Counts the falling pulse.

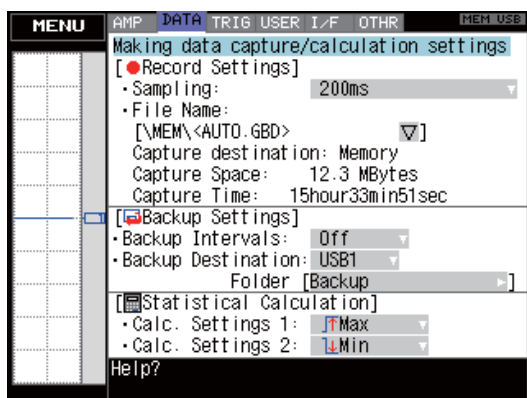
Pulse EU Sets scales for pulse measurement values.



- Function : Sets On/Off of the Scaling function.
- Meas. Value : Specifies the numeric value to be converted.
- EU Value : Specifies output after conversion.
- Unit : Selects the converted unit, which can be specified as a user-defined character string consisting of alphanumerics. The Unit parameter can also be specified by selecting the Select Unit setting.
- Select : Selects the type of engineering unit.
- Choose : Selects the converted unit. The Unit displayed here is the type of unit selected by the Select Unit setting.

(2) DATA settings

This menu is used to specify capture-related items and calculations.



DATA Menu Structure

Setting	Selections available
Record Settings	100, 200, 500ms 1, 2, 5, 10, 20, 30s
• Sampling Interval	1, 2, 5, 10, 20, 30min, 1h
File Name	File: Folder name, file name
	Name Type: Auto, User
	File Type: GBD, CSV

Setting	Selections available
Backup Settings	Backup Intervals: Off, 1, 2, 6, 12, 24 h
	Backup Desination: USB1, FTP
	Folder Name: enter text string
Statistical Calculation • Calculation Settings 1,2	Off, Average, Max, Min, Peak, RMS

Important

When you save files, create a folder and then save the files in the folder. Regardless of the remaining capacity, if you try to save files in the root directory, due to file restrictions you may not be able to save files.

The displayed Capture Time may vary according to the sampling interval or number of capture channels.

Sampling Interval Specifies the sampling interval for data capture.

The table below shows the number of measuring channels and sampling interval values that can be set.

If data fluctuate due to noise, set the sampling interval to a value which enables the digital filter function.

Number of Measuring Channels*	Allowed Sampling Interval	Sampling Interval which enables Digital Filter
10 channels or less	100 ms or above	500 ms or above
11CH to 20CH	200ms or above	1s or above
21CH to 50CH	500ms or above	2s or above
51CH to 100CH	1s or above	5s or above
101CH to 200CH	2s or above	10s or above


* "Number of Measuring Channels" is the number of channels in which input settings are NOT set to "OFF".

Note

To use the digital filter function, you must set the AC power supply frequency accurately.
Follow the instructions on p.72 to ensure that the settings are accurate.

Captured data file name..... Select the name of a file to which you want to save captured data.

Set either the main memory or USB device (option).

 "File box" p.78

Name Type..... Set how the file is named.

- Auto : Automatically uses the capture start time as the file name.

Example: 20050101-123456_UG.GBD

- Number part: Created on January 1, 2005, 12: 34:56.

- UG part : Number of user capturing data

UG: Guest

U1: User 1

U2: User 2

 (4) USER settings p.69

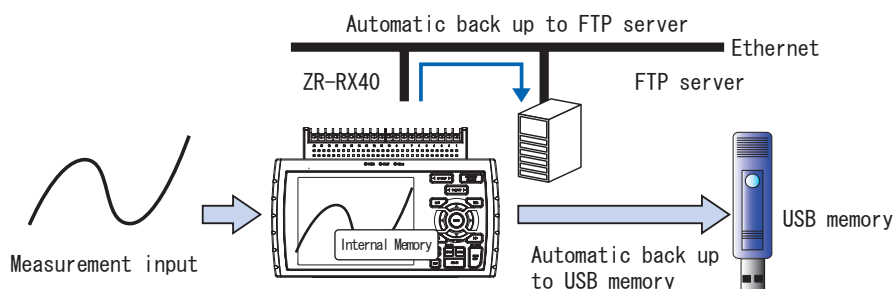
- User : Captures data using a user-defined name.

File Format..... Set the file format in which data is saved.

- GBD : Binary format
- CSV : CSV file format (such data cannot be replayed with the ZR-RX40)

Backup Settings ZR-RX40 provides a back up function where captured data can be backed up periodically (see figure below).

This section allows you to set data back up conditions.



- Backup Intervals: Sets the interval to perform back up of captured data. Off, 1, 2, 6, 12, 24 h

- Backup Destination: Sets the location where back up data will be stored.

USB1: Data is backed up in the USB memory. This is enabled only when data is captured in the internal Flash memory.

FTP: Data is backed up in the FTP server in the Network. * FTP settings in the I/F menu is required.

- Folder Name: Specifies folder where data will be saved.
ex) \OMRON\TEST\20071204

Statistical calculation Two types of operation can be performed on all channels.

Operation results are displayed on the "Digital + Calculation Display" screen.

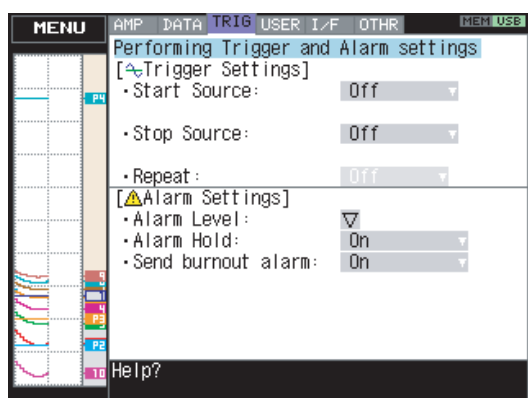
- Off: Calculation is not performed.
- Average: Displays the simple average value during data capture.
- Max: Displays the maximum value during data capture.
- Min: Displays the minimum value during data capture.
- Peak: Displays the peak value data during data capture.
- RMS: Displays the effective value of the data during data capture.

$$\text{R.M.S} = \sqrt{\sum D^2 / n}$$

D: data n: number of data

(3) TRIG settings

This menu is used to specify trigger conditions and alarms.



Setting	Selections available
Start side source setting	Off, Level, Alarm, External Input, Date
	Level : Mode, Level, Combination
	Alarm : Alarm port number
	External input : none
	Date : Date, Time
Stop side source setting	Off, Level, Alarm, External Input, Date, Time
	Level : Mode, Level, Combination
	Alarm : Alarm port number
	External input : none
	Date : Date, Time
	Time : Duration
Repeated capturing	On, Off
Alarm level settings	Mode, Level, Output
Alarm Hold	On, Off
Send burnout alarm	On, Off

Start side source settings..... Specifies conditions to start data capture.

- Off: Starts capturing data unconditionally.
- Level: Starts capturing data when a specified level is reached.
- Alarm: Starts capturing data when the alarm with the specified number is generated.
- External Input: Starts capturing data when an input signal is received from an external trigger terminal.
- Date: Starts capturing data when a specified time arrives (when repeated capturing is set to Off).
 - : Starts capturing data when a specified time arrives (when repeated capturing is set to On).

This setting is used when you want to start capturing data at the same time every day.

Stop side source settings Specifies conditions to stop data capture.

- Off: Does not stop data capture by a trigger.
- Level: Stops data capture when the specified level is reached.
- Alarm: Stops capturing data when the alarm with the specified number is generated.
- External Input: Stops capturing data when an input signal is received from an external trigger terminal.
- Date: Stops capturing data when a specified time arrives (when repeated capturing is set to Off).
 - : Stops capturing data when a specified time arrives (when repeated capturing is set to On). This setting is used when you want to stop capturing data at the same time every day.
- Time: Stops capturing data at a specified time after starting data capture.

Repeated capturing After a stop side trigger is generated, the next data capture process begins.

- Off: Does not repeat data capture.
- On: Repeats data capture.

Alarm level settings When the setting level conditions are met, the alarm output terminal outputs an alarm.

The Digital screen showing the channel for which the alarm has been generated is displayed in red.

Alarm Hold Specifies whether or not to maintain the alarm status when an alarm is generated and then canceled.

- Not Maintained: Alarm status is canceled when the alarm is canceled.
- Maintained: Alarm status is not canceled even though the alarm is canceled.

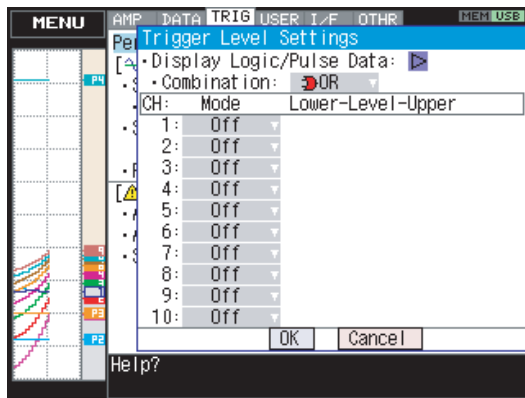
Send burnout Alarm When burnout occurs, an alarm signal is output to the alarm output terminal.

 "(6) OTHR settings" p.72

- Does not occur: Alarm signal is not output to the alarm output terminal when burnout occurs.
- Occurs: Alarm signal is output to the alarm output terminal when burnout occurs.

Alarm is output to the output terminal set in the Alarm level settings.

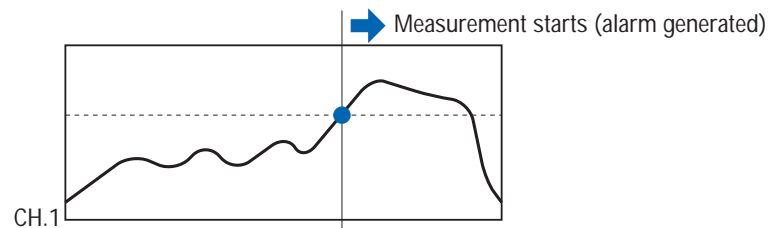
Trigger level settings/Alarm level settings



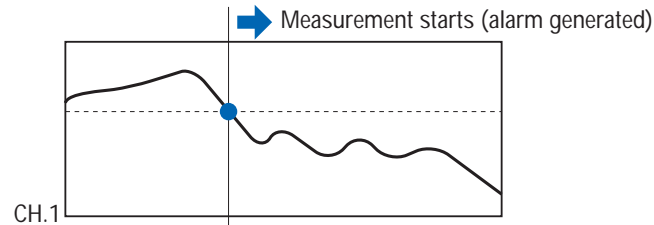
Mode Specifies mode trigger/alarm output conditions.

Off: Does not enable trigger/alarm.

