PX8000
Precision Power Scope
USER'S MANUAL

YOKOGAWA
Yokogawa Test & Measurement Corporation

IM PX8000-02EN
6th Edition

Thank you for purchasing the PX8000 Precision Power Scope (hereafter referred to as the PX8000). This User's Manual explains how to use the PX8000. To ensure correct use, please read this manual thoroughly before beginning operation.
Keep this manual in a safe place for quick reference in the event a question arises. The following manuals, including this one, are provided as manuals for the PX8000. Please read all manuals.

List of Manuals

The following four manuals, including this one, are provided as manuals for the PX8000. Read them along with this manual.

Manual Title	Manual No.	Description
PX8000 Precision Power Scope Features Guide	IM PX8000-01EN	This manual explains all the PX8000 features other than the communication interface features.
PX8000 Precision Power Scope User's Manual	IM PX8000-02EN	This manual. The manual explains how to operate the PX8000.
PX8000 Precision Power Scope Getting Started Guide	IM PX8000-03EN	Provided as a printed manual. This guide explains the handling precautions, basic operations, and specifications of the PX8000.
PX8000 Precision Power Scope Communication Interface User's Manual	IM PX8000-17EN	This manual explains the PX8000 communication interface features and how to use them.
Model PX8000 Precision Power Scope	IMPX8000-92Z1	Document for China

The "EN" and "Z1" in the manual numbers are the language codes.
The pdf data of all the manuals listed in the above table is in the supplied manual CD.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

Document No.	Description
PIM 113-01Z2	List of worldwide contacts

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functionality. The figures given in this manual may differ from those that actually appear on your screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
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Revisions

- January 2014 1st Edition
- January 2014 2nd Edition
- August 2014 3rd Edition
- December 2015 4th Edition
- June 2017 5th Edition
- October 2017 6th Edition

Conventions Used in This Manual

Notes

The notes and cautions in this manual are categorized using the following symbols.

Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the user's manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."

WARNING Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

CAUTION Calls attentions to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.

French

AVERTISSEMENT Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures graves (voire mortelles), et sur les précautions de sécurité pouvant prévenir de tels accidents.

ATTENTION Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures légères ou d'endommager l'instrument ou les données de l'utilisateur, et sur les précautions de sécurité susceptibles de prévenir de tels accidents.

Note Calls attention to information that is important for the proper operation of the instrument.

Unit

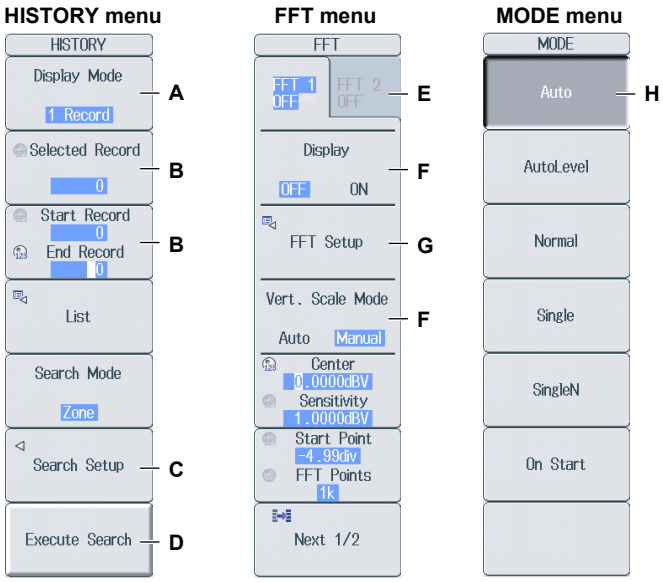
k	Denotes 1000. Example: 100 kHz (frequency)
K	Denotes 1024. Example: 720 KB (file size)

Key and Jog Shuttle Operations

Key Operations

How to Use Setup Menus That Appear When Keys Are Pressed

The operation after you press a key varies depending on the key that you press.



A: Press the soft key to display a selection menu.
Press the soft key that corresponds to the appropriate setting.

B: Press the soft key to use the jog shuttle to configure this setting. Use the jog shuttle or the arrow keys to set the value or select an item.
For a numeric setting, you can press NUM LOCK to use the ELEM 1 to P 4 keys to enter numbers.

C: A related setup menu appears when you press the soft key.

D: Press the soft key to execute the specified feature.

E: Selects which item to configure when configuring a feature that consists of two items that operate with different settings, such as the FFT1 and FFT2 features.

F: The selected setting switches each time you press the soft key.

G: A dialog box or the keyboard appears when you press the soft key.
Use the jog shuttle, SET key, and arrow keys to configure the settings in the dialog box or operate the keyboard.

H: Press the soft key to apply the value assigned to the key.

How to Display the Setup Menus That Are Written in Purple below the Keys

In the explanations in this manual, “SHIFT+key name (written in purple)” is used to indicate the following operation.

1. Press **SHIFT**. The SHIFT key illuminates to indicate that the keys are shifted.
   Now you can select the setup menus written in purple below the keys.
2. Press the key that you want to display the setup menu of.

ESC Key Operation

If you press **ESC** when a setup menu or available options are displayed, the screen returns to the menu level above the current one. If you press **ESC** when the highest level menu is displayed, the setup menu disappears.

RESET Key Operation

If you press **RESET** when you are using the jog shuttle to set a value or select an item, the setting is reset to its default value (depending on the operating state of the PX8000, the setting may not be reset).

SET Key Operations

The operation varies as indicated below depending on what you are setting.

- For a soft key menu that has two values that you use the jog shuttle to adjust
  Press **SET** to switch the value that the jog shuttle adjusts.
- For a menu that has the jog shuttle + SET mark (◯+SET) displayed on it
  Press **SET** to confirm the selected item.

Arrow Key Operations

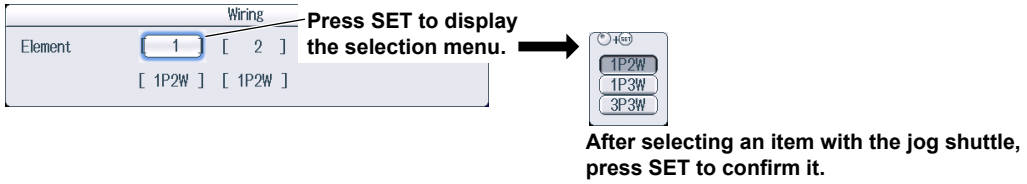
The operation varies as indicated below depending on what you are setting.

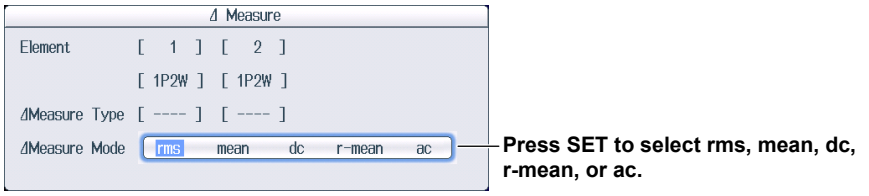
- When setting a value
  Up and down **arrow** keys: Increases and decreases the value
  Left and right **arrow** keys: Changes which digit to set
- When selecting the item to set
  You can use the up, down, left, and right arrow keys.

How to Enter Values in Setup Dialog Boxes

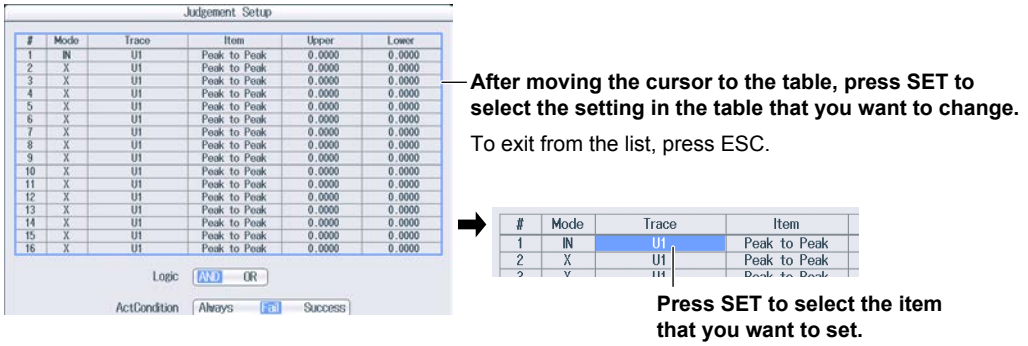
1. Use the keys to display the appropriate setup dialog box.
2. Use the **jog shuttle** or the **arrow** keys to move the cursor to the setting that you want to set.
3. Press **SET**. The operation varies as indicated below depending on what you are setting.
   - A selection menu appears.
   - A check box is selected or cleared.
   - An item is selected.
   - A table of settings is selected.

Displaying a Selection Menu and Selecting an Item





Setting Items in a Table



How to Clear Setup Dialog Boxes

Press **ESC** to clear the setup dialog box from the screen.

Entering Values and Strings

Entering Values

Using Dedicated Knobs

You can use the following dedicated knobs to enter values directly.

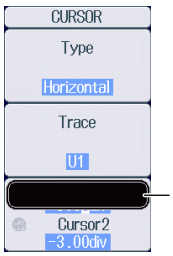
- ▲▼POSITION knob (vertical POSITION knob)
- RANGE knob
- TIME/DIV knob
- MAG knob (magnification knob)
- ◀POSITION▶ knob (zoom POSITION knob)

Using the Jog Shuttle

Select the appropriate item using the soft keys, and change the value using the jog shuttle and the SET key or using the arrow keys. This manual sometimes describes this operation simply as “using the jog shuttle.”

Using the Keypad

Press **NUM LOCK** to illuminate the NUM LOCK key, and use the ELEM1 to P4 keys to enter a value. After you enter the value, press **ENTER** to confirm it.



Use the keypad to enter the value.

Note

Some items that you can set using the jog shuttle are reset to their default values when you press the RESET key.

Entering Character Strings

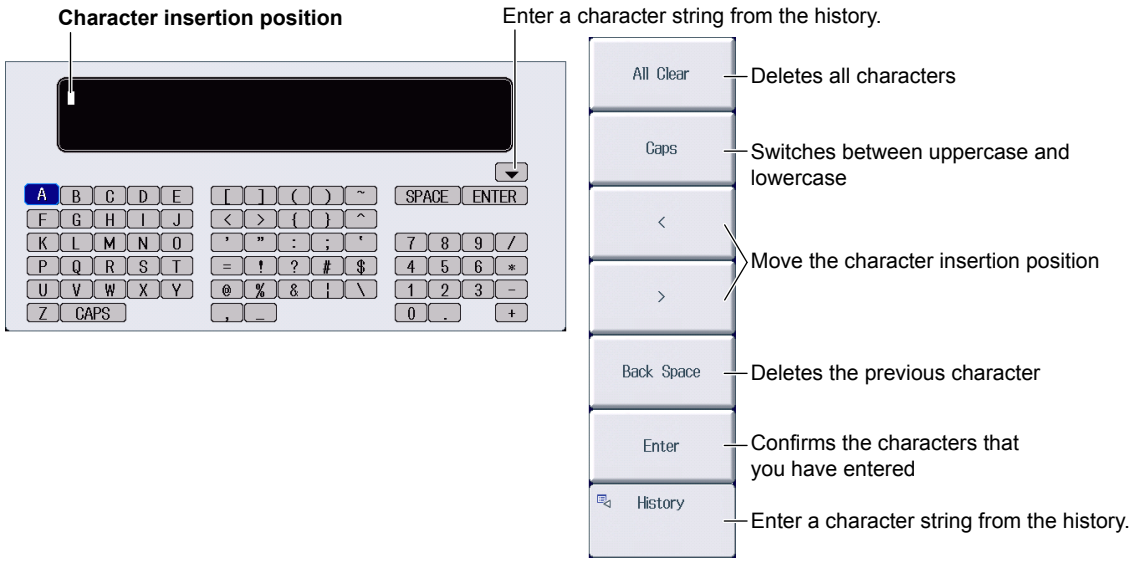
Use the keyboard that appears on the screen to enter character strings such as file names and comments. Use the jog shuttle, SET key, and arrow keys to operate the keyboard and enter a character string.

How to Operate the Keyboard

1. After bringing up the keyboard, use the **jog shuttle** to move the cursor to the character that you want to enter. You can also move the cursor using the up, down, left, and right **arrow** keys.
2. Press SET to enter the character.
   - If a character string has already been entered, use the **arrow** soft keys (< and >) to move the cursor to the position you want to insert characters into.
   - To switch between uppercase and lowercase letters, press the **Caps** soft key or move the cursor to **CAPS** on the keyboard, and then press **SET**.
   - To delete the previous character, press the **Back Space** soft key.
   - To delete all the characters, press the **All Clear** soft key.
3. Repeat steps 1 and 2 to enter all of the characters in the string.

   Select ▼ on the keyboard or press the **History** soft key to display a list of character strings that you have entered previously. Use the jog shuttle to select a character string, and press **SET** to enter the selected character string.
4. Press the **Enter** soft key, or move the cursor to ENTER on the keyboard, and press **SET**.

   The character string is confirmed, and the keyboard disappears.



History (a list of character strings that you have entered previously)

After selecting an item with the jog shuttle or up and down arrow keys, press SET to confirm it.

Note

- @ cannot be entered consecutively.
- File names are not case-sensitive. Comments are case-sensitive. The following file names cannot be used due to MS-DOS limitations:

  AUX, CON, PRN, NUL, CLOCK, COM1 to COM9, and LPT1 to LPT9

  For details on file name limitations, see the Features Guide, IM PX8000-01EN.
- When a character string is confirmed, it is stored in a list of previously entered strings. Up to 50 character strings are stored. The new character string appears at the top of the list of previously entered strings.

Contents

Chapter 25 Messages and Self-Test

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1.1 Configuring Wiring System Settings

This section explains the following wiring system settings.

- Wiring system
- Efficiency equation
- Turning independent element configuration on and off
- Delta computation
- Display format of external current sensor range
- Deskewing (correcting the transfer time difference between input signals)

► Features Guide: “Wiring System Settings (WIRING)”

WIRING Menu

Press **WIRING** to display the following menu.

Set the wiring system.

Set the efficiency equation.

Turns independent element configuration on and off

Set delta computation.

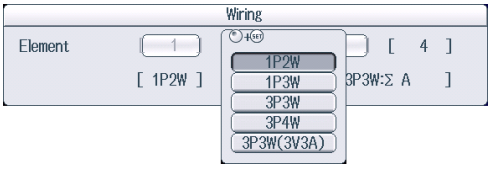
Set the display format of external current sensor range (Direct, Measure).

Set deskewing.

Setting the Wiring System

Press the **Wiring** soft key to display the following screen.

Set the wiring system (1P2W, 1P3W, 3P3W, 3P4W, 3P3W(3V3A)).
When you select an element, the wiring systems that you can select are displayed. Select the wiring system from those displayed.



Wiring System Combination

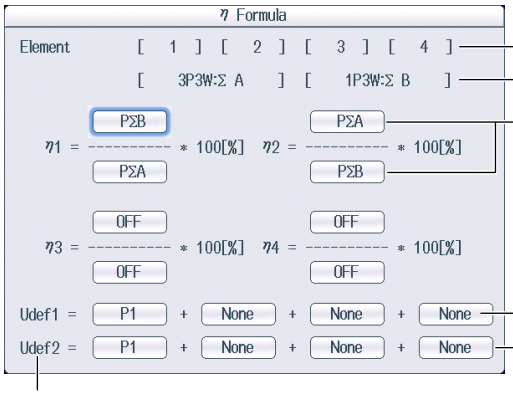
- If you select 1P3W, 3P3W, 3P4W, or 3P3W(3V3A) for the wiring system, the wiring unit is set with the two or three elements adjacent to the selected element whose element numbers are larger than the selected element.
- On models that have four elements installed, up to two wiring units (ΣA and ΣB) are automatically set. The wiring unit symbols ΣA and ΣB are attached to the element numbers in order, starting with the smallest number.

Note

- Because the wiring system with the largest element number is automatically determined according to the settings of the wiring system with the smallest element number, the element with the largest element number cannot be selected.
- You cannot set the wiring units for larger element numbers before the wiring units for smaller element numbers.

Setting the Efficiency Equation (η Formula)

Press the **η Formula** soft key to display the following screen.



Installed elements

The set wiring systems

Set the denominator and numerator of the efficiency equation to the active power and motor power measurement functions.
(P1-P4[1], PΣA-PΣB[2], Pm2-Pm4[3], Udef1, Udef2)
You can set up to four equations: η1 to η4.

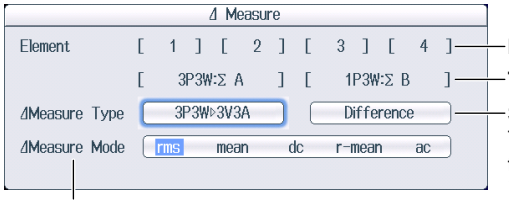
Define Udef1 and Udef2 (P1-P4[1], PΣA-PΣB[2], Pm2-Pm4[3]).

To add active powers and motor output and use them in efficiency equations, use Udef1 and Udef2.

1 P1 to P4 can be set within the range of the installed elements.
2 PΣA to PΣB can be set within the range of the wiring unit that is automatically determined by the installed elements.
3 Pm2, Pm3, and Pm4 can be set when AUX modules are installed in slots 3, 5, and 7, respectively.

Setting Delta Computation (Δ Measure)

Press the **Δ Measure** soft key to display the following screen.



Installed elements

The set wiring systems

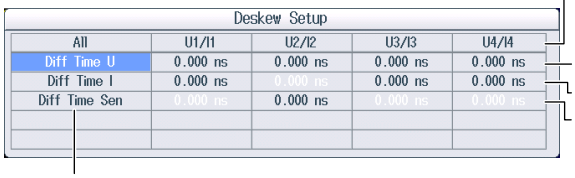
Set the delta computation type.
The available options vary depending on the set wiring systems.

Wiring System	Delta Computation Type
1P3W	Difference, 3P3W>3V3A
3P3W	Difference, 3P3W>3V3A
3P4W	Star>Delta
3P3W(3V3A)	Delta>Star

Set the delta computation mode (rms, mean, dc, r-mean, ac).

Setting Deskewing (Deskew Setup)

Press the **Deskew Setup** soft key to display the following screen.



Voltage (U) or current (I) of the installed elements

Manual deskewing

- **Set the correction value for voltage signals.**
- **Set the correction value for current signals.**
- **Set the correction value for external current sensor signals.**

To set or execute on all channels, set or execute the items in the All row.

1.2 Configuring Power Measurement Element Settings

This section explains the following element settings.

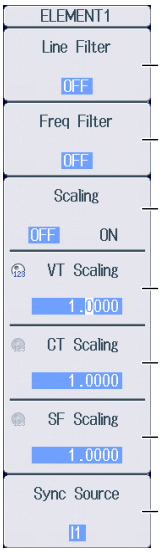
- Line filter
- Frequency filter
- Turning the scaling feature on and off
- VT ratio
- CT ratio
- Power coefficient
- Synchronization source

► Features Guide: “Power Measurement Element Settings (ELEM1 to 4)”

Check that a voltage module and current module are installed in appropriate slots.

ELEM Menu

Of the **ELEM1 to ELEM4** keys, press the key corresponding to the element in which the voltage and current modules are installed. The following menu appears.



Set the line filter (OFF, 500Hz, 2kHz, 20kHz, 1MHz).

Set the frequency filter (OFF, 100Hz, 500Hz, 2kHz, 20kHz).

Turns the scaling feature on and off*

Set the VT ratio.

Set the CT ratio.

Set the power coefficient.

Set the synchronization source (U1-U4, I1-I4, External, None).

* When you are trying to read the current of the circuit under measurement directly by multiplying the external current sensor output by the conversion ratio, if the scaling feature is set to ON, the CT ratio will end up being multiplied on top of the result. To avoid the influence of the CT ratio, set the CT ratio to 1.0000.

1.3 Setting the Motor Mode

This section explains the following motor mode settings.

- Turning motor mode on and off
- Function name
- Scaling
- Unit
- Synchronization source

► Features Guide: “Turning Motor Mode On and Off (Motor Mode)”
“Function Name (Name)”
“Scaling (Scaling)”
“Unit (Unit)”
“Synchronization Source (Sync Source), AUX Module”

Check that an AUX module is installed in slot 3, 5, or 7.

Pm Menu

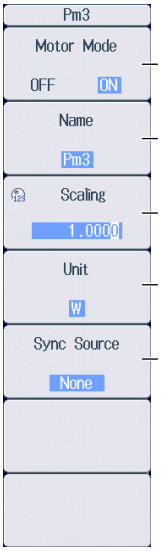
Of the **ELEM 2 to ELEM 4** keys, press the key corresponding to the slot in which the AUX module is installed. The following menu appears.

When motor mode is off

Set Motor Mode to OFF.

Set the synchronization source (U1-U4, I1-I4, External, None).

When motor mode is on



Set Motor Mode to ON.

Set the function name.

Set the scaling.

Set the unit.

Set the synchronization source (U1-U4, I1-I4, External, None).

2.1 Configuring Voltage Measurements

This section explains the following settings for the vertical axis of voltage measurements.

- Waveform display on and off
- Display labels
- Zoom method
  DIV: Magnification for zooming waveforms, offset
  SPAN: Upper and lower display limits for zooming waveforms
- Auto range on and off
- Voltage measurement range (vertical scale)
- Voltage waveform vertical position

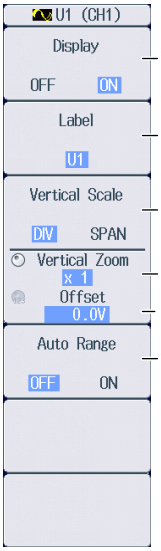
► Features Guide: “Voltage Measurement (U)”

Check that a voltage module and current module are installed in appropriate slots.

U Menu

Of the **U1 to U4** keys, press the key corresponding to the element in which the module is installed. The following menu appears.

When the zoom method is set to DIV



Turns the waveform display on and off

Set the display label.

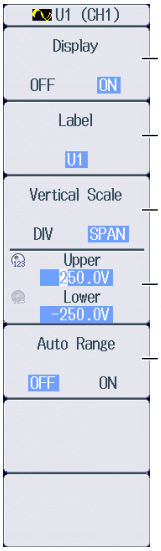
Set the zoom method to DIV.

Set the zoom magnification.

Set the offset.

Turns the auto range on and off

When the zoom method is set to SPAN



Turns the waveform display on and off

Set the display label.

Set the zoom method to SPAN.

Set the upper and lower limits of the display range.

Turns the auto range on and off

Note

The U key whose display setting is ON illuminates. If the U key is not illuminated, you can press it to turn on the waveform display and the key. If the U key is illuminated, you can press it to turn off the waveform display and the key.

Setting the Voltage Measurement Range (Vertical Scale, RANGE Knob)

This section explains how to set a fixed range.

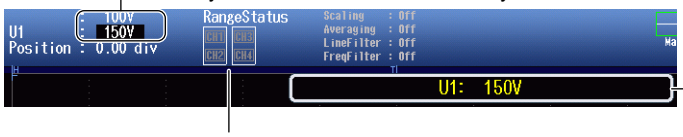
(If Auto Range in the U menu is set to ON, the measurement range changes depending on the amplitude of the input signal.)

Turn the **RANGE** knob to set the voltage measurement range.

- Select from 1.5V, 3V, 6V, 10V, 15V, 30V, 60V, 100V, 150V, 300V, 600V, and 1000V.
- Auto Range in the U menu is set to OFF.
- If you turn the RANGE knob when waveform acquisition is stopped, two values are shown on the measurement range screen. The upper value is the measurement range for the displayed waveforms. The lower value is the measurement range that you have specified. The new range will be applied the next time waveform acquisition is started.
- If you do not operate the RANGE knob for approximately 3 seconds, the measurement range that you are setting with the knob will disappear from the screen.

Top row: Measurement range for the displayed waveforms
Bottom row: Measurement range that you have specified

When the displayed waveform's measurement range and the measurement range that you have set are the same, only the bottom row is displayed.



Use the RANGE knob to display the measurement range that is currently being set.

Range status
Indicates the wiring units.

Display example

When the wiring system is 1P2W

Because the wiring unit is separate for each element, set the measurement range of each element.

When the wiring system is 1P3W or 3P3W

Element 1 (CH1, CH2) and element 2 (CH3, CH4) are grouped into a single wiring unit. Changing the measurement range of one element will change that of the other element to the same value.*

* If independent element configuration (see section 1.1) to ON, you need to set the measurement range for each element.

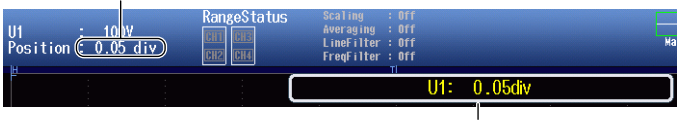
Setting the Voltage Waveform Vertical Position

When the Zoom Method is Set to DIV (Vertical POSITION Knob)

Turn the **vertical POSITION** knob to set the waveform vertical position.

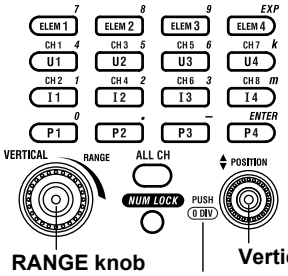
- Set in the range of –5.00 div to 5.00 div.
- If you do not operate the vertical POSITION knob for approximately 3 seconds, the vertical position that you are setting with the knob will disappear from the screen.

Vertical position of the displayed waveform



Use the vertical POSITION knob to display the vertical position that is currently being set.

- You can set the vertical position to 0 div by pressing the knob.



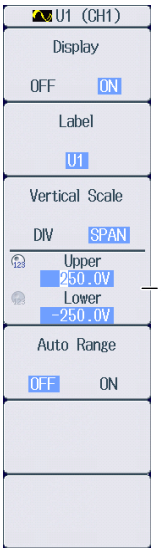
RANGE knob

Vertical POSITION knob

This indicates that you can press the vertical POSITION knob to set the vertical position to 0 div.

When the Zoom Method is Set to SPAN (Upper and Lower Limits)

Using the **Upper/Lower** soft key and the **jog shuttle**, set the voltage at the top edge of the waveform screen (upper limit) and the voltage at the bottom edge of the screen (lower limit) to set the waveform vertical position.



Set the upper and lower limits of the display range.

2.2 Configuring Current Measurements

This section explains the following settings for the vertical axis of current measurements.

- Waveform display on and off
- Display labels
- Zoom method
  DIV: Magnification for zooming waveforms, offset
  SPAN: Upper and lower display limits for zooming waveforms
- Auto range on and off
- Current measurement range (vertical scale)
  Direct input, external current sensor (conversion ratio, input coupling)
- Current waveform vertical position

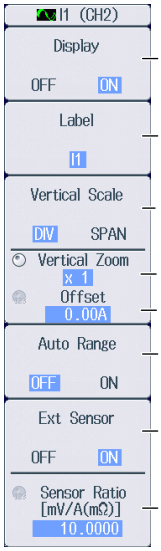
► Features Guide: “Current Measurement (I)”

Check that a voltage module and current module are installed in appropriate slots.

I Menu

Of the **I1 to I4** keys, press the key corresponding to the element in which the module is installed. The following menu appears.

When the zoom method is set to DIV



Turns the waveform display on and off

Set the display label.

Set the zoom method to DIV.

Set the zoom magnification.

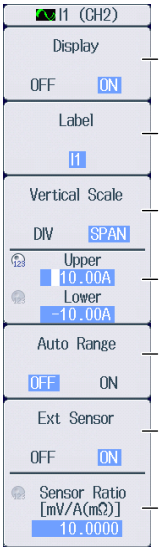
Set the offset.

Turns the auto range on and off

Turns the external current sensor on and off*

Set the external current sensor conversion ratio.*
Set this when the external current sensor (Ext Sensor) is set to ON.

When the zoom method is set to SPAN



Turns the waveform display on and off

Set the display label.

Set the zoom method to SPAN.

Set the upper and lower limits of the display range.

Turns the auto range on and off

Turns the external current sensor on and off*

Set the external current sensor conversion ratio.*
Set this when the external current sensor (Ext Sensor) is set to ON.

- In the case of a 760813 (current module), Ext Sensor and Sensor Ratio do not appear.

Note

The I key whose display setting is ON illuminates. If the I key is not illuminated, you can press it to turn on the waveform display and the key. If the I key is illuminated, you can press it to turn off the waveform display and the key.

Setting the Current Measurement Range (Vertical Scale, RANGE Knob)

This section explains how to set a fixed range.

(If Auto Range in the I menu is set to ON, the measurement range changes depending on the amplitude of the input signal.)

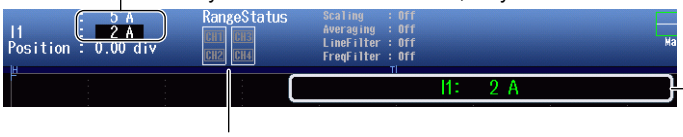
Direct Input Measurement Range Settings (When Ext Sensor is set to OFF)

Turn the **RANGE** knob to set the current measurement range.

- Select from 10mA, 20mA, 50mA, 100mA, 200mA, 500mA, 1A, 2A, and 5A.
- Auto Range in the I menu is set to OFF.
- If you turn the RANGE knob when waveform acquisition is stopped, two values are shown on the measurement range screen. The upper value is the measurement range for the displayed waveforms. The lower value is the measurement range that you have specified. The new range will be applied the next time waveform acquisition is started.
- If you do not operate the RANGE knob for approximately 3 seconds, the measurement range that you are setting with the knob will disappear from the screen.

Top row: Measurement range for the displayed waveforms
Bottom row: Measurement range that you have specified

When the displayed waveform's measurement range and the measurement range that you have set are the same, only the bottom row is displayed.



Use the RANGE knob to display the measurement range that is currently being set.

Range status
Indicates the wiring units.

Display example

When the wiring system is 1P2W

Because the wiring unit is separate for each element, set the measurement range of each element.

When the wiring system is 1P3W or 3P3W

Element 1 (CH1, CH2) and element 2 (CH3, CH4) are grouped into a single wiring unit. Changing the measurement range of one element will change that of the other element to the same value.*

* If independent element configuration (see section 1.1) to ON, you need to set the measurement range for each element.

External Current Sensor Input Measurement Range Settings (When Ext Sensor is set to ON)

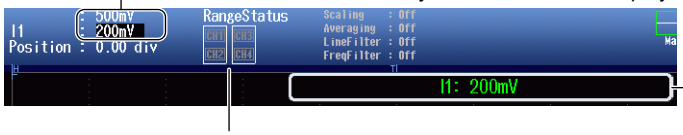
When the External Current Sensor Range Display Format (see section 1.1) Is Direct

Turn the **RANGE** knob to set the current measurement range.

- Select from 50mV, 100mV, 200mV, 500mV, 1V, 2V, 5V, and 10V.
- Auto Range in the I menu is set to OFF.
- If you turn the RANGE knob when waveform acquisition is stopped, two values are shown on the measurement range screen. The upper value is the measurement range for the displayed waveforms. The lower value is the measurement range that you have specified. The new range will be applied the next time waveform acquisition is started.
- If you do not operate the RANGE knob for approximately 3 seconds, the measurement range that you are setting with the knob will disappear from the screen.

Top row: Measurement range for the displayed waveforms
Bottom row: Measurement range that you have specified

When the displayed waveform's measurement range and the measurement range that you have set are the same, only the bottom row is displayed.



Use the RANGE knob to display the measurement range that is currently being set.

Range status
See page 2-5.

When the External Current Sensor Range Display Format (see section 1.1) Is Measure

Turn the **RANGE** knob to set the current measurement range.

- Select from 50mV, 100mV, 200mV, 500mV, 1V, 2V, 5V, and 10V.
- Auto Range in the I menu is set to OFF.
- If you turn the RANGE knob when waveform acquisition is stopped, two values are shown on the measurement range screen. The upper value is the measurement range for the displayed waveforms. The lower value is the measurement range that you have specified. The new range will be applied the next time waveform acquisition is started.
- If you do not operate the RANGE knob for approximately 3 seconds, the measurement range that you are setting with the knob will disappear from the screen.

Top row: Measurement range for the displayed waveforms
Bottom row: Measurement range that you have specified

- The measurement range is set to the value that results when the measurement range set with the RANGE knob is divided by the external current sensor conversion ratio (see page 2-4).
- When the displayed waveform's measurement range and the measurement range that you have set are the same, only the bottom row is displayed.

Use the RANGE knob to display the measurement range that is currently being set.

Range status
See page 2-5.

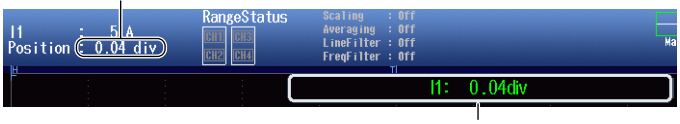
Setting the Current Waveform Vertical Position

When the Zoom Method is Set to DIV (Vertical POSITION Knob)

Turn the **vertical POSITION** knob to set the waveform vertical position.

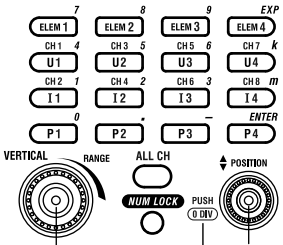
- Set in the range of –5.00 div to 5.00 div.
- If you do not operate the vertical POSITION knob for approximately 3 seconds, the vertical position that you are setting with the knob will disappear from the screen.

Vertical position of the displayed waveform



Use the vertical POSITION knob to display the vertical position that is currently being set.

- You can set the vertical position to 0 div by pressing the knob.



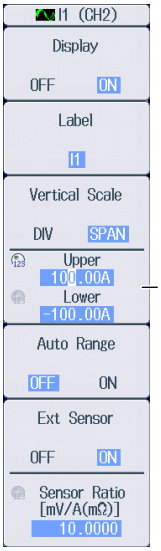
RANGE knob

Vertical POSITION knob

This indicates that you can press the vertical POSITION knob to set the vertical position to 0 div.

When the Zoom Method is Set to SPAN (Upper and Lower Limits)

Using the **Upper/Lower** soft key and the **jog shuttle**, set the current at the top edge of the waveform screen (upper limit) and the current at the bottom edge of the screen (lower limit) to set the waveform vertical position.



Set the upper and lower limits of the display range.

2.3 Configuring Power Measurements

This section explains the following settings for the vertical axis of power measurements.

- Waveform display on and off
- Display labels
- Zoom method
  DIV: Magnification for zooming waveforms, offset
  SPAN: Upper and lower display limits for zooming waveforms
- Power waveform vertical position

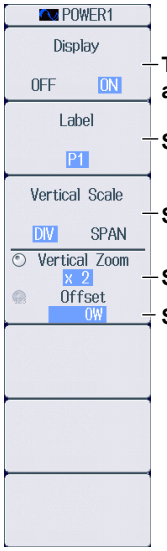
► Features Guide: “Power Measurement (P)”

Check that a voltage module and current module are installed in appropriate slots.

POWER Menu

Of the **P1 to P4** keys, press the key corresponding to the element in which the module is installed. The following menu appears.

When the zoom method is set to DIV



Turns the waveform display on and off

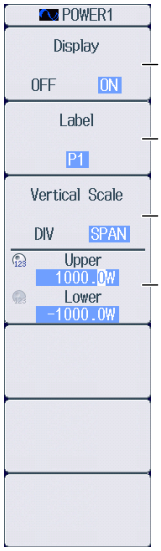
Set the display label.

Set the zoom method to DIV.

Set the zoom magnification.

Set the offset.

When the zoom method is set to SPAN



Turns the waveform display on and off

Set the display label.

Set the zoom method to SPAN.

Set the upper and lower limits of the display range.

Note

The P key whose display setting is ON illuminates. If the P key is not illuminated, you can press it to turn on the waveform display and the key. If the P key is illuminated, you can press it to turn off the waveform display and the key.

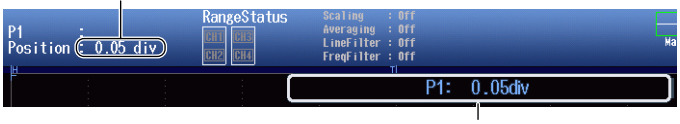
Setting the Power Waveform Vertical Position

When the Zoom Method is Set to DIV (Vertical POSITION Knob)

Turn the **vertical POSITION** knob to set the waveform vertical position.

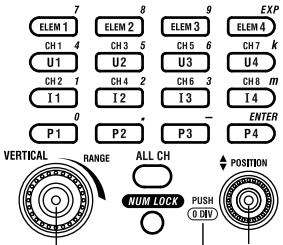
- Set in the range of –5.00 div to 5.00 div.
- If you do not operate the vertical POSITION knob for approximately 3 seconds, the vertical position that you are setting with the knob will disappear from the screen.

Vertical position of the displayed waveform



Use the vertical POSITION knob to display the vertical position that is currently being set.

- You can set the vertical position to 0 div by pressing the knob.



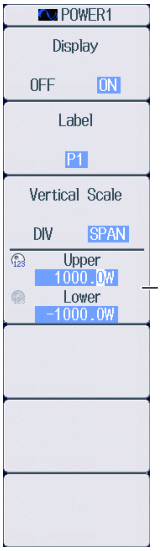
RANGE knob

Vertical POSITION knob

This indicates that you can press the vertical POSITION knob to set the vertical position to 0 div.

When the Zoom Method is Set to SPAN (Upper and Lower Limits)

Using the **Upper/Lower** soft key and the **jog shuttle**, set the power at the top edge of the waveform screen (upper limit) and the power at the bottom edge of the screen (lower limit) to set the waveform vertical position.



Set the upper and lower limits of the display range.

2.4 Configuring Sensor Input Voltage Measurements

This section explains the following settings for the vertical axis of sensor input voltage measurements.

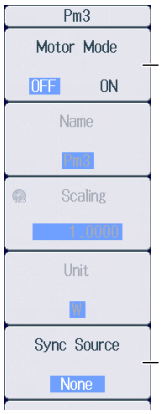
- Waveform display on and off
- Display labels
- Zoom method
  DIV: Magnification for zooming waveforms, offset
  SPAN: Upper and lower display limits for zooming waveforms
- Auto range on and off
- AUX settings
  Input signal type, linear scaling, display format
- Input coupling
- Probe attenuation
- Bandwidth limit
- Upper and lower pulse reference levels
- Sensor input voltage measurement range
- Sensor input voltage waveform vertical position

► Features Guide: “Sensor Input Voltage Measurement (AUX)”

Check that an AUX module is installed in slot 3, 5, or 7.

Pm Menu

Of the **ELEM 2 to ELEM 4** keys, press the key corresponding to the slot in which the AUX module is installed. On the menu that appears, set Motor Mode to OFF.



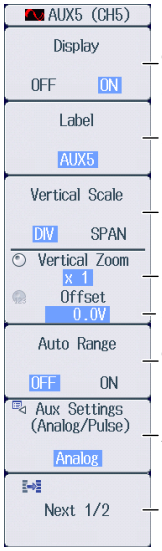
Set Motor Mode to OFF.

Set the synchronization source. ► section 1.3

AUX Menu

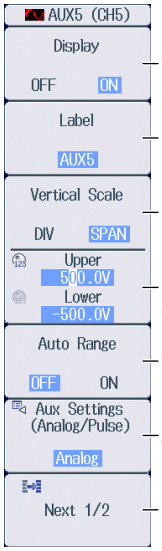
1. Press **U2(CH3)**, **I2(CH4)**, **U3(CH5)**, **I3(CH6)**, **U4(CH7)**, or **I4(CH8)** to select a channel on an installed AUX module. The following menu appears.