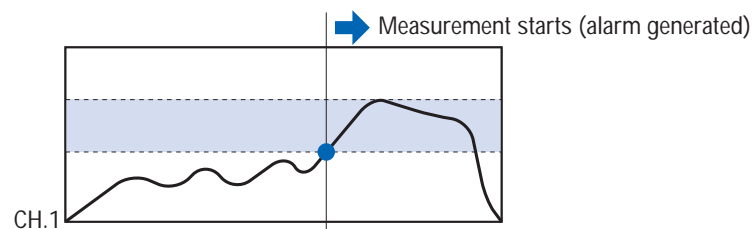
H: A trigger/alarm is generated when the signal input rises to (or exceeds) the specified level.



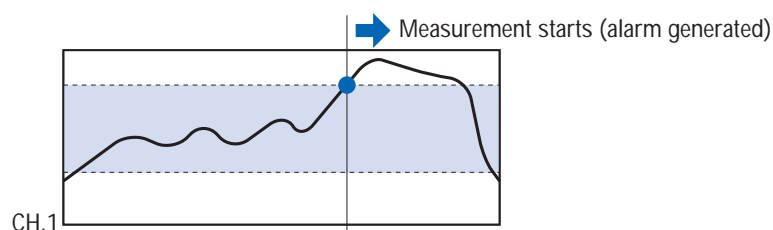
L: A trigger/alarm is generated when the signal input falls to (or falls below) the specified level.



Win In: Used to specify the upper and lower limits for each channel. When the signal level goes within (or is within) either limit, a trigger/alarm is generated.

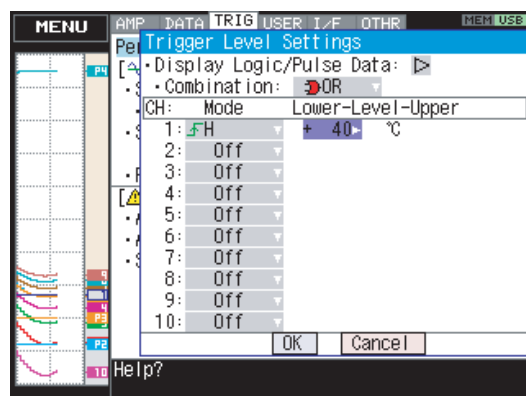


Win Out: Used to specify the upper and lower limits for each channel. When the signal level goes outside (or is outside) either limit, a trigger/alarm is generated.

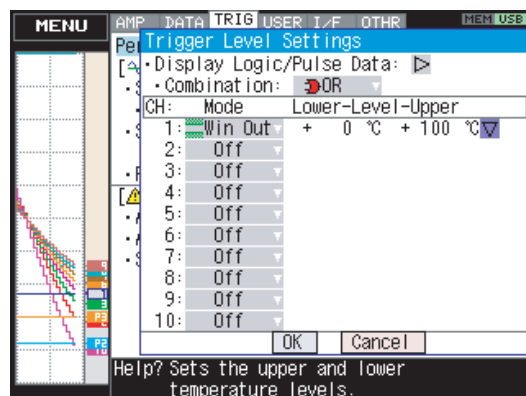


Lower - Level - Upper Specifies the trigger/alarm level(s) for the conditions set in Mode.

- H, L: Input a numeric value.



- Win In, Win Out: Input a numeric value for the upper and lower limit.



Combination (for trigger only)....Sets the combination of trigger conditions set for each channel.

OR: Starts (stops) capturing data when at least one trigger condition is met.

AND: Starts (stops) capturing data only when all trigger conditions are met.

Pulse

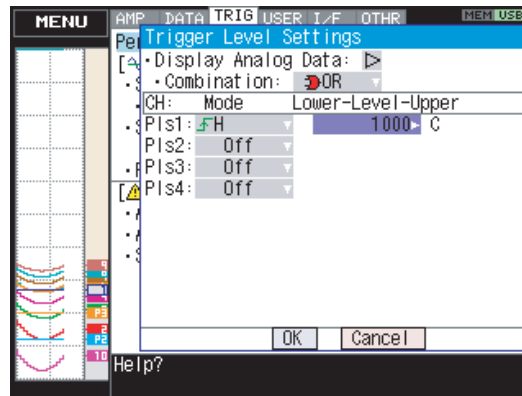
Specifies the trigger/alarm for pulse input signals.

These conditions can be set when they have been enabled in the AMP settings.

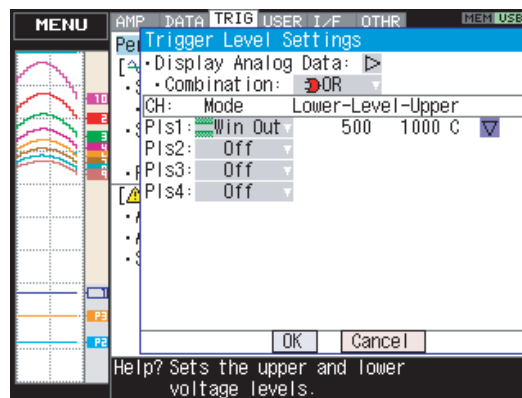
Mode Specifies the same conditions as for analog CH conditions (p.66).

Lower - Level - Upper Specifies the trigger/alarm level(s) for the conditions set in Mode.

- H, L: Input a numeric value.



- Win In, Win Out: Input numeric values for the upper and lower levels.

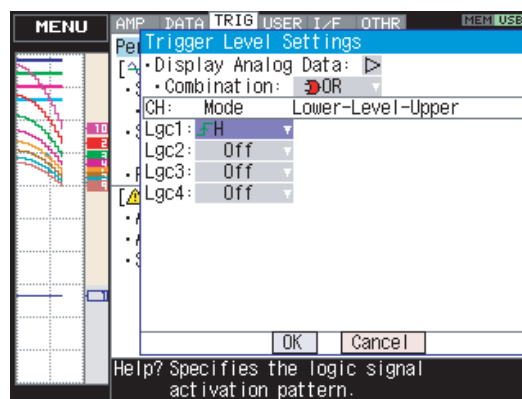


Logic

Sets the trigger/alarm conditions for logic input.

These conditions can be set when they have been enabled in the AMP settings.

- Off: No trigger/alarm conditions set.
- H: Enabled when the logic signal goes from Low to High.
- L: Enabled when the logic signal goes from High to Low.

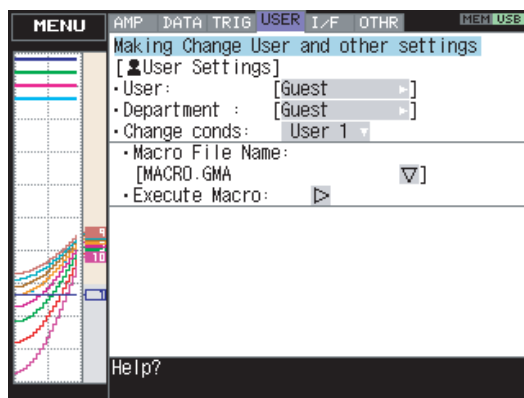


(4) USER settings

This menu is used to store setting conditions for each user. By switching between users, these setting conditions can easily be read out.

This menu is used to specify the user name and switches user setting conditions.

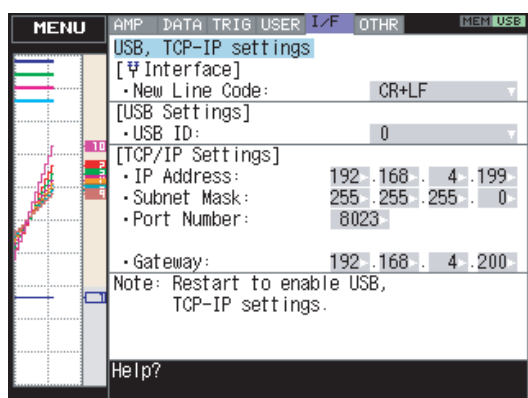
You can specify that the user is a Guest, User 1 or User 2.



- User: Specify the user name. You cannot specify it as Guest.
- Department name: Specify the department name. You cannot specify it as Guest.
- Setting condition switch: Switches between Guest, User 1 and User 2. Since setting conditions are stored for each user, they can be called up easily by simply switching the user.
- Macro file name: Specify the macro file name to be executed.
- Macro run: Executes the specified macro file.

(5) Interface settings

This menu is used to specify conditions for PC connection.



Settings	Selections available
New Line code	CR+LF, LF, CR
USB ID	0 to 9
IP address	Numerical value
Subnet mask	Numerical value
Port number	Numerical value
Gateway	Numerical value

New Line code Specifies the line feed code.

CR+LF : Starts a new line with CR+LF code (default value).

LF : Starts a new line with LF code.

CR : Starts a new line with CR code.

USB..... Specify settings relative to USB interface.

- USB ID : Sets the USB ID number of ZR-RX40.
Specify a number from 0 to 9 (default value: 0).

TCP-IP Specify TCP-IP settings of ZR-RX40.

- IP address : Specifies the IP address.
Default value (192.168.0.1)
- Subnet mask : Sets the subnet mask.
Default value (255.255.255.0)
- Port number : Sets the port number.
Specify a value from 1024 to 65535.
Default value (8023)
- Gateway : Sets the gateway address.
Default value (0.0.0.0)
- DNS Address : Sets the DNS address. Default value (0.0.0.0)

- Keep Alive : The no connection time is detected, then the socket connection is disconnected automatically.
 - OFF: Disconnection is not done.(Default)
 - From 10 seconds to 1 hour: If the no-communication is kept longer than specified time, the socket connection is disconnected. Please make any communication during specified time. Please note, in case of the application software which is attached as a standard accessory, it becomes the no-communication during replaying the measured data. (This function is enabled only for the command port. It does not affect to the Web server function or the FTP server function.)
- FTP Server Settings: Sets the FTP server settings.
 - FTP Server : Sets the domain name of the FTP server.
 - Username : Sets the login name for the FTP server.
 - Password : Sets the login password for the FTP server.
 - Port Number : Sets the port number of the FTP server.
 - PASV Mode : Sets ON/OFF of passive mode.
 - ON Select ON to establish connection to an external FTP server in a firewall-enabled environment.
 - OFF Select Off to establish connection to an FTP server in a general network environment.

Important

You must restart ZR-RX40 when any change is made to an interface setting value.

If you continue to operate ZR-RX40 without restarting after these changes, the new setting values will not be applied. As a result, the ZR-RX40 will not be able to establish a connection to your PC.

(6) OTHR settings

Other miscellaneous settings are made here.



Setting	Selections available
LCD brightness	Light, Medium, Dark
Screen Saver	Off, 10, 30 (sec.), 1, 2, 5, 10, 30, 60 (min.)
Power On Start	Disable, Enable
Room Temp.	Internal, External
Temp. Unit	°C, °F
Burn Out	Off, On
AC Line cycle	50/60Hz (Off, On)
Date/Time	Date, time settings
Language	Japanese, English (US), English (UK), French, German, Chinese, Korean
Return to default settings	
Information	Firmware version System Control MAC Address
Demo Waveform Mode	Off, On
Game	Memory test game Number order game Reversi

- LCD brightness..... Sets the brightness of the LCD backlight.
Available selections are Light, Medium, and Dark.
Selecting Dark allows longer operational time with batteries.
- Screen Saver..... Automatically turns off the display if the ZR-RX40 is not operated within a specified interval.
Available selections are Off, 10, 30 s, 1, 2, 5, 10, 30, 60 min.
Turning off the display frequently using the Screen Saver function allows longer operational time with batteries and longer lifetime of the LCD screen.
- Power On Start Sets the feature which initiates measurement as soon as the ZR-RX40 is turned on.
- Disable : Disables the Power On Start function.
 - Enable : Enables the Power On Start function.

Room Temp. Compensation .. This parameter enables room temperature compensation settings when thermocouples are used. You can select either internal or external room temperature compensation.

- Internal : The ZR-RX40's room temperature compensation settings are used (usually, you use this parameter).
- External : This parameter is set to enable room temperature compensation settings in external devices.

Temp. Unit..... Toggles the temperature unit between °C and °F.

- °C: Celsius
- °F: Fahrenheit (the scaling function is compulsorily enabled)
Fahrenheit indication is calculated by following formula based on Celsius
$$\text{Fahrenheit (deg. F)} = \text{Celsius (deg. C)} \times 1.8 + 32$$

Please calculate the temperature measurement accuracy of Fahrenheit based on this formula.

Burn Out Sets a feature which checks sensor burnout in a thermocouple.

- Off: Disables burnout check.
- On: Enables periodic burnout check.

Important

During a burnout check, voltage is applied to the ZR-RX40. Therefore, set Burn Out to "Off" when ZR-RX40 is connected in parallel with other devices to avoid any effect from these voltages.

AC Line cycle..... Select the frequency of the AC line used.

- 50Hz : For areas using line frequency of 50Hz
- 60Hz : For areas using line frequency of 60Hz

Important

This setting specifies the frequency in which noise can be eliminated with the digital filter function.

Note that specifying an incorrect value will not achieve line noise elimination.

The table below shows the sampling speed which enables the digital filter function.

Number of Measuring Channels*	Sampling Interval which enables Digital Filter
10 channels or less	500 ms or above
11CH to 20CH	1 s or above
21CH to 50CH	2 s or above
51CH to 100CH	5 s or above
101CH to 200CH	10 s or above

* "Number of Measuring Channels" is the number of channels in which input settings are NOT set to "OFF".

Date/Time This parameter sets the date and time.

- Internet Time : Selects whether to adjust the internal clock using the time server. Off, On
- NTP Server : Enter the domain name of the time server to be used.
- Time Zone : Sets the time zone where ZR-RX40 is used. (Japan +09:00)

- Synchronized Time: Sets the time when ZR-RX40 is synchronized with the time server. The internal clock will start synchronization upon the set time using the method selected in Adjust Mode.
- Adjust Mode : Sets the method to synchronize the internal clock to the time server.
 - Step: Sets the internal clock to the time server at Synchronized Time.
 - Slew: Gradually synchronizes the internal clock to the time server. Therefore, the internal clock will not be set instantaneously at Synchronized Time. Amount of adjustment is approximately 43 s/day (approx. 10 ms in 20 seconds).
- Connection Test : Conducts a test to confirm connection to the time server. A message is displayed when a connection test is performed.

Language..... This parameter sets the ZR-RX40's display language.

Return to default settings..... Returns all the settings to the factory defaults.

Information..... Displays system information.

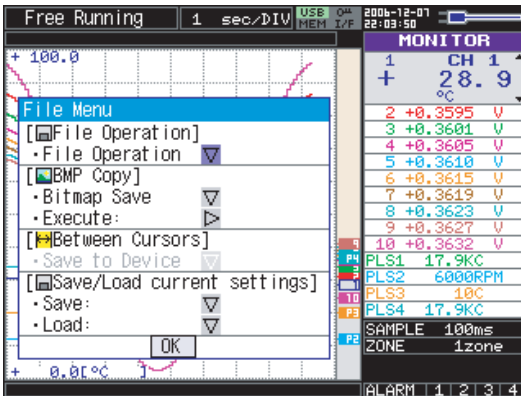
Demo Waveform Mode This parameter displays demo waveforms without analog signal input. Triangular waveforms, rectangular waveforms and noise are displayed in order. You can capture and replay demo waveforms.

- Off: Do not display demo waveforms.
- On: Display demo waveforms.


Game Three games are available. The score is stored for each user.

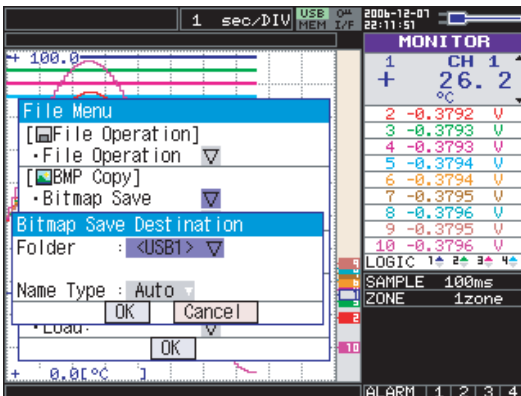
(7) Other menus

FILE



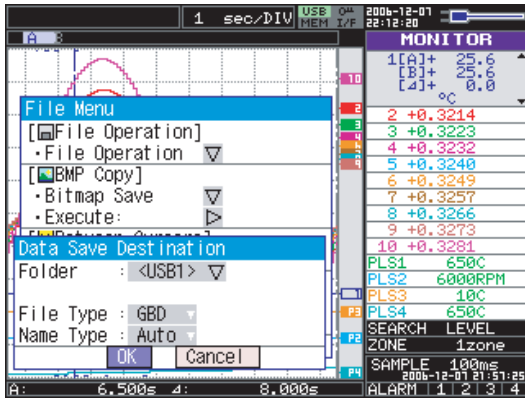
This menu is used to perform file-related operations.

- **File Operation** Operate files in the main memory and USB device.
 For details on file operation, see on p.78.
- **BMP Save** Saves a copy of the screen as a BMP file.



- Folder/File:** Specify a folder when the Name Type is set to Auto.
Specify a file name when the Name Type is set to User.
- Name Type:** Specifies how files are named.
- **Auto** : Automatically uses the capture start time as the file name.
 - **User** : Sets to a user-defined name.
- Execute:** Executes bitmap save.

- **Save Data Between Cursors** When captured data is replayed, the data between cursors A and B is saved.



Folder/File: Specify a folder when Name Type is set to Auto.
Specify a file name when the Name Type is set to User.

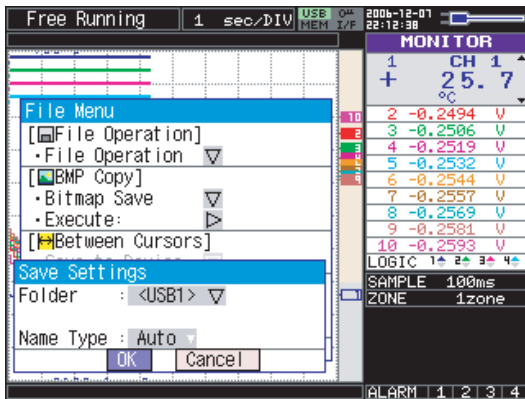
File Format: Specifies the file format used to save data.

- GBD : Binary format
- CSV : CSV file format (such data cannot be replayed with the ZR-RX40)

Name Type: Specifies how to name a file.

- Auto : Automatically uses the capture start time as the file name.
- User : Sets to a user-defined name.

- **Save current settings/Load settings** Saves or loads main unit condition settings.



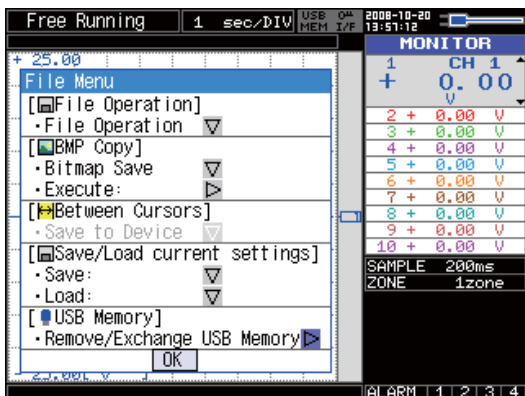
Folder/File: Specify a folder when Name Type is set to Auto.
Specify the file name when the Name Type is set to User.

Name Type: Specifies how to name a file.

- Auto : Automatically uses the capture start time as the file name.
- User : Sets to a user-defined name.

File format is fixed to CND.

- **USB Memory** This function is used when you need to remove or exchange USB memory devices. Follow the directions displayed in the message windows to remove or exchange the USB memory device.



Important

This function is only enabled during Free Running and data capturing.

<Operation example when USB thumb drives are exchanged detaching>

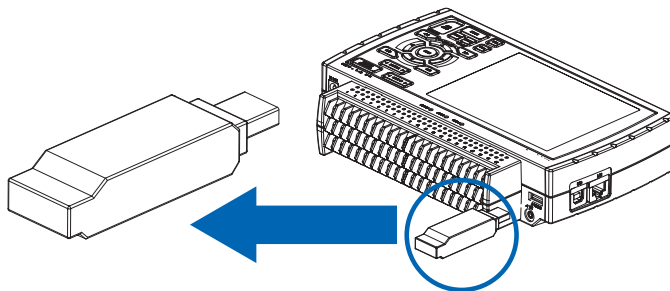
1 The following message is displayed. Remove the USB memory device from the ZR-RX40.

USB memory can be
removed/exchanged.

During measurement, make sure
that the replacement needs to
be completed within 10 min.

Press ENTER key after
removal/exchange.

[ENTER]Apply



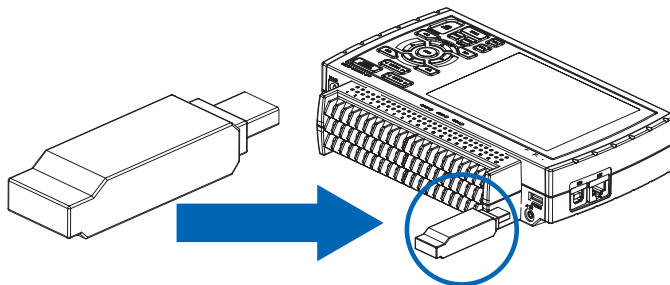
2 Insert a new USB memory device.

USB memory can be
removed/exchanged.

During measurement, make sure
that the replacement needs to
be completed within 10 min.

Press ENTER key after
removal/exchange.

[ENTER]Apply



3 Press the [ENTER] key.

Note

"_CHG" and a number will be appended to the file name each time you exchange a USB memory device.