When the zoom method is set to DIV



- **Turns the waveform display on and off**
- **Set the display label.**
- **Set the zoom method to DIV.**
- **Set the zoom magnification.**
- **Set the offset.**
- **Turns the auto range on and off***
- **AUX settings**
- **Displays the second page of the menu**

When the zoom method is set to SPAN



- **Turns the waveform display on and off**
- **Set the display label.**
- **Set the zoom method to SPAN.**
- **Set the upper and lower limits of the display range.**
- **Turns the auto range on and off***
- **AUX settings**
- **Displays the second page of the menu**

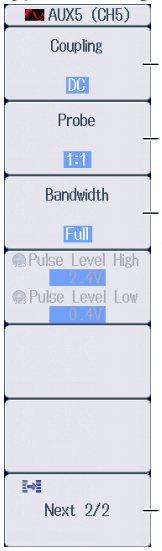
* You can turn auto range on and off when the AUX input signal type is set to Analog. If the type is set to Pulse, auto range is fixed to OFF.

Note

The U or I key whose display setting is ON illuminates. If the U or I key is not illuminated, you can press it to turn on the waveform display and the key. If the U or I key is illuminated, you can press it to turn off the waveform display and the key.

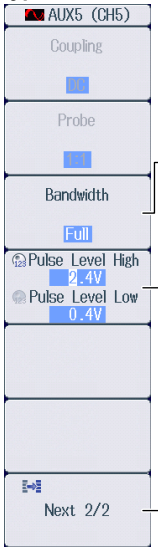
2. Press the **Next 1/2** soft key to display the 2/2 menu.

When the AUX input signal type is Analog



- **Set the input coupling (AC, DC, GND).**
- **Set the probe attenuation (1:1, 10:1, 100:1, 1000:1).**
- **Set the bandwidth limit (10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2MHz, Full).**
- **Displays the first page of the menu**

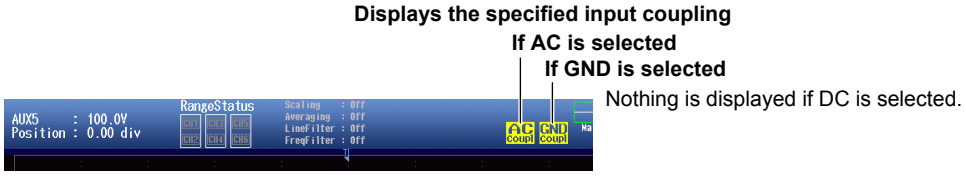
When the AUX input signal type is Pulse



- **Set the bandwidth limit (10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2MHz, Full).**
- **Set the upper and lower pulse reference levels.**
- **Displays the first page of the menu**

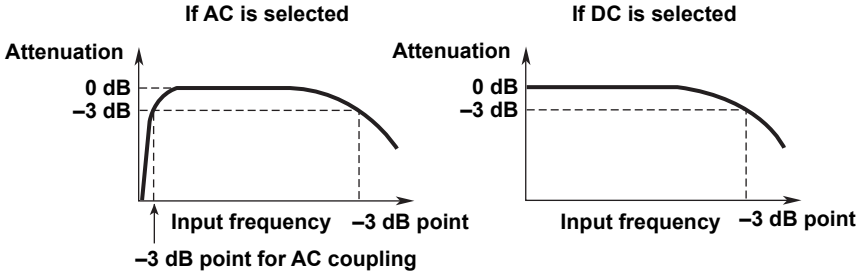
Setting the Input Coupling (Coupling)

AC: Only displays the waveform produced from the input signal's AC component.
DC: Displays the waveform produced from both the DC and AC components of the input signal.
GND: Displays the ground level.



Input Coupling and Frequency Response

The frequency responses when the input coupling is set to AC and DC are shown below.
Note that the PX8000 does not acquire low-frequency signals or signal components if the input coupling is set to AC as indicated in the figure below.



CAUTION

If the input coupling is AC, in accordance with the frequency response, the input signal is attenuated more in lower frequencies. As a result, even when a high voltage signal is actually applied, it may not be measured as a high voltage signal. Furthermore, the PEAK OVER message may not be displayed on the screen. As necessary, switch the input coupling to DC to check the input signal voltage.
Applying an input signal whose voltage exceeds the maximum input voltage of the AUX module may damage the input section.

French

ATTENTION

Si le courant du couplage d'entrée est alternatif (CA), conforme à la réponse en fréquence, le signal d'entrée est davantage atténué aux fréquences plus basses. Par conséquent, même si vous appliquez un signal de tension élevée, ce dernier risque de ne pas être mesuré comme tel. De plus, le message de dépassement de plage (PEAK OVER) risque de ne pas s'afficher à l'écran. Le cas échéant, basculez le couplage d'entrée sur CC (courant continu) afin de vérifier la tension du signal d'entrée.
Si la tension du signal d'entrée dépasse la tension d'entrée maximale du module AUX, la section d'entrée risque d'être endommagée.

Setting the Probe Attenuation (Probe)

1:1, 10:1, 100:1, 1000:1: Displays the voltage probe attenuation

Note

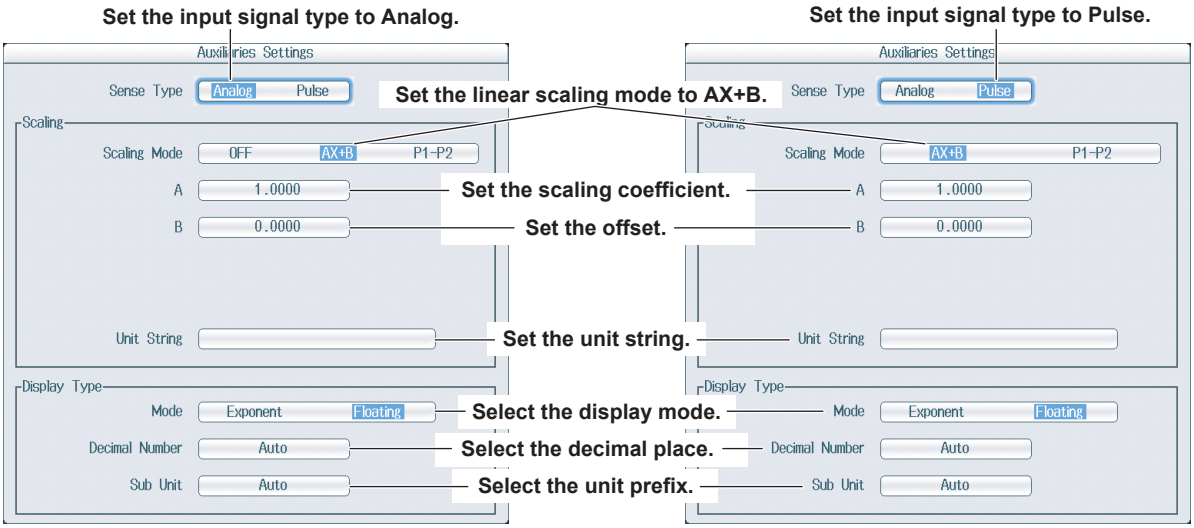
If the probe attenuation is not set correctly, the input signal voltage will not be displayed correctly. For example, if you use a 10:1 voltage probe but set the probe type to 1:1, the automatically measured amplitude of the waveform will be 1/10 the real value.

AUX Settings (Aux Settings)

Press the **Aux Settings** soft key to display the following screen.

When the input signal type is Analog

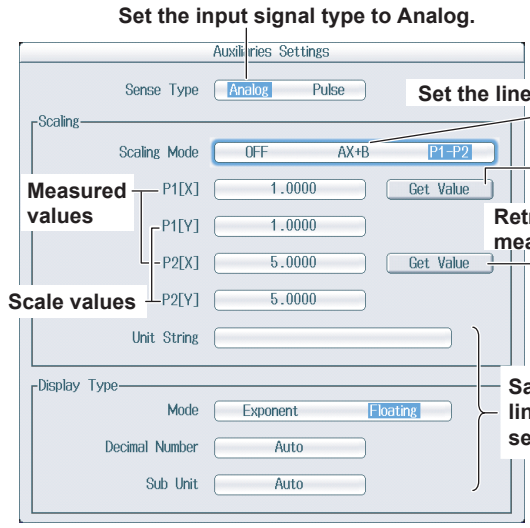
- **When the linear scaling mode is AX+B**



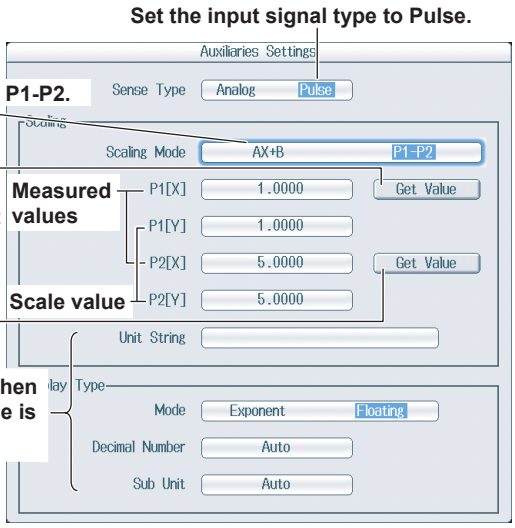
When the input signal type is Pulse

- **When the linear scaling mode is AX+B**

- **When the linear scaling mode is P1-P2**



- **When the linear scaling mode is P1-P2**



Setting the Sensor Input Voltage Measurement Range (Vertical Scale, RANGE Knob)

This section explains how to set a fixed range.

(If Auto Range in the AUX menu is set to ON, the measurement range changes depending on the amplitude of the input signal.)

Turn the **RANGE** knob to set the sensor input voltage measurement range.

- Auto Range in the AUX menu is set to OFF.
- If you turn the RANGE knob when waveform acquisition is stopped, two values are shown on the measurement range screen. The upper value is the measurement range for the displayed waveforms. The lower value is the measurement range that you have specified. The new range will be applied the next time waveform acquisition is started.
- If you do not operate the RANGE knob for approximately 3 seconds, the measurement range that you are setting with the knob will disappear from the screen.

Top row: Measurement range for the displayed waveforms
Bottom row: Measurement range that you have specified

When the displayed waveform's measurement range and the measurement range that you have set are the same, only the bottom row is displayed.

Use the RANGE knob to display the measurement range that is currently being set.

Measurement Range Options and Units

Below are the available options for the RANGE knob, measurement range values, and measurement range units that appear on the screen for when the zoom method is set to DIV and the zoom magnification is set to ×1. If you change the zoom method or zoom magnification, what appears on the screen will change accordingly.

- **When Waveform Acquisition Is Stopped**

Input Signal Type	**Linear Scaling Mode**	**Available Options for the RANGE Knob**	**Measurement Range Values** (that appear on the screen)	**Measurement Range Units** (that appear on the screen)
Analog	OFF	(When the probe attenuation is 10:1) 500.0mV, 1.000V, 2.500V, 5.000V, 10.00V, 25.00V, 50.00V, 100.0V, 250.0V, 500.0V, 1.000kV The available options vary depending on the probe attenuation setting.	Upper value: RANGE knob value for the displayed waveform Lower value: Available option value of the RANGE knob	Upper unit value: Same unit as the available options for the RANGE knob Lower unit value: Same unit as the available options for the RANGE knob
	AX+B, P1–P2		Upper value: Value obtained by multiplying the available option value of the RANGE knob by the linear scaling coefficient. Lower value: Available option value of the RANGE knob	Upper unit value: Unit specified on the AUX setting screen Lower unit value: Same unit as the available options for the RANGE knob
Pulse	—	1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200k, 500k, 1M	Upper value: No display Lower value: Available option value of the RANGE knob	Upper unit value: No display Lower unit value: Unit specified on the AUX setting screen

- **When Waveform Acquisition Is Running**

Input Signal Type	Linear Scaling Mode	Available Options for the RANGE Knob	Measurement Range Values (that appear on the screen)	Measurement Range Units (that appear on the screen)
Analog	OFF	(When the probe attenuation is 10:1) 500.0mV, 1.000V, 2.500V, 5.000V, 10.00V, 25.00V, 50.00V, 100.0V, 250.0V, 500.0V, 1.000kV The available options vary depending on the probe attenuation setting.	Upper value: No display Lower value: Available option value of the RANGE knob	Upper unit value: No display Lower unit value: Same unit as the available options for the RANGE knob
	AX+B, P1–P2		Upper value: Value obtained by multiplying the available option value of the RANGE knob by the linear scaling coefficient. Lower value: Available option value of the RANGE knob	Upper unit value: Unit specified on the AUX setting screen Lower unit value: Same unit as the available options for the RANGE knob
Pulse	—	1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200k, 500k, 1M	Upper value: No display Lower value: Available option value of the RANGE knob	Upper unit value: No display Lower unit value: Unit specified on the AUX setting screen

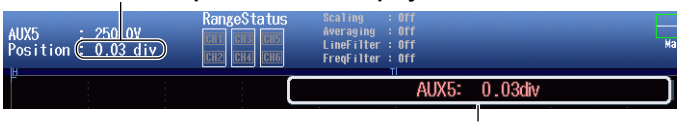
Setting the Sensor Input Voltage Waveform Vertical Position

When the Zoom Method is Set to DIV (Vertical POSITION Knob)

Turn the **vertical POSITION** knob to set the waveform vertical position.

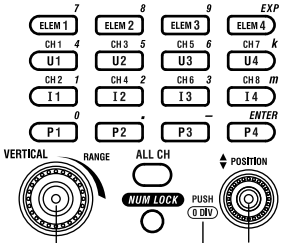
- Set in the range of –5.00 div to 5.00 div.
- If you do not operate the vertical POSITION knob for approximately 3 seconds, the vertical position that you are setting with the knob will disappear from the screen.

Vertical position of the displayed waveform



Use the vertical POSITION knob to display the vertical position that is currently being set.

- You can set the vertical position to 0 div by pressing the knob.



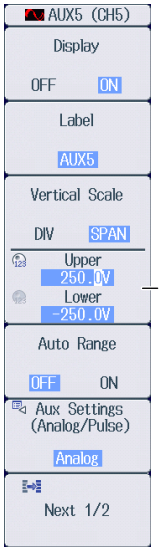
RANGE knob

Vertical POSITION knob

This indicates that you can press the vertical POSITION knob to set the vertical position to 0 div.

When the Zoom Method is Set to SPAN (Upper and Lower Limits)

Using the **Upper/Lower** soft key and the **jog shuttle**, set the voltage at the top edge of the waveform screen (upper limit) and the voltage at the bottom edge of the screen (lower limit) to set the waveform vertical position.



Set the upper and lower limits of the display range.

2.5 Configuring Rotating Speed Measurements

This section explains the following settings for the vertical axis of rotating speed measurements.

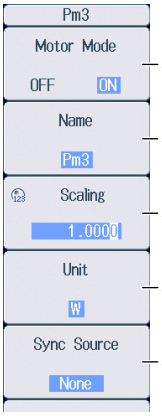
- Waveform display on and off
- Display labels
- Zoom method
  DIV: Magnification for zooming waveforms, offset
  SPAN: Upper and lower display limits for zooming waveforms
- Auto range on and off
- Rotating speed measurement
  Input signal type, linear scaling, display format
- Input coupling
- Bandwidth limit
- Upper and lower pulse reference levels
- Rotating speed measurement range
- Rotating speed waveform vertical position

► Features Guide: “Sensor Input Voltage Measurement (AUX)”
“Rotating Speed Settings (Speed Settings)”

Check that an AUX module is installed in slot 3, 5, or 7.

Pm Menu

Of the **ELEM 2 to ELEM 4** keys, press the key corresponding to the slot in which the AUX module is installed. On the menu that appears, set Motor Mode to ON.



Set Motor Mode to ON.

Set the function name.

Set the scaling coefficient.

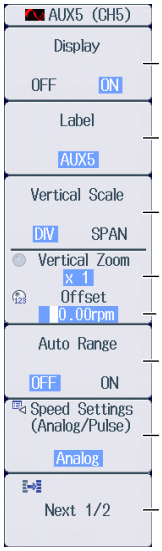
Set the unit.

Set the synchronization source. ► section 1.3

AUX Menu

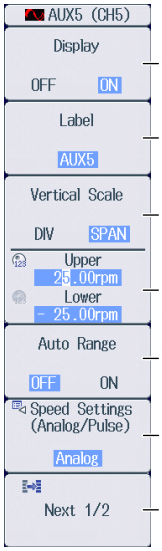
1. Press **U2(CH3)**, **U3(CH5)**, or **U4(CH7)** to select a channel on an installed AUX module. The following menu appears.

When the zoom method is set to DIV



- Turns the waveform display on and off
- Set the display label.
- Set the zoom method to DIV.
- Set the zoom magnification.
- Set the offset.
- Turns the auto range on and off*
- Configure rotating speed measurement.
- Displays the second page of the menu

When the zoom method is set to SPAN



- Turns the waveform display on and off
- Set the display label.
- Set the zoom method to SPAN.
- Set the upper and lower limits of the display range.
- Turns the auto range on and off*
- Configure rotating speed measurement.
- Displays the second page of the menu

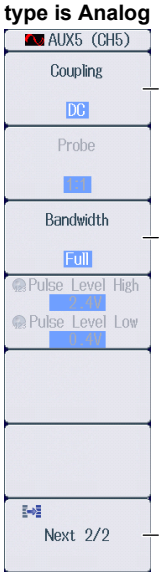
* You can turn auto range on and off when the rotating-speed input signal type is set to Analog. If the type is set to Pulse, auto range is fixed to OFF.

Note

The U key whose display setting is ON illuminates. If the U key is not illuminated, you can press it to turn on the waveform display and the key. If the U key is illuminated, you can press it to turn off the waveform display and the key.

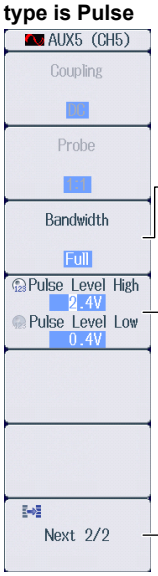
2. Press the **Next 1/2** soft key to display the 2/2 menu.

When the rotating-speed input signal type is Analog



- Set the input coupling (AC, DC, GND).
- Set the bandwidth limit (10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2MHz, Full).
- Displays the first page of the menu

When the rotating-speed input signal type is Pulse



- Set the bandwidth limit (10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2MHz, Full).
- Set the upper and lower pulse reference levels.
- Displays the first page of the menu

Setting the Input Coupling (Coupling)

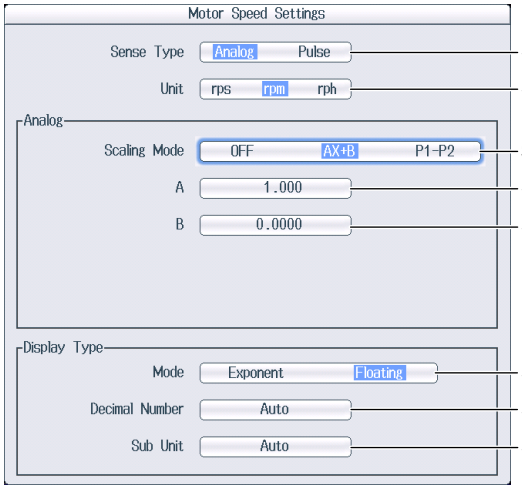
This is the same feature as the input coupling of sensor input voltage measurement. ► **section 2.4**

Configuring Rotating Speed Measurements (Speed Settings)

Press the **Speed Settings** soft key to display the following screen.

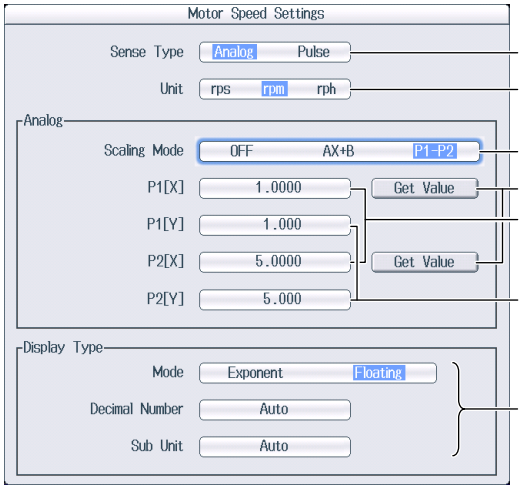
When the input signal type is Analog

- **When the linear scaling mode is AX+B**



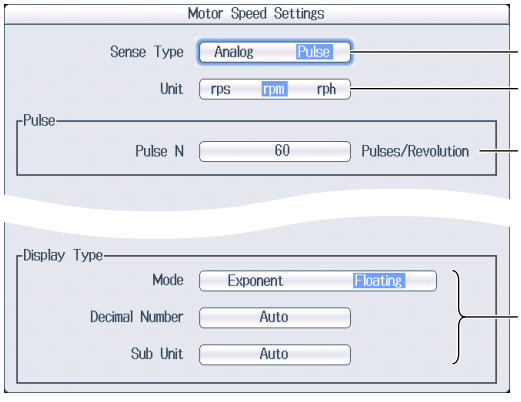
Set the input signal type to Analog.
Select the rotating speed unit (rps, rpm, rph).
Set the linear scaling mode to AX+B.
Set the scaling coefficient.
Set the offset.
Select the display mode.
Select the number of decimal places.
Select the unit prefix.

- **When the linear scaling mode is P1-P2**



Set the input signal type to Analog.
Select the rotating speed unit (rps, rpm, rph).
Set the linear scaling mode P1-P2.
Retrieve the current measured values.
Set the measured values.
Set the scale values.
Same feature as when linear scaling mode is set to AX+B

When the input signal type is Pulse



Set the input signal type to Pulse.
Select the rotating speed unit (rps, rpm, rph).
Set the number of pulses per rotation (1-9999).
Same feature as when the input signal type is set to Analog

Setting the Rotating Speed Measurement Range (Vertical Scale, RANGE Knob)

This section explains how to set a fixed range.

(If Auto Range in the AUX menu is set to ON, the measurement range changes depending on the amplitude of the input signal.)

Turn the **RANGE** knob to set the rotating speed measurement range.

- Auto Range in the AUX menu is set to OFF.
- If the input signal type is analog and you turn the RANGE knob when waveform acquisition is stopped, two values are shown on the measurement range screen. The upper value is the measurement range for the displayed waveforms. The lower value is the measurement range that you have specified. The new range will be applied the next time waveform acquisition is started.
- If you do not operate the RANGE knob for approximately 3 seconds, the measurement range that you are setting with the knob will disappear from the screen.

Top row: Measurement range for the displayed waveforms
Bottom row: Measurement range that you have specified

Use the RANGE knob to display the measurement range that is currently being set.

Measurement Range Options and Units

Below are the available options for the RANGE knob, measurement range values, and measurement range units that appear on the screen for when the zoom method is set to DIV and the zoom magnification is set to ×1. If you change the zoom method or zoom magnification, what appears on the screen will change accordingly.

- **When Waveform Acquisition Is Stopped**

Input Signal Type	**Linear Scaling Mode**	**Available Options for the RANGE Knob**	**Measurement Range Values** (that appear on the screen)	**Measurement Range Units** (that appear on the screen)
Analog	OFF	50.00mV, 100.0mV, 250.0mV, 500.0mV, 1.000V, 2.500V, 5.000V,	Upper value: RANGE knob value for the displayed waveform Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the rotating speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
	AX+B, P1–P2	10.00V, 25.00V, 50.00V, 100.0V	Upper value: Value obtained by multiplying the available option value of the RANGE knob by the linear scaling coefficient. Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the rotating speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
Pulse	—	1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200k, 500k, 1M	Upper value: No display Lower value: Available option value of the RANGE knob	Upper unit value: No display Lower unit value: Unit selected on the rotating speed measurement setting screen

- **When Waveform Acquisition Is Running**

Input Signal Type	**Linear Scaling Mode**	**Available Options for the RANGE Knob**	**Measurement Range Values** (that appear on the screen)	**Measurement Range Units** (that appear on the screen)
Analog	OFF	50.00mV, 100.0mV, 250.0mV, 500.0mV, 1.000V, 2.500V, 5.000V, 10.00V, 25.00V, 50.00V, 100.0V	Upper value: Available option value of the RANGE knob Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the rotating speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
	AX+B, P1–P2		Upper value: Value obtained by multiplying the available option value of the RANGE knob by the linear scaling coefficient. Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the rotating speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
Pulse	—	1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200k, 500k, 1M	Upper value: No display Lower value: Available option value of the RANGE knob	Upper unit value: No display Lower unit value: Unit selected on the rotating speed measurement setting screen

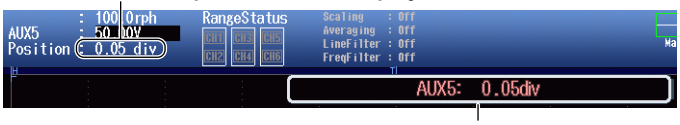
Setting the Rotating Speed Waveform Vertical Position

When the Zoom Method is Set to DIV (Vertical POSITION Knob)

Turn the **vertical POSITION** knob to set the waveform vertical position.

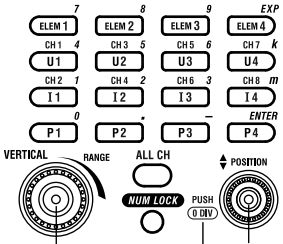
- Set in the range of –5.00 div to 5.00 div.
- If you do not operate the vertical POSITION knob for approximately 3 seconds, the vertical position that you are setting with the knob will disappear from the screen.

Vertical position of the displayed waveform



Use the vertical POSITION knob to display the vertical position that is currently being set.

- You can set the vertical position to 0 div by pressing the knob.



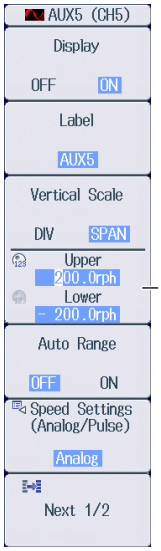
RANGE knob

Vertical POSITION knob

This indicates that you can press the vertical POSITION knob to set the vertical position to 0 div.

When the Zoom Method is Set to SPAN (Upper and Lower Limits)

Using the **Upper/Lower** soft key and the **jog shuttle**, set the number of rotations at the top edge of the waveform screen (upper limit) and the number of rotations at the bottom edge of the screen (lower limit) to set the waveform vertical position.



Set the upper and lower limits of the display range.

2.6 Configuring Torque Measurements

This section explains the following settings for the vertical axis of torque measurements.

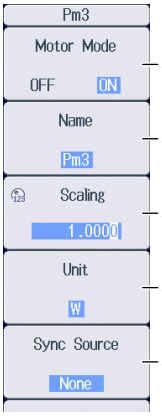
- Waveform display on and off
- Display labels
- Zoom method
  DIV: Magnification for zooming waveforms, offset
  SPAN: Upper and lower display limits for zooming waveforms
- Auto range on and off
- Torque measurement
  Input signal type, linear scaling, display format
- Input coupling
- Bandwidth limit
- Upper and lower pulse reference levels
- Torque measurement range
- Torque waveform vertical position

► Features Guide: “Sensor Input Voltage Measurement (AUX)”
“Torque Settings (Torque Settings)”

Check that an AUX module is installed in slot 3, 5, or 7.

Pm Menu

Of the **ELEM 2 to ELEM 4** keys, press the key corresponding to the slot in which the AUX module is installed. On the menu that appears, set Motor Mode to ON.



Set Motor Mode to ON.

Set the function name.

Set the scaling coefficient.

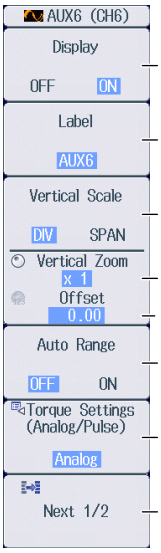
Set the unit.

Set the synchronization source. ► section 1.3

AUX Menu

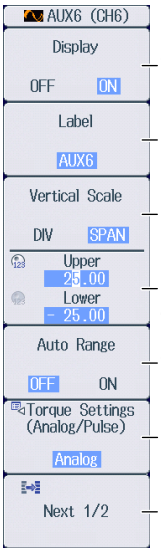
1. Press **I2(CH4)**, **I3(CH6)**, or **I4(CH8)** to select a channel on an installed AUX module. The following menu appears.

When the zoom method is set to DIV



- **Turns the waveform display on and off**
- **Set the display label.**
- **Set the zoom method to DIV.**
- **Set the zoom magnification.**
- **Set the offset.**
- **Turns the auto range on and off***
- **Configure torque measurements.**
- **Displays the second page of the menu**

When the zoom method is set to SPAN



- **Turns the waveform display on and off**
- **Set the display label.**
- **Set the zoom method to SPAN.**
- **Set the upper and lower limits of the display range.**
- **Turns the auto range on and off***
- **Configure torque measurements.**
- **Displays the second page of the menu**

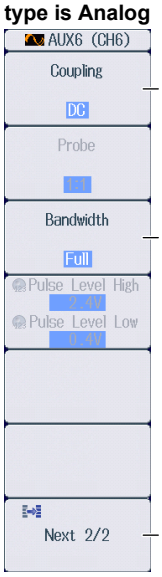
* You can turn auto range on and off when the torque input signal type is set to Analog. If the type is set to Pulse, auto range is fixed to OFF.

Note

The I key whose display setting is ON illuminates. If the I key is not illuminated, you can press it to turn on the waveform display and the key. If the I key is illuminated, you can press it to turn off the waveform display and the key.

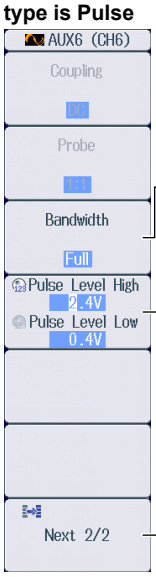
2. Press the **Next 1/2** soft key to display the 2/2 menu.

When the torque input signal type is Analog



- **Set the input coupling (AC, DC, GND).**
- **Set the bandwidth limit (10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2MHz, Full).**
- **Displays the first page of the menu**

When the torque input signal type is Pulse



- **Set the bandwidth limit (10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2MHz, Full).**
- **Set the upper and lower pulse reference levels.**
- **Displays the first page of the menu**

Setting the Input Coupling (Coupling)

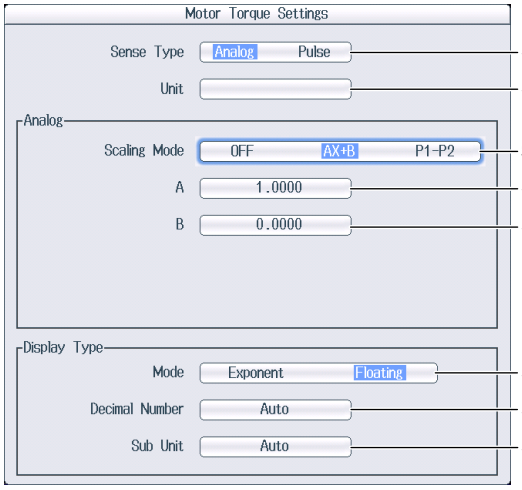
This is the same feature as the input coupling of sensor input voltage measurement. ► **section 2.4**

Configuring Torque Measurements (Torque Settings)

Press the **Torque Settings** soft key to display the following screen.

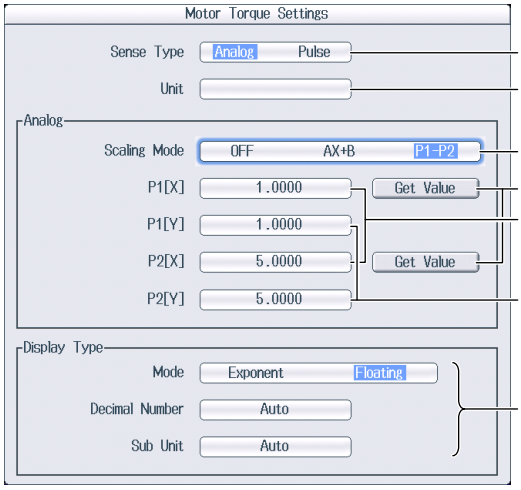
When the input signal type is Analog

- **When the linear scaling mode is AX+B**



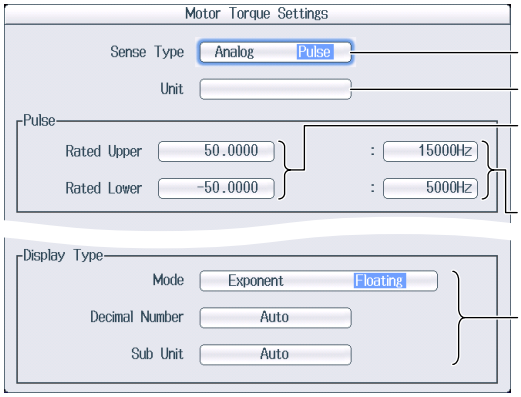
Set the input signal type to Analog.
Set the torque unit.
Set the linear scaling mode to AX+B.
Set the scaling coefficient.
Set the offset.
Select the display mode.
Select the number of decimal places.
Select the unit prefix.

- **When the linear scaling mode is P1-P2**



Set the input signal type to Analog.
Set the torque unit.
Set the linear scaling mode P1-P2.
Retrieve the current measured values.
Set the measured values.
Set the scale values.
Same feature as when linear scaling mode is set to AX+B

When the input signal type is Pulse



Set the input signal type to Pulse.
Set the torque unit.
Set the positive and negative rated torque signal values (-10000.0000 to 10000.0000).
Set the positive and negative rated torque signals' pulse signal values (1Hz-100000000Hz).
Same feature as when the input signal type is set to Analog

Setting the Torque Measurement Range (Vertical Scale, RANGE Knob)

This section explains how to set a fixed range.

(If Auto Range in the AUX menu is set to ON, the measurement range changes depending on the amplitude of the input signal.)

Turn the **RANGE** knob to set the torque measurement range.

- Auto Range in the AUX menu is set to OFF.
- If the input signal type is analog and you turn the RANGE knob when waveform acquisition is stopped, two values are shown on the measurement range screen. The upper value is the measurement range for the displayed waveforms. The lower value is the measurement range that you have specified. The new range will be applied the next time waveform acquisition is started.
- If you do not operate the RANGE knob for approximately 3 seconds, the measurement range that you are setting with the knob will disappear from the screen.

Top row: Measurement range for the displayed waveforms
Bottom row: Measurement range that you have specified

Use the RANGE knob to display the measurement range that is currently being set.

Measurement Range Options and Units

Below are the available options for the RANGE knob, measurement range values, and measurement range units that appear on the screen for when the zoom method is set to DIV and the zoom magnification is set to ×1. If you change the zoom method or zoom magnification, what appears on the screen will change accordingly.

- **When Waveform Acquisition Is Stopped**

Input Signal Type	**Linear Scaling Mode**	**Available Options for the RANGE Knob**	**Measurement Range Values** (that appear on the screen)	**Measurement Range Units** (that appear on the screen)
Analog	OFF	50.00mV, 100.0mV, 250.0mV, 500.0mV, 1.000V, 2.500V, 5.000V, 10.00V, 25.00V, 50.00V, 100.0V	Upper value: RANGE knob value for the displayed waveform Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the torque speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
	AX+B, P1–P2		Upper value: Value obtained by multiplying the available option value of the RANGE knob by the linear scaling coefficient. Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the torque speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
Pulse	—	1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200k, 500k, 1M	Upper value: No display Lower value: Available option value of the RANGE knob	Upper unit value: No display Lower unit value: Unit selected on the torque speed measurement setting screen

- **When Waveform Acquisition Is Running**

Input Signal Type	Linear Scaling Mode	Available Options for the RANGE Knob	Measurement Range Values (that appear on the screen)	Measurement Range Units (that appear on the screen)
Analog	OFF	50.00mV, 100.0mV, 250.0mV, 500.0mV, 1.000V, 2.500V, 5.000V, 10.00V, 25.00V, 50.00V, 100.0V	Upper value: Available option value of the RANGE knob Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the torque speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
	AX+B, P1–P2		Upper value: Value obtained by multiplying the available option value of the RANGE knob by the linear scaling coefficient. Lower value: Available option value of the RANGE knob	Upper unit value: Unit selected on the torque speed measurement setting screen Lower unit value: Same unit as the available options for the RANGE knob
Pulse	—	1, 2, 5, 10, 20, 50, 100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200k, 500k, 1M	Upper value: No display Lower value: Available option value of the RANGE knob	Upper unit value: No display Lower unit value: Unit selected on the torque speed measurement setting screen

Setting the Torque Waveform Vertical Position

When the Zoom Method is Set to DIV (Vertical POSITION Knob)

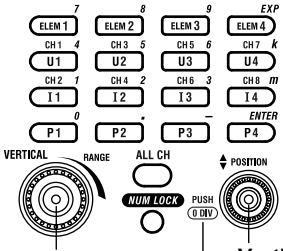
Turn the **vertical POSITION** knob to set the waveform vertical position.

- Set in the range of –5.00 div to 5.00 div.
- If you do not operate the vertical POSITION knob for approximately 3 seconds, the vertical position that you are setting with the knob will disappear from the screen.

Vertical position of the displayed waveform

Use the vertical POSITION knob to display the vertical position that is currently being set.

- You can set the vertical position to 0 div by pressing the knob.



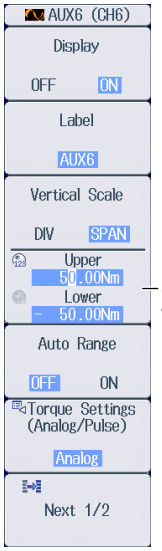
RANGE knob

Vertical POSITION knob

This indicates that you can press the vertical POSITION knob to set the vertical position to 0 div.

When the Zoom Method is Set to SPAN (Upper and Lower Limits)

Using the **Upper/Lower** soft key and the **jog shuttle**, set the torque at the top edge of the waveform screen (upper limit) and the torque at the bottom edge of the screen (lower limit) to set the waveform vertical position.



Set the upper and lower limits of the display range.

2.7 Displaying the Menu for Configuring All Channels

This section explains the following settings for configuring all channels.

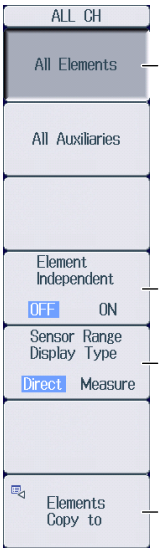
- Settings of all elements
- Settings of all AUX channels
- Copying setup data

► Features Guide: “Displaying the Menu for Configuring All Channels (ALL CH)”

ALL CH menu

Press **ALL CH** to display the following menu.

Displaying the settings of all elements



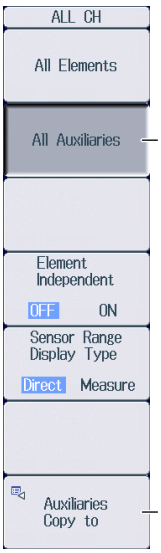
Press the All Elements soft key.

Turns independent element configuration on and off

Set the display format of external current sensor range (Direct, Measure).

Copies element setup data

Displaying the settings of all AUX channels



Press the All Auxiliaries soft key.

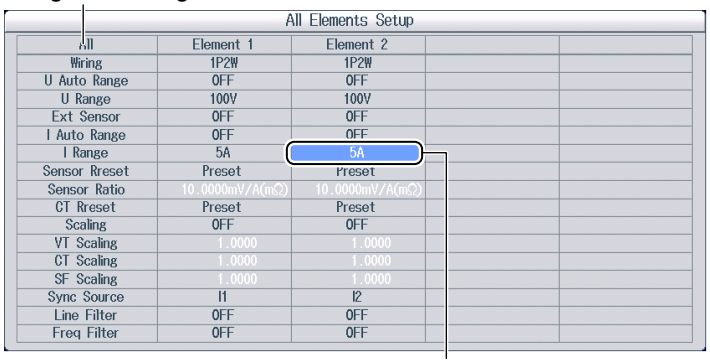
Copies AUX channel setup data

Settings of All Elements (All Elements)

1. Press the **All Elements** soft key to display the following screen.

   Use the **jog shuttle** to select the setting that you want to change, and then press **SET** to display the available options or an input box.