Ex) When data is captured to file "TEST.GBD":

First USB memory device: TEST.GBD

Second USB memory device: TEST_CHG1.GBD

Third USB memory device: TEST_CHG2.GBD

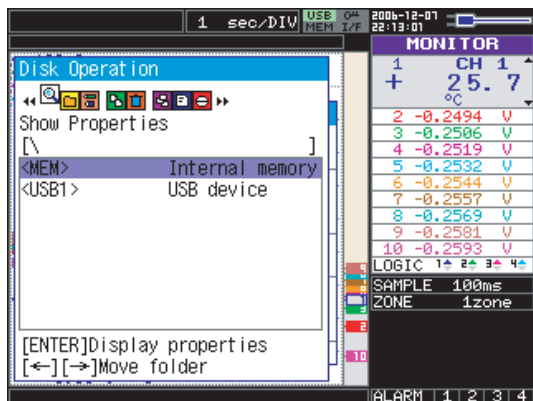
Important

The exchange procedure must be conducted within ten minutes. Data will be lost when ten minutes have elapsed. The data loss indicator will be displayed when any data loss is acknowledged.

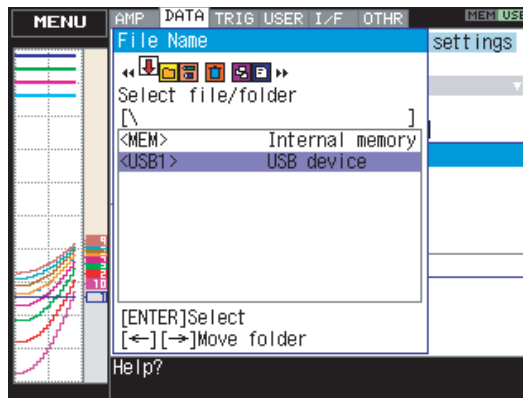
File box













The file box used to set captured data files using the DATA menu or for disk operations accessed using the FILE menu is operated as follows.

<File box by disk operations>



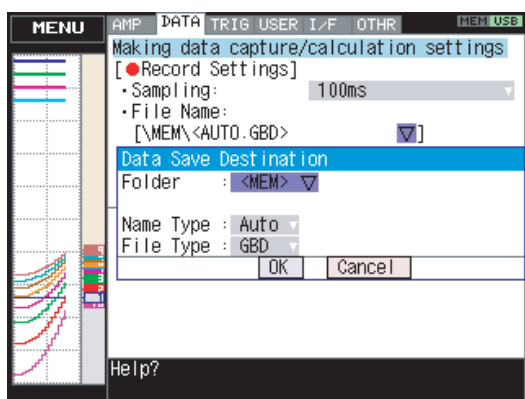
<File box using the DATA menu>



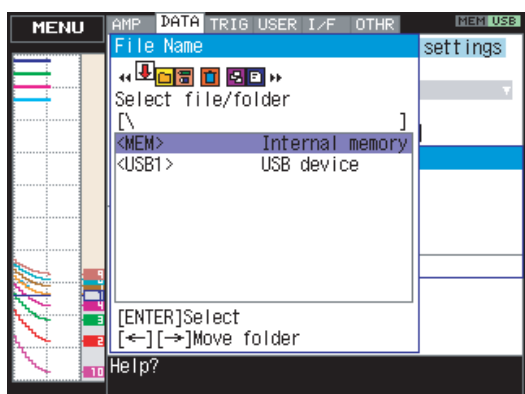
Key	Description
◀◀ ▶▶	<p>Change the operation of the file box.</p> <ul style="list-style-type: none">  Show properties Display details of a file or folder.  Select file/folder..... Select files or folders to write data.  Create new folder Create a new folder.  Create new file Create a new file.  Rename Change the file or folder name.  Copy file/folder Copy files or folders.  Select file to copy/delete Select the file to copy or delete.  Select copy destination and copy... Select the copy destination and copy.  Delete file/folder Delete files or folders.  Change file sort order..... Change the order in which files are displayed.  View setting Change displaying information for files.  Format disk Format the disk. <p>* Details of allowed operation will depend on the operation target.</p>
◀▶	<p>Moves between folders.</p> <p>◀ : Move up one folder.</p> <p>▶ : Move down one folder.</p>
ENTER	Finalize the operation.
QUIT	Close the file box.

<Setting example>

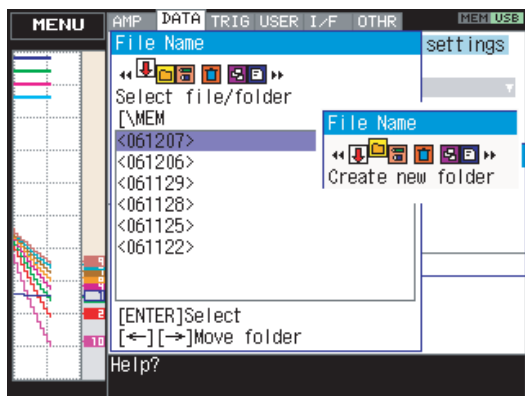
The following shows an operation example where a folder named "TEST" is created for captured data and automatically saved.



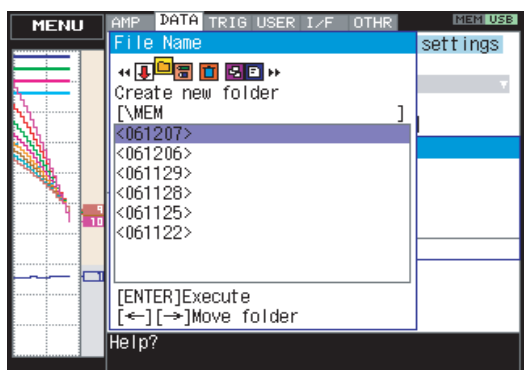
In the [Data save Destination], choose [Select folder] and press the [ENTER] key.



Use the \triangleright key to move to the target folder.

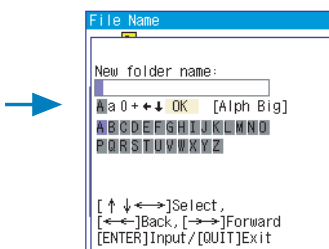


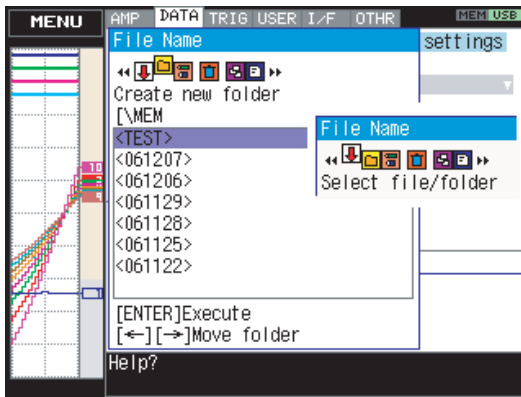
Use the $\triangleright\triangleright$ key to select [Create new folder].



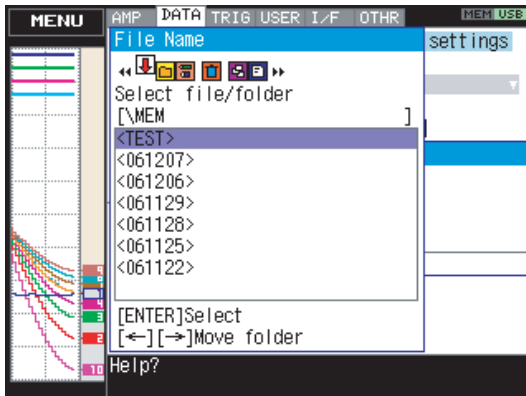
Press the [ENTER] key.

In the [New folder name] box that appears, type in "TEST".

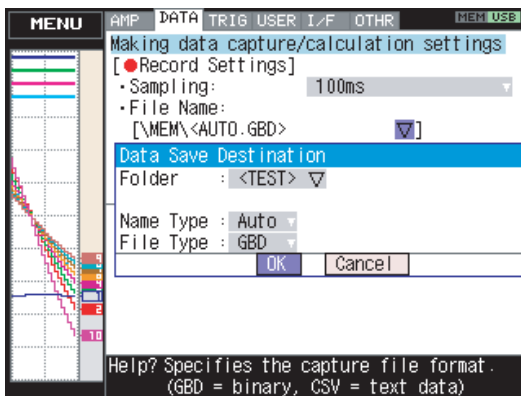




Use the \triangleleft key to choose [Select file/folder].



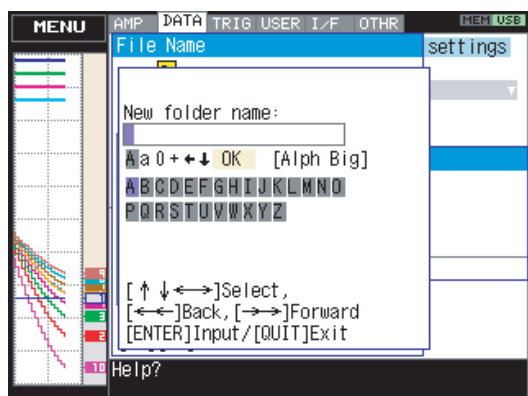
Use the ∇ key to move the cursor to the created "TEST" folder, and press the [ENTER] key.



Select [OK] to close the screen.

Text input

Related to text input operations such as annotation, EU (scaling) unit and captured data file name input.

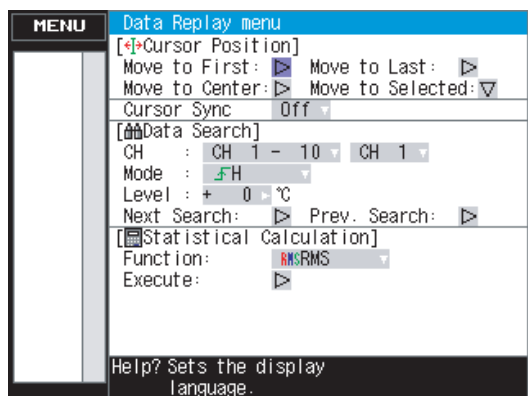


- Operation

Operation mode	Description		Operation method
Text input	A	Upper case alphabet mode	When the cursor key is moved to the uppermost part, operation can be selected using the left/right key. After selecting an operation, use the down key to move the cursor to the desired character.
	a	Lower case alphabet mode	
	0	Numeric mode	
	+	Symbol mode	
	←	Delete mode	
	↓	Insert mode	
	OK	Finalize mode	
When selecting operation	Text used for each operation		When you bring the cursor to a character and press ENTER, the character is entered. After you finish entering characters, move the cursor to OK and then press ENTER.

Data replay menu

Data replay menus are displayed by pressing the [MENU] key during replay.



Setting	Selections available
Cursor Position	<ul style="list-style-type: none"> • Move to First Data • Move to Last Data • Move to Center • Move to Selected Position <ul style="list-style-type: none"> Method : Position, Time Move to : Relative time (position only) : Absolute time (time only)
Cursor Sync	Off, On
Data Search	<ul style="list-style-type: none"> • CH : CH1 to 200, Pulse, Logic, Alarm • Mode <ul style="list-style-type: none"> Analog : H, L Pulse : H, L Logic : H, L Alarm : Both, H, L • Level : Level: set numeric value (selectable only when analog or pulse) • Next Search • Prev. Search
Statistical Calculation between cursors	<ul style="list-style-type: none"> • Statistical Calculation: Off, Average, Max, Min, Peak, RMS • Execute

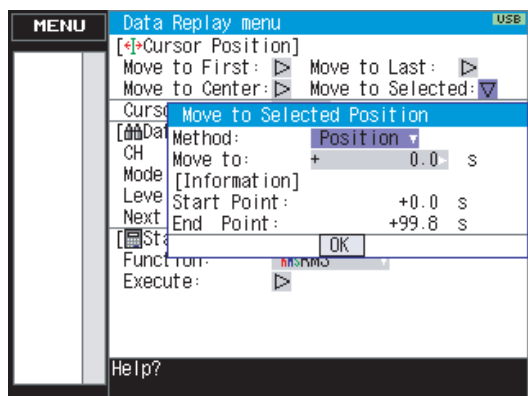
Cursor Position There are other functions for Cursor Move apart from the Level search function.

Move to First Data: Moves the cursor to the start of the data.

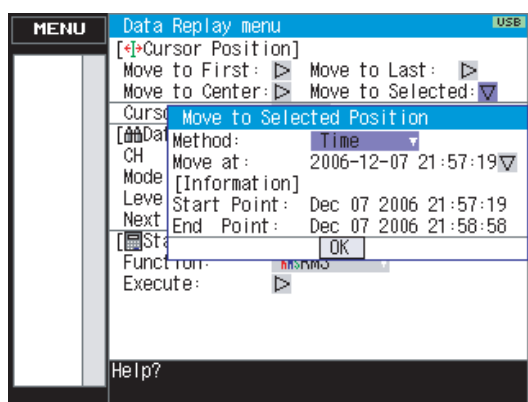
Move to Last Data: Moves the cursor to the end of the data.

Move to Center: Moves the cursor to the center of the data.

Move to Selected Position: Specify the cursor position to be moved to.



- Position: Move at the specified time from the start of measurement. Interval until the end of measurement, in 0.1 s units



- Time : Move to the specified date/time.

Cursor Sync Moves cursors A and B simultaneously. Cursor A is always the fulcrum.

Date Search This function searches within the captured data using the specified method.

CH: Select the channel you want to search.

Mode: Select the mode used for search. The setting is changed depending on the searched channel.

(For analog CH, pulse, and logic)

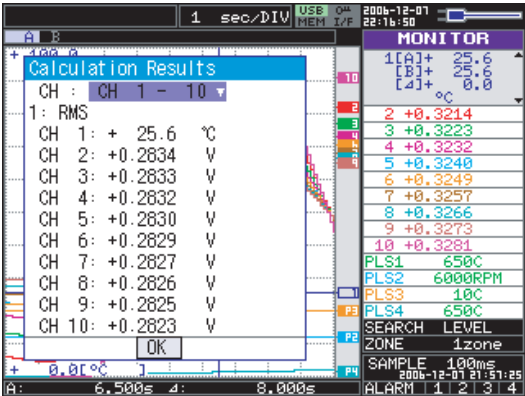
- H: Operates when the searched data rises to a specified level.
- L: Operates when the searched data falls to a specified level.

(For alarm)

- Both: Operates when a searched alarm is generated or canceled.
- H: Operates when a searched alarm is generated.
- L: Operates when a searched alarm is canceled.

Level: Sets the level to be searched for analog CH and pulse.

Statistical calculation between cursors
 Statistical calculation is performed on the data between the cursors.



Function : There are five types of between-cursor calculation functions and one of these can be selected.

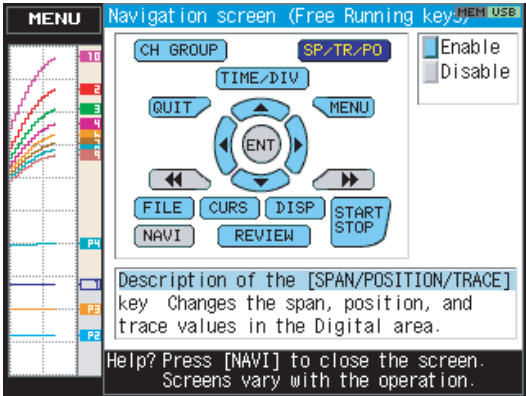
"(2) DATA settings" p.61

Calculation results are displayed for 10 channels each and may be switched to display another group of 10 channels.

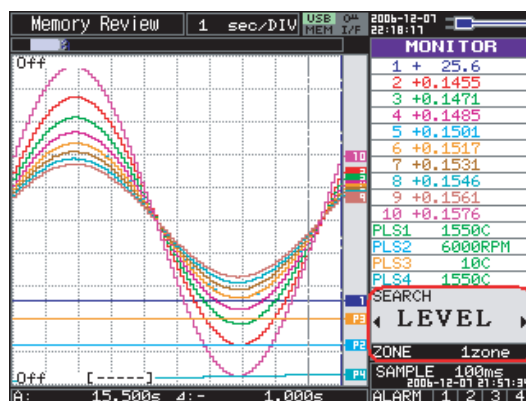
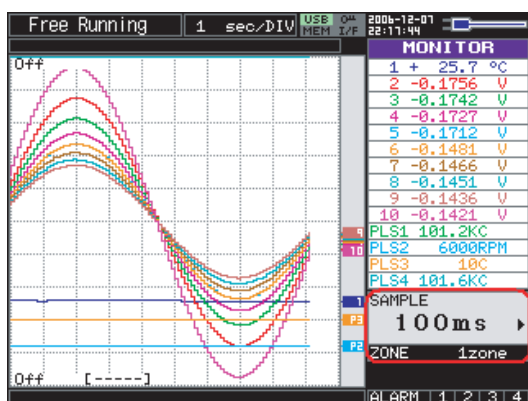
NAVI menu

The NAVI menu can be displayed in three modes, Free Running, Recording, and Replay.

Operation	Description
Open	Press the [NAVI] key to open the NAVI menu.
Close	Press the [NAVI] key to close the NAVI menu.
Browse explanation	Explanation is displayed when an enabled key is pressed.



Quick settings



You can easily set two items on the digital area of the Waveform + Digital screen.

To set items, use the up/down key to go to the Quick setting area.

Content differs depending on the operation mode.

Operation mode	Content	Explanation
Free Running	SAMPLE	Left/right key can be used to change the sampling interval.
	ZONE	Left/right key can be used to change the zone division.
Recording	ZONE	Left/right key can be used to change the zone division.
Replaying	SEARCH	Left/right key can be used to perform search. Left: Searches past side Right: Searches future side
	ZONE	Left/right key can be used to change the zone division.

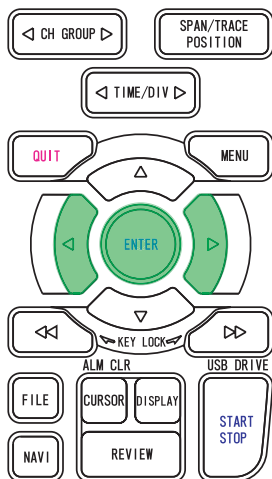
To cancel key lock by password

A password can be set to ZR-RX40 to cancel the key lock.

(No password is set at factory default.)

<Operation flow>

1 Set the password.



Press the \triangleleft , \triangleright , and [ENTER] keys at the same time to display the password setting screen shown below. Specify a 4 digit password.



Use the \triangleleft \triangleright \triangle ∇ keys to select numbers. Press the [ENTER] key to confirm the password.

Specifying 0000 will disable password operation.

In case you forgot your password, please contact us to acquire the master password.

2 Set the key lock.

Hold down the $\triangleleft\triangleleft$ and $\triangleright\triangleright$ keys together for at least two seconds.

3 Cancel the key lock.

Hold down the $\triangleleft\triangleleft$ and $\triangleright\triangleright$ keys together again for at least two seconds.

The password setting screen shown below will be displayed. Set a password.



Entering an incorrect password will not cancel key lock.

Key lock state will be retained when power is turned off.

WEB Server Function

This function allows operating and monitoring ZR-RX40 via a Web browser.

Supported Web browsers

- Microsoft Internet Explorer 6.0 or later
- Netscape 6.2 or later
- Firefox 1.5 or later
- Opera 9.0 or later

Available functions using a Web browser

- Operating ZR-RX40
- Monitoring ZR-RX40 display screen
- Enlarging ZR-RX40 display screen
- Linking to FTP
- Linking to our Web site

Setting the URL

The URL (Uniform Resource Locator) must be correctly set according to your network environment.

Follow the procedure below to access the ZR-RX40.

http://IP address/Index.html

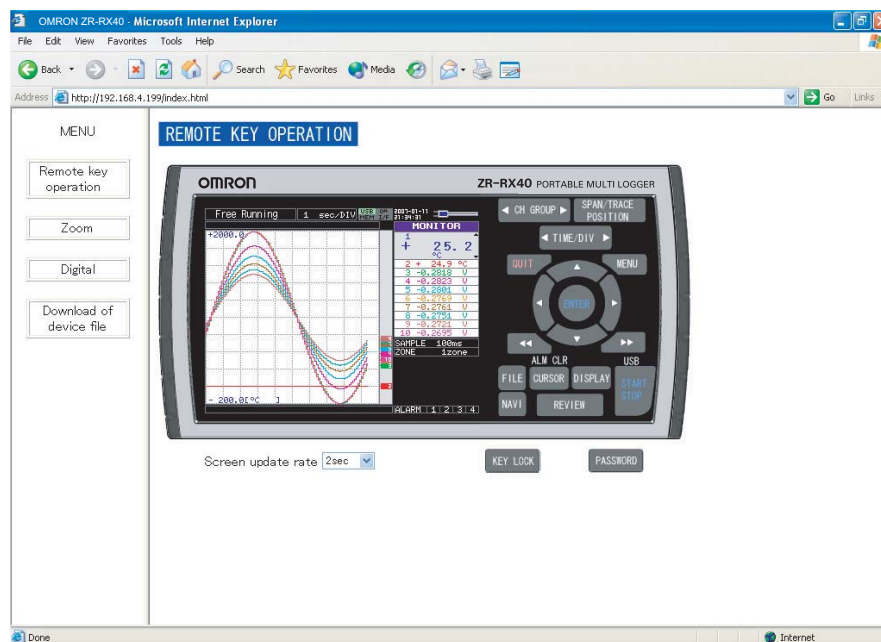
- http Protocol to access the server.
HTTP (Hyper Text Transfer Protocol)
- IP address Type in the IP address of the ZR-RX40 to monitor.
- Index.html File name. This is fixed to Index.html.

Procedure

- 1** Open the Web browser.
- 2** Type in the URL (http://IP address/Index.html) in the address input field.