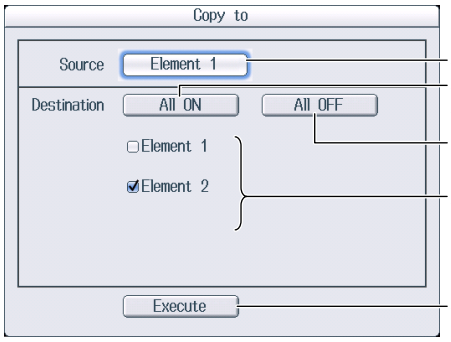
To set all elements to the same setting at once, change the settings in the All column.



Use the jog shuttle to select the item that you want to set.

Copying Element Setup Data (Elements Copy to)

2. Press the **Elements Copy to** soft key to display the following screen.

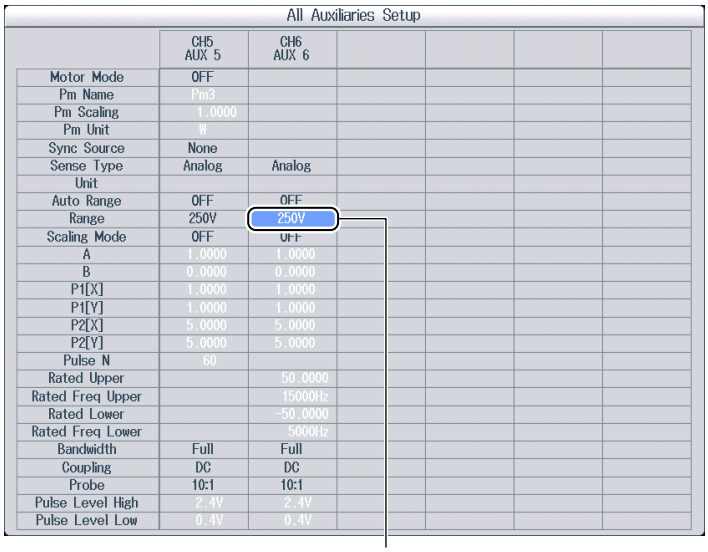


Set the copy source element.
Selects all elements except the copy source to be copy destinations
Clears all elements from being copy destinations
Select the element check boxes separately to set the copy destination.
Starts copying

Settings of All AUX Channels

1. Press the **All Auxiliaries** soft key to display the following screen.

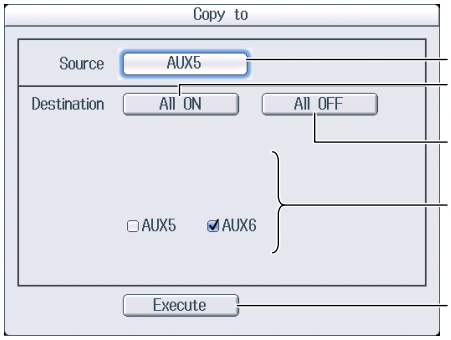
Use the **jog shuttle** to select the setting that you want to change, and then press **SET** to display the available options or an input box.



Use the jog shuttle to select the item that you want to set.

Copying AUX Channel Setup Data (Auxiliaries Copy to)

2. Press the **Auxiliaries Copy to** soft key to display the following screen.



Set the copy source channel.
Selects all channels except the copy source to be copy destinations
Clears all channels from being copy destinations
Select the channel check boxes separately to set the copy destination.
Starts copying

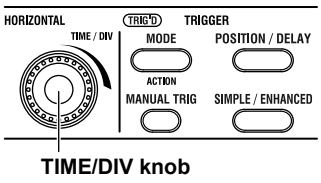
2.8 Configuring the Horizontal Axis (Time axis)

This section explains how to set the time scale (the time per grid (1 div) displayed on the screen).

► Features Guide: “Horizontal Axis”

Configuring the Horizontal Axis (Time axis)

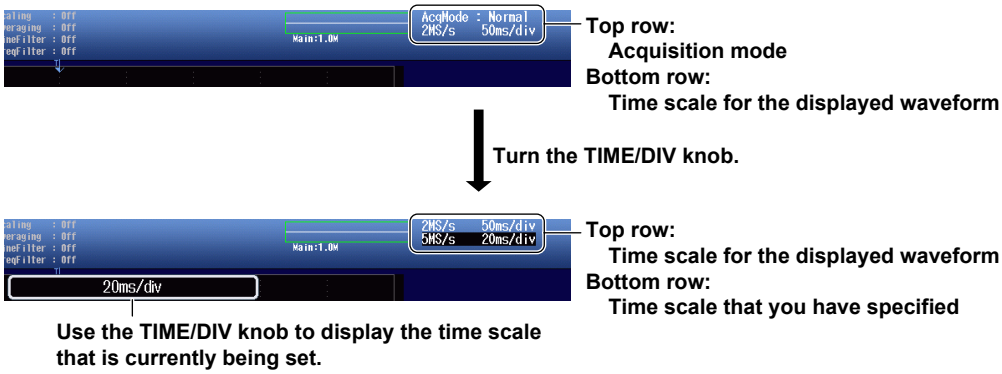
Turn the **TIME/DIV** knob to set the time scale.



TIME/DIV knob

Time Scale (TIME/DIV) Display

- If you turn the TIME/DIV knob when waveform acquisition is stopped, the time scale display shows the time scale for the currently displayed waveform in the upper row and the changed time scale in the lower row. The new time scale will be applied the next time waveform acquisition is started.
- If you do not operate the TIME/DIV knob for approximately 3 seconds, the time scale that you are setting with the knob will disappear from the screen.



3.1 Setting the Trigger Mode

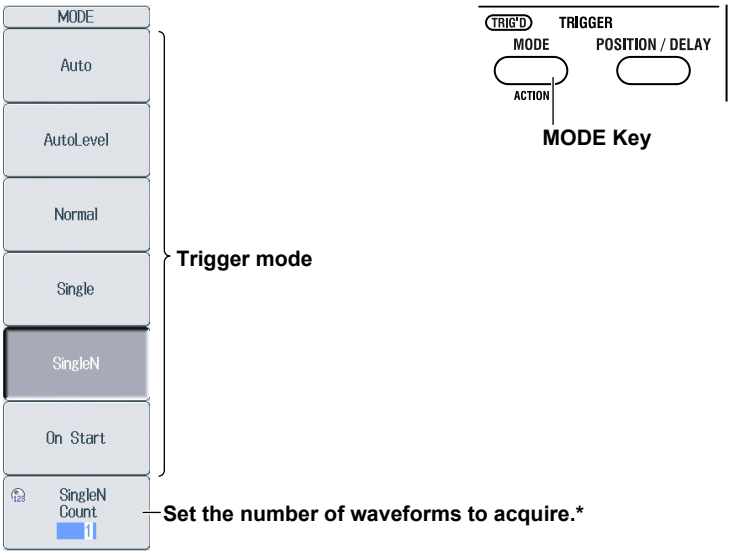
This section explains the following setting for updating the displayed waveform.

- Trigger mode

► Features Guide: “Trigger Mode (MODE)”

MODE menu

Press **MODE** to display the following menu.



* Displayed when the trigger mode is set to SingleN.

Setting the Trigger Mode (Mode)

Auto: If the trigger conditions are met within 50 ms, the PX8000 updates the displayed waveforms on each trigger occurrence. If not, the PX8000 automatically updates the displayed waveforms. If the time axis is set to a value that would cause the display to switch to roll mode, the roll mode display will be enabled.

AutoLevel: If a trigger occurs before a timeout (which is approximately 1 second), the PX8000 updates the waveform in the same way that it does in Auto mode. If a trigger does not occur before a timeout, the PX8000 automatically changes the trigger level to the center value of the trigger source amplitude, triggers on that value, and updates the displayed waveform.

Normal: The PX8000 only updates the waveform display when the trigger conditions are met.

Single: When the trigger conditions are met, the PX8000 updates the displayed waveform once and stops signal acquisition. If the time axis is set to a value that would cause the display to switch to roll mode, the roll mode display will be enabled. When the PX8000 triggers, it begins recording data. When data has been acquired up to the amount specified by the set record length, the waveform display stops.

SingleN: The PX8000 acquires signals each time the trigger conditions are met until a specified number of signals have been acquired, and then displays all of the acquired signals. If no triggers occur, the display is not updated.

On Start: Regardless of the trigger settings, when you press the START key, the PX8000 updates the displayed waveforms once and stops signal acquisition. If the time axis is set to a value that would cause the display to switch to roll mode, the roll mode display will be enabled. When data has been acquired up to the amount specified by the set record length, the waveform display stops.

3.2 Setting the Trigger Position and Trigger Delay

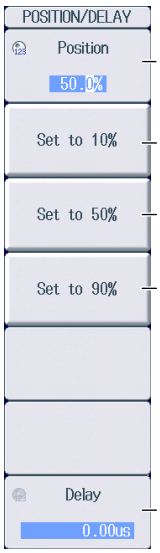
This section explains the following settings for updating the displayed waveform.

- Trigger position
- Trigger delay

► Features Guide: “Trigger Position (Position)”
“Trigger Delay (Delay)”

POSITION/DELAY Menu

Press **POSITION/DELAY** to display the following menu.



Set the trigger position.

Set the trigger position to 10%.

Set the trigger position to 50%.

Set the trigger position to 90%.

Set the trigger delay.

3.3 Setting the Trigger Hold Off

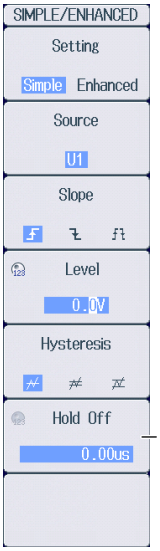
This section explains the following setting for updating the displayed waveform.

- Hold-off time

► Features Guide: “Trigger Hold Off (Hold Off)”

SIMPLE/ENHANCED Menu

Press **SIMPLE/ENHANCED** to display the following menu.



Set the trigger hold off.

Setting the Hold-off Time (Hold Off)

The trigger hold-off feature temporarily stops the detection of the next trigger once a trigger has occurred.

3.4 Triggering on an Edge Trigger (Simple)

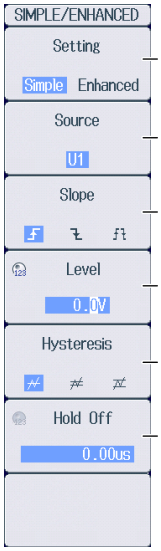
This section explains the following settings for triggering on the edges of a signal applied to an installed module.

- Trigger source
- Trigger slope
- Trigger level
- Trigger hysteresis

► Features Guide: “Simple Trigger (Simple),” “Trigger Source (Source),” “Trigger Slope (Slope),” “Trigger Level (Level),” and “Trigger Hysteresis (Hysteresis)”

SIMPLE Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Simple. The following menu appears.



Set Setting to Simple.

Set the trigger source (U1-U4, I1-I4, P1-P4, AUX3-AUX8).

Set the trigger slope (, ,).

Set the trigger level.

Set the trigger hysteresis (, ,).

Set the trigger hold off. ► section 3.3

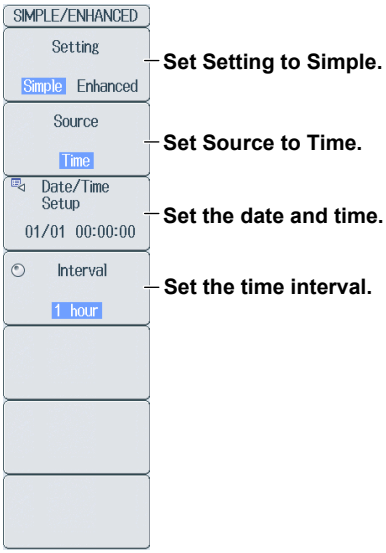
3.5 Triggering on a Timer Trigger (Simple)

This section explains the settings that are used when triggering on a specific date and time.

► Features Guide: “Time (Time)”

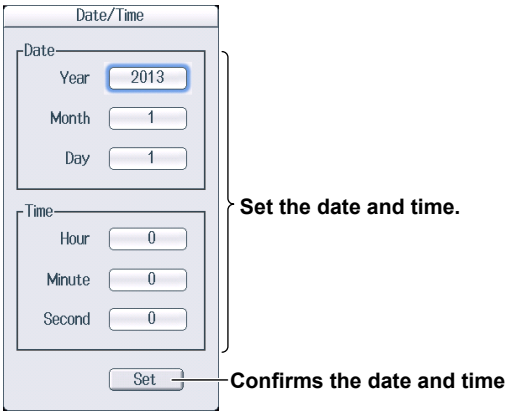
SIMPLE Time Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Simple. The following menu appears.



Setting the Date and Time (Date/Time Setup)

Press the **Date/Time Setup** soft key to display the following screen.



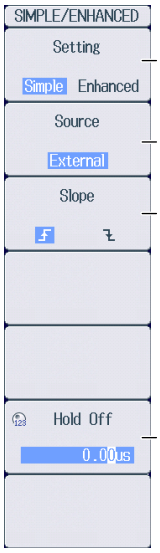
3.6 Triggering on an External Trigger (Simple)

This section explains the settings that are used when triggering on an external signal.

► Features Guide: “External Signal (External)”
“Trigger Slope (Slope)”

SIMPLE External Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Simple. The following menu appears.



Set Setting to Simple.

Set Source to External.

Set the trigger slope (⨍ , ⨏).

Set the trigger hold off. ► section 3.3

3.7 Triggering on a Power Line Signal (Simple)

This section explains the settings that are used when triggering on a power line signal.

► Features Guide: “Power Line Signal (Line)”

SIMPLE Line Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Simple. The following menu appears.

Set Setting to Simple.

Set Source to Line.

Set the trigger hold off. ► section 3.3

3.8 Triggering on an A -> B(N) Trigger (Enhanced)

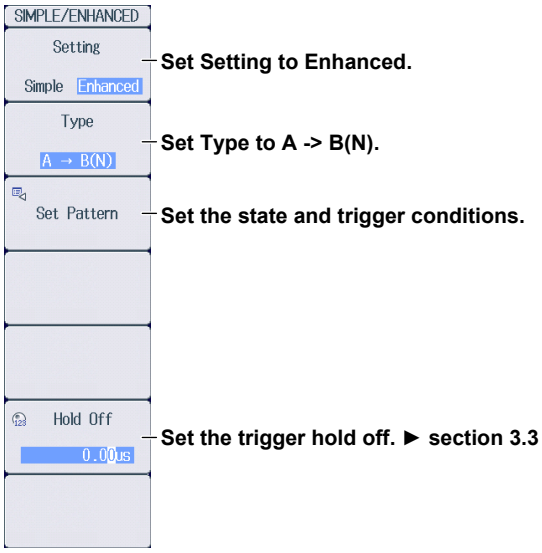
This section explains the following settings for triggering on an A -> B(N) trigger.

- Trigger source
- State condition
- State condition achievement condition
- Number of times state condition B must be met
- Trigger condition

► Features Guide: “A -> B(N) Trigger (Enhanced)”

ENHANCED_A->B(N) Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

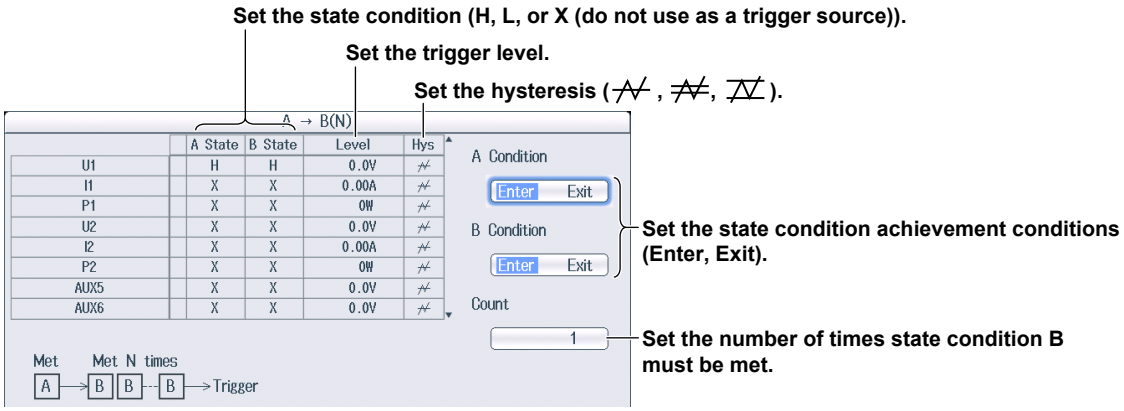
Set Type to A -> B(N).

Set the state and trigger conditions.

Set the trigger hold off. ► section 3.3

Setting the State and Trigger Conditions (Set Pattern)

Press the **Set Pattern** soft key to display the following menu.



Set the state condition (H, L, or X (do not use as a trigger source)).

Set the trigger level.

Set the hysteresis (, ,).

Set the state condition achievement conditions (Enter, Exit).

Set the number of times state condition B must be met.

3.9 Triggering on an A Delay B Trigger (Enhanced)

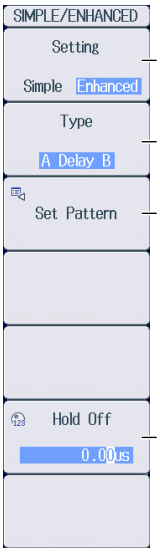
This section explains the following settings for triggering on an A Delay B trigger.

- Trigger source
- State condition
- State condition achievement condition
- Delay time
- Trigger condition

► Features Guide: “A Delay B Trigger (Enhanced)”

ENHANCED A Delay B Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

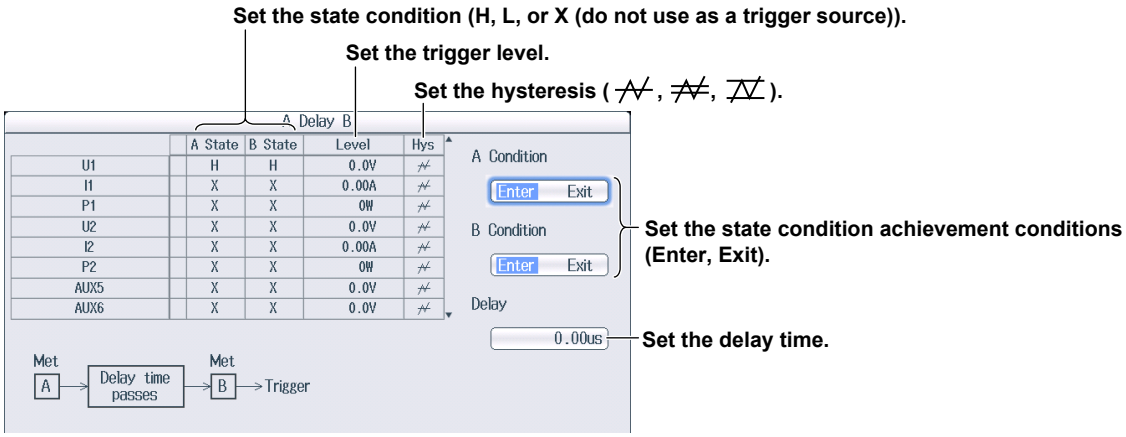
Set Type to A Delay B.

Set the state and trigger conditions.

Set the trigger hold off. ► section 3.3

Setting the State and Trigger Conditions (Set Pattern)

Press the **Set Pattern** soft key to display the following menu.



3.10 Triggering on an Edge On A Trigger (Enhanced)

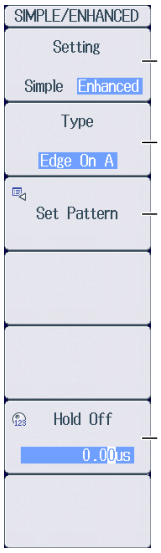
This section explains the following settings for triggering on an Edge On A trigger.

- Trigger source
- State condition
- State condition achievement condition
- Edge detection condition
- Trigger condition

► Features Guide: “Edge On A Trigger (Enhanced)”

ENHANCED Edge On A Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

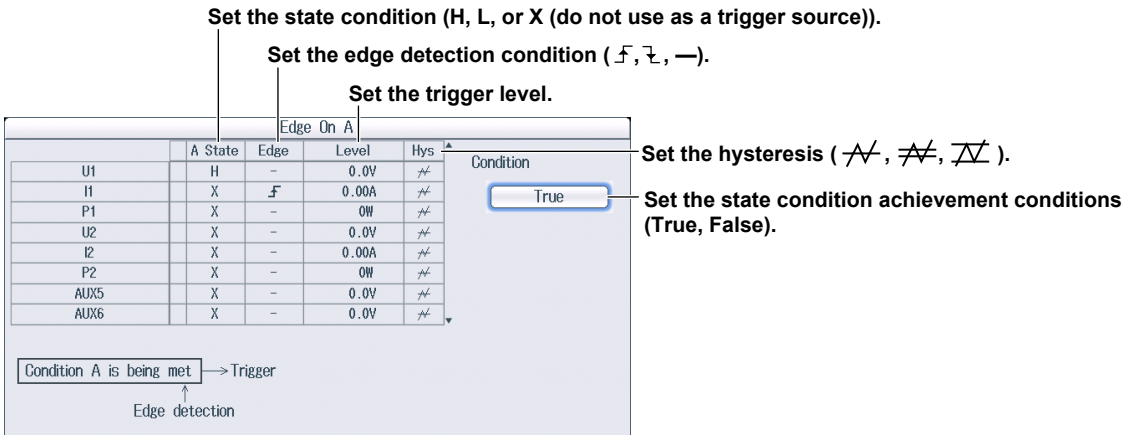
Set Type to Edge On A.

Set the state and trigger conditions.

Set the trigger hold off. ► section 3.3

Setting the State and Trigger Conditions (Set Pattern)

Press the **Set Pattern** soft key to display the following menu.



Set the state condition (H, L, or X (do not use as a trigger source)).

Set the edge detection condition (, , —).

Set the trigger level.

Set the hysteresis (, ,).

Set the state condition achievement conditions (True, False).

3.11 Triggering on an OR or AND Trigger (Enhanced)

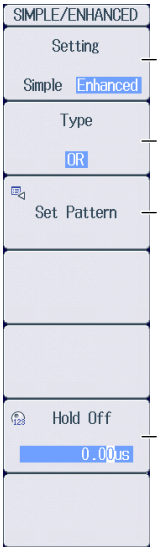
This section explains the following settings for triggering on an OR or AND trigger.

- Trigger source
- Edge detection condition (OR trigger)
- Achievement condition (AND trigger)
- Trigger condition

► Features Guide: “OR Trigger (Enhanced)” and “AND Trigger (Enhanced)”

ENHANCED OR Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

Set Type to OR.

Set the state and trigger conditions.

Set the trigger hold off. ► section 3.3

Setting the State and Trigger Conditions (Set Pattern)

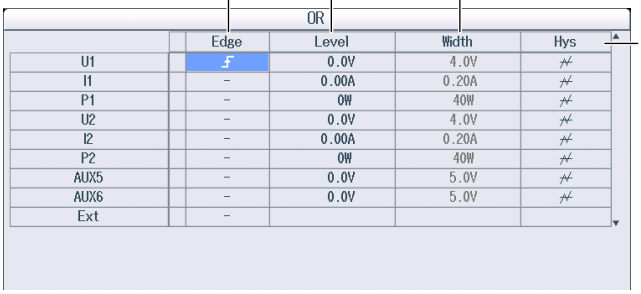
Press the **Set Pattern** soft key to display the following menu.

Set the edge detection condition (, , IN, OUT, —).

Set the trigger level (set to the center value of the level width if the edge detection condition is set to IN or OUT).

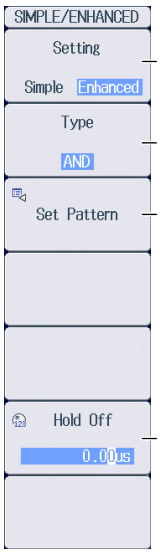
Set the level width (when the edge detection condition is set to IN or OUT).

Set the hysteresis (, ,).



ENHANCED AND Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

Set Type to AND.

Set the state and trigger conditions.

Set the trigger hold off. ► section 3.3

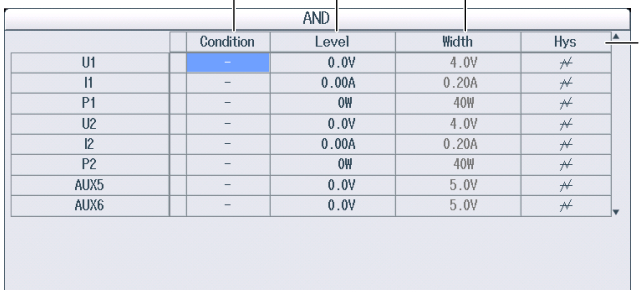
Setting the State and Trigger Conditions (Set Pattern)

Press the **Set Pattern** soft key to display the following menu.

Set the achievement condition (H, L, IN, OUT, —).

Set the trigger level (set to the center value of the level width if the achievement condition is set to IN or OUT).

Set the level width (when the achievement condition is set to IN or OUT).



Set the hysteresis (⩘, ⩘, ⩘).

3.12 Triggering on a Period Trigger (Enhanced)

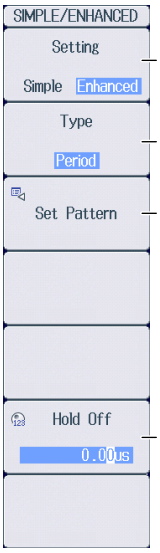
This section explains the following settings for triggering on a period trigger.

- Trigger source
- State condition
- Determination mode
- Reference time
- Trigger condition

► Features Guide: “Period Trigger (Enhanced)”

ENHANCED Period Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

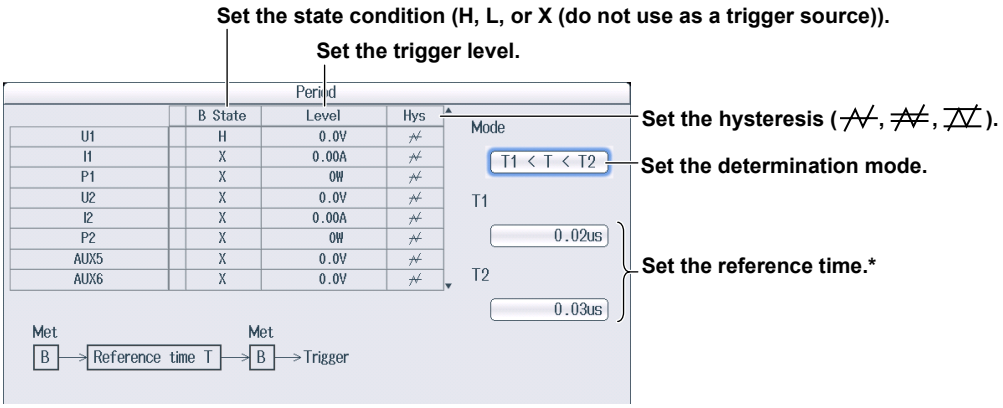
Set Type to Period.

Set the state and trigger conditions.

Set the trigger hold off. ► section 3.3

Setting the State and Trigger Conditions (Set Pattern)

Press the **Set Pattern** soft key to display the following menu.



* Set T1 and T2 when the determination mode is T1 < T < T2 or T <T1, T2 < T.
Set Time when the determination mode is T < Time or T >Time.

Setting the Reference Mode (Mode)

Set what kind of relationship must be established between period T and the specified reference times (Time or T1 and T2) for the PX8000 to trigger.

T < Time	Period T must be shorter than the reference time (Time).
T > Time	Period T must be longer than the reference time (Time).
T1 < T < T2	Period T must be longer than reference time T1 and shorter than reference time T2.
T < T1, T2 <T	Period T must be shorter than reference time T1 or longer than reference time T2.

3.13 Triggering on a Pulse Width Trigger (Enhanced)

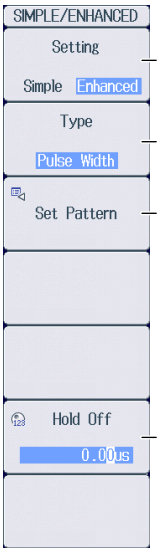
This section explains the following settings for triggering on a pulse width trigger.

- Trigger source
- State condition
- Determination mode
- Reference time
- Trigger condition

► Features Guide: “Pulse Width Trigger (Enhanced)”

ENHANCED Pulse Width Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

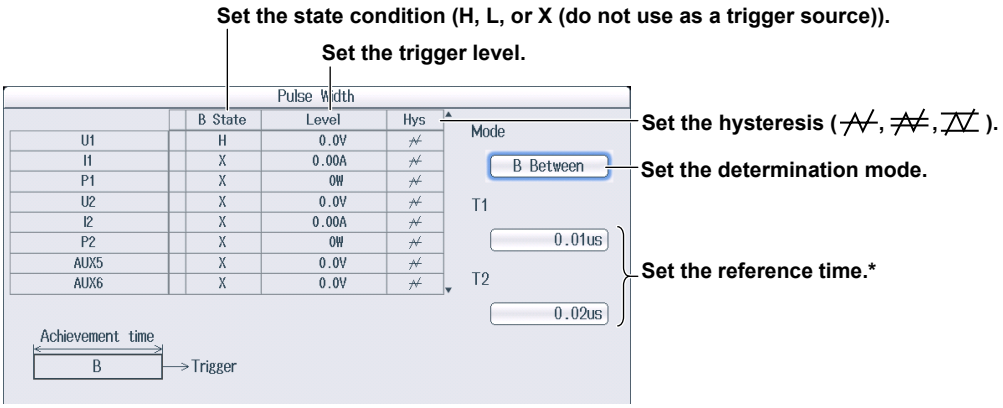
Set the trigger type to Pulse Width.

Set the state and trigger conditions.

Set the trigger hold off. ► section 3.3

Setting the State and Trigger Conditions (Set Pattern)

Press the **Set Pattern** soft key to display the following menu.



* Set T1 and T2 when the determination mode is B Between.
Set Time when the determination mode is B < Time, B >Time, or B TimeOut.

Setting the Reference Mode (Mode)

Set what kind of relationship must be established between the state condition B achievement time and the specified reference times (Time or T1 and T2) for the PX8000 to trigger.

B < Time	The PX8000 triggers when the achievement time is shorter than the reference time (Time), and the state condition changes from being met to not being met.
B > Time	The PX8000 triggers when the achievement time is longer than the reference time (Time), and the state condition changes from being met to not being met.
B TimeOut	The PX8000 triggers when the achievement time is longer than the reference time (Time).
B Between	The PX8000 triggers when the achievement time is longer than reference time T1 and shorter than reference time T2, and the state condition changes from being met to not being met.

3.14 Triggering on a Wave Window Trigger (Enhanced)

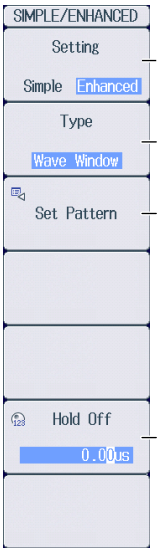
This section explains the following settings for triggering on a wave window trigger.

- Source channel
  Tolerance width, cycle frequency, and reference cycle
- Synchronization channel
- Trigger condition

► Features Guide: “Wave Window Trigger (Enhanced)”

ENHANCED Wave Window Trigger Menu

Press **SIMPLE/ENHANCED** and then the **Setting** soft key to select Enhanced. The following menu appears.



Set Setting to Enhanced.

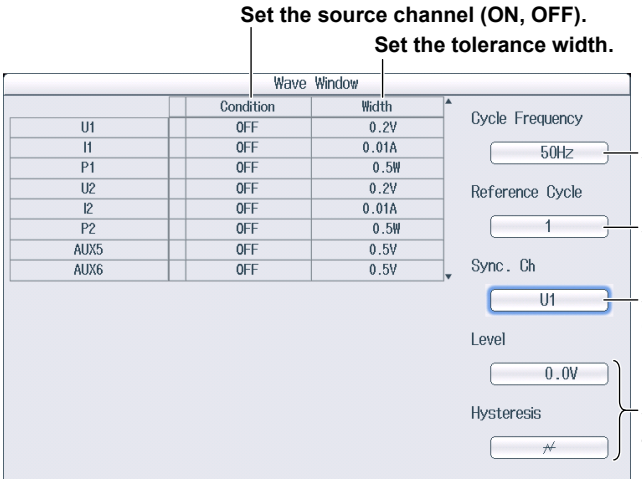
Set Type to Wave Window.

Set the trigger conditions.

Set the trigger hold off. ► section 3.3

Setting the Trigger Conditions (Set Pattern)

Press the **Set Pattern** soft key to display the following menu.



Set the source channel (ON, OFF).

Set the tolerance width.

Set the cycle frequency.

Set the reference cycle.

Set the synchronization channel (Auto, U1-U4, I1-I4, P1-P4, AUX3-AUX8).

Set the level for detecting the start and end points, and set the detection hysteresis.*

* Set when the synchronization channel is U1 to U4, I1 to I4, P1 to P4, or AUX3 to AUX8.

3.15 Triggering the PX8000 Manually (Manual Trigger)

This section explains how to trigger the PX8000 manually.

► Features Guide: “Trigger Types (Type)”

Press **MANUAL TRIG**.

4.1 Setting Conditions for Waveform Acquisition

This section explains the following settings for acquiring waveforms.

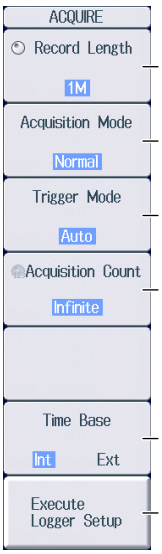
- Record length
- Acquisition mode
- Number of waveforms to acquire and attenuation constant
- Time base
- Executing logger setup

► Features Guide: “Waveform Acquisition”

ACQUIRE Menu

Press **ACQUIRE** to display the following menu.

When the Acquisition Mode Is Set to Normal or Envelope



Set the record length.

Set the acquisition mode to Normal or Envelope.

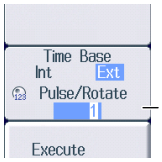
Set the trigger mode. ► section 3.1

Set the number of waveform acquisitions.

Set the time base (Int, Ext).

Execute Logger Setup.*

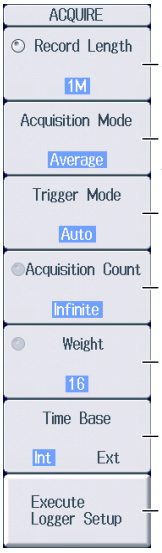
When the time base is Ext



Set the pulse/rotation.

* A confirmation message will appear.

When the Acquisition Mode Is Set to Average



Set the record length.

Set the acquisition mode to Average.

Set the trigger mode. ► section 3.1

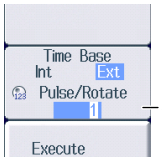
Set the number of waveform acquisitions.

Set the attenuation constant.

Set the time base (Int, Ext).

Execute Logger Setup.*

When the time base is Ext



Set the pulse/rotation.

* A confirmation message will appear.

Setting the Acquisition Mode (Acquisition Mode)

Normal: Displays waveforms without processing the sampled data. You can set the number of waveforms to acquire with the jog shuttle.

Envelope: Displays waveforms in envelope mode. You can set the number of waveforms to acquire with the jog shuttle.

Average: Displays averaged waveforms. You can set the attenuation constant and the number of times to average with the jog shuttle.

4.2 Starting and Stopping Waveform Acquisition

This section explains how to start and stop waveform acquisition.

► Features Guide: “Waveform Acquisition (START/STOP)”

Waveform Acquisition (START/STOP)

Press **START/STOP** to start or stop waveform acquisition.
When the START/STOP key is illuminated, the PX8000 is acquiring waveforms.

Note

If every numeric data (see chapter 6) is displayed as no data (−−−−−−−) even when you start waveform acquisition, check the following items.

- Is the numeric measurement setting set to ON? ► section 7.1
- Is the trigger set properly?
  - Trigger mode ► section 3.1
  - Trigger position and trigger delay ► section 3.2
  - Trigger hold off ► section 3.3
  - Trigger conditions according to trigger type ► sections 3.4 to 3.15

5.1 Selecting the Display Mode

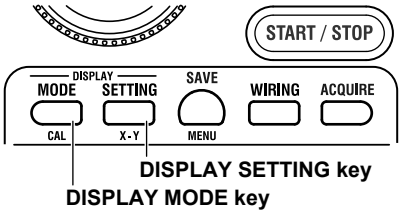
This section explains how to set the type of display to show.

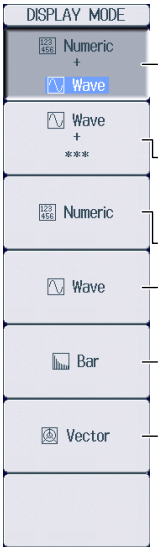
- Display mode

► Features Guide: “Display Mode and Display Settings”

DISPLAY MODE menu

Press **DISPLAY MODE** to display the following menu.





Displays numeric data in the top half of the screen. Set the display that you want to show in the bottom half of the screen (Wave, Bar,* Vector*).

Displays waveforms in the top half of the screen. Set the display that you want to show in the bottom half of the screen (Numeric, Bar,* Vector*).

Split display

Displays numeric data on the entire screen

Displays waveforms on the entire screen

Displays bar graphs on the entire screen*

Displays vectors on the entire screen*

Single display

* These settings are available on models with the harmonic measurement (/G5) option.

DISPLAY SETTING Menu

Press **DISPLAY SETTING**. The SETTING menu of the display you specified on the DISPLAY MODE menu appears.

If you specified a split display in which the half of the screen is set to Numeric or Wave on the DISPLAY MODE menu, the SETTING menu for the top half of the screen and that of the bottom half of the screen toggles each time you press DISPLAY SETTING.

For details on the different SETTING menus, see the following sections.

NUMERIC SETTING menu	**► section 6.1**
WAVE SETTING menu	**► section 8.1**
BAR SETTING menu	**► section 9.1**
VECTOR SETTING menu	**► section 10.1**

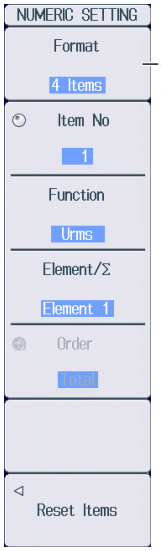
6.1 Switching the Displayed Page

This section explains how to switch the displayed numeric data page.

► Features Guide: “Numeric Data Display Settings”
“Switching the Displayed Page”

NUMERIC SETTING menu

1. Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the NUMERIC SETTING menu.



Set the display format (4 Items, 8 Items, 16 Items, Matrix, All Items, Hrm Single List,* Hrm Dual List,* Custom).

* These settings are available on models with the harmonic measurement (/G5) option.

2. Set the display format, and then press **ESC** to clear the menu.

Note

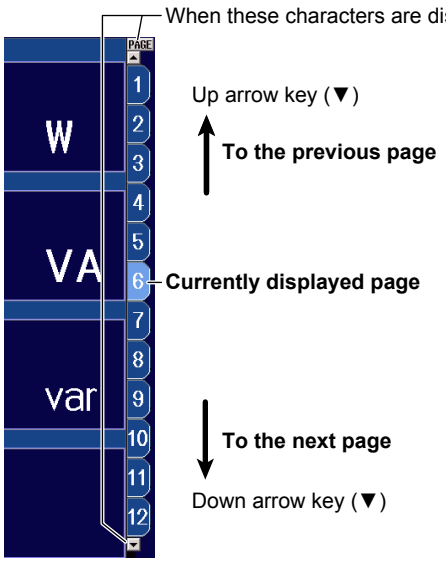
If every numeric data is displayed as no data (-------), check the following items.