3 The following pages are displayed.



Remote key operation..... Allows ZR-RX40 operation.

Zoom..... Enlarges only the LCD screen of ZR-RX40.

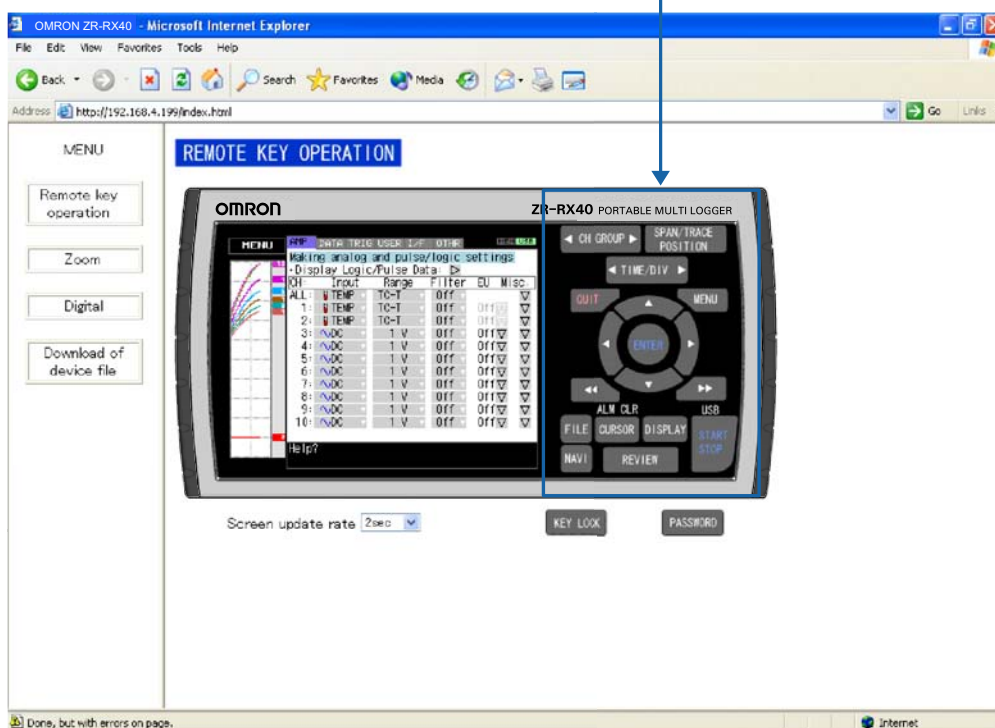
Digital Displays the ZR-RX40 measured value digitally.

Download of device file Allows data captured with ZR-RX40 to be downloaded to your PC via FTP.

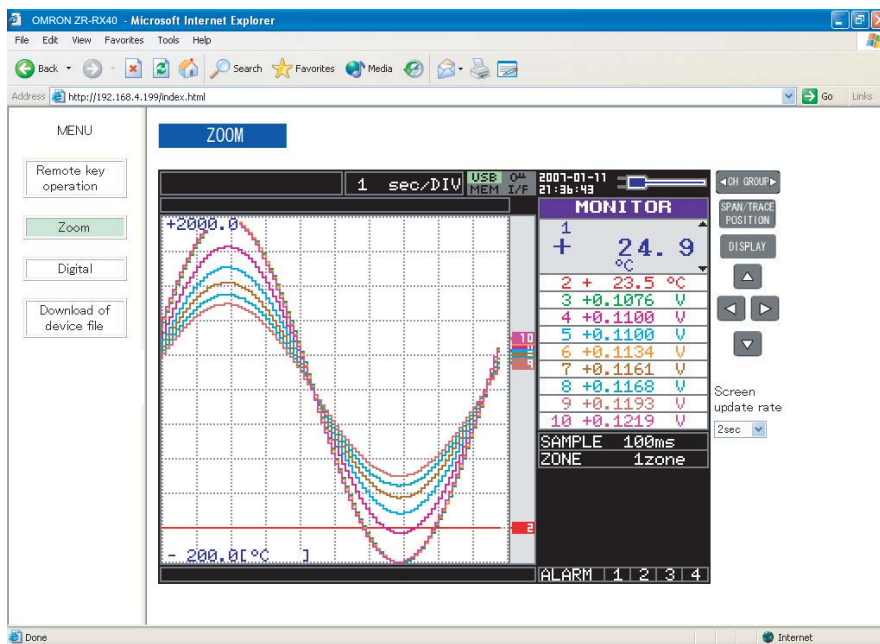
OMRON Web site Accesses to our Web site.

Remote key operation

To operate ZR-RX40 from a remote location, click the corresponding ZR-RX40's panel keys on the screen.

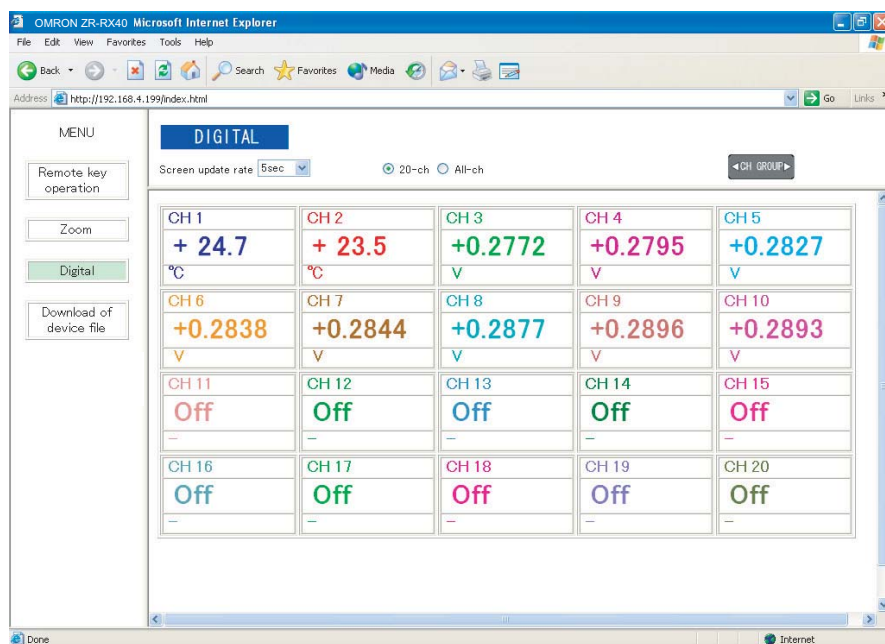


Zoom



- CH GROUP**..... Digital values for 10 channels are displayed on a single screen.
Press this key to display the next group consisting of 10 channels.
- DISPLAY** Switches the display mode.
Press this key to switch among Waveform + Digital, Expanded Waveform, and Digital screens.
- SPAN/TRACE/POSITION** Switches the display in the digital display area.
Press this key to switch among MONITOR, SPAN, POSITION, and TRACE.
- ← → ↑ ↓**..... Cursor keys
- Screen update speed**..... Specifies the speed in which the screen is updated.
Available update speeds are 2, 5, and 10 seconds.

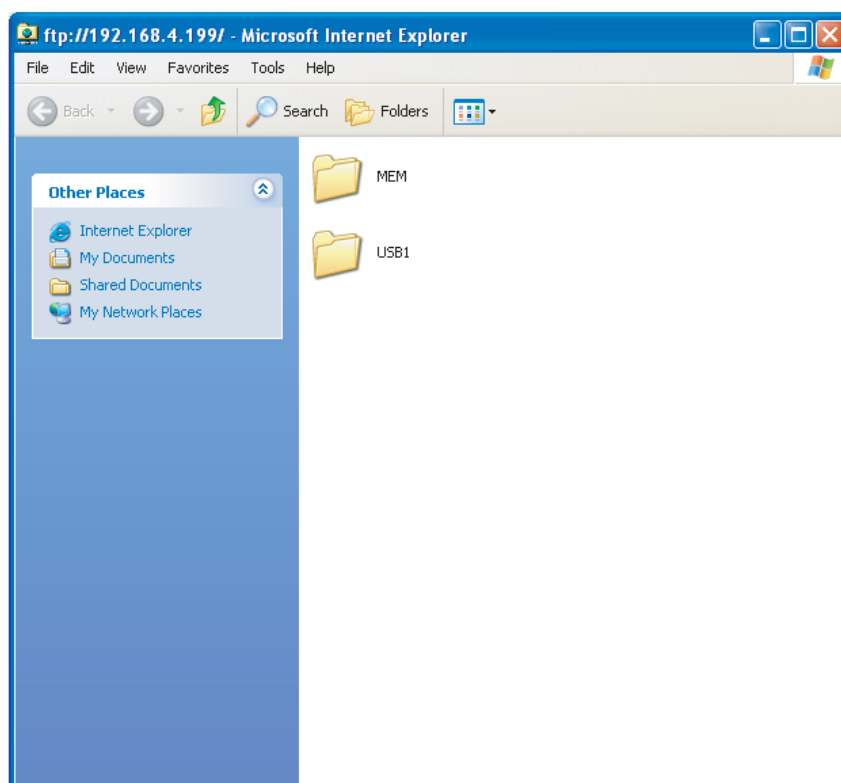
Digital



- Displayed CH Select either 20 channel display or ALL channel display.
- Switch CH group Displays digital values for 20 channels on a single screen.
Press this key to display the next group consisting of 20 channels.
- Screen update speed Specifies the speed in which the screen is updated.
Available update speeds are 2, 5, and 10 seconds.

Download of device file

Allows memory data from ZR-RX40 and data in USB memory device to be downloaded to your PC.