- Is waveform acquisition running? ► section 4.2
- Is the numeric measurement setting set to ON? ► section 7.1
- Is the trigger set properly?
  - Trigger mode ► section 3.1
  - Trigger position and trigger delay ► section 3.2
  - Trigger hold off ► section 3.3
  - Trigger conditions according to trigger type ► sections 3.4 to 3.15

When the Display Format Is 4 Items, 8 Items, 16 Items, Matrix, All Items, or Custom

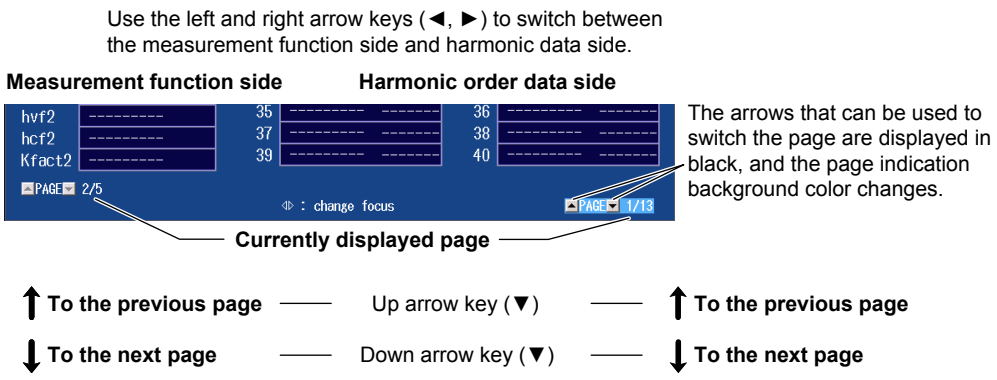
Press the up and down **arrow** keys (▲, ▼) to switch the page.

- You can switch the displayed page separately for the 4 Items, 8 Items, 16 Items, Matrix, All Items, and Custom displays.
- If the display format is set to All Items in single display mode (see section 5.1), the top half of the display of page 1 is constantly displayed, and the bottom half of the display changes for subsequent pages. In split display mode (see section 5.1), the entire numeric data displayed in the top or bottom half of the screen switches.
  In addition, if the display format is set to All Items, you can switch pages using soft keys without clearing the menu as explained in step 2 on the previous page.
- For the Custom display, you can switch between pages when the display is set so that the total number of displayed items is more than the number of items that can be displayed on one page (see section 6.6).



When the Display Format Is Hrm Single List or Hrm Dual List (/G5 Option)

1. Press the left and right **arrow** keys (◄,►) to select either the measurement function side (the left side of the screen) or the harmonic order data side (the right side of the screen).
2. Press the up and down **arrow** keys (▲, ▼) to switch the page.



6.2 Changing the Displayed Items on the 4-, 8-, and 16-Value Displays

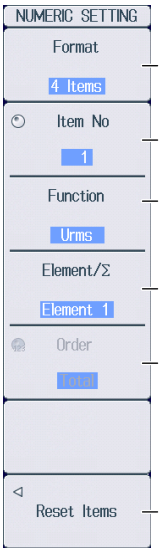
This section explains the following settings for the displayed items on the 4-, 8-, and 16-value displays.

- Item number
- Measurement function
- Element and wiring unit
- Order (harmonic order, /G5 option)
- Resetting the displayed items

► Features Guide: “4-, 8-, and 16-Value Displays (4 Items/8 Items/16 Items).”

NUMERIC SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the NUMERIC SETTING menu.



Set the display format to 4 Items, 8 Items, or 16 Items.

Select the item number that you want to set. (**For 4 Items: 1-48**, **For 8 Items: 1-96**, **For 16 Items: 1-192**)

Set the measurement function (None, other functions—for details on the various measurement functions, see “Items That This Instrument Can Measure” in the Features Guide).

Set the element and wiring unit (Element 1-Element 4, ΣA, ΣB).

Set the harmonic order (Total, 0-500).*
You can set this setting only when you have selected a measurement function that includes a harmonic order.

Set the resetting of displayed items.

* These settings are available on models with the harmonic measurement (/G5) option.

Example of the 4 Items Display

Note

If every numeric data is displayed as no data (−−−−−−−), check the referenced sections under “Note” in section 6.1.

Resetting the Displayed Items (Reset Items)

Press the **Reset Items** soft key to display the following menu.

Resets the arrangement of the displayed items on all pages
The arrangement pattern varies depending on the number of installed elements.

Sets all displayed measurement functions to None*

Sets all measurement functions on all pages to None*

* The measurement functions displayed on the screen are cleared, and every numeric data is displayed as no data.

Switching the Page

To set items on pages that are not currently shown, switch to these pages. For details on how to switch pages, see section 6.1.

6.3 Changing the Displayed Items on the Matrix Display

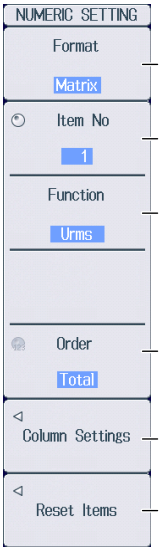
This section explains the following settings for the displayed items on the Matrix display.

- Item number
- Measurement function
- Order (harmonic order, /G5 option)
- Display column
  Number of columns, element and wiring unit
- Resetting the displayed items

► Features Guide: “Matrix Display (Matrix)”

NUMERIC SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the NUMERIC SETTING menu.



Set the display format to Matrix.

Select the item number that you want to set (1-81).

Set the measurement function (None, other functions—for details on the various measurement functions, see “Items That This Instrument Can Measure” in the Features Guide).

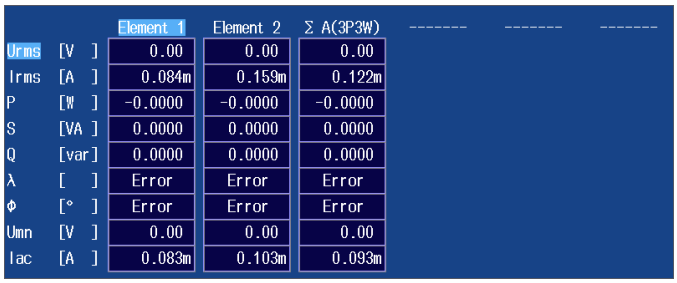
Set the harmonic order (Total, 0-500).*
You can set this setting only when you have selected a measurement function that includes a harmonic order.

Configure the columns to display.

Set the resetting of displayed items.

* These settings are available on models with the harmonic measurement (/G5) option.

Matrix Display Example

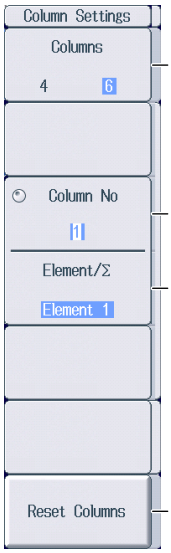


Note

If every numeric data is displayed as no data (-------), check the referenced sections under “Note” in section 6.1.

Setting the Columns to Display (Column Settings)

Press the **Column Settings** soft key to display the following menu.



Set the number of columns (4, 6).

Set the column number (1-6).

Set the element and wiring unit (None, Element 1-Element 4, ΣA, ΣB).

Resets the element and wiring unit settings of each column

Resetting the Displayed Items (Reset Items)

Press the **Reset Items** soft key to display the following menu.

Resets the arrangement of the displayed items on all pages
The arrangement pattern varies depending on the number of installed elements.

Sets all displayed measurement functions to None*

Sets all measurement functions on all pages to None*

* The measurement functions displayed on the screen are cleared, and every numeric data is displayed as no data.

Switching the Page

To set items on pages that are not currently shown, switch to these pages. For details on how to switch pages, see section 6.1.

6.4 Changing the All Items Display

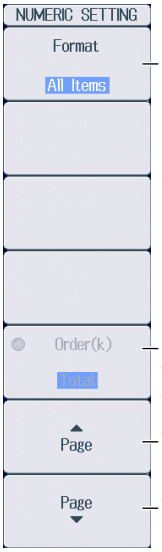
This section explains the following All Items display settings.

- Order (harmonic order, /G5 option)
- Switching the Page

► Features Guide: “All Items Display (All Items)”

NUMERIC SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the NUMERIC SETTING menu.



Set the display format to All Items.

Set the harmonic order (Total, 0-500).*
You can set this setting only when you have selected the page of a measurement function that includes a harmonic order.

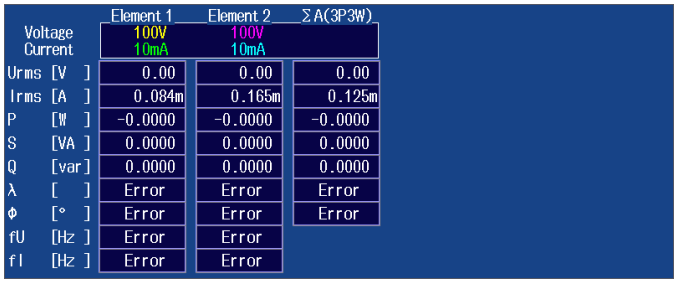
To the previous page

To the next page

Switching the Page

* These settings are available on models with the harmonic measurement (/G5) option.

All Items Display example



Note

- On the All Items display, you cannot select individual display items and change their measurement function, element, or wiring unit. If you switch to the Matrix display, you can change the measurement functions, elements, and wiring units using the displayed table (see section 6.3).
- If every numeric data is displayed as no data (−−−−−−−), check the referenced sections under “Note” in section 6.1.

6.5 Changing the Harmonics List Display (Option)

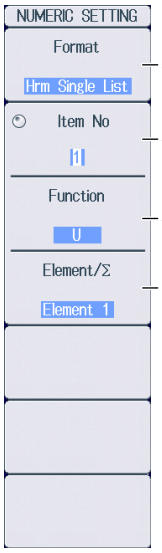
This section explains the following settings for the harmonics list display (Hrm List). These settings are available on models with the harmonic measurement (/G5) option.

- List number
- Measurement function
- Element and wiring unit

► Features Guide: “Single Harmonics and Dual Harmonics Lists (Hrm Single List/Hrm Dual List; option)”

NUMERIC SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the NUMERIC SETTING menu.



Set the display format to Hrm Single List or Hrm Dual List.

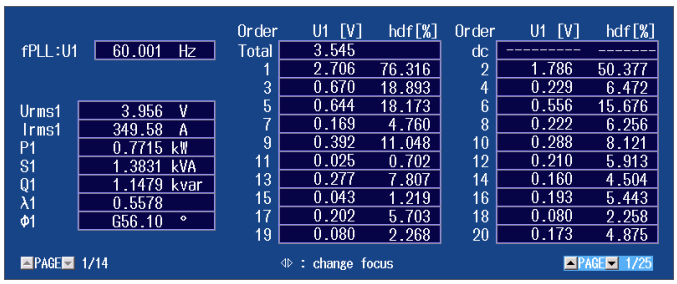
Select the list number that you want to set (1, 2).
Function, element, and wiring unit settings that you make for list number 2 are also reflected in the right column of the harmonic order data of the dual harmonics list.

Set the measurement function (U, I, P, S, Q, λ, Φ, ΦU, ΦI, Z, Rs, Xs, Rp, Xp).

Set the element and wiring unit (Element 1-Element 4, ΣA, ΣB).

Hrm Single List Display Example

Measurement function side **Harmonic order data side**



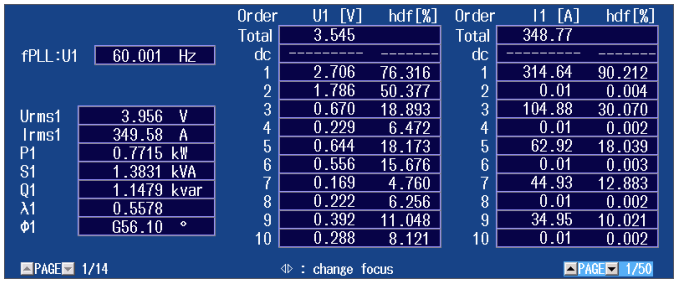
Order	U1 [V]	hdf[%]	Order	U1 [V]	hdf[%]
Total	3.545		dc	---------	-------
1	2.706	76.316	2	1.786	50.377
3	0.670	18.893	4	0.229	6.472
5	0.644	18.173	6	0.556	15.676
7	0.169	4.760	8	0.222	6.256
9	0.392	11.048	10	0.288	8.121
11	0.025	0.702	12	0.210	5.913
13	0.277	7.807	14	0.160	4.504
15	0.043	1.219	16	0.193	5.443
17	0.202	5.703	18	0.080	2.258
19	0.080	2.268	20	0.173	4.875

Note

If every numeric data is displayed as no data (--------), check the referenced sections under “Note” in section 6.1.

Hrm Dual List Display Example

Measurement function side **Harmonic order data side**



Note

On the harmonics list displays, you can change the measurement function, element, and wiring unit for the selected list, but you cannot change these settings for each individual display item.

Switching the Page

You can switch the page to display other items. For details on how to switch pages, see section 6.1.

6.6 Setting the Custom Display

This section explains the following Custom display settings.

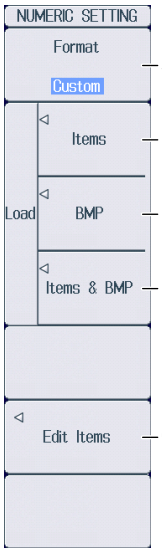
- Loading display configuration files
- Loading background files
- Display configuration

  Total items, items per page, custom items (item number, measurement function, element and wiring unit, harmonic order, display position, font size, font color), saving custom display configuration files

► Features Guide: “Custom Display (Custom)”

NUMERIC SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the NUMERIC SETTING menu.



Set the display format to Custom.

Load a display configuration file.

Load a background file.

Load display configuration and background files at the same time.
► page 6-12

You can load files for the custom display.
Display configuration files: TXT format
Background file: BMP format

- You can use the “Edit Items” menu described below to change the display configuration that you have loaded.
- To load both a display configuration file and background file at the same time, load the display configuration file.

Configure the display configuration.

Setting the Display Configuration (Edit Items)

1. Press the **Edit Items** soft key to display the following menu.

Set the total number of items (1-192).

Set the number of items per page (1-192).

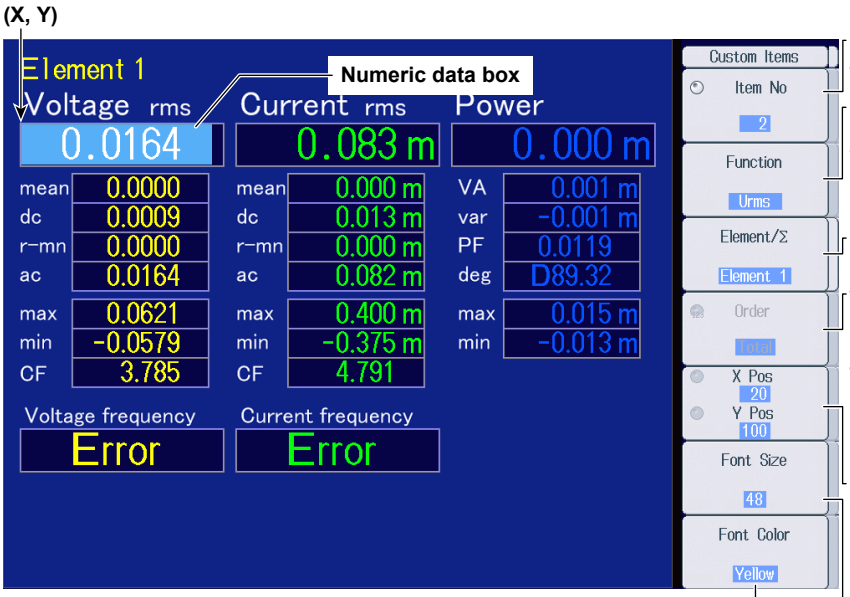
- Any changes made to Total Items will change the Items Per Page setting, and vice-versa.
- For details on how to switch pages, see section 6.1.

Customize display items.

Save the display configuration file.

Customizing Display Items (Custom Items)

2. Press the **Custom Items** soft key to display the following screen.



Select the item number that you want to set (1-the Total Items setting).

Set the measurement function (None, other functions—for details on the various measurement functions, see "Items That This Instrument Can Measure" in the Features Guide).

Set the element and wiring unit (Element 1-Element 4, ΣA, ΣB).

When Function is set to None:
Set the character string (up to 15 characters).
When the measurement function includes a harmonic order:
Set the harmonic order (Total, 0-500; G5 option).

Set the display position.
• X Pos: 0 (left edge of the screen)-800 (right edge of the screen)
• Y Pos: 0 (top of the screen)-671 (bottom of the screen)

Set the font size (14, 16, 20, 24, 32, 48, 64, 96, 128).

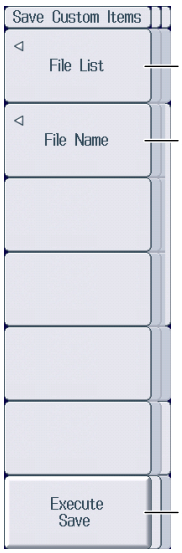
Set the font color (Yellow, Green, Magenta, Cyan, Red, Orange, Light Blue, Purple, Blue, Pink, Light Green, Dark Blue, Blue Green, Salmon Pink, Mid Green, Gray, White, Dark Gray, Blue Gray, Black).

Note

If every numeric data is displayed as no data (-------), check the referenced sections under "Note" in section 6.1.

Saving Display Configuration Files (Save Custom Items)

2. Press the **Save Custom Items** soft key to display the following menu.



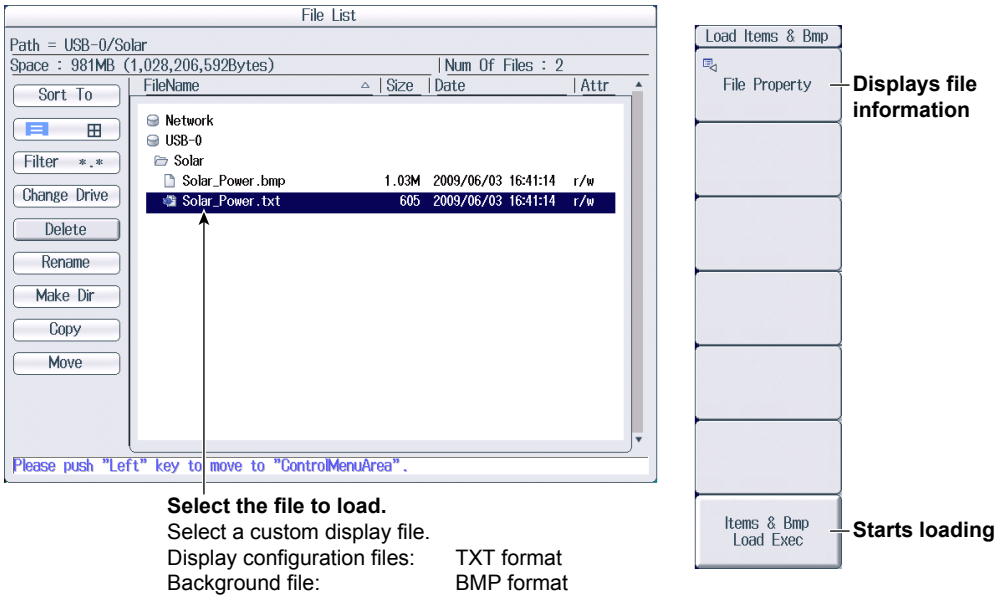
Set the save destination. ► section 22.3

Set the file name. ► section 22.3

Starts saving
Note that if a file with the same name exists in the destination folder, it will be overwritten without warning.
File names are not case-sensitive.

Loading Display Configuration and Background Files at the Same Time (Load Items & Bmp)

On the NUMERIC SETTING menu on page 6-10, click the **Items & Bmp** soft key to display the following screen.

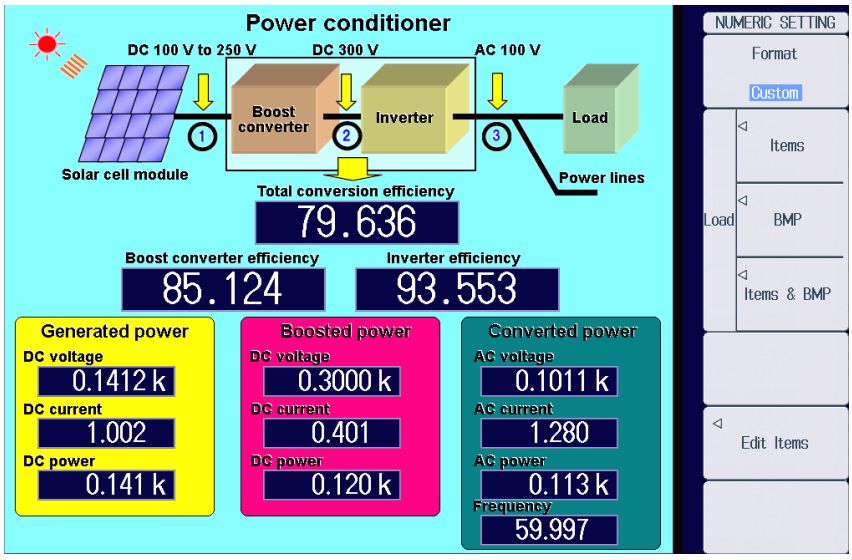


Select the file to load.
Select a custom display file.
Display configuration files: TXT format
Background file: BMP format

To load both a display configuration file and background file at the same time, load the display configuration file.
However, an error will occur if a background file that has the same name as the display configuration file is not present in the save destination folder of the display configuration file.

For the operating procedure, see section 22.10.

Example of Loading a File for the Custom Display



Note

After you properly load a display configuration file and a background file, if you restart the PX8000 and the same background file is not in the same location, the background will return to its default.

Switching the Page

You can switch between pages when the display is set so that the total number of displayed items is more than the number of items that can be displayed on one page. For details on how to switch pages, see section 6.1.

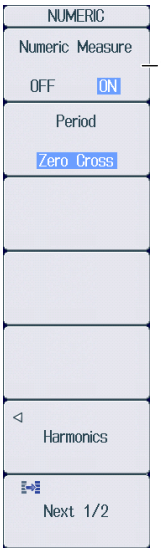
7.1 Turning Numeric Measurement On and Off

This section explains how to turn numeric measurement on and off.

► Features Guide: “Turning Numeric Measurement On and Off (Numeric Measure)”

NUMERIC Menu

Press **NUMERIC** to display the following menu.



Turns numeric measurement on and off

To measure voltage, current, power, and other measurement functions, set this to ON. If this is set to OFF, none of the measurement functions will be measured, and every numeric data will be displayed as no data (−−−−−−−).

Note

If every numeric data (see chapter 6) is displayed as no data (−−−−−−−) even when you turn numeric measurement on, check the following items.

- Is waveform acquisition running? ► section 4.2
- Is the trigger set properly?
  - Trigger mode ► section 3.1
  - Trigger position and trigger delay ► section 3.2
  - Trigger hold off ► section 3.3
  - Trigger conditions according to trigger type ► sections 3.4 to 3.15

7.2 Setting the Calculation Period

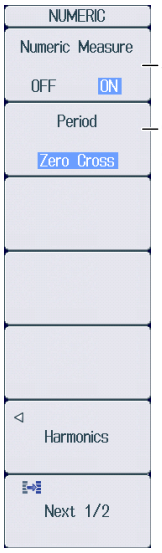
This section explains the following settings for measuring and computing measurement functions of normal measurement.

- Calculation period
- External signal status
- Cursor start and end points
- Search zero cross

► Features Guide: “Calculation Period (Period)”

NUMERIC Menu

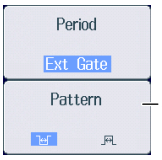
Press **NUMERIC** to display the following menu.



Set Numeric Measure to ON.

Calculation period (Zero Cross, Ext Gate, Cursor)

When the calculation period is Ext Gate



Set the external signal status (,)

When the calculation period is Cursor

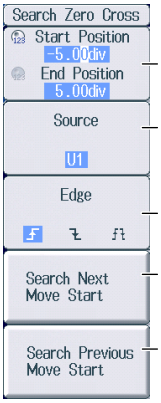
Set the cursor start and end points.

Set the search zero cross

Setting Search Zero Cross (Search Zero Cross)

Press the **Search Zero Cross** soft key to display the following menu.

When Start Position is selected for the cursor start and end point setting



Set the cursor start and end points.

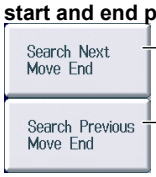
Set the zero-crossing search source.

Set the edge.

Moves to the nearest zero-crossing position after the Start Position

Moves to the nearest zero-crossing position before the Start Position

When End Position is selected for the cursor start and end point setting



Moves to the nearest zero-crossing position after the End Position

Moves to the nearest zero-crossing position before the End Position

When both Start Position and End Position are selected for the cursor start and end point setting

Moves to the nearest zero-crossing position after the Start Position while maintaining the cursor span

Moves to the nearest zero-crossing position before the Start Position while maintaining the cursor span

7.3 Setting Numeric Data Averaging

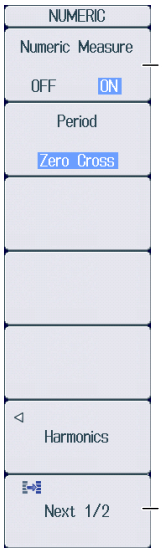
This section explains the following settings for exponential averaging (Exp) and moving averaging (Lin) of numeric data.

- Averaging type
- Attenuation constant
- Averaging count

► Features Guide: “Averaging (Averaging)”

NUMERIC Menu

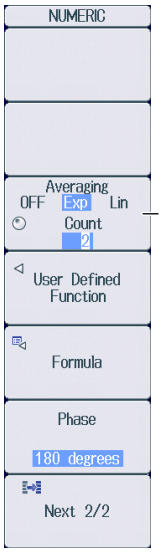
1. Press **NUMERIC** to display the following menu.



Set Numeric Measure to ON.

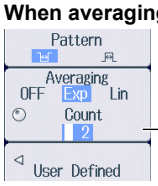
Displays the second page of the menu

2. Press the **Next 1/2** soft key to display the 2/2 menu.



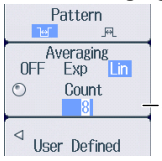
Set the averaging type (OFF, Exp, Lin).

When averaging type is Exp



Set the attenuation constant (2-64).

When averaging type is Lin



Set the averaging count (8-64).

7.4 Setting User-Defined Functions

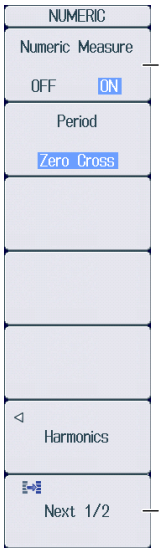
This section explains the following settings for user-defined functions.

- Turning computation on and off
- Computation name
- Unit
- Equation

► Features Guide: “User-Defined Functions (User Defined Function)”

NUMERIC Menu

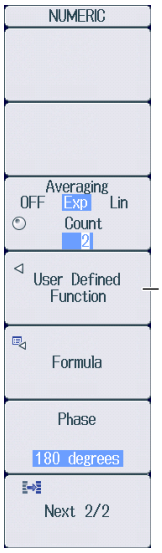
1. Press **NUMERIC** to display the following menu.



Set Numeric Measure to ON.

Displays the second page of the menu

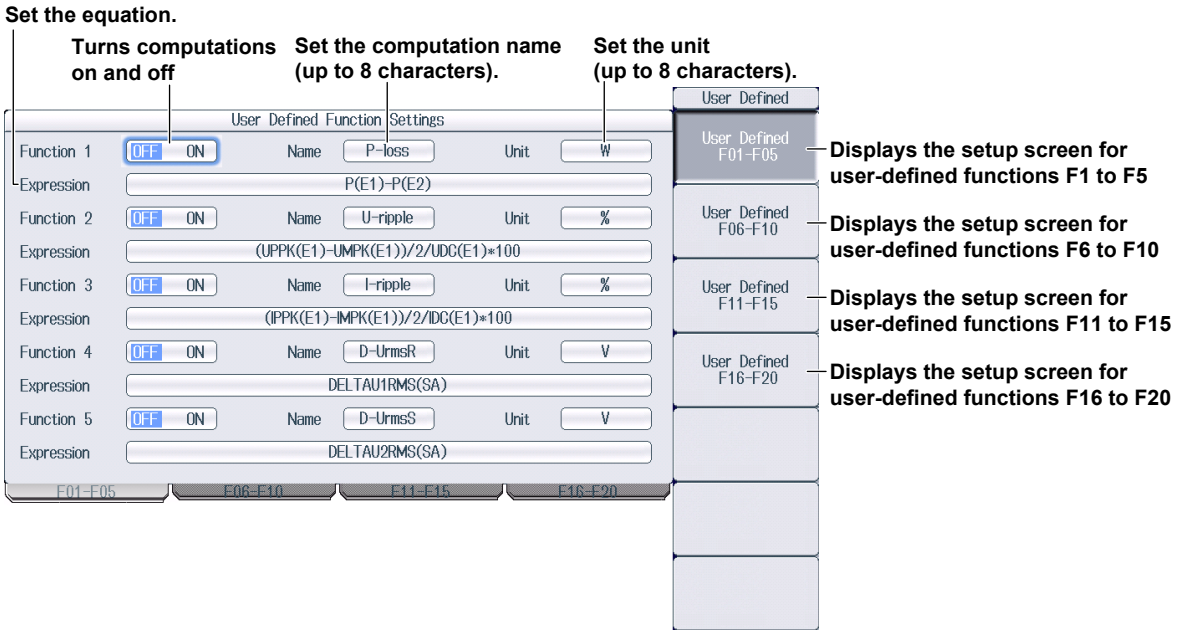
2. Press the **Next 1/2** soft key to display the 2/2 menu.



Set the user-defined function.

Setting User-Defined Functions (User Defined Function)

Press the **User Defined Function** soft key to display the following screen.



7.5 Setting Apparent Power, Reactive Power, and Corrected Power Equations

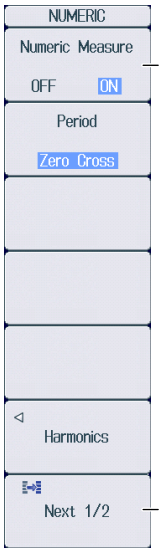
This section explains the following settings for the apparent power, reactive power, and corrected power equations.

- Apparent power equation
- Apparent power and reactive power computation types
- Corrected power equation
  Applicable standard and coefficients

► Features Guide: “Apparent Power, Reactive Power, and Corrected Power Equations (Formula)”

NUMERIC Menu

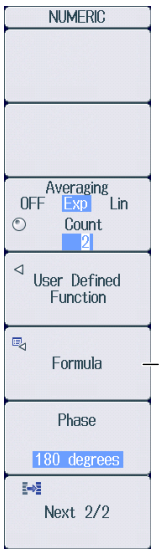
1. Press **NUMERIC** to display the following menu.



Set Numeric Measure to ON.

Displays the second page of the menu

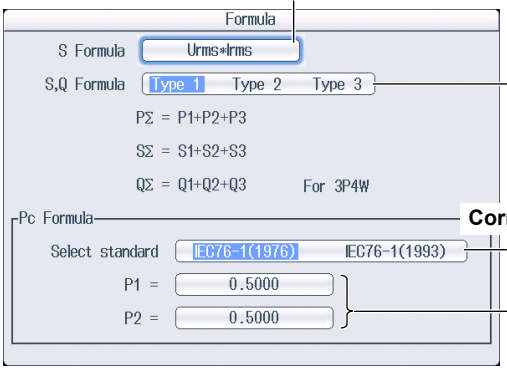
2. Press the **Next 1/2** soft key to display the 2/2 menu.



Set the apparent power, reactive power, and corrected power equations.

Setting Apparent Power, Reactive Power, and Corrected Power Equations (Formula)

Press the **Formula** soft key to display the following screen.



Set the apparent power equation (Urms*Irms, Umean*Imean, Udc*Idc, Umean*Irms, Urmean*Irmean).

Set the apparent power and reactive power computation types (Type 1, Type 2, Type 3†).

Corrected power equation

Set the applicable standard (IEC76-1(1976), IEC76-1(1993)).

Set the coefficients (0.0001-9.9999).
When Select standard is IEC76-1(1976), set coefficients P1 and P2.

† These settings are available on models with the harmonic measurement (/G5) option.

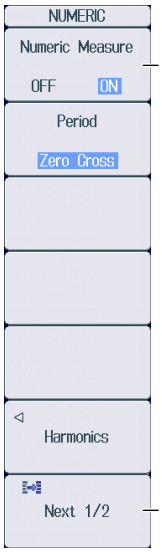
7.6 Setting the Phase Difference Display Format

This section explains how to set the phase difference display format.

► Features Guide: “Phase Difference Display Format (Phase)”

NUMERIC Menu

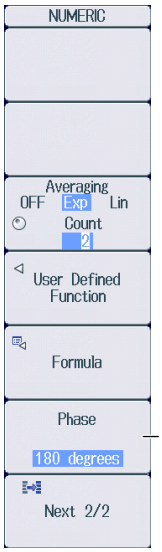
1. Press **NUMERIC** to display the following menu.



Set Numeric Measure to ON.

Displays the second page of the menu

2. Press the **Next 1/2** soft key to display the 2/2 menu.



Set the phase difference display format (180 degrees, 360 degrees).

7.7 Setting Harmonic Measurement Conditions

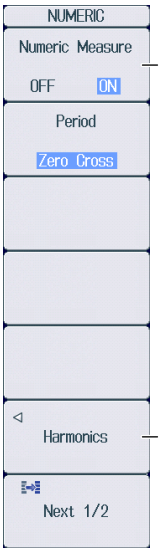
This section explains the following settings for harmonic measurement conditions. These settings are available on models with the harmonic measurement (/G5) option.

- Turning harmonic measurement on and off
- PLL source
- Measured harmonic order
- Distortion factor equation
- Harmonic measurement start point

► Features Guide: “Harmonic Measurement Conditions (Harmonics; option)”

NUMERIC Menu

Press **NUMERIC** to display the following menu.

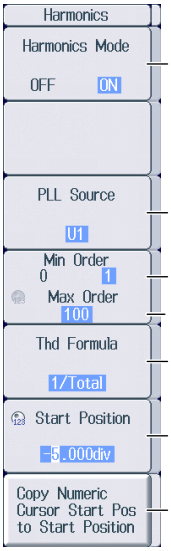


Set Numeric Measure to ON.

Set harmonic measurement conditions.

Harmonics Menu

Press the **Harmonics** soft key to display the following menu.



Turns harmonic measurement on and off

Set the PLL source (U1-U4, I1-I4, External).

Set the minimum value of the measured harmonic order (0, 1).

Set the maximum value of the measured harmonic order (1-500).

Set the distortion factor equation (1/Total, 1/Fundamental).

Set the start point of harmonic measurement (−5.000div to 5.000div).

Sets the start point (Start Position) of the numeric cursor computation range to the start point (Start Position) of harmonic measurement

8.1 Setting the Waveform Display

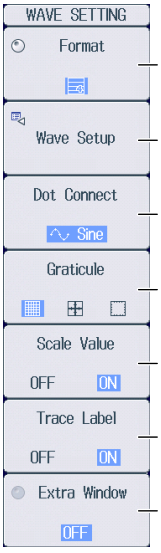
This section explains the following settings for displaying waveforms.

- Waveform display format
- Detailed settings of the waveform display
  Turning waveform display on and off, waveform color, waveform mapping, waveform label, vertical zoom
    DIV: Offset value, waveform's vertical position, magnification
    SPAN: Upper and lower limits of the display range
  Horizontal (time scale) zoom ► chapter 12
- Interpolation method
- Grid
- Turning the display of scale values on and off
- Turning the trace label display on and off
- Extra window

► Features Guide: "Waveform Display Settings"

WAVE SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the WAVE SETTING menu.



Set the display format (1 (no windows), 2, 3, 4, 6, 8, 12, 16).

Configure the detailed settings of the waveform display.

Set the interpolation method (OFF, Sine, Line, Pulse).

Set the grid (▦, ⊞, ⬚).

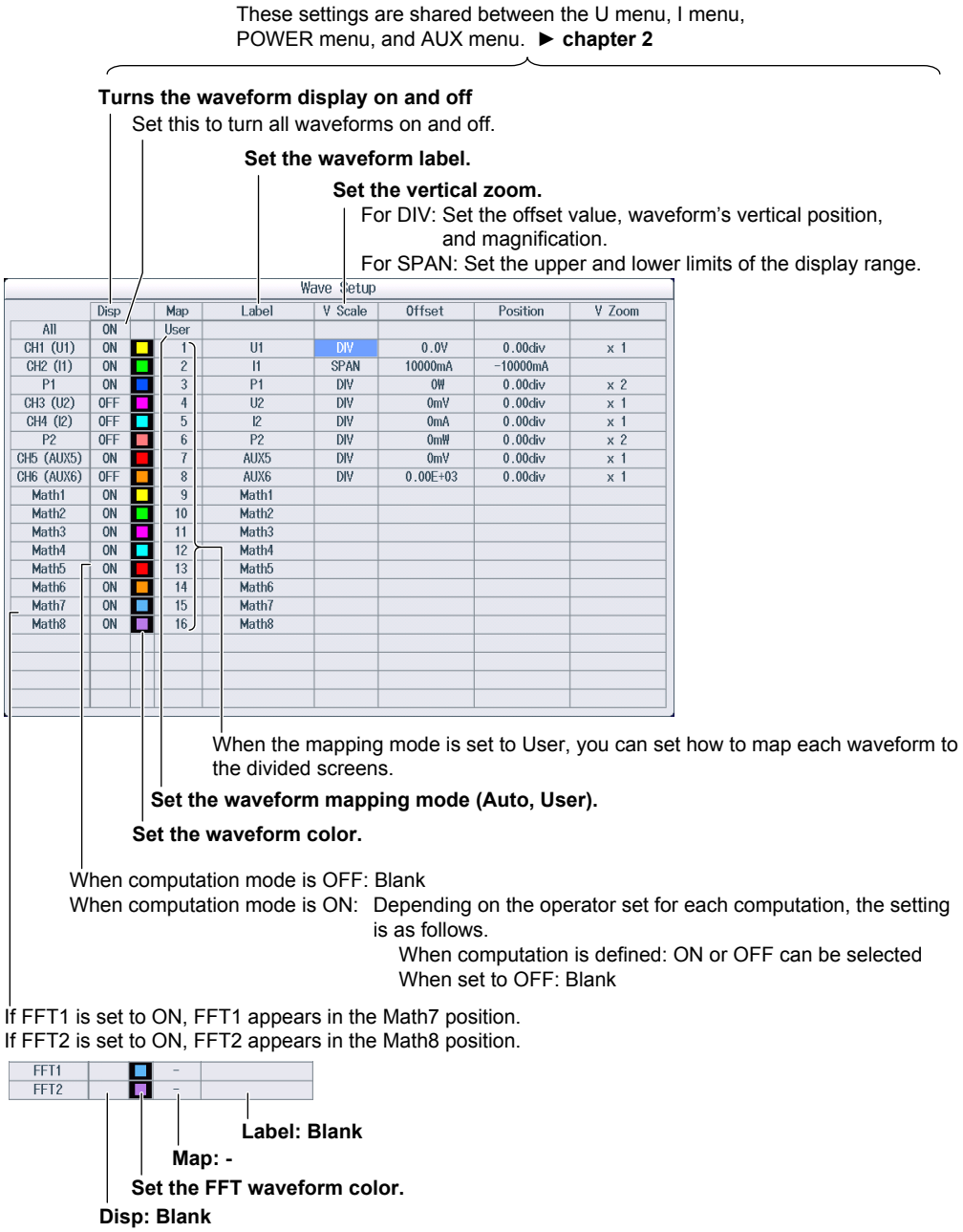
Turns the display of scale values on and off

Turns the trace label display on and off

Set the extra window (OFF, 1, 2, 3, 4, 5, 6, 7, 8, Auto).

Configuring Detailed Settings of the Waveform Display (Wave Setup)

Press the **Wave Setup** soft key to display the following screen.



8.2 Using the Snapshot and Clear Trace Features

This section explains how to use the snapshot feature (which retains the currently displayed waveforms on the screen) and the clear trace feature (which clears all displayed waveforms).