MEMO

SPECIFICATIONS

Standard Specifications

94

Accessory/Option Specifications

98

External Dimensions

100

Standard Specifications

Standard Specifications

Specifications			ZR-RX40A		
Analog input section	Input method		Photo MOS relay scanning system; all channels isolated, balanced input		
	Input terminal shape		M3 screw type terminal		
	Number of input channels		Standard: 20 ch Max: 200 ch (When the terminal unit is connected)		
	Scan speed		100 ms/10 ch max		
	A/D resolution		16-bit		
	Measurement ranges	Voltage	20, 50, 100, 200, 500 mV; 1, 2, 5, 10, 20, 50 V; 1-5 V F.S.		
		Temperature	Thermocouples: K, J, E, T, R, S, B, N, W (WRe5-26) Resistance temperature detector: Pt100, JPt100, Pt1000 (IEC751)		
		Humidity (*1)	0 to 100 % (Voltage 0 to 1 V scaling conversion)		
	Measurement accuracy (*2) (*3)	Voltage	±0.1 % of F.S.		
		Thermocouple	Type	Measurement Temperature Range (°C)	Measurement Accuracy
			R/S	0 ≤ TS ≤ 100	± 5.2 °C
				100 < TS ≤ 300	± 3.0 °C
				R: 300 < TS ≤ 1600	± (0.05 % of rdg +2.0 °C)
				S: 300 < TS ≤ 1760	± (0.05 % of rdg +2.0 °C)
			B	400 ≤ TS ≤ 600	± 3.5 °C
600 < TS ≤ 1820				± (0.05 % of rdg +2.0 °C)	
K			−200 ≤ TS ≤ −100	± (0.05 % of rdg +2.0 °C)	
			−100 < TS ≤ 1370	± (0.05 % of rdg +1.0 °C)	
E			−200 ≤ TS ≤ −100	± (0.05 % of rdg +2.0 °C)	
			−100 < TS ≤ 800	± (0.05 % of rdg +1.0 °C)	
T			−200 ≤ TS ≤ −100	± (0.1 % of rdg +1.5 °C)	
			−100 < TS ≤ 400	± (0.1 % of rdg +0.5 °C)	
J			−200 ≤ TS ≤ −100	± 2.7 °C	
			−100 < TS ≤ 100	± 1.7 °C	
			100 < TS ≤ 1100	± (0.05 % of rdg +1.0 °C)	
N			0 ≤ TS ≤ 1300	± (0.1 % of rdg +1.0 °C)	
W			0 ≤ TS ≤ 2315	± (0.1 % of rdg +1.5 °C)	
Reference contact compensation accuracy			± 0.5 °C		

Specifications				ZR-RX40A			
Analog input section	Measurement accuracy (*2) (*3)	Resistance temperature detector	Type	Measurement Temperature Range (°C)	Applied current	Measurement Accuracy	
			Pt100	−200 to 850 (FS = 1050 °C)	1 mA	± 1.0 °C	
			JPt100	−200 to 500 (FS = 700 °C)	1 mA	± 0.8 °C	
			Pt1000	−200 to 500 (FS = 700 °C)	0.2 mA	± 0.8 °C	
	Maximum input voltage			60 Vp-p (between +/− terminals, between input terminals, between input terminal/GND)			
	Reference contact compensation			Internal/External switching			
	Input impedance			1 MΩ ± 5 %			
	Allowable signal source resistance			300 Ω or less			
	Temperature coefficient			Gain: 0.01 % of F.S./°C			
	Common mode rejection ratio			At least 90 dB (50/60 Hz; signal source 300 Ω or less)			
	Noise			At least 48 dB (with +/− terminals shorted)			
	Withstand voltage			350 Vp-p (between input channel/GND; between each chs) 1 minute			
	Insulation resistance			Between input terminal/GND: At least 50 MΩ (at 500VDC)			
External Input/ Output Sections	Logic input/ Pulse input	Number of channels (*4)		4 ch			
		Pulse input modes	Revolutions mode	Spans	50, 500, 5000, 50 k, 500 k, 5 M, 50 M, 500 M RPM/F.S.		
				Maximum number of pulse inputs	50 k/sec		
			Counts mode	Spans	50, 500, 5000, 50 k, 500 k, 5 M, 50 M, 500 M C/F.S.		
				Maximum number of pulse inputs	50 k/sec		
		Inst. mode	Spans	50, 500, 5000, 50 k, 500 k, 5 M, 50 M, 500 M C/F.S.			
			Maximum number of pulse inputs	50 k/sec			
		Trigger input		Number of channels	1 ch		
	Specifications of each input section	Maximum input voltage		24 V			
		Threshold voltage		Approx. 2.5 V			
		Hysteresis range		Approx. 0.5 V (2.5 to 3 V)			
	Alarm output	Number of channels		4 ch			
		Output format		Open collector output (10 kΩ pull-up resistance)			
				5 to 24 VDC, up to 100 mA			
		Output conditions		Level judgment, window judgment, logic pattern judgment, pulse judgment			
	Clock accuracy (*5)				± 0.002 % (approx. 50 sec/month)		
	Operating environment				0 to 45 °C, 5 to 85 % RH (15 to 40 °C when the battery is used)		

Specifications	ZR-RX40A
Power supply	AC adapter: 100 to 240 VAC/50 to 60 Hz (*8) DC input: 8.5 to 24VDC Battery pack (ZR-XRB1) (*6) two batteries can be mounted
Power consumption	28 VA or less (when the AC adapter is used)
Vibration resistance	Equivalent to automobile parts Type 1 Category A classification
External dimensions	232 x 152 x 50 mm
Weight	Approx. 990 g (*7)

*1 When ZR-XRH1 (Option) is used

*2 Features under the following measurement parameters

- Operating environment 23 °C ± 5 °C
- Left for at least 30 minutes after the power supply is turned on
- Sampling interval 1 s (20 ch)
- Filter ON (Average: 10 times)
- GND connection
- Thermocouple used is T: 0.32Ø, other: 0.65Ø

*3 Refer to the ZR-XRH1 (Option) specifications for humidity measurement accuracy.

*4 Switch between logic and pulse input

*5 When used at 23 °C

*6 ZR-XRB1 is an option

*7 Excluding the AC adapter and battery

*8 Be sure to use only the AC cable and the AC adapter provided as standard accessories.

Main Functions

Main unit specifications			ZR-RX40A
Sampling interval			100, 200, 500 ms; 1, 2, 5, 10, 20, 30 s; 1, 2, 5, 10, 20, 30 min; 1h 100 ms/10 ch max
Filter (*1)			Off, 2, 5, 10, 20, 40 times
Trigger Functions	Repeat Trigger		Off/On
	Trigger types		Start: Data capture starts when a trigger is generated
			Stop: Data capture stops when a trigger is generated
	Trigger conditions		Start: Off, Level, External, Date, Alarm
			Stop: Off, Level, External, Date, Time, Alarm
	Alarm judgment modes	Analog judgment	Analog: H, L, Window IN, Window OUT
		Logic judgment	Logic: H, L
		Pulse judgment	Pulse: H, L, Window IN, Window OUT
Channel combination		OR, AND	
Miscellaneous Functions	Scaling (EU) function		4 points can be set for each channel
	Review function		Data replay during data capture
	Statistical calculation	Types of operation	Average value, peak value, maximum value, minimum value, RMS
		Number of operations	2 can be set simultaneously
		Method	Realtime and between cursors specified (during data replay) (*2)
	Data Search	Function	Search the captured data for the required number of points
		Search type	Channel, Pulse, Logic, Level, Alarm search

Main unit specifications			ZR-RX40A
Miscellaneous Functions	Annotation input	Function	A comment can be input for each channel
		Inputtable characters	Alphanumeric, Kana
		Number of characters	11 (Displayed up to 8 characters)
Monitor	Display		5.7-inch TFT color LCD (QVGA: 320 x 240 dots)
	Display screen		Waveform screen + Digital screen/Waveform screen/Digital screen + Calculation Display screen
	Screen saver function		10, 30 sec; 1, 2, 5, 10, 30, 60 min
PC I/F	Interface types		Ethernet (10BASE-T/100BASE-TX)
			USB (2.0)
	Functions	Software functions	Data transfer to the PC (realtime memory)
			PC control of the ZR-RX40
		Ethernet functions	Web server function (Operation of ZR-RX40, Displays ZR-RX40's screen image on browser)
			FTP server function (Transfers and deletes measured data from internal memory via network)
			FTP client function (Supports backup of data in internal memory and USB memory)
			NTP client function (Adjusts internal clock)
		USB functions	USB drive mode (Transfers and deletes measured data from internal memory)
Realtime data transfer speed (*3)		100 ms/10 ch max	
Internal memory devices	Memory capacity	Internal memory	Approx. 12 MB Flash Memory
		Available USB memory capacity	Max 2 GB
	Memory contents		Setup conditions/Captured data/Screen copy
Data save functions	Measured data		Internal memory or direct capture in the USB memory device
	Other		Setup conditions, copy of data screen can be saved in the internal memory or USB memory device

*1 Filter operation is on a moving average basis. The average value of the set sampling count is used. If the sampling interval is set to 30 seconds or slower, the basis of average value which are sampled with the sub-sampling (30 seconds) is used.

*2 When the Digital screen + Calculation Display screen has been specified the calculation results are displayed.

*3 Differs according to the number of transfer channels

Accessory/Option Specifications

PC Software

Item	Special PC software ZR-SX10 Wave Inspire RX (Since Ver 2.3) (Option Specifications)	Standard PC software Smart Viewer RXW (Since Ver 1.04) (Standard accessories)
Compatible operating system	Windows Vista/XP/2000	
CPU	Intel compatible processor 1 GHz or faster recommended	Pentium 4: 2.0GHz or higher
Memory	<ul style="list-style-type: none"> Windows 2000/XP: 512 MB or more (recommended: 1 GB or more) Windows Vista: 1 GB or more (recommended: 2 GB or more) 	512MB or more (1GB or more recommended)
Display	<ul style="list-style-type: none"> 1024 x 768 resolution, or higher 16-bit color or higher screen display functions (recommended: 24-bit color or more) 	
Compatible interface	USB, LAN	
Standard functions	Review saved data, realtime capture of PC data, main unit setup, CSV file conversion	
Waveform operation	Drag & Move waveform directly Batch change of CH scale Intuitive operation by mousewheel	Change CH scales individually by icons
Waveform display	Displays multi-windows Displays all the CH multi-scales simultaneously X-Y display Scrolling for all directions (up, down, right, left)	Split display in the single window X-Y display Meter display selection
Configuration function	Smart Listview setup function Smart Grouping function	Setup in the tab format
Captured data	Binary file (original format) : Captured data and the information of graph window are saved. CSV file : Captured data is saved in Comma separated value format. Binary files can be converted to CSV files all at once.	
Others	Cursor function, Comment input function, Excel transfer function	

- *1 When you capture the data by WaveInspire, please finish all the other application software and save captured data to hard disk. Even using the PC which fills enough specification, the capture error occurs at times because the PC is bad condition. (For example, the other application software works, or recording medium has no free area.)
- *2 Don't start up the other application software, as WaveInspire works. And don't work other several operation. (For example, screen saver, virus scan program, copying or moving files, searching file etc.)

Battery Pack ZR-XRB1

Item		Description
Capacity		7.2 V/2200 mAh
Running time (*1) (*2) (*3)	When using the LCD display	Approx. 5 hours
	When using the screensaver	Approx. 9 hours
Battery type		Lithium secondary battery
Charging method		Mount in the main unit (ZR-RX20/RX40)
Time required for charging		Approx. 4 hours (*4)
Switchover in the case of a power failure		By using the battery together with the AC adapter, the power supply will be switched automatically to the battery in the event of a power failure.
Operation environment		15 to 40 °C
Other functions		When the battery is running low, measured data is saved and the file is closed automatically.

*1 For ZR-RX40, when two battery packs are mounted.

*2 When capturing to internal memory at a sampling speed of 1 sec, 20 channel terminals, using new battery packs at +25 °C environment.

*3 The running time depends on the operating environment.

*4 When one battery pack is charged.