► Features Guide: “Snapshot (SNAPSHOT)”
“Clear Trace (CLEAR TRACE)”

Snapshot (SNAPSHOT)

Press **SNAPSHOT** to retain the currently displayed waveform on the screen as a snapshot waveform in white. Snapshot waveforms remain on the screen until you execute a clear trace operation.

Clear Trace (CLEAR TRACE)

Press **CLEAR TRACE** to clear all the waveforms that are displayed on the screen.

Note

Click **SHIFT+SNAPSHOT** to clear only the snapshot waveforms.

9.1 Configuring the Bar Graph Display

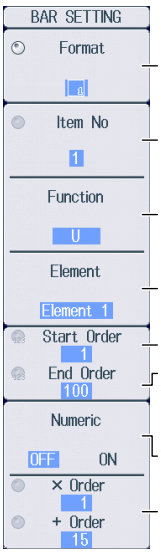
This section explains the following settings for displaying bar graphs. These settings are available on models with the harmonic measurement (/G5) option.

- Bar graph display format
- Bar graph number
- Measurement function
- Element
- Bar graph display range (displayed harmonics)
- Turning the numeric data display on and off
- Marker position (harmonic)

► Features Guide: “Bar Graph Display (Option)”

BAR SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the BAR SETTING menu.



Set the display format (1 (no windows), 2, 3).

Set the bar graph number (1-3).

Set the measurement function (U, I, P, S, Q, λ, Φ, ΦU, ΦI, Z, Rs, Xs, Rp, Xp).

Set the element (Element 1-Element 4).

Set the bar graph display range.
- **The display’s starting harmonic order (0-490)**
- **The display’s ending harmonic order (10-500)**

You can set the range to any value provided that the end harmonic order is larger than the start harmonic order by 10 or more.

Turns the numeric data display on and off

Set the harmonic order of the bar graph to measure with markers x and + (0-500).
If you press this soft key and select both × Order and + Order, you can change both orders while maintaining the relationship between the two.

10.1 Configuring the Vector Display

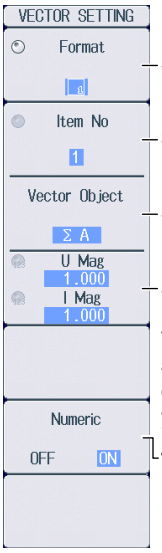
This section explains the following settings for displaying vectors. These settings are available on models with the harmonic measurement (/G5) option.

- Vector display format
- Vector number
- Element and wiring unit
- Zooming vectors
- Turning the numeric data display on and off

► Features Guide: “Vector Display (Option)”

VECTOR SETTING Menu

Use the **DISPLAY MODE** and **DISPLAY SETTING** keys as explained in section 5.1 to display the VECTOR SETTING menu.



Set the display format (1 (no windows), 2).

Set the vector number (1, 2).

Set the element and wiring unit (Element 1-Element 4, ΣA, ΣB).

Set the magnification of vectors of the fundamental waves U(1) and I(1) (0.100-100.000).
The value that indicates the size of the vector display’s peripheral circle changes according to the zoom factor, and the size of the vectors that indicate U (1) and I (1) change accordingly as well. If you press this soft key to select both U Mag and I Mag, you can change both magnifications while maintaining the relationship between the two.

Turns the numeric data display on and off

11.1 Displaying X-Y Waveforms

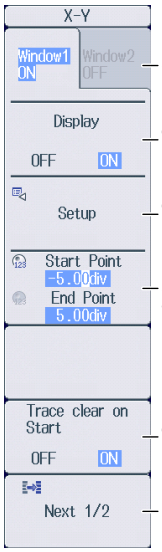
This section explains the following settings for displaying X-Y waveforms.

- Turning the X-Y window display on and off
- Turning the X-Y waveform on and off and X-axis and Y-axis source waveforms
- Start and end points
- Turning the trace-clear-on-start on and off
- Main window's display ratio
- Window layout
- Turning combine display on and off
- Interpolation method
- The number of data points that are used to display waveforms

► Features Guide: "Displaying X-Y Waveforms"

X-Y Menu

1. Press **SHIFT+SETTING** (X-Y) to display the following menu.



Select whether to set X-Y Window 1 or Window 2.

Turns the X-Y window display on and off

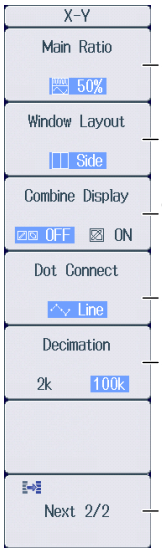
Turn the X-Y waveform on and off and set X-axis and Y-axis source waveforms.

Set the start and end points (−5.00div to 5.00div).
The end point must be greater than or equal to the start point.

Turns the trace-clear-on-start on and off

Displays the second page of the menu

2. Press the **Next 1/2** soft key to display the 2/2 menu.



Set the main window's display ratio (50%, 0%).

Set the window layout (Side, Vertical).

Turns combine display on and off
Select whether to combine the displays of the X-Y windows (Window1 and Window2) (ON, OFF).

Set the display interpolation (OFF, Line).

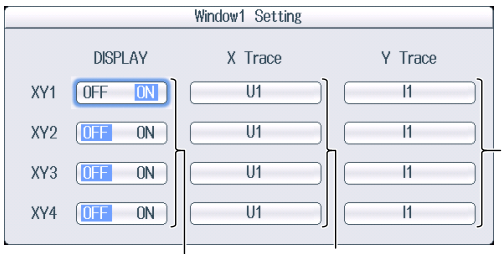
Set the number of data points that are used to display waveforms (2k, 100k).

Displays the first page of the menu

Turning the X-Y Waveform On and Off and Setting X-Axis and Y-Axis Source Waveforms

Press the **Setup** soft key to display the following screen.

When X-Y Window 1 is selected,
Set the X-Y waveforms of XY1 to XY4.

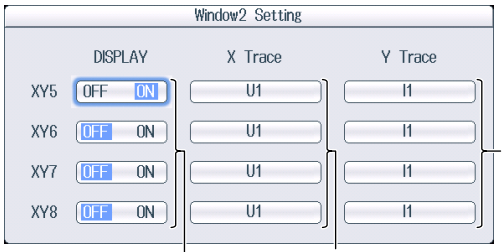


Set the source waveform for the Y axis.

Set the source waveform for the X axis.

Turns the XY waveform display on and off

When X-Y Window 2 is selected,
Set the X-Y waveforms of XY5 to XY8.



Set the source waveform for the Y axis.

Set the source waveform for the X axis.

Turns the XY waveform display on and off

12.1 Zooming in on or out of Waveforms

This section explains the following settings for zooming in on or out of waveforms horizontally (time scale). For details on vertical zoom settings, see sections 2.1 to 2.6 or section 8.1.

- Turning the zoom window display on and off
- Zoom position and zoom box
- Zoom display format
- Zoom 2 source window
- Main window's display ratio
- Window layout
- Auto scrolling
- Zoom source waveform
- Changing the range for performing automated measurement of waveform parameters
- Zoom position using the zoom POSITION knob and magnification

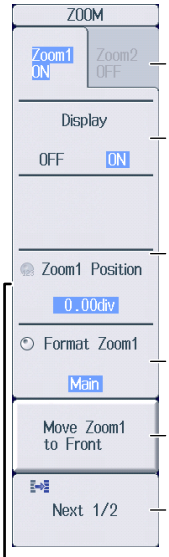
► Features Guide: "Zooming in on Waveforms"

ZOOM Menu

1. Press **ZOOM** to display the following menu.

- If you press **ZOOM** while no zoom window is displayed on the screen, zoom box 1 is automatically turned on (Z1 ON).
- Set the menu items separately for zoom windows Zoom 1 and Zoom2.

Setting the Zoom 1 window



Select Zoom 1.

Turns the Zoom 1 window display on and off

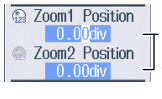
Set the zoom position of Zoom 1.
Zoom box 1 that is displayed in the Main window moves to the specified zoom position. The waveforms in zoom box 1 are displayed in the Zoom 1 window.

Set the display format (Main, 1, 2, 3, 4, 6, 8, 12, 16).

Moves zoom box 1 to the right edge of the screen (most recent data position)

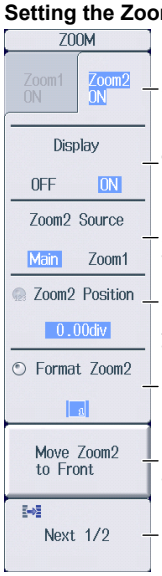
Displays the second page of the menu

When both Zoom 1 and Zoom 2 window displays are on



Set the zoom positions of Zoom1 and Zoom2.
Zoom box 1 and zoom box 2 that are displayed in the Main window moves to the specified zoom positions. The waveforms in zoom box 1 are displayed in the Zoom 1 window; the waveforms in zoom box 2 are displayed in the Zoom 2 window.

Setting the Zoom 2 window



Select Zoom 2.

Turns the Zoom 2 window display on and off

Select the zoom source window for Zoom 2 (Main, Zoom 1).
When Zoom 1 window is on, select Main or Zoom 1.

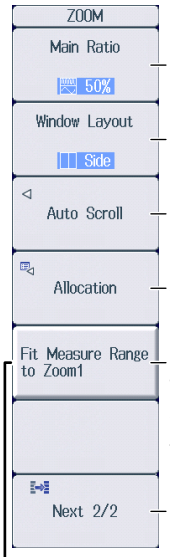
Set the zoom position of Zoom 2.
Zoom box 2 that is displayed in the Main window moves to the specified zoom position. The waveforms in zoom box 2 are displayed in the Zoom 2 window.

Set the display format (Main, 1, 2, 3, 4, 6, 8, 12, 16).

Moves zoom box 2 to the right edge of the screen (most recent data position)
This is available when Zoom 2 Source (shown above) is set to Main.

Displays the second page of the menu

2. Press the **Next 1/2** soft key to display the 2/2 menu.



Set the main window's display ratio (50%, 0%).

Set the window layout (Side, Vertical).

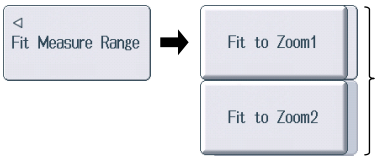
Configure auto scrolling.

Set the zoom source waveforms.

Change the range for performing automated measurement of waveform parameters.
The range over which automated measurement of waveform parameters is performed is set to the zoom range of Zoom1 when the Zoom 1 window is on and the zoom range of Zoom2 when the Zoom 2 window is on.

Displays the first page of the menu

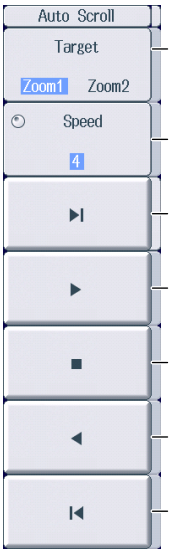
When both Zoom 1 and Zoom 2 window displays are on



Select which zoom range: Zoom 1 or Zoom 2.

Setting Auto Scrolling (Auto Scroll)

Press the **Auto Scroll** soft key to display the following menu.



Select the zoom box to auto scroll.
When both Zoom 1 and Zoom 2 window displays are on, select Zoom 1 or Zoom 2.

Set the scroll speed (1-10).

Moves to the right edge of the Main window

Starts scrolling to the right

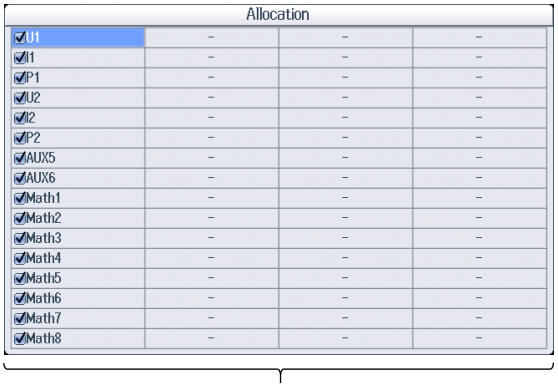
Stops auto scrolling

Starts scrolling to the left

Moves to the left edge of the Main window

Allocating Zoom Source Waveforms (Allocation)

Press the **Allocation** soft key to display the following screen.

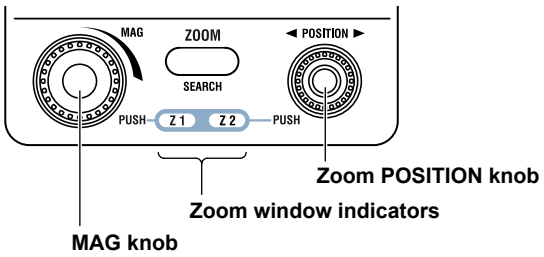


Select the zoom source waveforms.
The waveforms that can be selected are displayed.

Setting the Magnification (MAG knob)

Use the **MAG** knob to set the magnification.

- The MAG knob controls the waveforms in the zoom window whose corresponding indicator, Z1 or Z2, is illuminated.
- The MAG knob has a push switch. Push the knob to illuminate the Z1 indicator, Z2 indicator, or both indicators. When both the Z1 and Z2 indicators are illuminated, you can set both zoom windows to the same magnification at the same time.



Zoom POSITION knob

Zoom window indicators

MAG knob

Setting the Zoom Position (zoom POSITION knob)

Turn the zoom **POSITION** knob to set the zoom position.

- The zoom POSITION knob controls the waveforms in the zoom window whose corresponding indicator, Z1 or Z2, is illuminated.
- The zoom POSITION knob has a push switch. Push the knob to illuminate the Z1 indicator, Z2 indicator, or both indicators. When both the Z1 and Z2 indicators are illuminated, you can set both zoom windows to the same zoom position at the same time.

13.1 Measuring with Horizontal Cursors

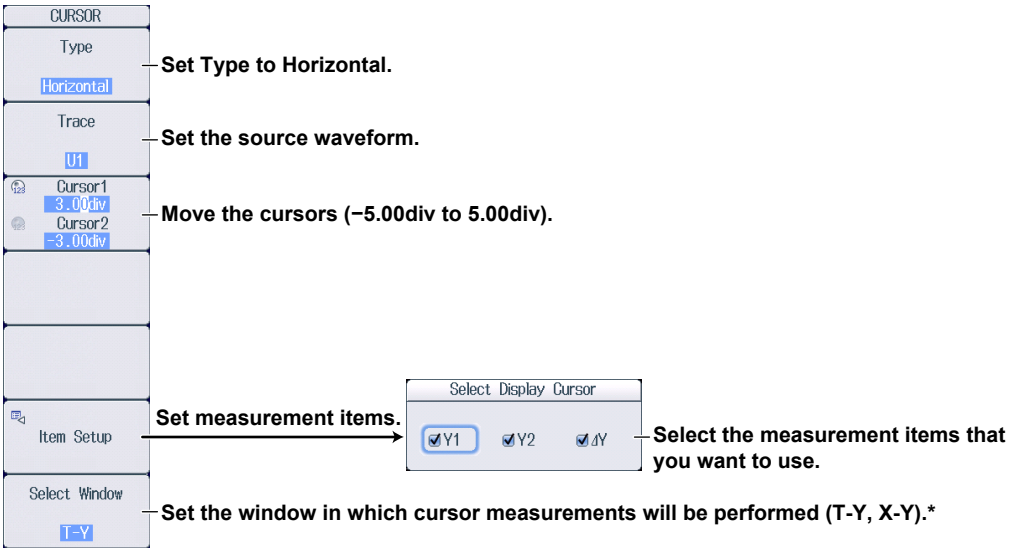
This section explains the following settings for measuring with horizontal cursors:

- Cursor type
- Source waveform
- Moving the cursors
- Measurement items
- Windows that cursor measurements will be performed in

► Features Guide: “Horizontal Cursors (Horizontal) - T-Y waveforms”
“Horizontal Cursors (Horizontal) (X-Y)”
“Turning the X-Y Window Display On and Off (Display)”

CURSOR Horizontal Menu

Press **CURSOR**, the **Type** soft key, and then the **Horizontal** soft key to display the following menu.



* This is available when the X-Y window display is turned on.

Setting the Source Waveform (Trace)

The waveforms that you can select differ depending on the window that cursor measurements will be performed in.

- T-Y: U1 to U4, I1 to I4, P1 to P4, AUX3 to AUX8, Math1 to Math8
- X-Y: XY1 to XY8

13.2 Measuring with Vertical Cursors

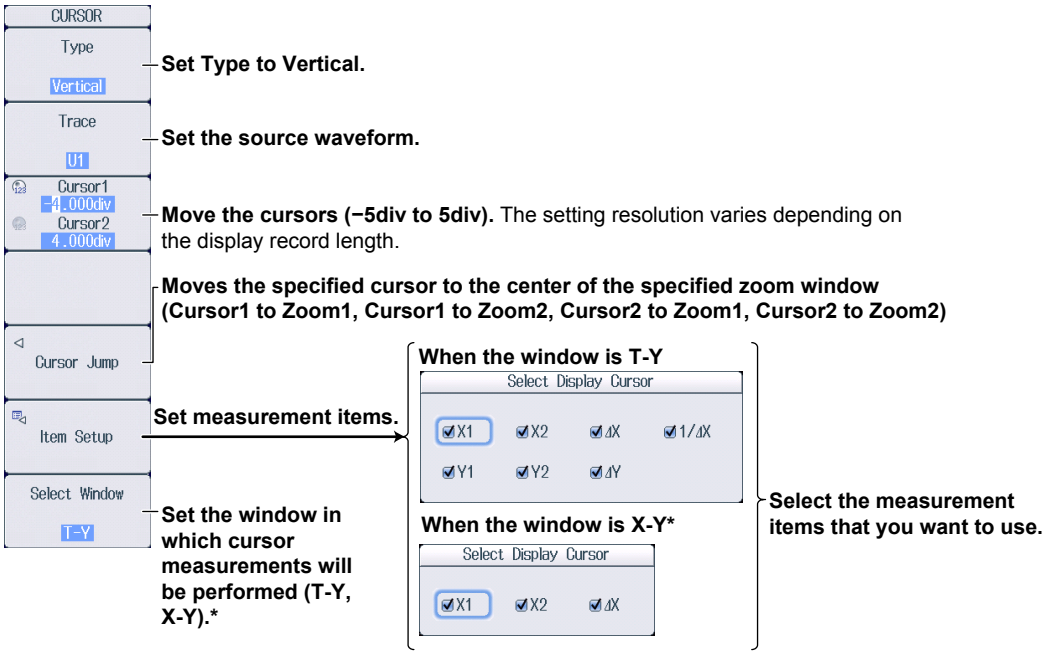
This section explains the following settings for measuring with vertical cursors:

- Cursor type
- Source waveform
- Moving the cursors
- Jumping the cursors
- Measurement items
- Windows that cursor measurements will be performed in

► Features Guide: “Vertical Cursors (Vertical) - T-Y waveforms”
“Vertical Cursors (Vertical) (X-Y)”
“Turning the X-Y Window Display On and Off (Display)”
“Record Length (Record Length)”

CURSOR Vertical Menu

Press **CURSOR**, the **Type** soft key, and then the **Vertical** soft key to display the following menu.



* This is available when the X-Y window display is turned on.

Setting the Source Waveform (Trace)

The waveforms that you can select differ depending on the window that cursor measurements will be performed in.

- T-Y: All, U1 to U4, I1 to I4, P1 to P4, AUX3 to AUX8, Math1 to Math8
- X-Y: XY1 to XY8

13.3 Measuring with Marker Cursors (Marker)

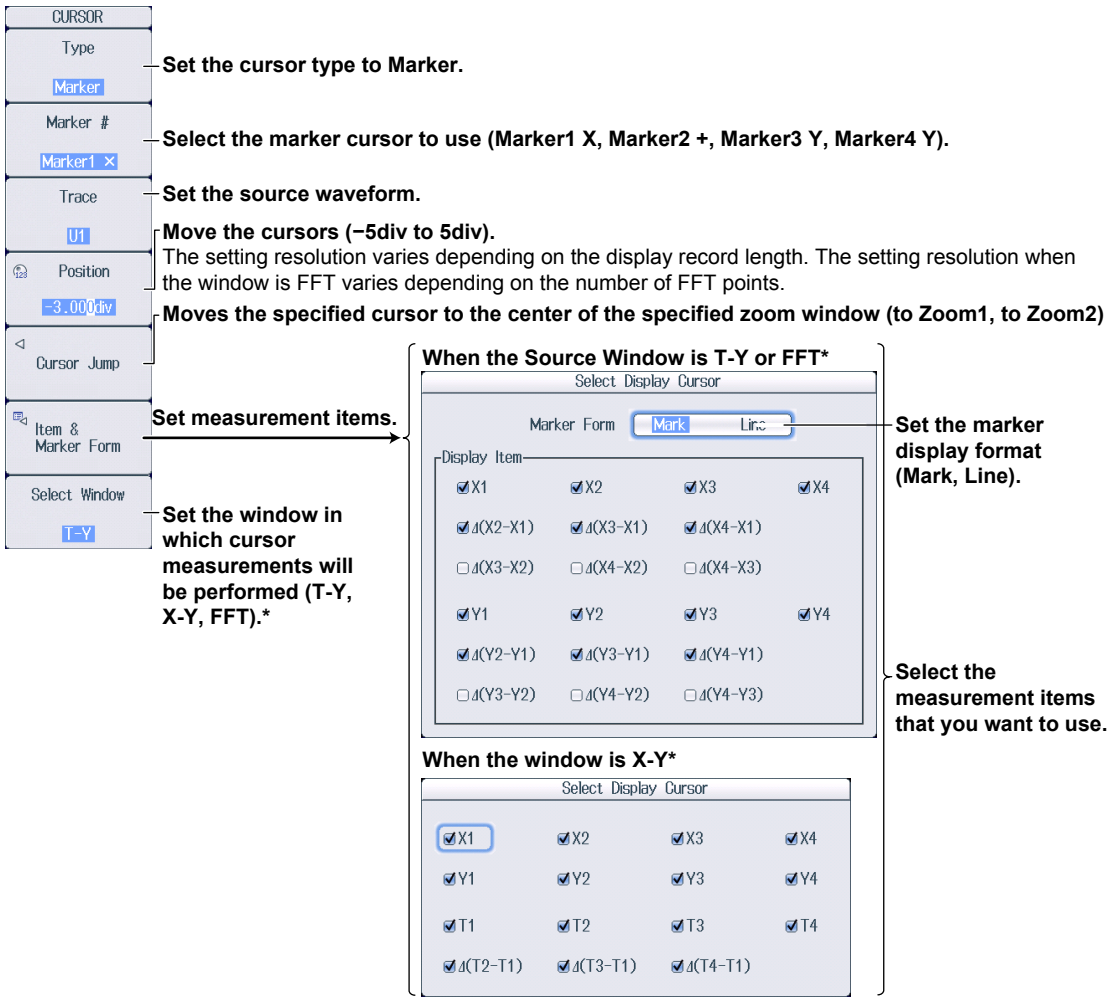
This section explains the following settings for measuring with marker cursors.

- Cursor type
- Source waveform
- Moving the cursors
- Jumping the cursors
- Marker display format
- Measurement items
- Windows that cursor measurements will be performed in

► Features Guide: “Marker Cursors (Marker) - T-Y waveforms”
“Marker Cursors (Marker) (X-Y)”
“Marker Cursors (Marker) (FFT)”
“Turning the X-Y Window Display On and Off (Display)”
“Turning FFT On and Off (Display)”
“Record Length (Record Length)”
“Start Point and Number of FFT Points (Start Point and FFT Points)”

CURSOR Marker Menu

Press **CURSOR**, the **Type** soft key, and then the **Marker** soft key to display the following menu.



* This is available when the X-Y window display or FFT window display is turned on.

Setting the Source Waveform (Trace)

The waveforms that you can select differ depending on the window that cursor measurements will be performed in.

- T-Y: OFF, U1 to U4, I1 to I4, P1 to P4, AUX3 to AUX8, Math1 to Math8
- X-Y: OFF, XY1 to XY8
- FFT: OFF, FFT1, FFT2

13.4 Measuring with Angle Cursors (Degree)

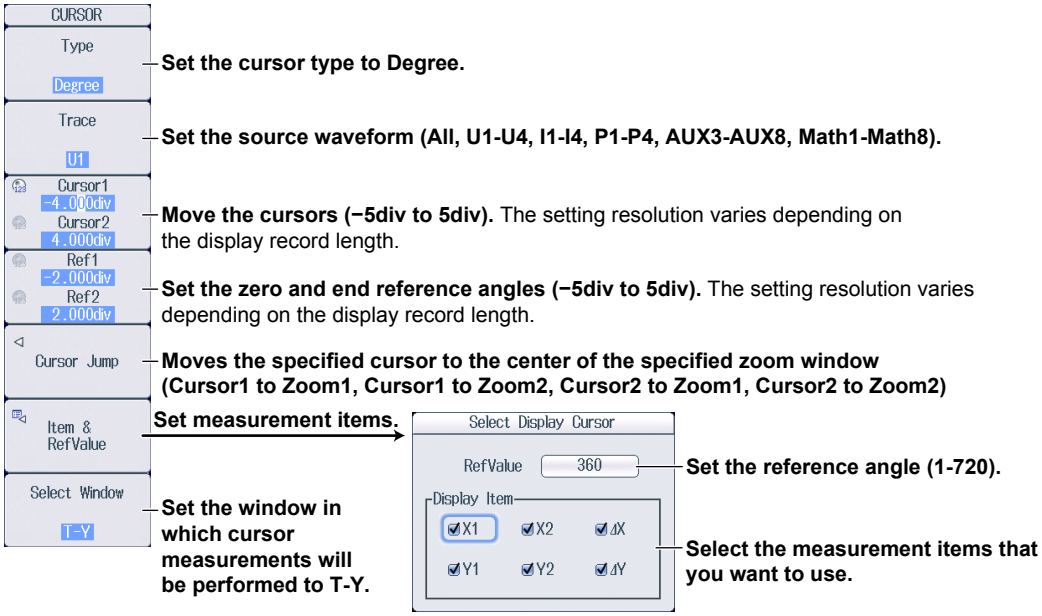
This section explains the following settings for measuring with angle cursors. You can use angle cursors when the T-Y window is displayed.

- Cursor type
- Source waveform
- Moving the cursors
- Zero and end reference angles
- Jumping the cursors
- Measurement items
- Reference angle
- Windows that cursor measurements will be performed in

► Features Guide: “Angle Cursors (Degree) - T-Y waveforms”
“Record Length (Record Length)”

CURSOR Degree Menu

1. Press **CURSOR**, the **Select Window** soft key, and then the **T-Y** soft key.
2. Press the **Type** soft key and then the **Degree** soft key to display the following menu.



13.5 Measuring with Horizontal and Vertical Cursors (H & V)

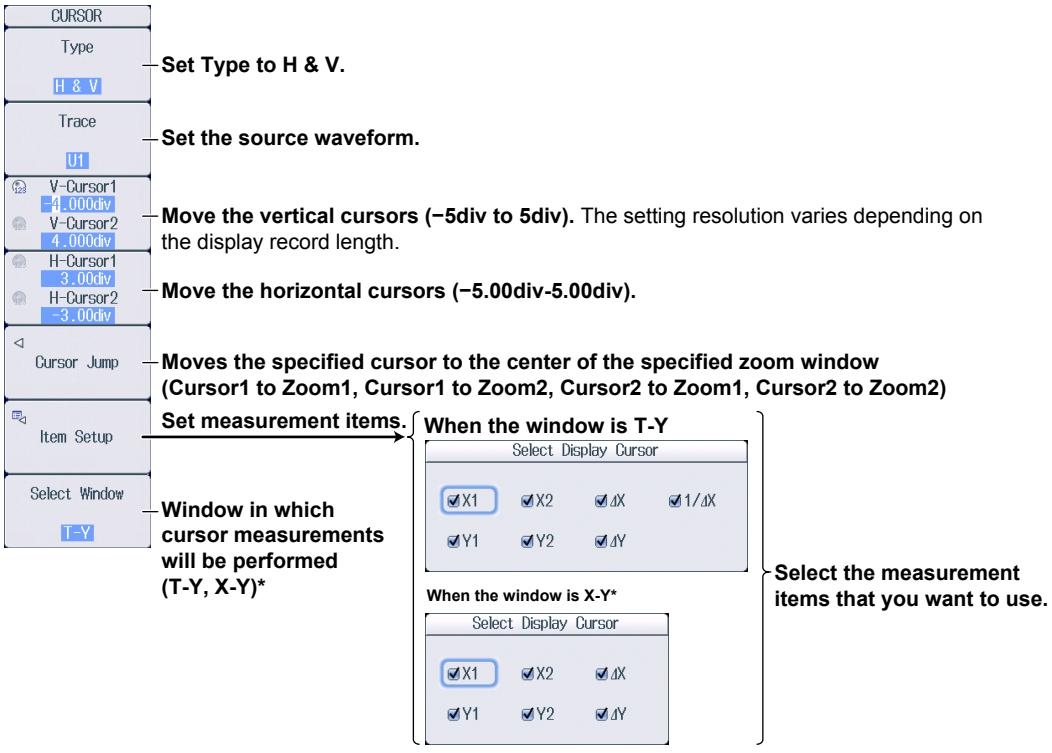
This section explains the following settings for measuring with horizontal and vertical cursors:

- Cursor type
- Source waveform
- Moving the vertical cursors
- Moving the horizontal cursors
- Jumping the cursors
- Measurement items
- Windows that cursor measurements will be performed in

► Features Guide: “Horizontal and Vertical Cursors (H & V) - T-Y waveforms”
“Horizontal and Vertical Cursors (H & V) (X-Y)”
“Turning the X-Y Window Display On and Off (Display)”
“Record Length (Record Length)”

CURSOR H & V Menu

Press **CURSOR**, the **Type** soft key, and then the **H & V** soft key to display the following menu.



* This is available when the X-Y window display is turned on.

Setting the Source Waveform (Trace)

The waveforms that you can select differ depending on the window that cursor measurements will be performed in.

- T-Y: U1 to U4, I1 to I4, P1 to P4, AUX3 to AUX8, Math1 to Math8
- X-Y: XY1 to XY8

13.6 Measuring with Peak Cursors (Peak)

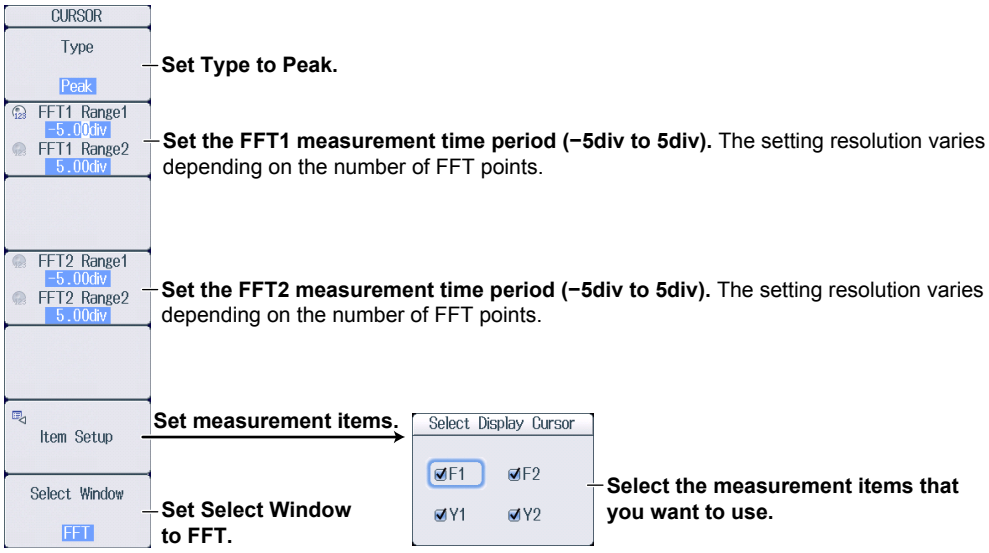
This section explains the following settings for measuring with peak cursors. You can use peak cursors when the FFT window is displayed.

- Cursor type
- Two measurement ranges
- Measurement items
- Windows that cursor measurements will be performed in

► Features Guide: “Peak Cursors (Peak)”
“Turning FFT On and Off (Display)”
“Start Point and Number of FFT Points (Start Point and FFT Points)”

CURSOR Peak Menu

1. Press **CURSOR**, and then press the **Select Window** soft key and then the FFT soft key.
2. Press the **Type** soft key and then the Peak soft key to display the following menu.



14.1 Automatically Measuring Waveform Parameters

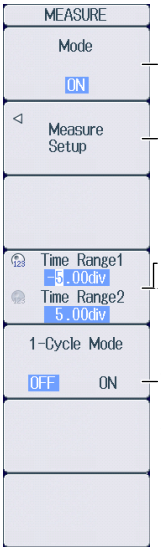
This section explains the following settings for automatically measuring waveform parameters.

- Turning automated measurement on and off
- Source waveform and measurement items
- Measurement time period
- Turning cycle mode on and off
- Parameter details
- Delay settings

► Features Guide: “Automated Measurement of Waveform Parameters”
“Record Length (Record Length)”

MEASURE Menu

Press **MEASURE**, the **Mode** soft key, and then the **ON** soft key to display the following menu.



Set Mode to ON.

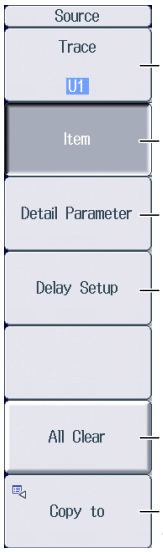
Set the source waveform and measurement items.

Set the measurement time period (−5div to 5div). The setting resolution varies depending on the display record length.
Time period 2 (Time Range2) must be greater than or equal to Time period 1 (Time Range1).
The maximum number of data points that are measured is 100 Mpoint from Time Range 1.

Turns cycle mode on and off
If the measurement time period (the spacing between Time Range1 and Time Range2) is less than 1 cycle, the measured value will be “*****.”

Setting the Source Waveform and Configuring the Measurement Items (Measure Setup)

1. Press the **Measure Setup** soft key to display the following menu.



Set the source waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8, Math1-Math8, XY1-XY8).

Set measurement items.

Parameter details

Set the delay.

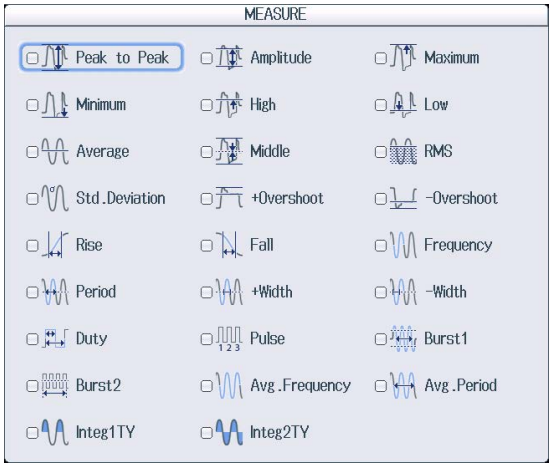
Clears all measurement items

Copies measurement items to the specified channels

Setting Measurement Items (Item)

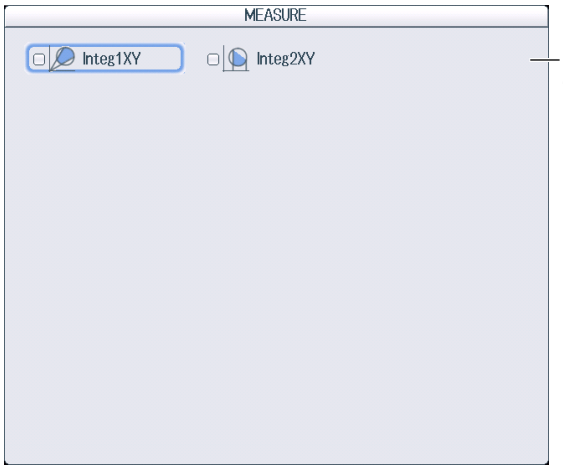
2. Press the **Item** soft key to display the following screen.

- **When the Source Waveform Is U1 to U4, I1 to I4, P1 to P4, AUX3 to AUX8, Math1 to Math8**



Select the measurement items that you want to use.

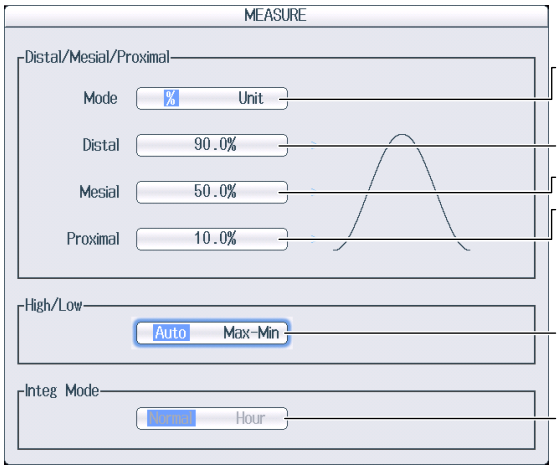
- **When the Source Waveform Is XY1 to XY8**



Select the measurement items that you want to use.

Setting the Parameter Details (Detail Parameter)

2. Press the **Detail Parameter** soft key to display the following screen.



Set the unit for the reference level (%, Unit).

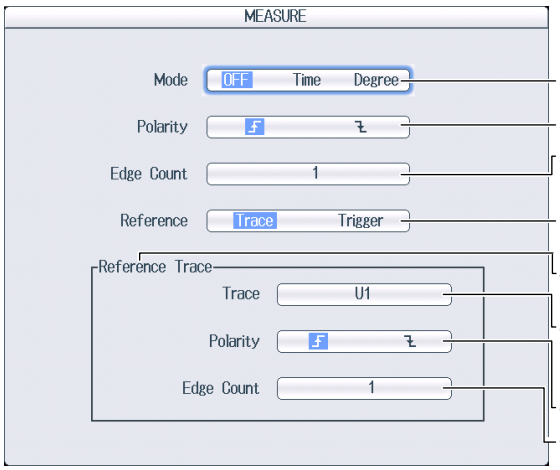
Reference level
Set the distal value.
Set the mesial value.
Set the proximal value.
When set to %: 0.0%-100.0%
When set to Unit: Within ±5 div of the source waveform

Set the mode for determining high and low levels (Auto, Max-Min).

Set the integration mode (Normal, Hour).
Set this when the source waveform (Trace) is set to I1-I4 or P1-P4.

Setting the Delay (Delay Setup)

2. Press the **Delay Setup** soft key to display the following screen.



Set the delay value unit (OFF, Time, Degree).

Set the slope of the edge to be detected.

Set which counted edge to use as a detected point (measured point) (1-9).

Set the delay measurement reference (Trace, Trigger).

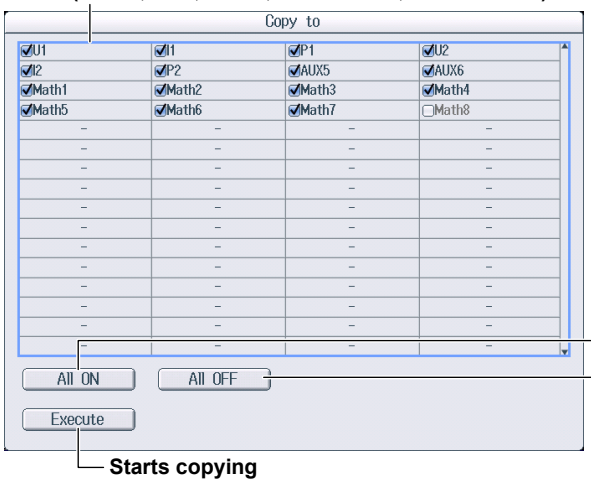
Set the reference waveform conditions.
(Set this when Reference is set to Trace.)

- **Set the reference waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8, Math1-Math8).**
- **Set the slope of the edge to be detected.**
- **Set which counted edge to use as a detected point (reference point) (1-9).**

Copying Measurement Items to the Specified Channels (Copy to)

2. Press the **Copy to** soft key to display the following screen.

Copies the contents specified by measurement item (Item) to the selected waveforms (Trace) (U1-U4, I1-I4, P1-P4, AUX3-AUX8, Math1-Math8)



Selects all waveforms

Unselects all waveforms

Starts copying

14.2 Performing Normal Statistical Processing

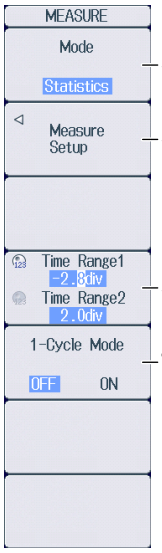
This section explains the following settings for performing normal statistical processing on automatically measured waveform parameters.

- Normal statistical processing

► Features Guide: “Normal Statistical Processing (Statistics)”

MEASURE Menu

Press **MEASURE**, the **Mode** soft key, and then the **Statistics** soft key to display the following menu.



Set automated measurement to Statistics.

Set the source waveform and configure the measurement items. ► section 14.1

Set the measurement time period. ► section 14.1

Turns cycle mode on and off ► section 14.1

14.3 Performing Cyclic Statistical Processing

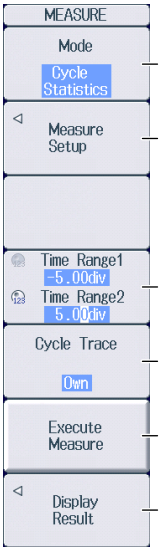
This section explains the following settings for performing cyclic statistical processing on automatically measured waveform parameters.

- Cyclic statistical processing
- Cycle trace (source waveform for determining the cycle)
- Result display

► Features Guide: “Cyclic Statistical Processing (Cycle Statistics)”

MEASURE Menu

Press **MEASURE**, the **Mode** soft key, and then the **Cycle Statistics** soft key to display the following menu.



Set automated measurement to Cycle Statistics.

Set the source waveform and configure the measurement items. ► section 14.1

Set the measurement time period. ► section 14.1

Set the cycle trace.

Executes measurement

Display the measured results.

Setting the Cycle Trace (Cycle Trace)

U1 to U4, I1 to I4, P1 to P4, AUX3 to AUX8, Math1 to Math8:

The PX8000 automatically measures the waveform parameters of all the source waveforms and performs statistical processing on the measured values once per cycle of the specified waveform.

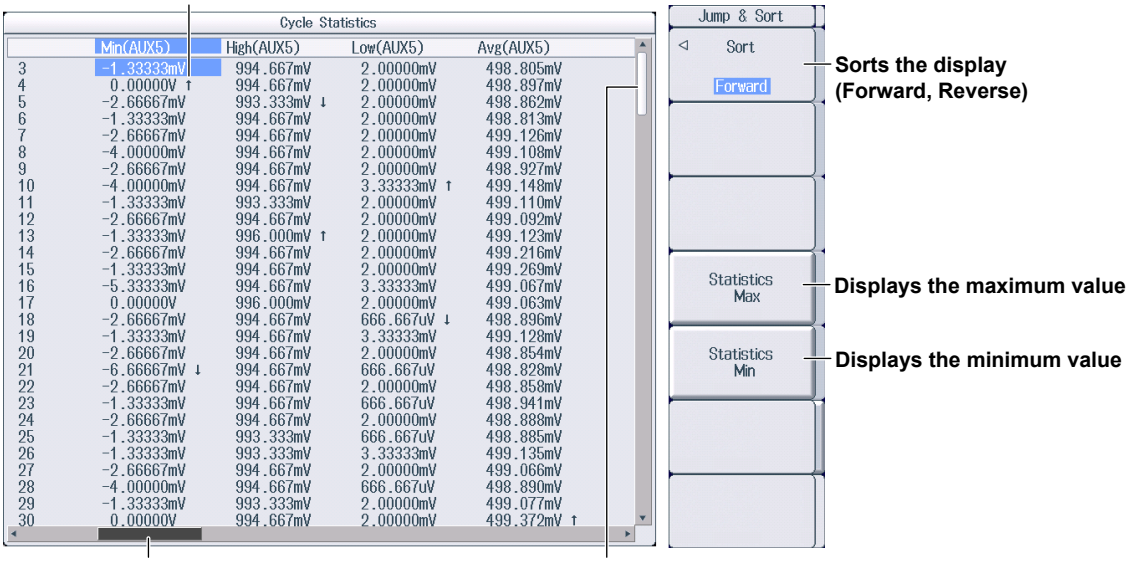
Own:

The PX8000 determines the cycle of each source waveform. It then automatically measures the waveform parameters and performs statistical processing once per cycle of each waveform. However, if multiple waveforms with different cycles are measured, the number of iterations of automated measurement of waveform parameters and statistical processing performed on all waveforms is equal to the number of cycles in the slowest waveform.

Displaying the Measured Results (Display Result)

Press the **Display Result** soft key to display the following screen.

↑: Displayed next to the maximum value of each measurement item.
↓: Displayed next to the minimum value of each measurement item.



Sorts the display (Forward, Reverse)

Displays the maximum value

Displays the minimum value

If scroll bars are displayed, you can press the arrow keys (▲, ▼, ◄, ►) to scroll the list.
You can scroll vertically also using the jog shuttle.

15.1 Performing Addition, Subtraction, Multiplication, and Division

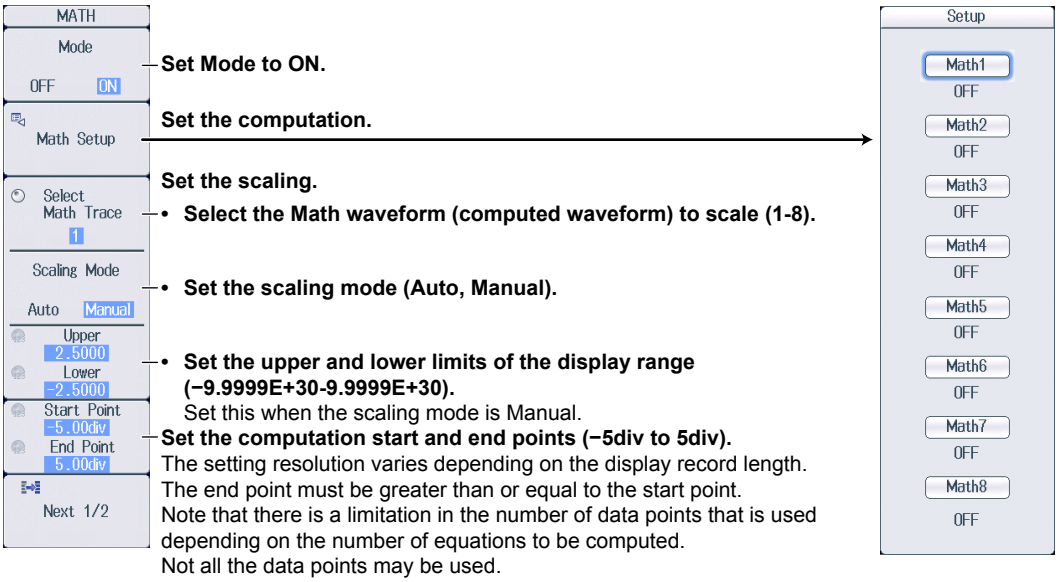
This section explains the following settings for performing addition, subtraction, multiplication, and division.

- Computation
  Operator (+, –, *, /), computation source waveform, unit, label, turning the waveform display on and off
- Scaling
  Math waveform to scale (computed waveform), scaling mode, upper and lower limits of the display range
- Computation start and end points

► Features Guide: “Basic Arithmetic (S1+S2, S1-S2, S1*S2, and S1/S2)”
“Scaling Mode (Scaling Mode)”
“Record Length (Record Length)”

MATH Menu

Press **MATH** to display the following menu.



Set Mode to ON.

Set the computation.

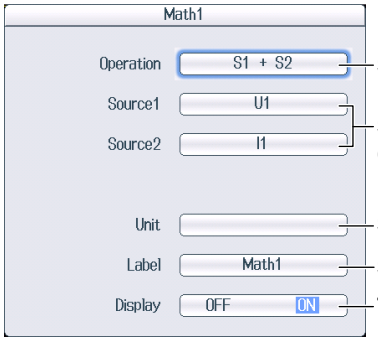
Set the scaling.

- **Select the Math waveform (computed waveform) to scale (1-8).**
- **Set the scaling mode (Auto, Manual).**
- **Set the upper and lower limits of the display range (−9.9999E+30-9.9999E+30).**
  Set this when the scaling mode is Manual.

Set the computation start and end points (−5div to 5div).
The setting resolution varies depending on the display record length.
The end point must be greater than or equal to the start point.
Note that there is a limitation in the number of data points that is used depending on the number of equations to be computed.
Not all the data points may be used.

Configuring Computations (Math Setup)

1. Press the **Math Setup** soft key.
2. Press a soft key from **Math1** to **Math8** to display the following screen.



Select the operation (S1+S2, S1–S2, S1*S2, S1/S2).

Select the computation source waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8, Math1-Math7).

Set the unit.

Set the label.

Turns the waveform display on and off

15.2 Performing Binary Conversion

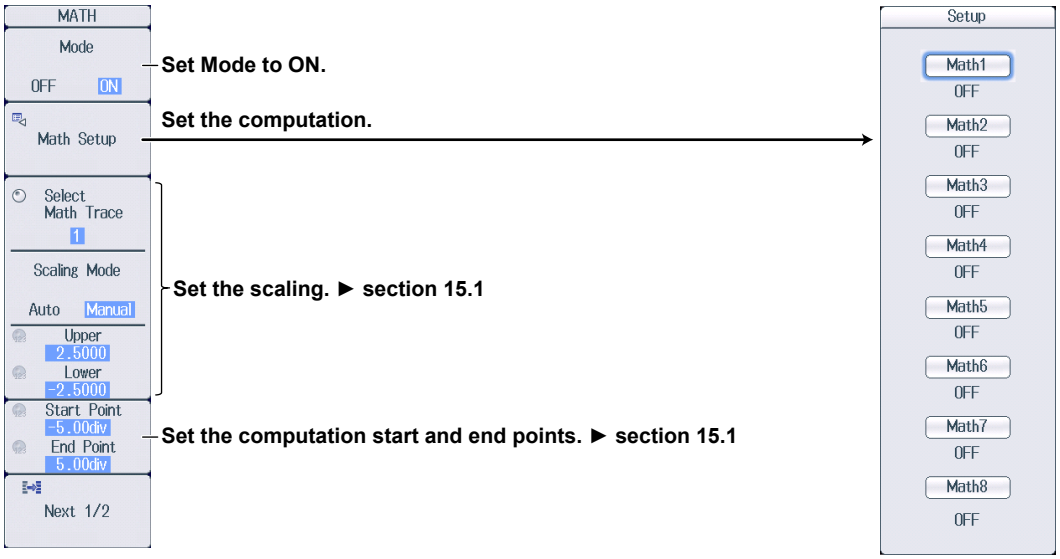
This section explains the following settings for performing binary conversions:

- Computation
  Function (Bin(S1)), computation source waveform, threshold level, unit, label, turning the waveform display on and off
- Scaling
- Computation start and end points

► Features Guide: “Binary Conversion (Bin (S1))”

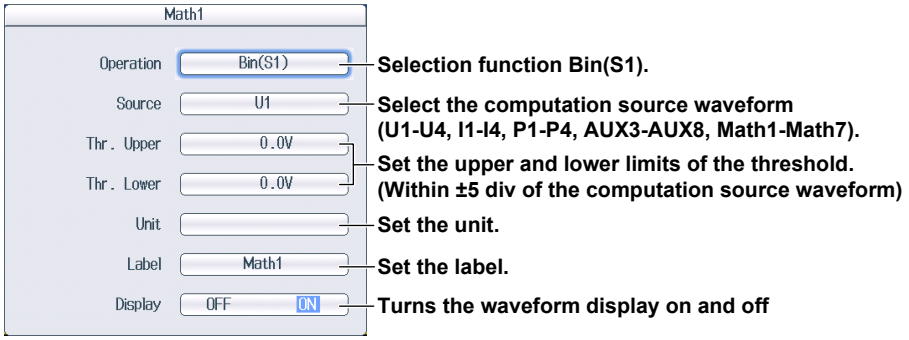
MATH Menu

Press **MATH** to display the following menu.



Configuring Computations (Math Setup)

1. Press the **Math Setup** soft key.
2. Press a soft key from **Math1** to **Math8** to display the following screen.



15.3 Shifting the Phase

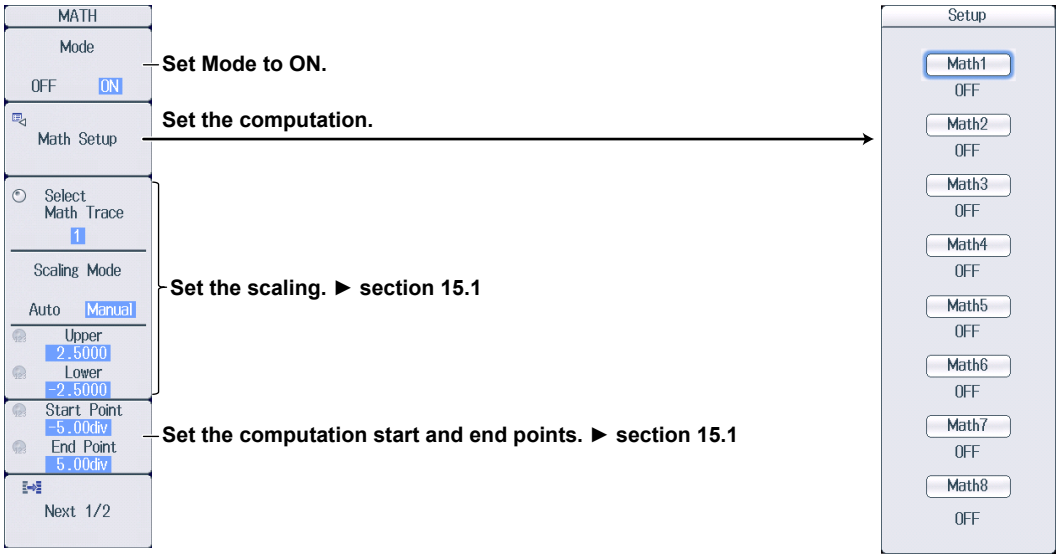
This section explains the following settings for shifting the phase:

- Computation
  Function (Shift(S1)), computation source waveform, shift range, unit, label, turning the waveform display on and off
- Scaling
- Computation start and end points

► Features Guide: “Phase Shift (Shift (S1))”
“Record Length (Record Length)”

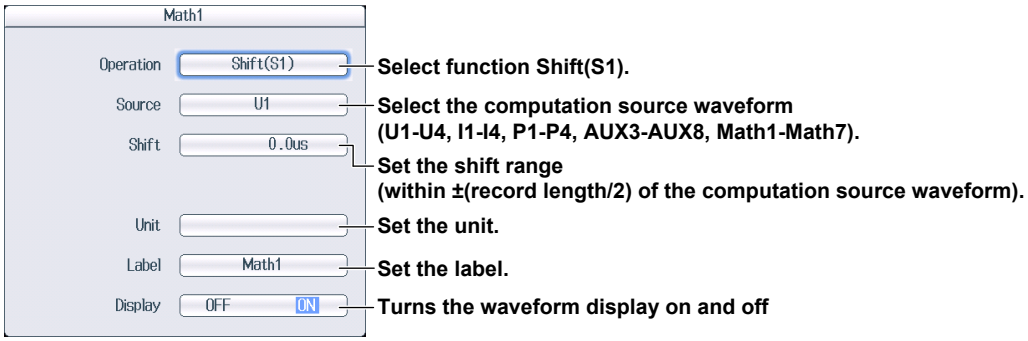
MATH Menu

Press **MATH** to display the following menu.



Configuring Computations (Math Setup)

1. Press the **Math Setup** soft key.
2. Press a soft key from **Math1** to **Math8** to display the following screen.



15.4 Displaying the Power Spectrum

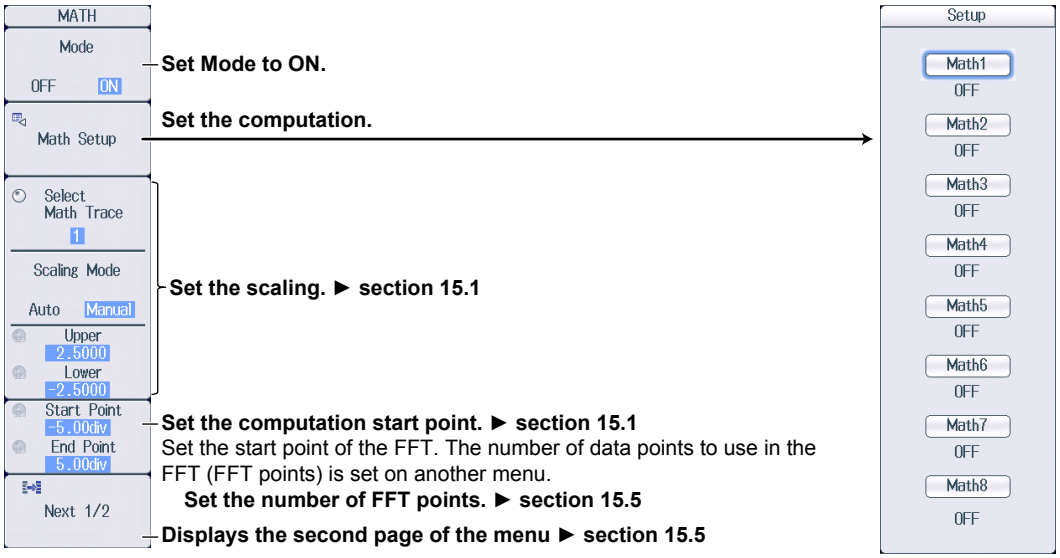
This section explains the following settings for performing FFT and displaying the power spectrum.

- Computation
  Function (PS(S1)), computation source waveform, unit, label, turning the waveform display on and off
- Scaling
- Computation start point
- FFT

► Features Guide: “Power Spectrum (PS (S1))”

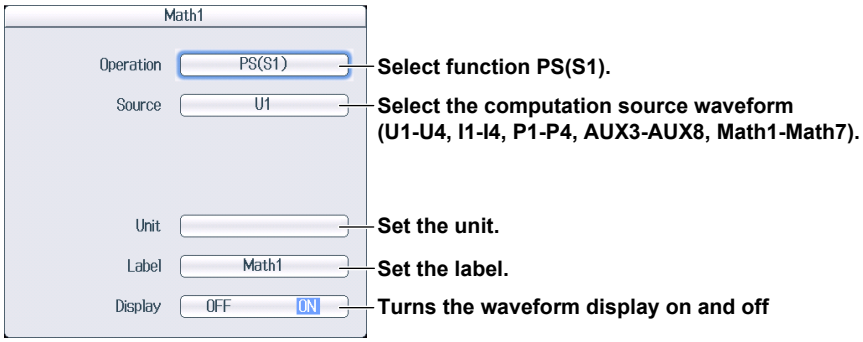
MATH Menu

Press **MATH** to display the following menu.



Configuring Computations (Math Setup)

1. Press the **Math Setup** soft key.
2. Press a soft key from **Math1** to **Math8** to display the following screen.



Configuring the FFT

Set the number of FFT points and window function. ► section 15.5

15.5 Performing User-Defined Computations

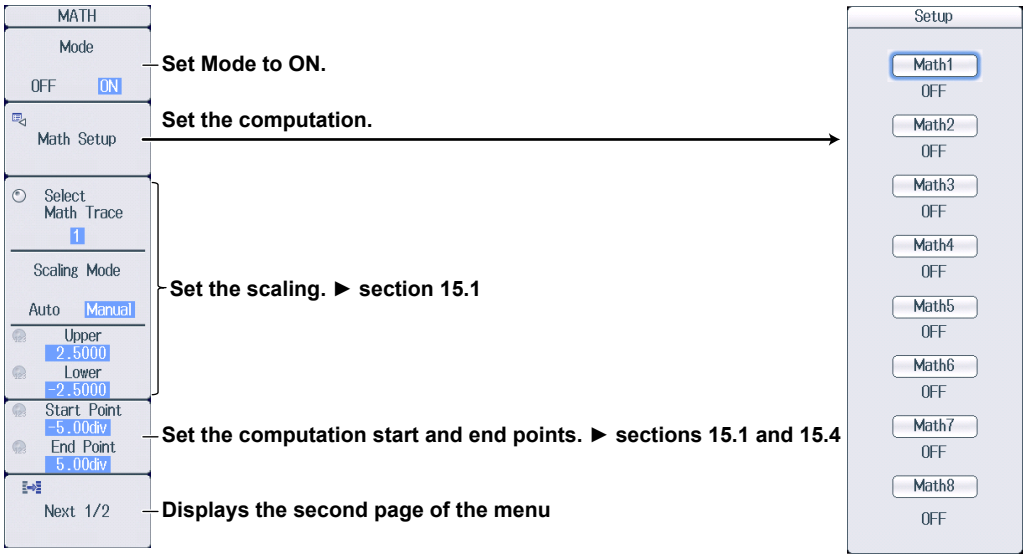
This section explains the following settings for performing user-defined computations.

- Computation
  User definition (User Define), expression, unit, label, turning the waveform display on and off
- Scaling
- Computation start and end points
- FFT
- Filter
- Constant

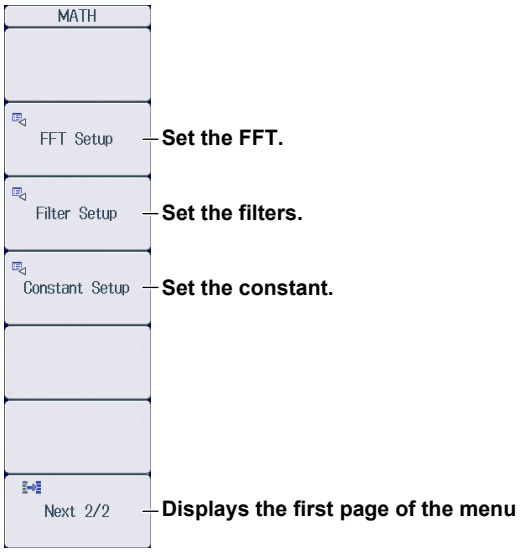
► Features Guide: “User-Defined Computation”

MATH Menu

1. Press **MATH** to display the following menu.

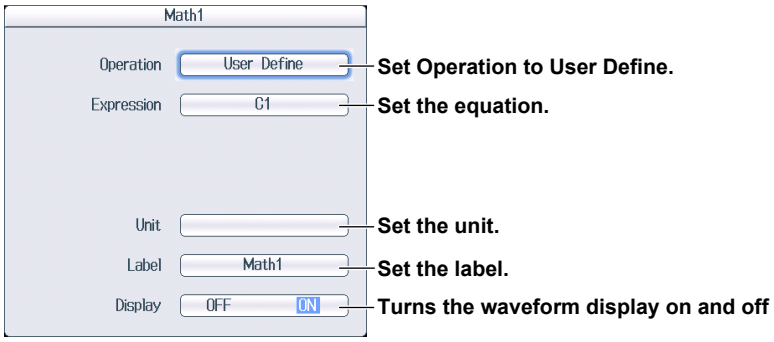


2. Press the **Next 1/2** soft key to display the 2/2 menu.



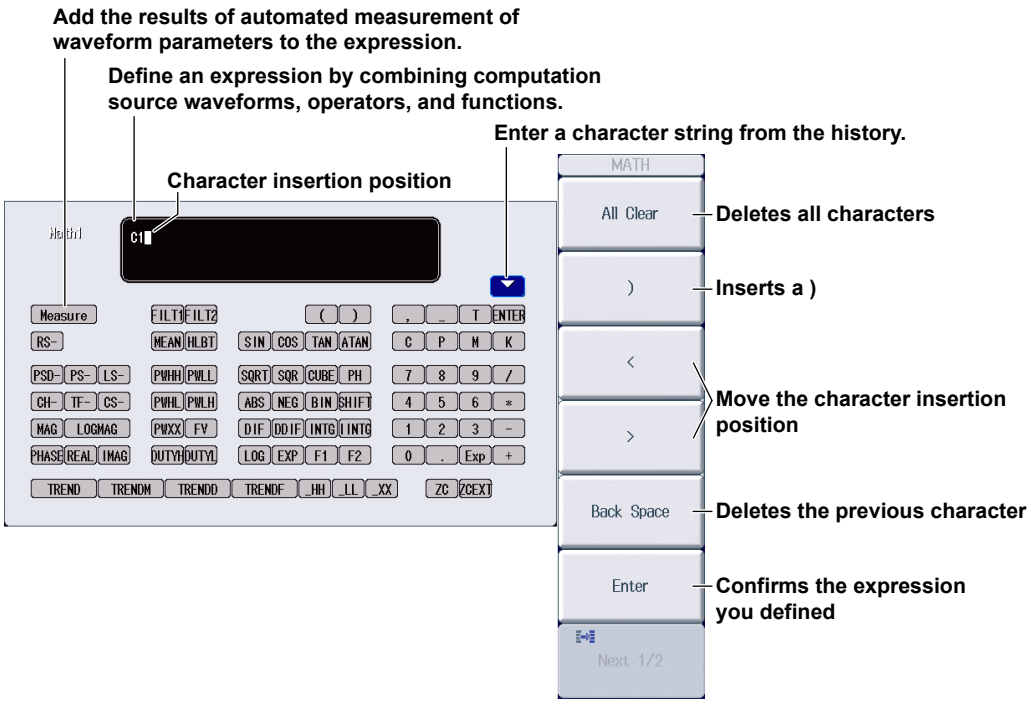
Configuring Computations (Math Setup)

1. Press the **Math Setup** soft key.
2. Press a soft key from **Math1** to **Math8** to display the following screen.



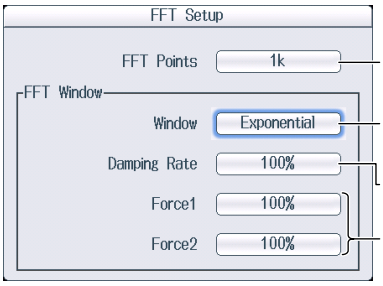
Setting the Expression (Expression)

3. Select **Expression** to display the following screen.



Configuring the FFT (FFT Setup)

Press the **FFT Setup** soft key to display the following screen.



Set the number of FFT points (1k, 2k, 5k, 10k, 20k, 50k, 100k).

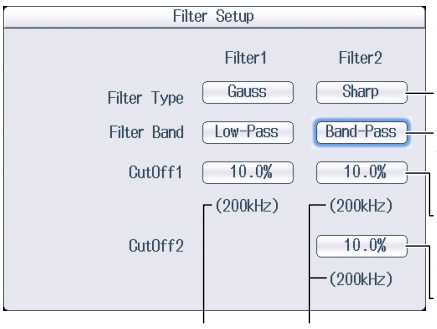
Set the window function
(Rect, Hanning, Flat Top, Hamming, Exponential).

Set the attenuation (1%-100%).
Set this when the window function is Exponential.

Set the calculation period (1%-100%).
Set this when the window function is Exponential.

Configuring Filters (Filter Setup)

Press the **Filter Setup** soft key to display the following screen.



Select the filter type (Gauss, Sharp, IIR).

Set the filter band (Low-Pass, Band-Pass, High-Pass).
When the filter type is Gauss, you can only select Low-Pass.

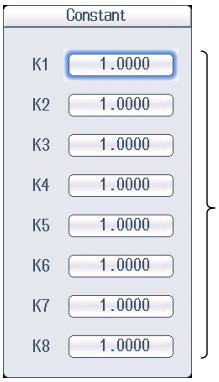
Set cutoff frequency 1 (2.0%-30.0%).
Set this when the bandwidth is Low-Pass, Band-Pass, or High-Pass.

Set cutoff frequency 2 (2.0%-30.0%).
Set this when the filter band is Band-Pass.

Displays the cutoff frequency as a percentage of the sample rate in use.

Defining Constants (Constant Setup)

Press the **Constant Setup** soft key to display the following screen.



Set the constant (−9.9999E+30-9.9999E+30).

16.1 Displaying FFT Waveforms

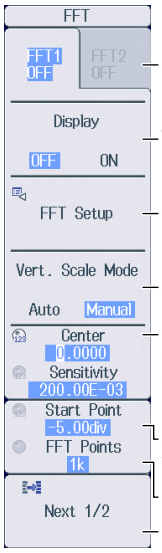
This section explains the following settings for displaying power spectrum waveforms in the FFT window.

- FFT waveform display
- FFT
  Spectrum type and sub type, analysis source waveform, window function
- Vertical scale
- Computation start point
- FFT points
- Main window's display ratio
- Window layout
- Horizontal axis
  Scale, unit, zoom (display range)

► Features Guide: "FFT"

FFT Menu

1. Press **SHIFT+MATH** (FFT) to display the following menu.



Select whether to set FFT1 or FFT2.

Turns the FFT display on and off

Set the FFT.

Set the vertical scaling mode (Auto, Manual).

Set the vertical axis center and sensitivity.
- **Center (−9.9999E+30 to 9.9999E+30)**
- **Sensitivity (1E−30 to 1.9999E+30)**

Set this when the vertical scale is Manual.

Set the computation start point (−5div to -5div).
The setting resolution varies depending on the display record length.

Set the number of FFT points (1k, 2k, 5k, 10k, 20k, 50k, 100k).

Displays the second page of the menu

2. Press the **Next 1/2** soft key to display the following menu.

Set the main window's display ratio (50%, 0%).

Set the window layout (Side, Vertical).

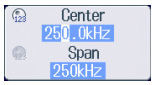
Set the horizontal scale (Hz, Log Hz).

Set the vertical scale unit.

Set the horizontal zoom mode (Auto, Left/Right, Center/Span).
Center/Span cannot be selected when the horizontal scale is set to Log Hz.

Set the display range of the horizontal axis.
When horizontal zoom is set to Left/Right
- **Set the left and right edges (0Hz to maximum frequency).**

The setting resolution varies depending on the number of FFT points.
The following relationship must be satisfied: (right edge – left edge) ≥ (10×setting resolution).



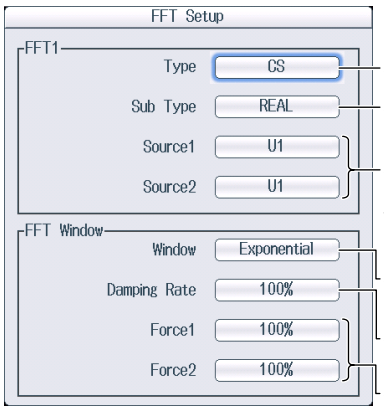
Set the display range of the horizontal axis.
When horizontal zoom is set to Center/Span
- **Set the center (0Hz to maximum frequency).**
- **Set the Span ((frequency resolutionx10) to maximum frequency).**

The setting resolution varies depending on the number of FFT points.

Displays the first page of the menu

Configuring the FFT (FFT Setup)

Press the **FFT Setup** soft key to display the following screen.



Set the spectrum type (LS, RS, PS, PSD, CS, TF, or CH).

Set the spectrum sub type (REAL, IMAG, MAG, LOGMAG, PHASE).*

Set the analysis source waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8, Math1-Math6).
You can set Source 2 when the spectrum type is CS, TF, or CH.

Set the window function (Rect, Hanning, Flat Top, Hamming, Exponential).

Set the attenuation (1%-100%).
Set this when the window function is Exponential.

Set the calculation period (1%-100%).
Set this when the window function is Exponential.

* The available sub types vary depending on the spectrum type.

Type	Available Sub Types
LS, CS, TF	REAL, IMAG, MAG, LOGMAG, PHASE
RS, PS, PSD	MAG, LOGMAG
CH	MAG

17.1 Performing GO/NO-GO Determination with Waveform Zones

This section explains the following settings for performing GO/NO-GO determination with waveform zones:

- GO/NO-GO determination mode
- Editing the waveform zone
- Judgment condition
- Action
- Determination period

► Features Guide: “Waveform Zone (Wave Zone)”

GO/NO-GO Menu

Press **SHIFT+MEASURE** (GO/NO-GO) to display the following menu.

Set the GO/NO-GO determination mode to Wave Zone.

Edit the waveform zone.

Select the number of the zone to edit.

Set the judgment conditions.

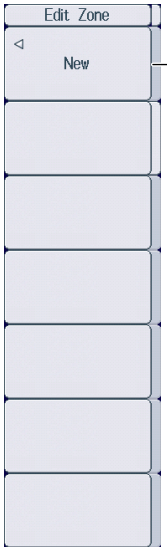
Set the actions.

Set the determination period (−5div to 5div). The setting resolution varies depending on the display record length.
Time period 2 (Time Range2) must be greater than or equal to Time period 1 (Time Range1).

Editing Waveform Zones (Edit Zone)

1. Press the **Edit Zone** soft key described on the previous page to use the jog shuttle to adjust this setting.
   If the jog shuttle is already controlling the Edit Zone soft key, proceed to step 2.
2. Use the **jog shuttle** to select the number of the zone that you want to edit (Zone1 to Zone6).
3. Press the **Edit Zone** soft key to display the following menu.

When in step 2, a zone number in which a created waveform zone does not exist is selected



Select the base waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8, Math1-Math8).

When you select the base waveform, the edit menu shown on the right appears.

When in step 2, a zone number in which a created waveform zone exists is selected

To clear the waveform zone that you are creating or have created and create a new waveform zone, select the base waveform on this menu.

Set the editing range (Whole, Part).

When the editing range is set to Whole
- **Set the upper and lower limits (0.00div-10.00div).**
- **Set the left and right edges (0.00div-5.00div).**

When the editing range is set to Part
- **Set the time range (−5.00div to 5.00div).**

Set the waveform zone save destination (Zone1-Zone6).

Saves the waveform zone

Setting the Judgment Conditions (Judgement Setup)

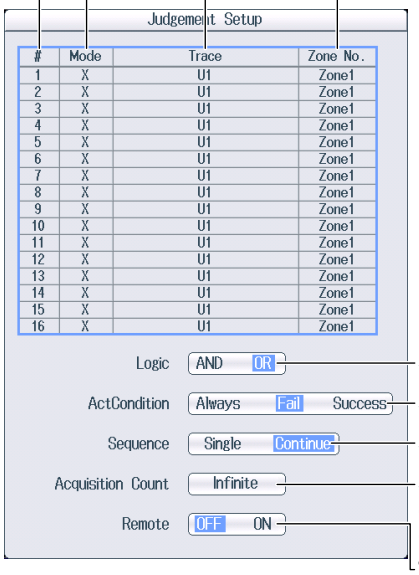
Press the **Judgement Setup** soft key to display the following screen.

You can set up to 16 conditions.

Set the judgment criterion (X, IN, OUT).

Set the source waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8, Math1-Math8).

Set the zone number (Zone1-Zone6).



Set the determination logic (AND, OR).

Set the action condition (Always, Fail, Success).

Set the sequence (Single, Continue).

Set the number of measurements (the number of waveform acquisitions) (Infinite, 1-65536).

Turns external start on and off

Setting Action Conditions (ActCondition)

Always: The action is always executed. The specified action, explained later, is executed each time a trigger occurs.

Fail: The action is executed when the GO conditions are not met.

Success: The action is executed when the GO conditions are met.

Setting the Sequence (Sequence)

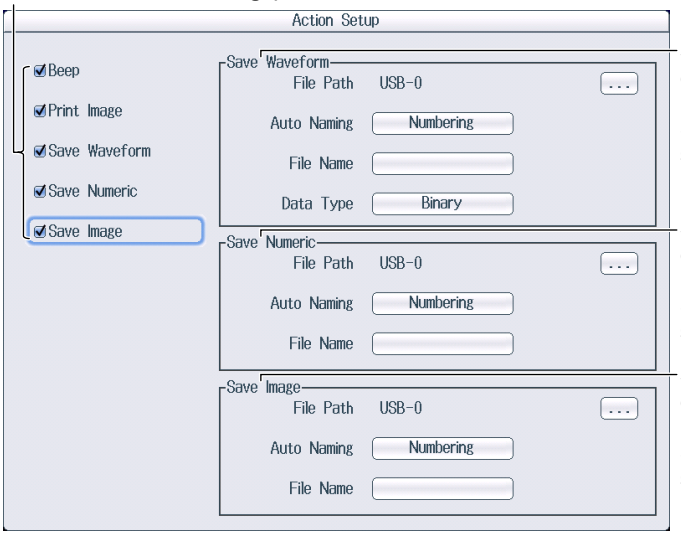
Single: The action is executed once.

Continue: The action is executed repeatedly. It is repeated until the waveform is acquired the number of times specified by Acquisition Count. If Acquisition Count is set to Infinite, the action is repeated until waveform acquisition is stopped with the START/STOP key.

Setting Actions (Action Setup)

Press the **Action Setup** soft key to display the following screen.

Select the actions to execute (Beep, Print Image, Save Waveform, Save Numeric, Save Image).



Set the waveform data save destination.
► section 22.3
Set this when Save Waveform is selected for the action.

Set the numeric data save destination.
► section 22.3
Set this when Save Numeric is selected for the action.

Set the screen capture save destination.
► section 22.3
Set this when Save Image is selected for the action.

17.2 Performing GO/NO-GO Determination with Waveform Parameters

This section explains the following settings for performing GO/NO-GO determination with waveform parameters.

- GO/NO-GO determination mode
- Judgment condition
- Action
- Determination period

► Features Guide: “Waveform Parameters (Parameter)”
“Automated Measurement of Waveform Parameters”

GO/NO-GO Menu

Press **SHIFT+MEASURE** (GO/NO-GO) to display the following menu.

Set the GO/NO-GO determination mode to Parameter.

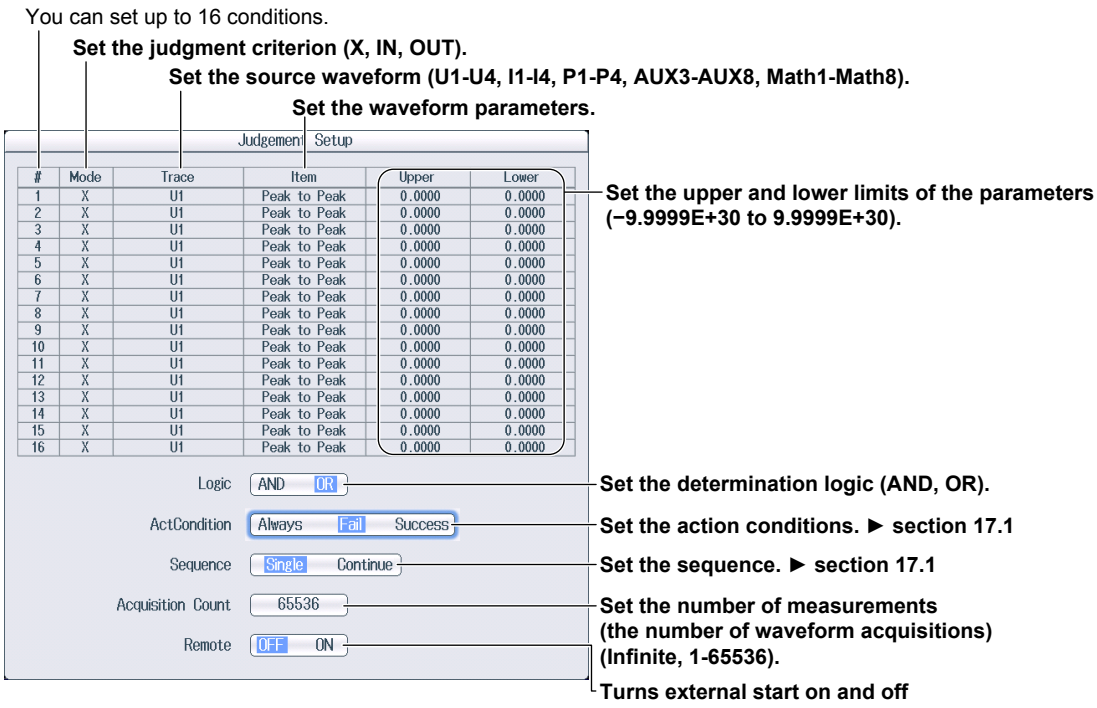
Set the judgment conditions.