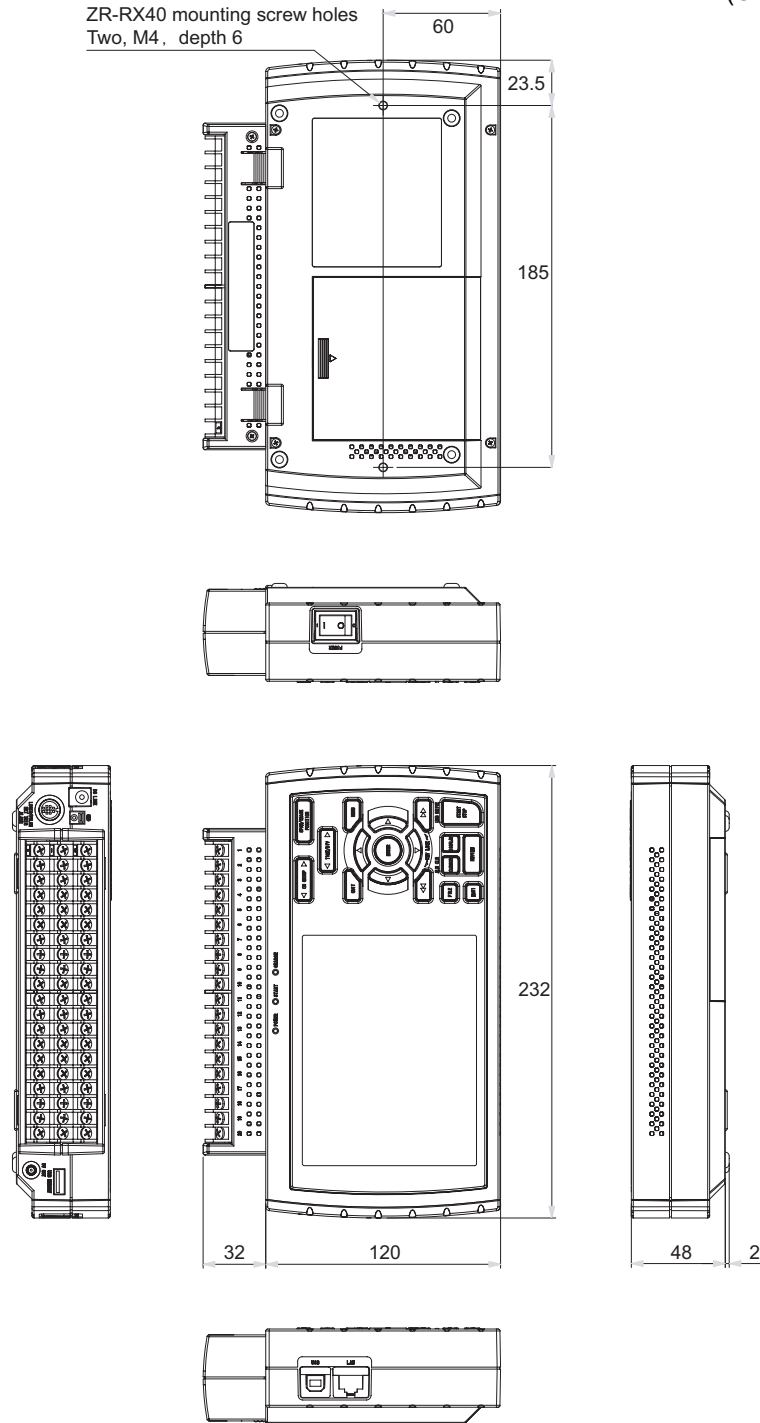
Humidity Sensor ZR-XRH1

Item		Description
Allowable temperature range		–25 to +80 °C
Allowable humidity range		0 to 100 % RH
Method		Capacitance Method
Relative humidity measurement accuracy (5 to 98%)	Measurement environment	Measurement accuracy
	0 to 10°C	±5% RH
	10 to 20°C	±4% RH
	20 to 30°C	±3% RH
	30 to 40°C	±4% RH
	40 to 50°C	±5% RH
	50 to 60°C	±6% RH
	60 to 70°C	±7% RH
	70 to 80°C	±8% RH
Relative humidity measurement accuracy		± 3 % RH (5 to 98 % RH at 25 °C)
Response time		15 sec (90 % response when membrane filter is installed)
Sensor output		0 to 1 VDC
Power consumption		Approx. 4 mA
External dimensions		Ø14 × 80 mm (excluding cable)
Cable length		3 m

External Dimensions

(Unit: mm)

ZR-RX40 mounting screw holes
Two, M4, depth 6



APPENDIX

Error Messages and Countermeasures	102
Index	105
Revision History	108

Error Messages and Countermeasures

List of Error Messages

This section outlines the error messages that are displayed and the countermeasures for those messages.

Display	Details Cause	Countermeasure
Can't adjust zero voltage.	When the input voltage is over 0 point adjustable range, it is displayed.	Please adjust the input voltage within 10% of \pm of a set range.
Back-up is not available when saving with CSV format. Do you wish to continue without baking up data?	In case of the data file format is CSV, the backup function cannot be used.	Please change the data file format to a binary or logging without using the backup function.
Data was not captured.	When the logging file that is not recorded by as much as one point is replayed, it is displayed. The error occurs before detecting the trigger by the file that stops logging.	Please start the data logging.
The replay file name has not been specified.	When the replay is executed without selecting the file, it is displayed.	Please select the logging file.
The replay file name is the same as the save file name.p	When the logging file and the saved file are selected by the same name when it preserves between cursors, it is displayed.	Please change the file name.
EU function had set ON can't change range.	When the range is changed with scaling on, it is displayed.	Please turn off the scaling function, and change the range.
The recovery could not be done.	When the power supply is turned off while data is being written in a built-in memory, the recovery processing is done. However when failing in the recovery processing, it is displayed.	The recording data cannot be replayed. Please do not turn off power while logging data.
Upper < Lower setting	When the upper and the lower are opposite in the span setting, it is displayed.	Please change to upper < lower.
Too narrow span setting	When the span setting width of voltage CH is set by less than 1% of full-scale, it is displayed.	Please change the span setting value to 1% or more of full-scale.
Too narrow span setting	When the span setting width of temperature CH is less than 50°C, it is displayed.	Please change the span setting value to 50°C or more.
The load file name has not been specified.	When the setting file is loaded when it unselects the file, it is displayed.	Please select the setting file.
Out of input range.	When input value is over range, it is displayed.	Please change within the range of can the displayed setting.
Invalid trigger start settings. Press [Enter] key and change the settings.	When logging is started with the trigger setting not normally set, it is displayed.(START)	Please set the start trigger correctly.
Invalid trigger stop settings. Press [Enter] key and change the settings.	When logging is started with the trigger setting not normally set, it is displayed.(STOP)	Please set the stop trigger correctly.

Display	Details Cause	Countermeasure
Unable to establish a connection.	In connected test in the network time setting,when not connected with the network server,it is displayed.	Please check the network setting and the synchronous server setting of ZR-RX.
Unable to establish a connection.	In connected test in FTP server setting,when not connected with the FTP server,it is displayed.	Please check the network setting and the FTP server setting of ZR-RX.

List of File Error Messages

This section outlines the file error messages that are displayed and the countermeasures for those messages.

Display	Details Cause	Countermeasure
Disk I/O Error.(2)	File or directory is not found.	Set a correct file or directory.
Disk I/O Error.(9)	Invalid file format.	Filesystem is invalid, and format it again, please. If the error is not canceled even if it formats it, might the media failure. Repair ZR-RX when a built-in memory is failure. Please use another USB memory when the USB memory is failure.
Disk I/O Error.(13)	It is displayed by either of following cause. • Not formatted. • Write-protected. • Memory failure.	• Please confirm whether write-protection is turning on. (For the USB memory with the write-protection function.) • Please format it. If the error is not canceled even if it formats it, might the media failure. Repair ZR-RX when a built-in memory is failure. Please use another USB memory when the USB memory is failure.
Disk I/O Error.(28)	It is displayed by either of following cause. • Disk is full. • Neither the file nor the directory are created any further.	"Disk is full" is usually displayed. Please increase the capacity of the disk as it erases an unnecessary file.

MEMO

Index

A

AC	
Power Supply, Connecting	18
AC Line Frequency	72, 73
ALARM CLEAR	51
Alarm Hold	65
Alarm level settings	65, 66
AMP settings	56
Analog Input Circuit Diagram	37
Annotation	60
Annotation setting	56

B

Battery	
Charging	28
Pack	27
Battery Pack	
Mounting	27
Burn Out	72, 73

C

Captured data file name	62
Capturing	54
CURSOR key	51

D

Data replay menu	82
DATA settings	61
Date and Time	39
Date/Time	72, 73
DC	
Power Supply, Connecting	19
Demo Waveform Mode	72
Department name	69
Direction key	47
Display	
Language	40
DISPLAY key	50
Dual View Replaying	54

E

ENTER key	47
EU (Scaling)	59
External	
Dimensions	100

F

FAST FORWARD key	47
Features	16

File box	78
File Format	62
FILE key	51
FILE menu	75
Filter	56, 59
Free Running	53

G

Game	72, 74
------	--------

H

Humidity Sensor	29
-----------------	----

I

Information	72, 74
Input	56, 57
Internal memory devices	97

K

KEY LOCK	47
----------	----

L

Language	72, 74
LCD brightness	72
LOCAL	46
Logic	57, 68
Lower - Level - Upper	67

M

MENU key	46
Misc.	56, 60

N

Name Type	62
NAVI key	52
NAVI menu	84

O

OTHR settings	72
---------------	----

P

Part Names and Functions	17
PC	
Interface	98
PC Software	98
Performing Measurement,	
Precautions to Observe	37
Power On Start	72
Pulse	57, 60, 68

Q

Quick settings	85
QUIT key	46

R

Range	56, 57
Repeated capturing	65
Replaying	55
Return to default settings	72, 74
REVIEW key	49
Room Temp.	72
Room Temp. Compensation	73

S

SAVE	48
Screen Saver	72
Send burnout Alarm	65
SPAN	
Settings	58
Span	56, 60
Span setting	56
Standad Specifications	102, 103
Standard	
Specifications	94
Standard Specifications	102, 103
Start side source settings	64
START/STOP key	48
Statistical calculation	63

T

Temp. Unit	72, 73
Text input	81
TIME/DIV key	46
TRIG settings	64
Trigger level settings	66

U

USB Drive Mode	48
User	69
USER settings	69

Revision History

A manual revision code appears as a suffix to the catalog number at the bottom of the front and back covers of this manual.

Cat. No. Z260-E1-04

↑

Revision code

Revision code	Date	Revised contents
01	April 2007	Original production
02	August 2007	Rear view added in External Dimensions and minor corrections
WEB1	October 2007	Accessories changed.
03	October 2009	Function addition according to software upgrade (Ver 2.14)
04	December 2009	Backup Setting added in DATA settings.

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