Set the actions. ► section 17.1

Set the determination period. ► section 17.1

Setting the Judgment Conditions (Judgement Setup)

Press the **Judgement Setup** soft key to display the following screen.



Setting Waveform Parameters (Item)

You can use all automatically measured waveform parameters as judgment conditions. Up to 16 parameters set as judgment conditions can be determined simultaneously. ► section 14.1

18.1 Setting Actions

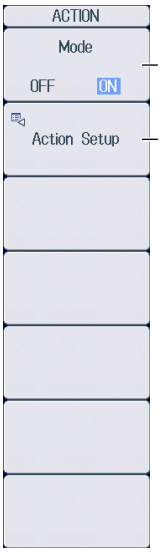
This section explains the following settings for executing the action function.

- Action mode
- Action

► Features Guide: “Action”

ACTION Menu

Press **SHIFT+MODE** (ACTION) to display the following menu.



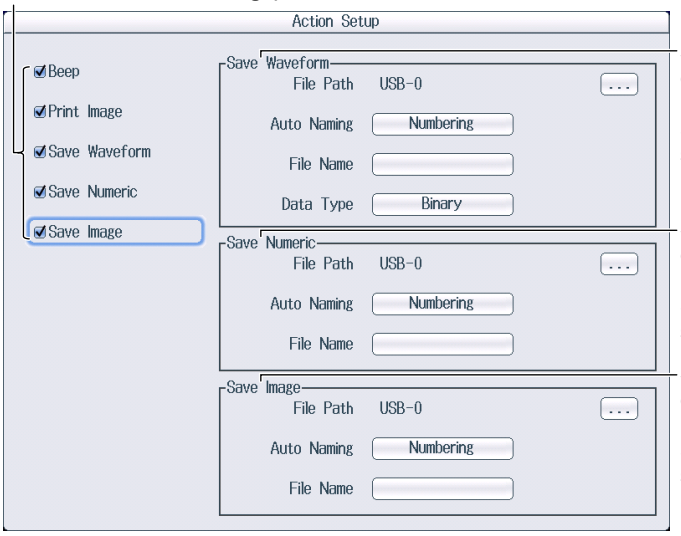
Set Mode to ON.

Set the actions.

Setting Actions (Action Setup)

Press the **Action Setup** soft key to display the following screen.

Select the actions to execute (Beep, Print Image, Save Waveform, Save Numeric, Save Image).



Set the waveform data save destination.
► section 22.3
Set this when Save Waveform is selected for the action.

Set the numeric data save destination.
► section 22.3
Set this when Save Numeric is selected for the action.

Set the screen capture save destination.
► section 22.3
Set this when Save Image is selected for the action.

Executing Actions

Starting

1. Set the following functions, and press **START/STOP**. The actions are executed according to the settings.

   An icon  appears in the top center of the screen when actions are being executed.

   - Trigger ► chapter 3
   - GO/NO-GO determination ► chapter 17

Stopping

2. Actions stop in the following conditions.
   - When the specified number of measurement count (waveform acquisition count) is reached
     Measurement count (waveform acquisition count) ► section 4.1 or chapter 17
   - When waveform acquisition is stopped with the **START/STOP** key
     When waveform acquisition is stopped with the **START/STOP** key, actions are executed once.

19.1 Searching for Edges

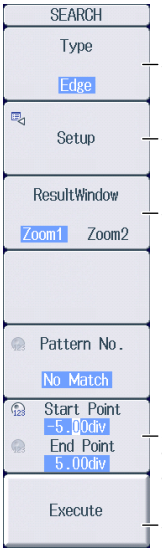
This section explains the following settings for searching for edges.

- Search type
- Search conditions
  Source waveform, reference level to detect, edge polarity, hysteresis, and detection count
- Detected waveform display
- Detected point number
- Search start and end points
- Executing the search

► Features Guide: “Edge Search (Edge)”

SEARCH Edge Menu

Press **SHIFT+ZOOM** (SEARCH), the **Type** soft key, and then the **Edge** soft key to display the following menu.



Set the search type to Edge.

Set the search conditions.

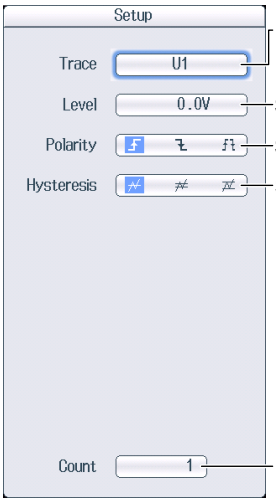
Set the detected waveform display (Zoom1, Zoom2).
If both the Zoom1 and Zoom2 windows are displayed, select which one to operate.

Set the search start and end points (−5div to 5div).
The setting resolution varies depending on the display record length.
The end point must be greater than or equal to the start point.

Starts searching

Setting Search Conditions (Setup)

Press the **Setup** soft key to display the following screen.



Set the waveform to search (U1-U4, I1-I4, P1-P4, AUX3-AUX8).

Set the reference level.

Set the edge polarity (, ,).

Set the hysteresis (, ,).

Set the number of times to detect the conditions.

Setting the Detected Waveform Display (Result Window)

Press the **Result Window** soft key to select which zoom window displaying the search waveform to operate.

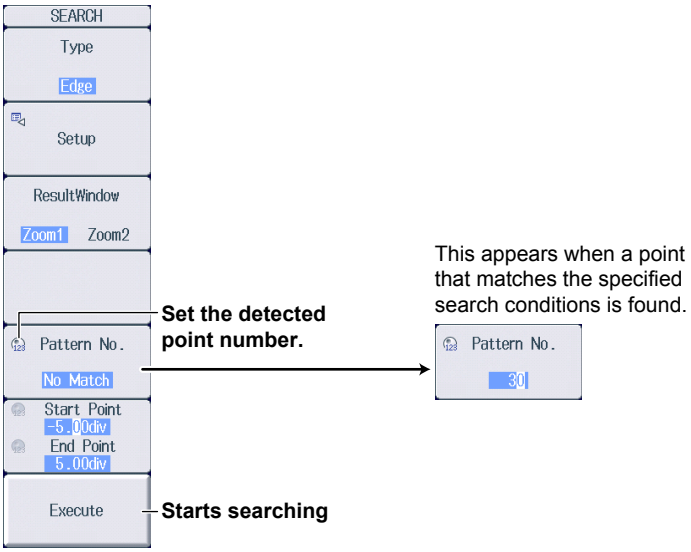
The search waveform that includes the search point specified by the detected point number (Pattern No.) described later is displayed in the zoom windows. If both the Zoom1 and Zoom2 windows are displayed, select which one to operate.

- If only one of the two zoom windows is displayed, you do not have to select the window.
- If both Zoom1 and Zoom2 are not displayed, Zoom1 will be displayed when you press SHIFT+ZOOM (SEARCH) to display the SEARCH menu.

Executing a Search (Execute)

Press the **Execute** soft key to execute the search.

If the PX8000 finds points that match the search conditions (detected points), it shows detected point number numbers (0, 1, 2, etc.) from the left of the waveform display in the order that the points were detected.



Setting the Detected Point Number

Set the detected point number. The detected waveform appears in the zoom window with the detected point corresponding to the specified detected point number at the center.

19.2 Searching for a Specific Time

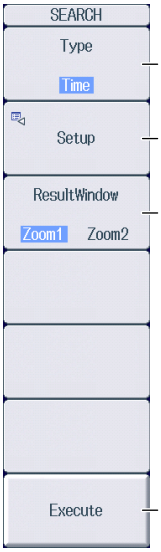
This section explains the following settings for searching for a specific time.

- Search type
- Search conditions
  Year, month, day, time
- Executing the search

► Features Guide: “Time Search (Time)”

SEARCH Time Menu

Press **SHIFT+ZOOM** (SEARCH), the **Type** soft key, and then the **Time** soft key to display the following menu.



Set Type to Time.

Set the search conditions.

Configure the display for detected waveforms. ► section 19.1

Starts searching

Setting Search Conditions (Setup)

Press the **Setup** soft key to display the following screen.

Set the date and time
(Year, Month, Day, Hour, Minute, Second, µSecond).

Executing a Search (Execute)

Press the **Execute** soft key to execute the search.

The detected waveform appears in the zoom window with the specified time at the center.

20.1 Displaying Waveform History Waveforms

This section explains the following settings for displaying history waveforms, which are waveforms that were previously saved to acquisition memory.

- Display mode
- Highlight display
- Display range
- List of history waveforms
- Clearing all the history waveforms

► Features Guide: “Displaying and Searching History Waveforms”

HISTORY Menu

Press **SHIFT+NUMERIC** (HISTORY) to display the following menu.

Set the display mode (1 Record, All Record, Average Record).

Set the highlight display (display range start number-end number).[1]

Set the display range start number and end number (0 to –(number of waveform acquisitions –1)).[2]
The start number must be greater than or equal to the end number.

List of history waveforms

Clears all the history waveforms

1 This setting appears when Display Mode is set to 1 Record or All Record.
2 The number of waveform acquisitions that can be specified is up to the number of history waveforms that can be held in the acquisition memory.

Setting the Display Mode (Display Mode)

1 Record: Only the waveform corresponding to the selected record number is displayed.[1]

All Record: All selected waveforms are superimposed on each other.[2] All other waveforms[1] are displayed in the normal color.

Average Record: All selected waveforms[2] are linearly averaged and displayed.

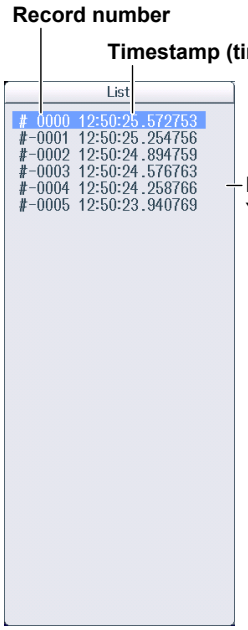
1 Waveforms specified by Selected Record for highlighting
2 Waveforms in the display range specified by Start Record and End Record

Note

- After you execute a search on the history waveforms, the only waveforms that are displayed are those that meet the search conditions. To display all the history waveforms in acquisition memory again, turn the history waveform search feature off.
- The averaging feature requires a certain amount of acquisition memory. If this is not available, you will not be able to display the Average Record.

List of History Waveforms (List)

Press the **List** soft key to display the following screen.



Note

Notes on Using the History Feature

- You can start waveform acquisition when the HISTORY menu is displayed. However, you cannot change the history feature settings while waveform acquisition is in progress.
- When the acquisition mode is set to Average, you cannot use the history feature.
- If you stop waveform acquisition, even if one complete screen's worth of waveform data has not been acquired, the waveform at which the trigger occurred is displayed as a single history waveform.
- The settings are restricted so that the following relationship is retained: Last record (End Record) ≤ Selected Record ≤ first record (Start Record).
- When you load waveform data from the specified storage medium, history waveforms up to that point are cleared. The loaded waveform data is placed in record number zero. If you load a file containing multiple history waveforms, the latest waveform is placed in zero, and earlier waveforms are placed in order to record numbers –1, –2, and so on.
- Computation and automated measurement of waveform parameters are performed on the waveform of the record number specified by Selected Record. You can analyze old data as long as you do not overwrite the acquisition memory contents by restarting waveform acquisition. If Display Mode is set to Average Record, analysis is performed on the averaged waveform.
- If many history waveforms are selected, it may take a long time to display all waveforms or average waveforms. If this happens, the  icon appears at the top of the screen. To cancel the operation, set Display Mode to 1 Record.
- History waveforms are cleared when you turn the power off.

20.2 Searching History Waveforms

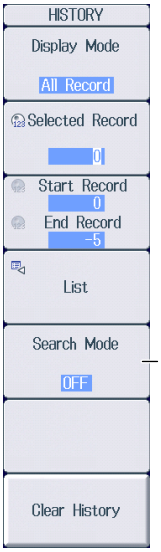
This section explains the following settings for searching history waveforms.

- Search mode
- Search conditions
  Search zone, search parameters, search condition, source waveform,
  search window (upper and lower limits and left and right edges), search logic, and measurement time period of the parameters
- Executing the search

► **Features Guide: "Search Condition Settings for Zone Searching (Search Setup)"**
"Search Condition Settings for Waveform Parameter Searching (Search Setup)"

HISTORY Menu

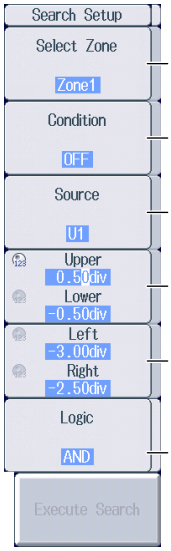
Press **SHIFT+NUMERIC** (HISTORY) to display the following menu.



Set the search mode (OFF, Zone, Parameter).

Setting the Zone Search (Search Setup)

Press the **Search Mode** soft key, the **Zone** soft key, and then the **Search Setup** soft key to display the following menu.



Select the search zone (Zone1-Zone4).

Set the search condition (OFF, IN, OUT).

Set the source waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8).

Set the upper and lower limits of the search window (−5.00div to 5.00div).
The upper limit must be greater than or equal to the lower limit.

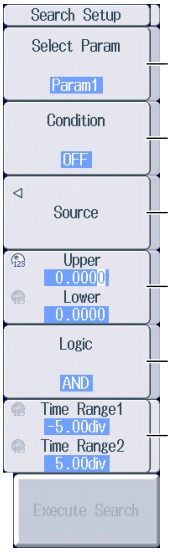
Set the left edge and right edge of the search window (−5div to 5div).
The setting resolution varies depending on the display record length.
The right edge must be greater than or equal to the left edge.

Set the search logic (AND, OR).

Proceed to executing the search on the next page.

Setting the Waveform Parameter Search (Search Setup)

1. Press the **Search Mode** soft key, the **Parameter** soft key, and then the **Search Setup** soft key to display the following menu.



Select the search parameter (Param1-Param4).

Set the search condition (OFF, IN, OUT).

Set the waveform to search and parameters.

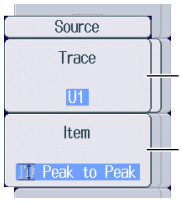
Set the upper and lower limits of the search condition (−9.9999E+30 to 9.9999E+30).

Set the search logic (AND, OR).

Set the parameter measurement time period (−5div to 5div).
The setting resolution varies depending on the display record length.
Time period 2 (Time Range2) must be greater than or equal to Time period 1 (Time Range1).
The maximum number of data points that are measured is 100 Mpoint from Time Range 1.

Setting the Waveform to Search and the Parameter (Source)

2. Press the **Source** soft key to display the following menu.

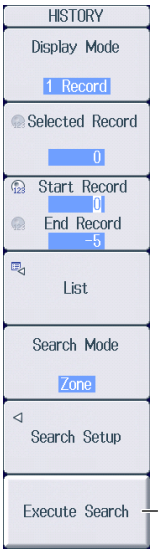


Set the source waveform (U1-U4, I1-I4, P1-P4, AUX3-AUX8).

Set the waveform parameter type. ► section 14.1

Executing a Search (Execute Search)

After setting the search conditions, press **ESC** to return to the HISTORY menu.



Starts searching

21.1 Loading Roll Paper Into the Built-In Printer (Optional)

This section explains how to load roll paper into the built-in printer (/B5 option).

Printer Roll Paper

Only use YOKOGAWA roll paper for the PX8000. When using the printer for the first time, use the roll paper supplied with the PX8000. When you need extra roll paper, please contact your nearest YOKOGAWA dealer.

Part Number: B9988AE
Specifications: Heat-sensitive paper, 10 m
Minimum Quantity: 10 rolls

Handling Roll Paper

The roll paper is made of heat-sensitive paper that changes color thermochemically. Please read the following information carefully.

Storage Precautions

The heat-sensitive paper changes color gradually at temperatures of approximately 70°C or higher. The paper can be affected by heat, humidity, or chemicals, whether something has been recorded on it or not. As such, please follow the guidelines listed below.

- Store the paper in a cool, dry, and dark place.
- Use the paper as quickly as possible after you break its protective seal.
- If you attach a plastic film that contains plasticizing material such as vinyl chloride film or cellophane tape to the paper for a long time, the recorded sections will fade due to the effect of the plasticizing material. Use a holder made of polypropylene to store the roll paper.
- When starching the record paper, do not use starches containing organic solvents such as alcohol or ether. Doing so will change the paper's color.
- We recommend that you make copies of the recordings if you intend to store them for a long period of time. Because of the nature of heat-sensitive paper, the recorded sections may fade.

Handling Precautions

- Only use genuine YOKOGAWA roll paper.
- If you touch the roll paper with sweaty hands, there is a chance that you will leave fingerprints on the paper or smudge the recorded sections.
- If you rub the surface of the roll paper against something hard, there is a chance that the paper will change color due to frictional heat.
- If the roll paper comes into contact with chemicals, oil, and the like, there is a chance that the paper will change color or that the recorded sections will disappear.

Loading the Roll Paper

CAUTION

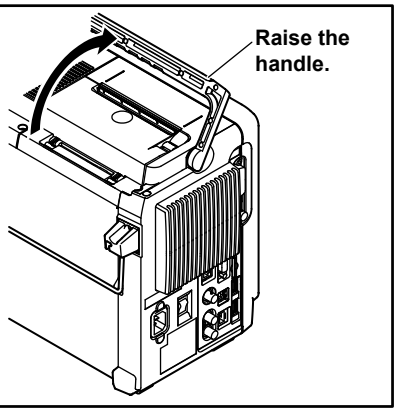
- Do not touch the print head. If you do, you may burn yourself.
- Do not touch the roll paper cutter section at the end of the printer cover. Doing so may cause injury.

French

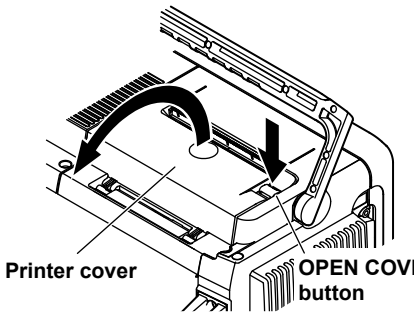
ATTENTION

- Ne pas toucher la tête d'impression. Vous pourriez vous brûler.
- Ne pas toucher la section du coupe-papier à l'extrémité du cache de l'imprimante. Vous pourriez vous blesser.

1.

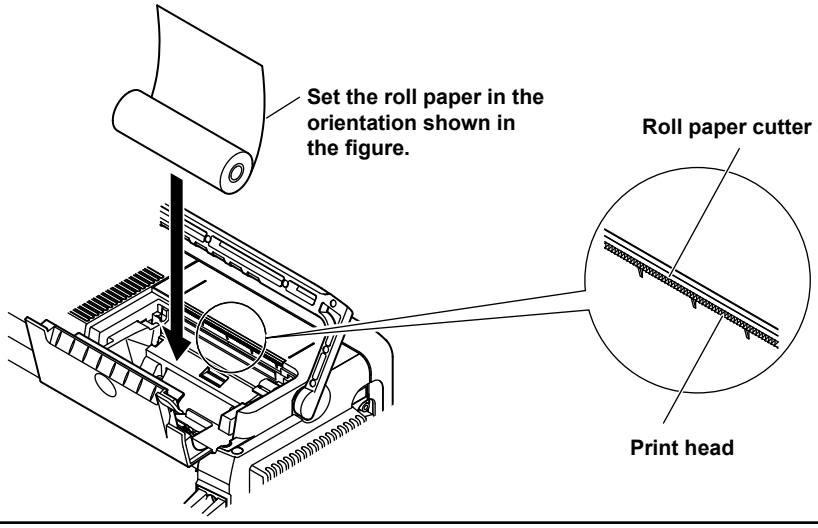


2.

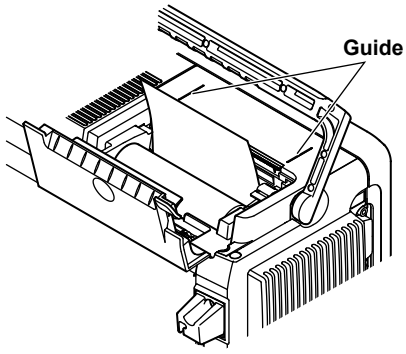


Press the OPEN COVER button to open the printer cover.

3.

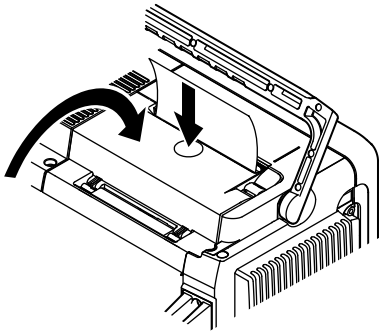


4.



Align the ends of the roll paper with the guides and set the roll in place.

5.



Close the printer cover and press LOCK at the center of the cover until you hear a click.

21.2 Printing on the Built-in Printer (Option)

This section explains the following settings for printing the image that is displayed on the PX8000 using the built-in printer (/B5 option).

- Print destination
- Comment

► Features Guide: “Printing from the Built-In Printer (BuiltIn; option)”

PRINT MENU Menu

Press **SHIFT+PRINT** (MENU), the **Print To** soft key, and then the **BuiltIn** soft key to display the following menu.

Set the print destination to BuiltIn.

Set comments.

Starting to Print

Press **PRINT** to print the image that is displayed on the screen using the built-in printer.

21.3 Saving Screen Captures to Files

This section explains the following settings for saving screen captures to files.

- Print destination
- Data format
- Color
- Background transparency, frame on/off
- Save destination and file name

You can save screen captures from the PRINT MENU menu, SAVE menu, and FILE Others Save menu. The screen capture settings are shared among these menus.
This section describes how to save screen captures from the PRINT MENU menu and SAVE menu. For instructions on how to save from the FILE Others Save menu, see section 22.6.

► Features Guide: “Saving Screen Captures (File)”

PRINT MENU Menu

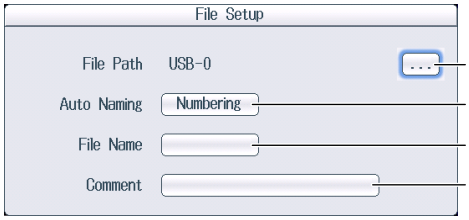
Press **SHIFT+PRINT** (MENU), the **Print To** soft key, and then the **File** soft key to display the following menu.

Set the print destination to File.
Set the data format (PNG, BMP, JPEG).
Set the color (ON, ON(Gray), ON(Reverse), OFF).
Sets the background to opaque (Normal) or transparent (Transparent).*
Set the save destination and the file name.

* This appears when the data format is set to PNG.
When the data format is set to JPEG, the frame on/off setting appears.

Setting the Save Destination and the File Name (File Setup)

Press the **File Setup** soft key to display the following screen.



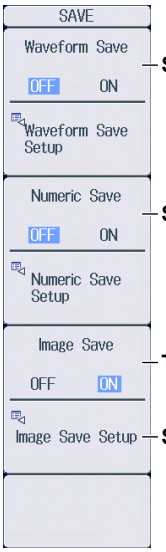
Displays the file list ► section 22.10
Set auto naming. ► section 22.3
Set the file name. ► section 22.3
Set a comment. ► section 22.3

Starting to Save

Press **PRINT** to save the screen capture file to the specified folder.

SAVE Menu

Press **SHIFT+SAVE** (MENU) to display the following menu.



Set waveform data saving to OFF* ► section 22.3

Set numeric data saving to OFF* ► section 22.4

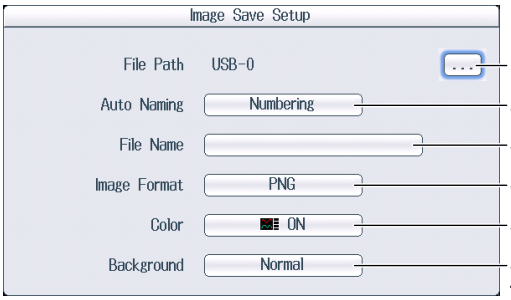
Turns the screen capture save feature on and off

Set the save destination and the file name for screen captures.

* If the saving of waveform data and numeric data is turned on, the corresponding data will also be saved according to the specified save destinations and file names. Here, the settings for saving only the screen capture are shown.

Setting the Save Destination and the File Name of the Screen Capture (Image Save Setup)

Press the **Image Save Setup** soft key to display the following screen.



Displays the file list ► section 22.10

Set auto naming. ► section 22.3

Set the file name. ► section 22.3

Set the data format (PNG, BMP, JPEG).

Set the color (ON, ON(Gray), ON(Reverse), OFF).

Sets the background to opaque (Normal) or transparent (Transparent)*

* This appears when the data format is set to PNG.
When the data format is set to JPEG, the frame on/off setting appears.

Starting to Save

Press **SAVE** to save the screen capture file to the specified folder.

22.1 Connecting Storage Media

This section explains how to connect the following types of storage media for saving and loading data from the PX8000.

- SD memory card
- USB storage device

SD Memory Card

CAUTION

- Do not orient the SD memory card in the wrong direction, and force it into the PX8000. Doing so may damage the SD memory card and the PX8000.
- Inserting and removing the SD memory card quickly (within the span of a second) may damage the PX8000.
- Removing the SD memory card from the PX8000 while the card is being accessed may corrupt the data on the SD memory card.
- An icon centered at the top of the screen indicates when the SD memory card is being accessed.

French

ATTENTION

- Ne placez pas la carte mémoire SD dans le mauvais sens et ne l'insérez pas en forçant dans le PX8000. Vous risqueriez d'endommager la carte mémoire SD et le PX8000.
- Le fait d'insérer et de retirer la carte mémoire SD rapidement (en une seconde) peut endommager le PX8000.
- Le fait de retirer la carte mémoire SD du PX8000 pendant que le dispositif accède à cette carte risque d'endommager les données qu'elle contient.
- Une icône au centre de la partie supérieure de l'écran indique que le dispositif est en train d'accéder à la carte mémoire SD.

SD Memory Cards That Can Be Used

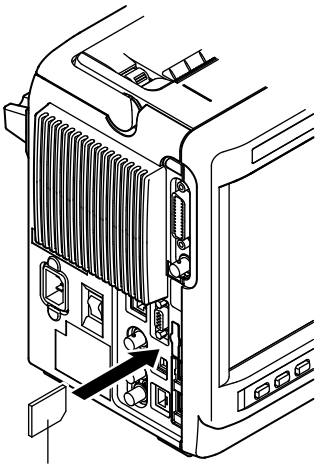
You can use memory cards that conform to the SD or SDHC standard with the PX8000. For details, contact your nearest YOKOGAWA dealer.

Note

When using an SD memory card with a PC, make sure that the PC is compatible with the SD memory card. Also, depending on the type of PC, some of the SD cards listed above may not function properly. Make sure that the card that you intend to use is compatible with your PC.

How to Insert an SD Memory Card

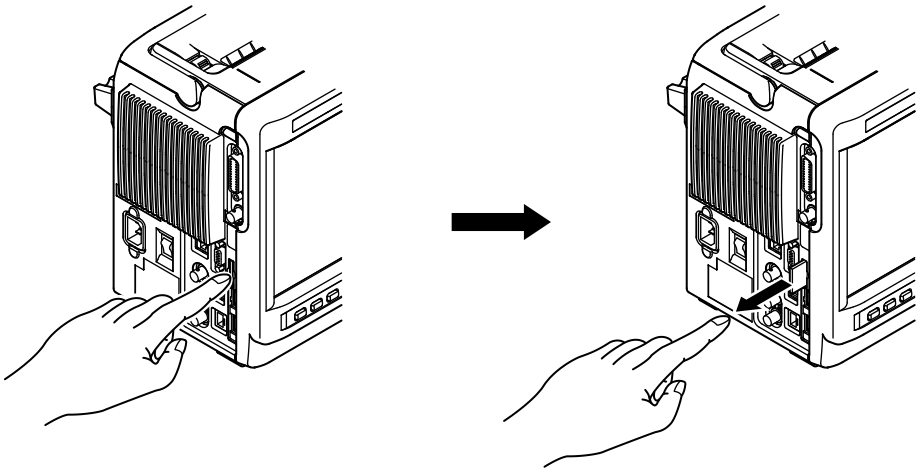
Insert the SD memory card into the slot. The front of the card should be facing you.
The SD memory card slot is on the left side panel of the PX8000.
If you are using an SD memory card that has a write-protection feature and you want to save data to or format the card, disable the write-protection feature before you insert the SD memory card into the PX8000.



SD memory card

Removing the SD Memory Card

Push the SD memory card with your finger and release to eject the card.
Remove the SD memory card.



Press the memory card in. **Release the SD memory card to eject.**

General SD Memory Card Handling Precautions

Follow the general handling precautions that are provided with your SD memory card.

USB Storage Device

CAUTION

- Do not remove the USB storage device or turn off the power when the device is being accessed. If you do so, the data on the USB storage device may be corrupted.
- An icon centered at the top of the screen indicates when the USB storage medium is being accessed.

French

ATTENTION

- Pendant que le dispositif accède au support de stockage USB, ne retirez pas ce dernier et ne mettez pas l'alimentation hors tension. Vous risqueriez d'endommager les données sur le support de stockage USB.
- Une icône au centre de la partie supérieure de l'écran indique que le dispositif est en train d'accéder au support de stockage USB.

Compatible USB Storage Devices

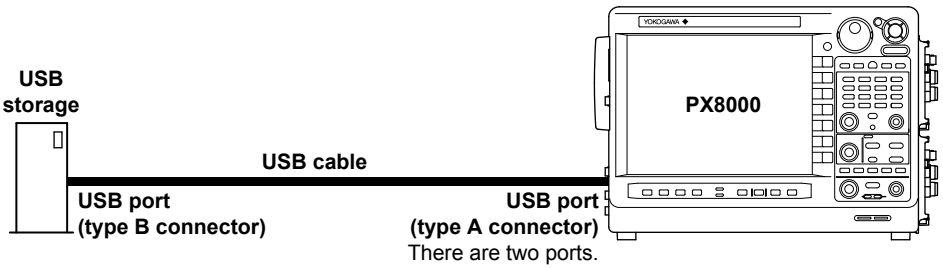
You can use USB storage devices that are compatible with USB Mass Storage Class version 1.1.

Note

- Only connect a USB keyboard, mouse, printer, or storage device to the USB connector for peripherals.
- The PX8000 can handle up to four storage devices. If the connected device is partitioned, the PX8000 treats each partition as a separate storage device.
- Connect USB storages device directly, not through a USB hub.
- Do not connect and disconnect the two USB devices repetitively. Provide a 10-second interval between removal and connection.

How to Connect a USB Storage Device

When connecting a USB storage device to the PX8000 USB port, connect the USB cable directly as shown in the figure below. You can connect/disconnect a USB cable at any time regardless of whether the PX8000 is on or off (hot-plugging is supported). Connect the type A connector of the USB cable to the PX8000, and connect the type B connector to the USB storage device. If you connect a USB storage device when the power switch is on, the device becomes available for use after the PX8000 identifies it. The PX8000 has two USB ports: USB-0 and USB-1. The port numbers are not fixed. The port at which the first USB storage device is detected becomes USB-0. The second detected USB storage device becomes USB-1.



General USB Storage Device Handling Precautions

Follow the general handling precautions that are provided with your USB storage device.

22.2 Formatting Storage Media

This section explains how to format storage media.
Storage management
- Selecting the storage medium to format
- Executing the format

CAUTION

- When you format a storage medium, all the data that is stored on the medium is deleted.
- If a formatted storage medium cannot be detected by the PX8000, use the PX8000 to format the storage medium again.

French

ATTENTION

- Lorsque vous formatez un support de stockage, toutes les données qu'il contient sont supprimées.
- Si le DL850E/DL850EV ne détecte pas un support de stockage formaté, utilisez le PX8000 pour formater de nouveau le support de stockage.

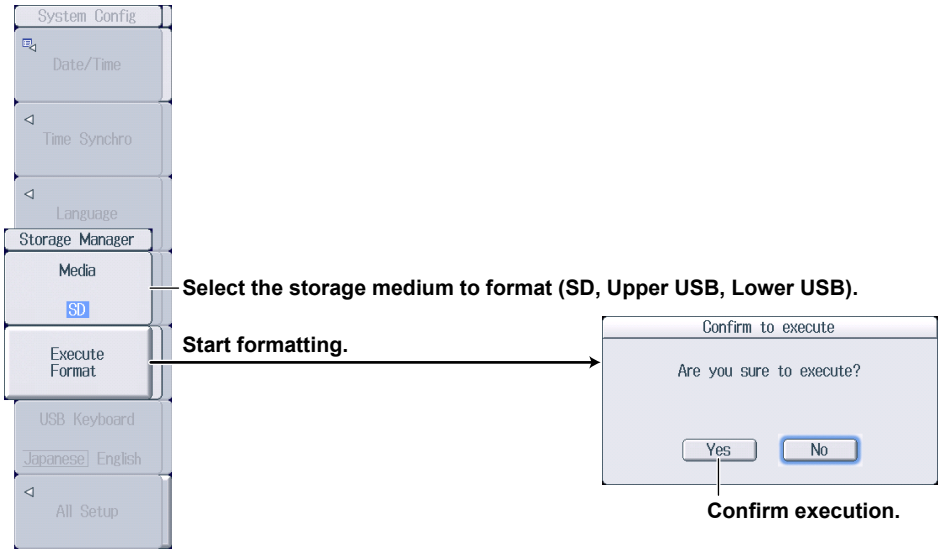
UTILITY System Config Menu

Press **UTILITY** and then the **System Config** soft key to display the following menu.

Opens the storage manager

Setting Storage Management (Storage Manager)

Press the **Storage Manager** soft key to display the following menu.



Storage Medium to Format (Media)

SD: SD memory card

Upper USB: The USB storage device that is connected to the PX8000's upper USB port (type A) for connecting peripheral devices.

Lower USB: The USB storage device that is connected to the PX8000's lower USB port (type A) for connecting peripheral devices.

22.3 Saving Waveform Data

This section explains the following settings for saving waveform data.

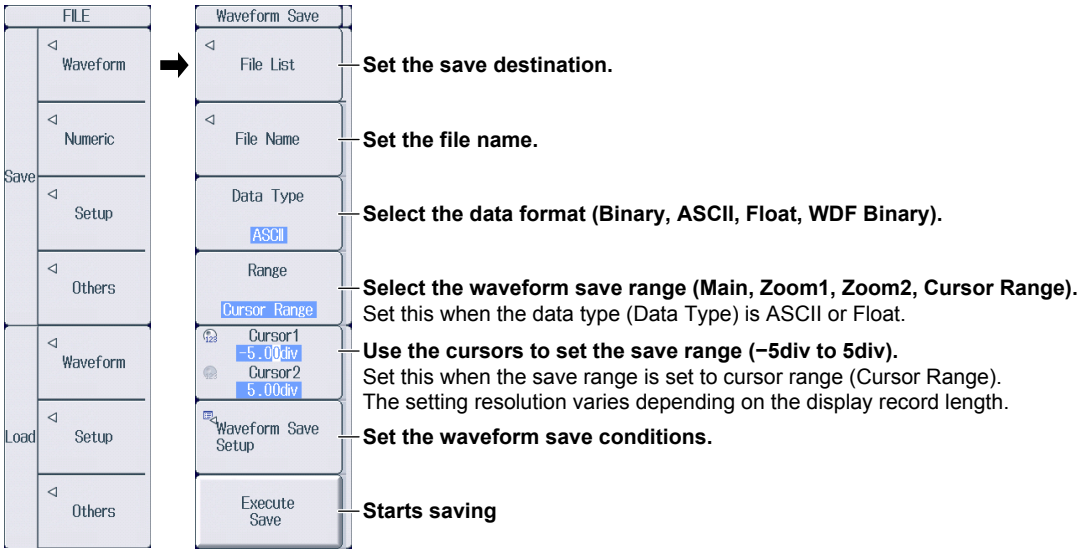
- Save destination
  Drive (medium), folder
- File name
  Auto naming, file name, comment
- Data type
- Save range
- Save conditions
  Waveforms to save, history data range of waveforms to be saved, data removal interval, etc.
- Starting to Save

You can save waveform data from the FILE Waveform Save menu and SAVE menu. The settings for saving waveform data are shared among these menus.

► Features Guide: “Saving Waveform Data (Waveform)”

FILE Waveform Save Menu

Press **FILE** and then the **Waveform** soft key next to Save to display the following menu.



Selecting the Data Type (Data Type)

Binary:

The sampled data stored in the acquisition memory is saved to a file in binary format. The extension is .WPF. You can load this type of data into the PX8000.

ASCII:

The sampled data stored in the acquisition memory is converted using the specified range and saved to a file in ASCII format. The extension is .CSV. To save the data for MATLAB (numeric analysis software), the extension is .TXT. You cannot load either of these types of data into the PX8000.

Float:

The sampled data stored in the acquisition memory is converted using the specified range and saved to a file in 32-bit IEEE floating format. The extension is .FLD. You cannot load this type of data into the PX8000. If the file size would exceed 2 GB to create the file, it cannot be saved.

WDF Binary:

- The sampled data stored in the acquisition memory is saved to a file in binary format. The extension is .WDF. This file is used to analyze waveforms using NI DIAdem.
- You cannot load this type of data into the PX8000.
- If the combination of the record length and the number of channels causes the file size to exceed 2 GB, the file cannot be created.

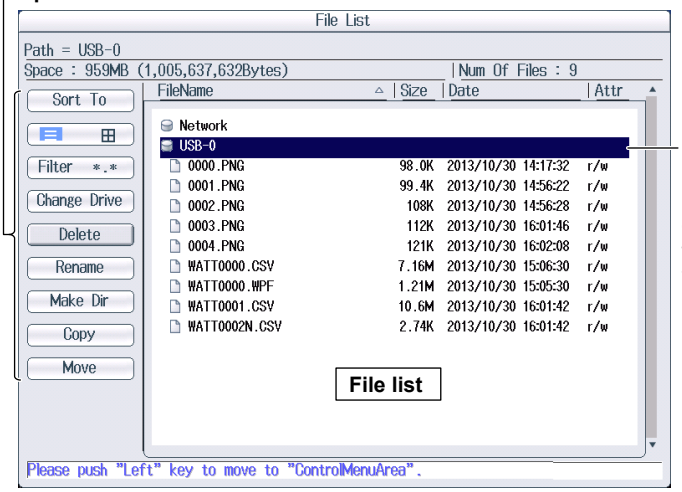
Selecting the Waveform Save Range (Range)

Main:	The range of data displayed in the main window is saved.
Zoom1:	The range data displayed in the Zoom1 window is saved.
Zoom2:	The range of data displayed in the Zoom2 window is saved.
Cursor Range:	The range of data specified by Cursor1 and Cursor2 is saved.

Setting the Save Destination (File List)

Press the **File List** soft key to display the following screen.

Operation menu ► section 22.10



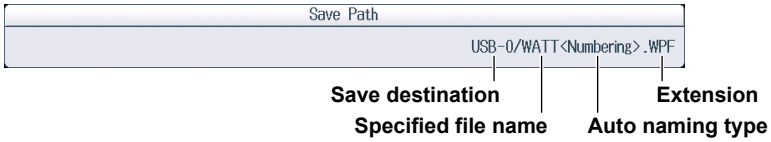
Destination storage medium (drive) or folder
Use the jog shuttle or the up and down arrow keys (▲.▼) to move the cursor, and press SET to make your selection.

Note

You can also set the save destination drive by using the Change Drive item on the operations menu.

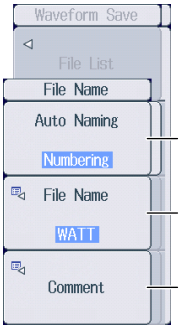
Save Destination (Save Path) Display Box

The save destination box appears at the bottom of the screen when the FILE Save menu is displayed. This box displays the file save destination, file name, and so on.



Assigning File Names (File Name)

Press the **File Name** soft key to display the following menu.



Set the auto naming method (OFF, Numbering, Date).

Set the file name.

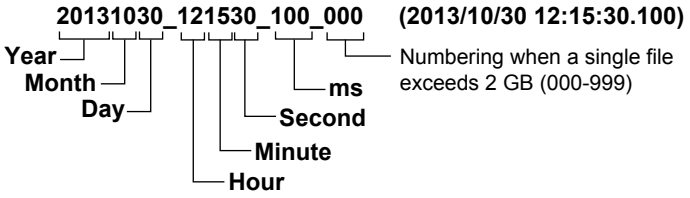
Set comments.

Setting Auto Naming (Auto Naming)

OFF: The auto naming feature is disabled. The name that you specify using the File Name setting is used. If there is a file with the same name in the save destination folder, you cannot save the data.

Numbering: The PX8000 automatically adds a four-digit number between 0000 to 9999 after the common name specified using the File Name setting (up to four characters) when it saves files.

Date: The file name is the date and time (down to ms) when the file is saved. The file name specified for the File Name setting is ignored.



Regardless of whether the auto naming feature is set to OFF, Numbering, or Date, if the data size of a single file exceeds 2 GB, an underscore and a three-digit sequence number (000 to 999) is appended to the file name. The sequence number is incremented by one each time a file is added. This is appended only if the file exceeds 2 GB.

Setting the Comment (Comment)

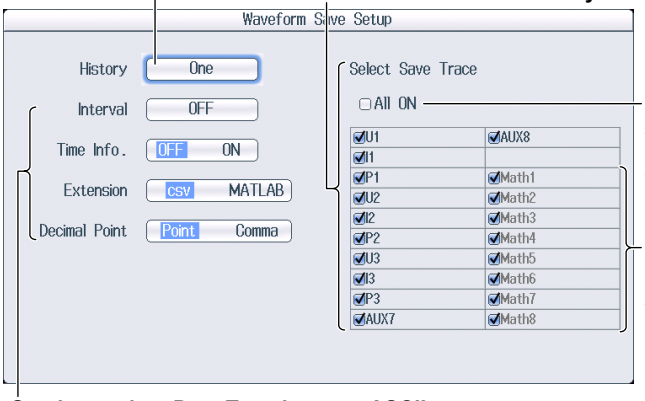
You can add a comment that consists of up to 120 characters when you save a file. You do not have to enter a comment. All characters, including spaces, can be used in comments.

Setting the Waveform Save Conditions (Waveform Save Setup)

Press the **Waveform Save Setup** soft key to display the following screen.

History data range of the waveforms to be saved (One, All)
Set this when Data Type is set to Binary, ASCII, or FLOAT.
This is fixed to One for WDF Binary.

Select the waveforms that you want to save.



Select All ON.
All displayed waveforms are saved regardless of whether the individual waveforms in the table below are selected.

Math1 to Math8
Set these when Data Type is set to ASCII or Float. These do not appear for Binary or WDF Binary.

Set these when Data Type is set to ASCII.

Interval (data removal interval): OFF, Per5, Per10, Per20, Per50, Per100, Per200, Per500, Per1000, Per2000, Per5000

Time Info. (whether to save time information): OFF, ON

Extension (file name extension): csv, MATLAB*

Decimal Point (decimal point): Point, Comma

* If MATLAB is selected, the extension will be set to .TXT.

History Data Range of Waveforms to Be Saved (History)

One: The one waveform that is specified with Selected Record on the HISTORY menu will be saved. To save an averaged history waveform, set the history feature's display mode to Average Record, and then select One.

All: All history waveforms within the range bounded by Start Record and End Record on the HISTORY menu will be saved. If you search for history waveforms, and then select All, only the detected waveforms will be saved. All waveforms (All) cannot be used to save waveforms when the data format is WDF Binary.

Selecting the Waveforms to Save (Select Save Trace)

You can select All ON, U1 to U4, I1 to I4, P1 to P4, AUX3 to AUX8, and Math1 to Math8 waveforms. The displayed waveforms that you select are saved. The setup data for the saved waveforms are also saved.

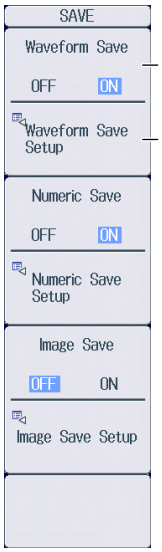
- Waveforms that are not displayed will not be saved even if you select them.
- Math1 to Math8 are available when the data type (Data Type) is ASCII or Float.
  - If the computation mode on the MATH menu is set to OFF, Math1 to Math8 cannot be selected.
  - Any computation channels (Math1 to Math8) whose operation is set to OFF on the MATH menu cannot be selected.
  - Any computation channels (Math1 to Math8) whose display is set to OFF on the MATH menu will not be displayed. Therefore, they will not be saved.
- If the data type is set to Binary, source waveforms for waveform computation on the MATH menu are saved even if they are not displayed. Therefore, even though Math1 to Math8 are cannot be specified to be saved when the data type is set to Binary, when binary data is loaded, Math1 to Math8 may appear depending on the setup data of the MATH menu.
- If the data type is set to ASCII or Float and you select All for saving history waveforms, Math1 to Math8 will not be saved. If you want to save Math1 to Math8, set History to One.

Starting to Save (Execute Save)

Press the **Execute Save** soft key to save the waveform data file to the specified folder.

SAVE Menu

Press **SHIFT+SAVE** (MENU) to display the following menu.

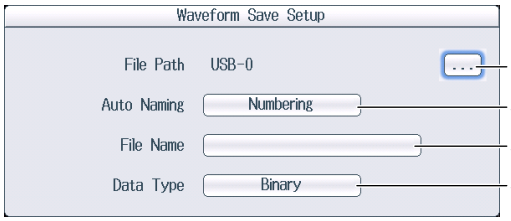


Set waveform data saving to ON.

Set the save destination, file name, and data type for waveform data.

Setting the Save Destination, File Name, and Data Type for Waveform Data (Data Save Setup)

Press the **Waveform Save Setup** soft key to display the following screen.



Displays the file list ► section 22.10

Set the auto naming method (OFF, Numbering, Date).

Set the file name.

Set the data format (Binary, ASCII, Float, WDF Binary).

Starting to Save

Press **SAVE** to save the waveform data file to the specified folder.

If Numeric Save or Image Save on the SAVE menu is set to ON, the numeric data or screen capture data will also be saved.

Save Destination for Action Execution

In the specified drive, a folder is automatically created with the date (year, month, and day) as its name, and data is saved to files in that folder using names that are specified by the auto naming feature.

If the number of files in the save destination folder exceeds 1000, a new folder is automatically created with the date and an incremented sequence number (000 to 999) as its name, and the data continues to be saved in the new folder.

22.4 Saving Numeric Data

This section explains the following settings for saving numeric data.

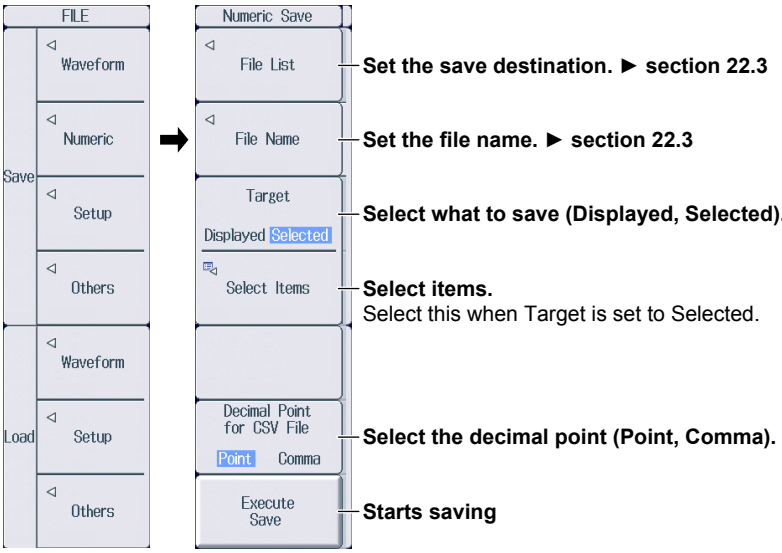
- Save destination
- File name
- Data to save
- Decimal point
- Starting to Save

You can save numeric data from the FILE Numeric Save menu and SAVE menu. The settings for saving numeric data are shared among these menus.

► Features Guide “Saving Numeric Data (Numeric)”

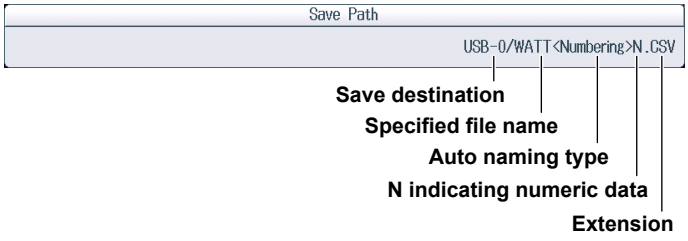
FILE Numeric Save Menu

Press **FILE** and then the **Numeric** soft key next to Save to display the following menu.



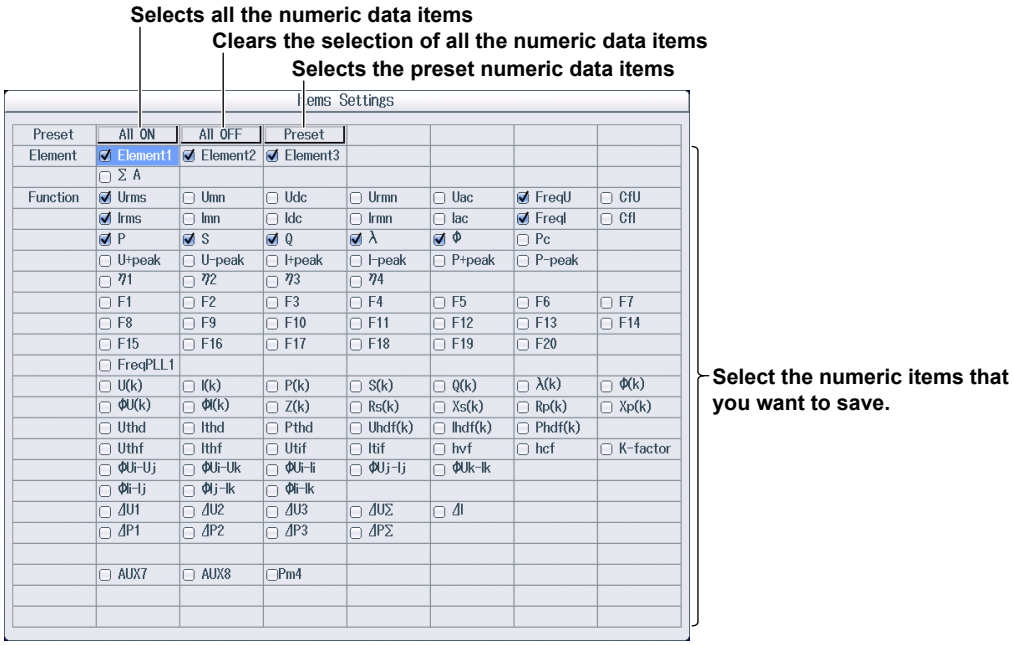
Save Destination (Save Path) Display Box

The save destination box appears at the bottom of the screen when the FILE Save menu is displayed. This box displays the file save destination, file name, and so on.



Selecting an Item

Press the **Select Items** soft key to display the following screen.

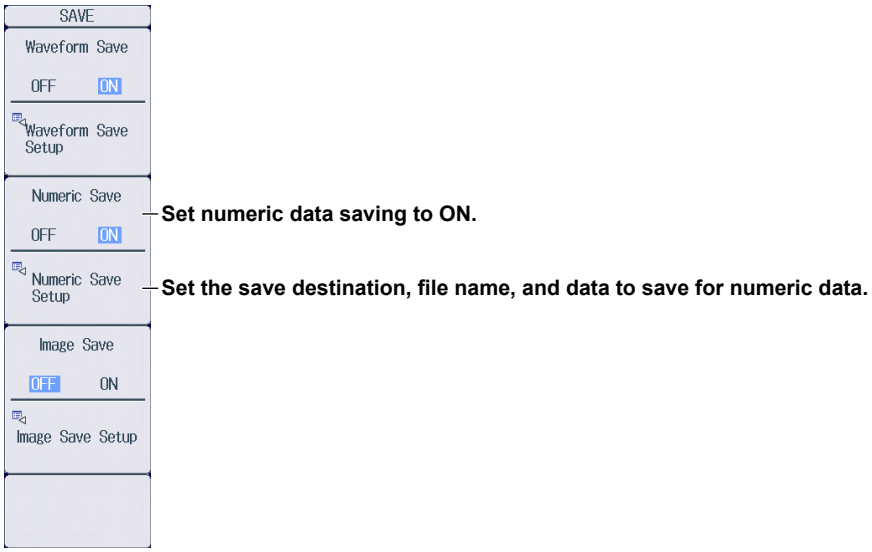


Starting to Save (Execute Save)

Press the **Execute Save** soft key to save the numeric data file to the specified folder.

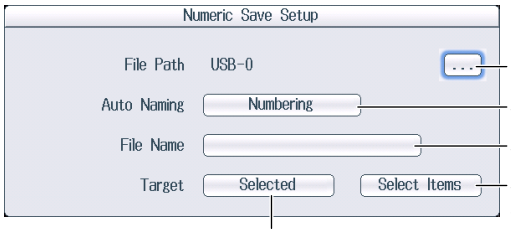
SAVE Menu

Press **SHIFT+SAVE** (MENU) to display the following menu.



Setting the Save Destination, File Name, and Data to Save for Numeric Data (Data Save Setup)

Press the **Numeric Save Setup** soft key to display the following screen.



Displays the file list ► section 22.10

Set auto naming. ► section 22.3

Set the file name. ► section 22.3

Select items (shared with the FILE Numeric Save setting).
Select this when Target is set to Selected.

Select what to save (Displayed, Selected).

Starting to Save

Press **SAVE** to save the numeric data file to the specified folder.

If Waveform Save or Image Save on the SAVE menu is set to ON, the waveform data or screen capture data will also be saved.

22.5 Saving Setup Data

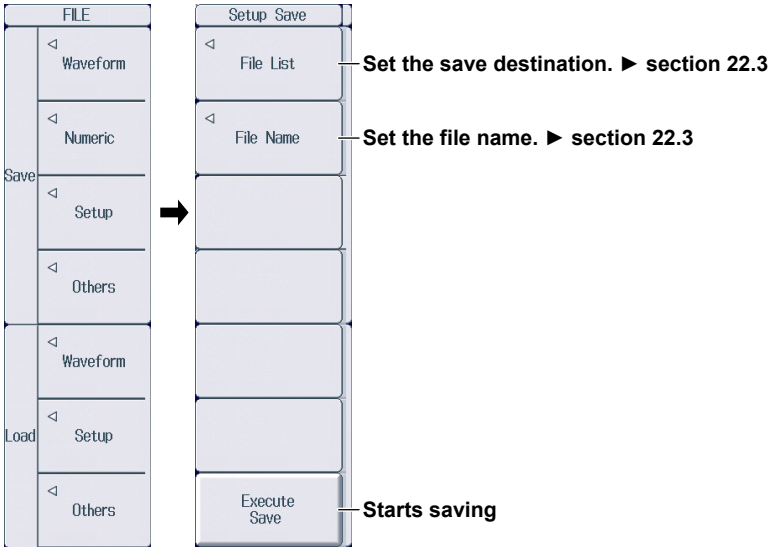
This section explains the following settings for saving setup data. You can save setup data to a file.

- Save destination
- File name
- Starting to Save

► Features Guide: “Saving Setup Data (setup)”

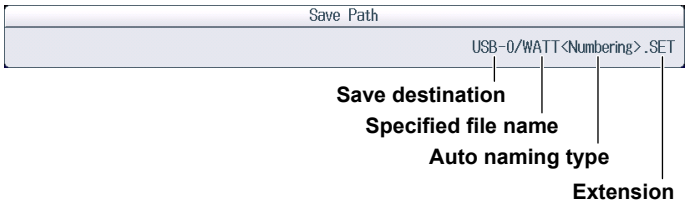
FILE Setup Save Menu

Press **FILE** and then the **Setup** soft key next to Save to display the following menu.



Save Destination (Save Path) Display Box

The save destination box appears at the bottom of the screen when the FILE Save menu is displayed. This box displays the file save destination, file name, and so on.



Starting to Save (Execute Save)

Press the **Execute Save** soft key to save the setup data file to the specified folder.

22.6 Saving Other Types of Data

This section explains the following settings for saving screen captures, snapshot waveforms, results of automated measurement of waveform parameters, and results of FFT.

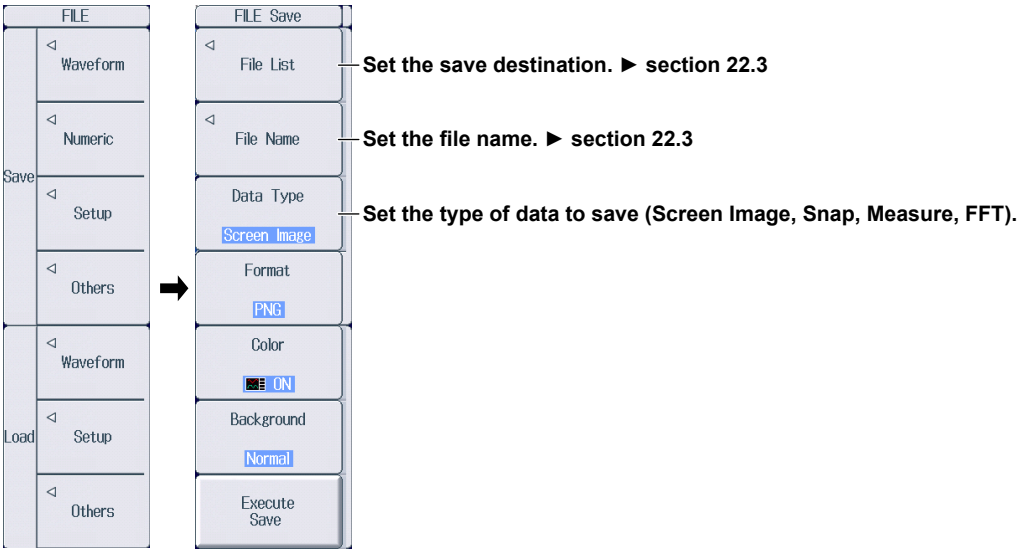
- Save destination
- File name
- Data type to save
- Data format (for screen captures)
- Color (for screen captures)
- Starting to Save

You can save screen captures from the FILE Others Save, PRINT MENU menu, and SAVE menu. The screen capture settings are shared among these menus.
This section describes how to save screen captures from the FILE Others Save menu. For instructions on how to save from the PRINT MENU menu and SAVE menu, see section 21.3.

► Features Guide: “Saving Other Types of Data (Others)”

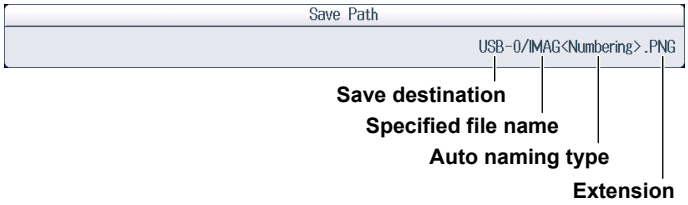
FILE Others Save Menu

Press **FILE** and then the **Others** soft key next to Save to display the following menu.



Save Destination (Save Path) Display Box

The save destination box appears at the bottom of the screen when the FILE Save menu is displayed. This box displays the file save destination, file name, and so on.

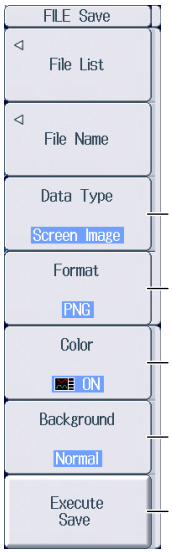


Setting the Data Type to Save (Data Type)

1. Press the **Data Type** soft key.
2. Set the type of data to save.

Screen Image: The displayed screen image is saved to a PNG, BMP, or JPEG file.
Snap: Waveform data captured in a snapshot is saved to an .SNP file.
Measure: The results of automated measurement of waveform parameters are saved to a CSV file.
FFT: The FFT analysis results are saved to a CSV file.

When Data Type Is Set to Screen Image



Set Data Type to Screen Image.
Set the data format (PNG, BMP, JPEG).
Set the color (ON, ON(Gray), ON(Reverse), OFF).
Sets the background to opaque (Normal) or transparent (Transparent).*
Starts saving

* This appears when the data format is set to PNG.
When the data format is set to JPEG, the frame on/off setting appears.

- **Setting the Data Format (Format)**

Screen captures can be saved in the following data formats. The table below shows the extensions that are automatically assigned to each format and the approximate sizes of files in each format.

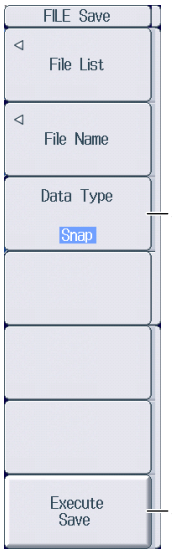
Data Format	Extension	File Size[1]
PNG	*.PNG	Approx. 100 KB (approx. 50 KB)[2]
BMP	*.BMP	Approx. 2 MB (approx. 150 KB)[2]
JPEG	*.JPG	Approx. 250 KB

1 When Color is set to ON
2 The file sizes in parentheses indicate the file size when Color is set to OFF.

- **Setting the Color (Color)**

ON	An screen capture is produced with a 65536-color palette.
ON(Gray)	An screen capture is produced with a 16-color grayscale palette.
ON(Reverse)	The screen background is not produced in color.
OFF	A black-and-white screen capture is produced.

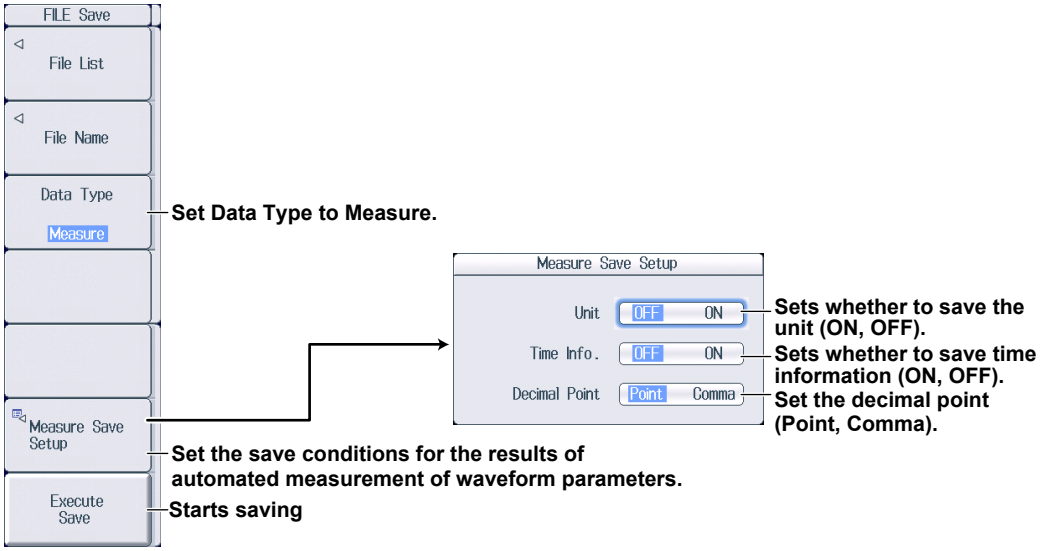
When Data Type Is Snap



Set Data Type to Snap.

Starts saving

When Data Type Is Measure



Set Data Type to Measure.

Sets whether to save the unit (ON, OFF).

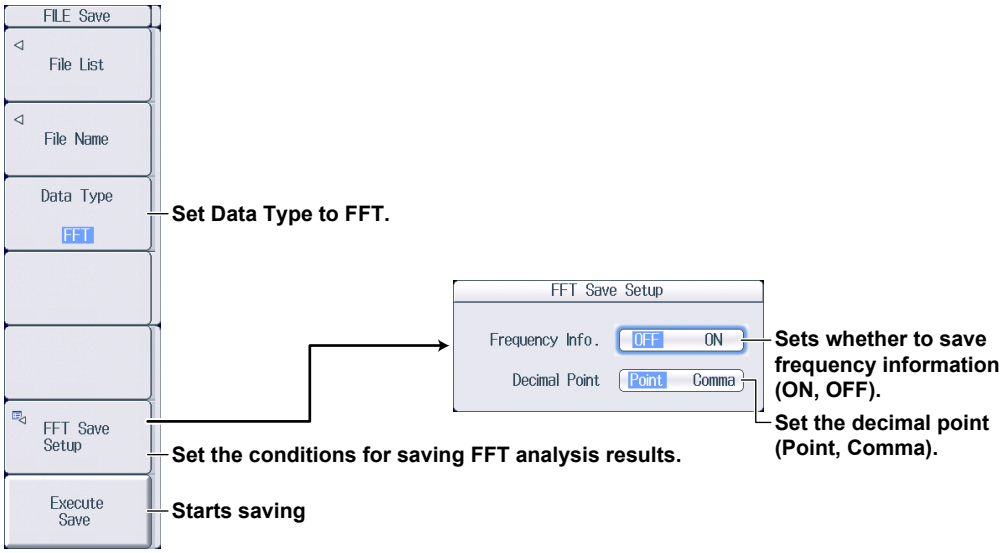
Sets whether to save time information (ON, OFF).

Set the decimal point (Point, Comma).

Set the save conditions for the results of automated measurement of waveform parameters.

Starts saving

When Data Type Is FFT



Starting to Save (Execute Save)

Press the **Execute Save** soft key to save the appropriate data file to the specified folder.

22.7 Loading Waveform Data

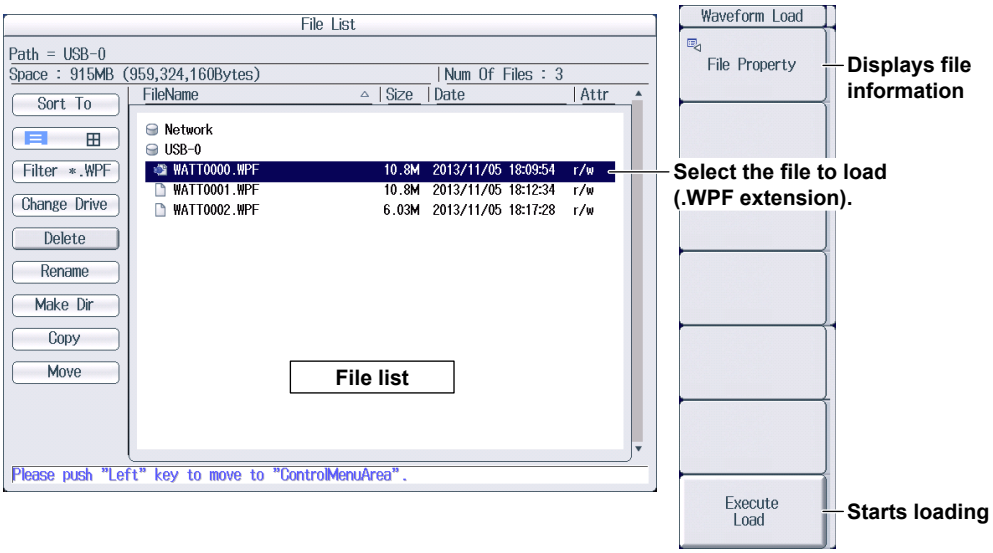
This section explains the following settings for loading waveform data.

- File to load
- Displaying file information
- Starting to load
- Clearing loaded waveforms

► Features Guide: “Loading Waveform Data (Waveform)”

FILE Waveform Load Menu

Press **FILE** and then the **Waveform** soft key next to Load to display the following screen and menu.



Selecting the File to Load

Select the waveform data file (.WPF extension) to load from the file list. ► section 22.10

Starting to Load (Execute Load)

Press the **Execute Load** soft key to load the waveform data file from the specified file.

- The setup data in the waveform data file is also loaded. When you start measurement, the loaded waveform data will cleared, but the setup data that was loaded with the waveform data will remain.
- If the current PX8000 module configuration is different from the modules configuration in the waveform data, you cannot load the waveform data.
- Waveform data saved with a PX8000 model with large memory capacity cannot be loaded in to a model with small memory capacity.

Clearing Loaded Waveforms

Loaded waveforms are cleared in the following situations.

- When waveform acquisition is started with the START/STOP key
- When the Clear History soft key on the HISTORY menu is pressed
- When the PX8000 is initialized

22.8 Loading Setup Data

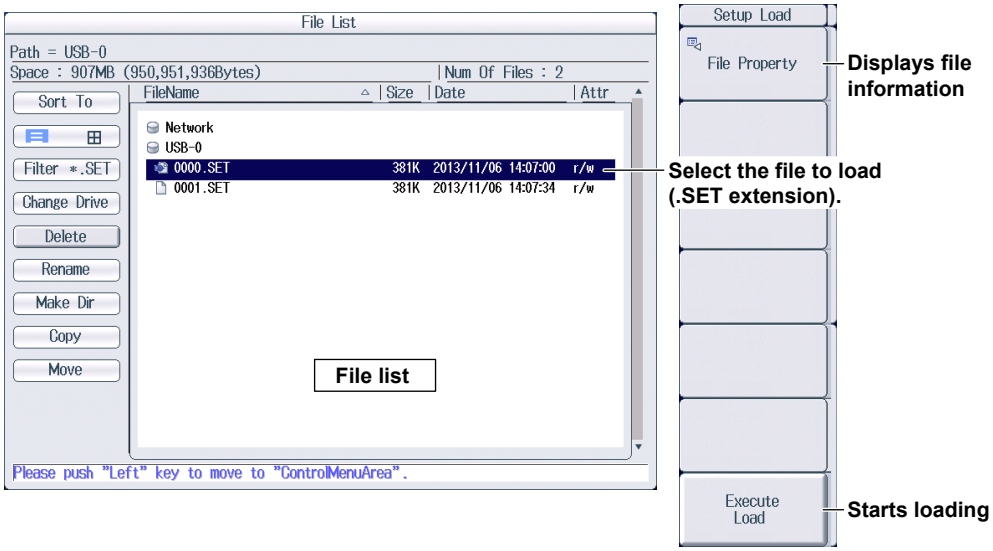
This section explains the following settings for loading setup data.

- File to load
- Displaying file information
- Starting to load

► Features Guide: “Loading Setup Data (Setup)”

FILE Setup Load Menu

Press **FILE** and then the **Setup** soft key next to Load to display the following screen and menu.



Selecting the File to Load

Select the setup data file (.SET extension) to load from the file list. ► section 22.10

Starting to Load (Execute Load)

Press the **Execute Load** soft key to load the setup data file from the specified file.

If the current PX8000 module configuration is different from the modules configuration in the setup data, you cannot load the setup data.

22.9 Loading Other Types of Data

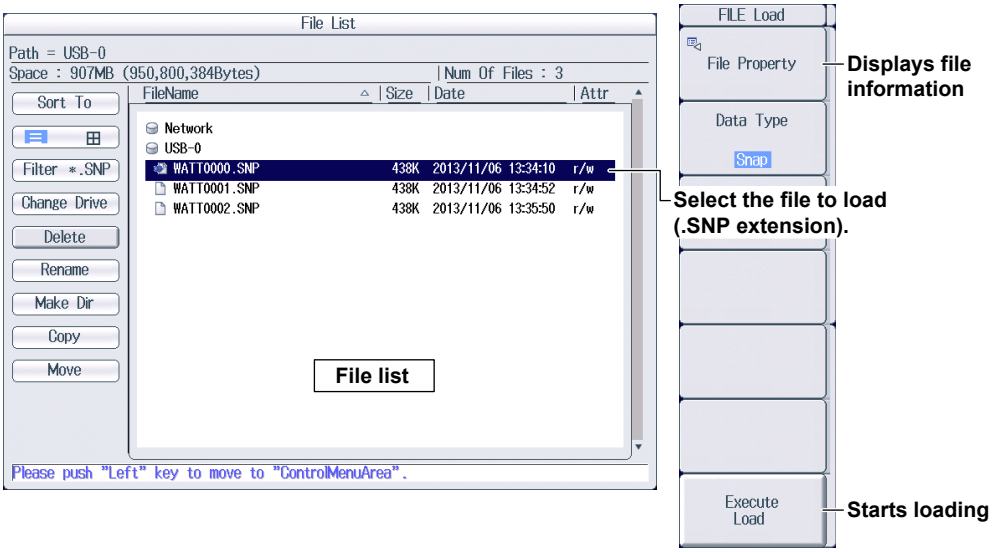
This section explains the following settings for loading snapshot waveforms.

- File to load
- Displaying file information
- Starting to load
- Clearing Loaded Waveforms

► Features Guide: “Loading Other Types of Data (Others)”

FILE Others Load Menu

Press **FILE** and then the **Others** soft key next to Load to display the following screen and menu.



Selecting the File to Load

Select the snapshot data file (.SNP extension) to load from the file list. ► section 22.10

Starting to Load (Execute Load)

Press the **Execute Load** soft key to load the snapshot waveform data file from the specified file.

Clearing Loaded Waveforms

Loaded waveforms are cleared when you press CLEAR TRACE or when you initialize the PX8000.

22.10 Performing File Operations

This section explains the following settings for performing various file operations from the file list or the file utility menu.

File list
- Sorting
- Display format
- Type of file to list
- Changing the storage medium (drive)
- Deleting files and folders
- Renaming files and folders
- Creating folders (directories)
- Copying files
- Moving files

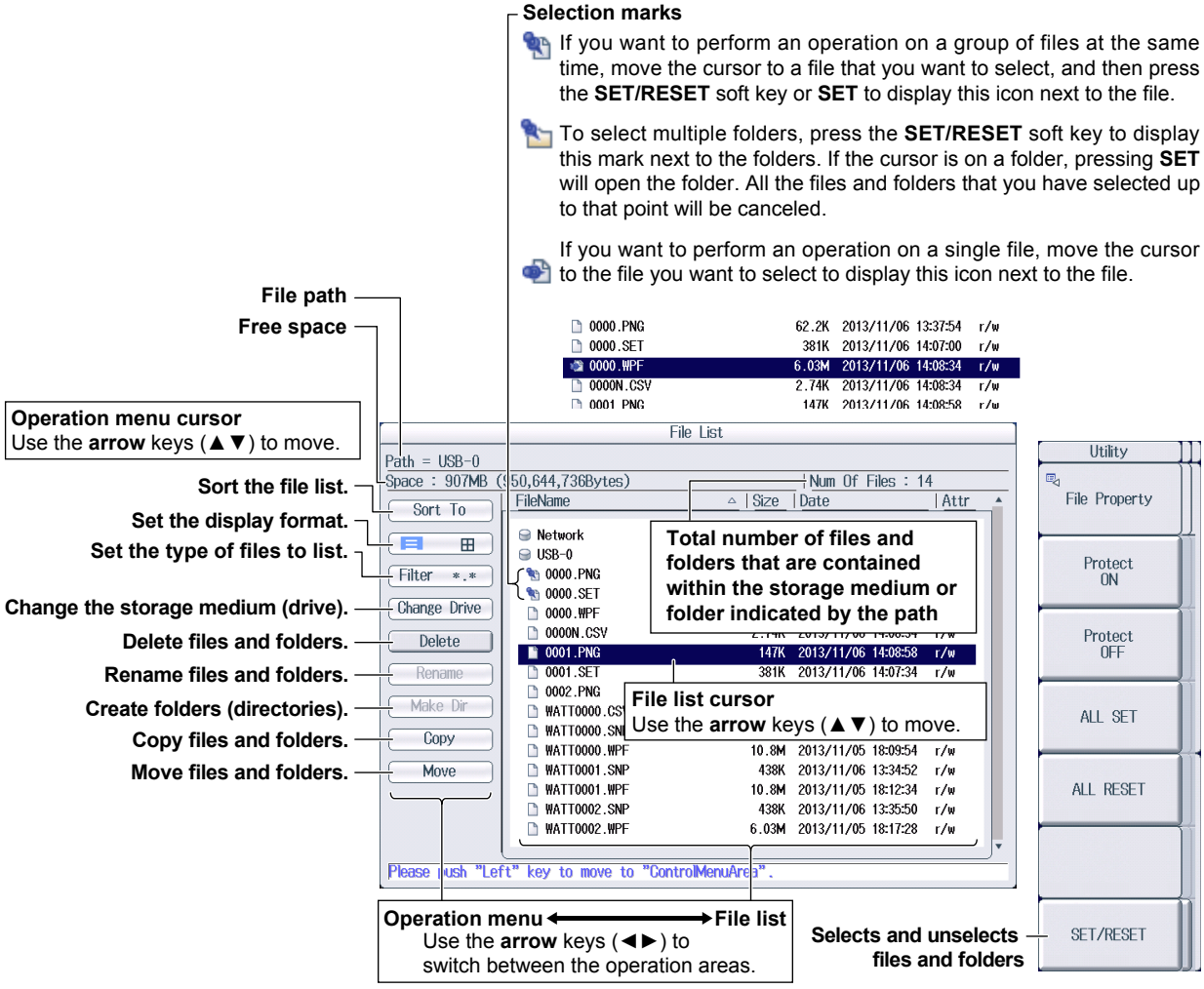
FILE Utility Menu
- Displaying file information
- Turning file protection on and off
- Selecting files (All Set/All Reset and Set/Reset)

► Features Guide: “File Operations (Utility)”

File List and FILE Utility Menu

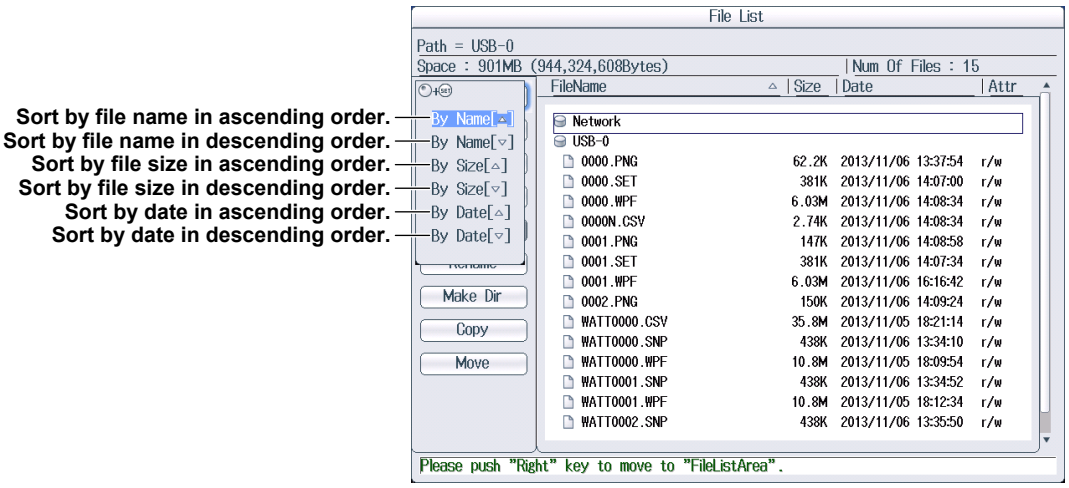
1. Press **FILE** and then the **Waveform**, **Numeric**, **Setup**, or **Others** soft key next to Save.
2. Press the **File List** soft key to display the file list and FILE Utility menu.
   For details on the FILE Utility menu, see page 22-28.

File List (File List)



Sorting the File List (Sort To)

Select **Sort To** on the operation menu to display the following screen.

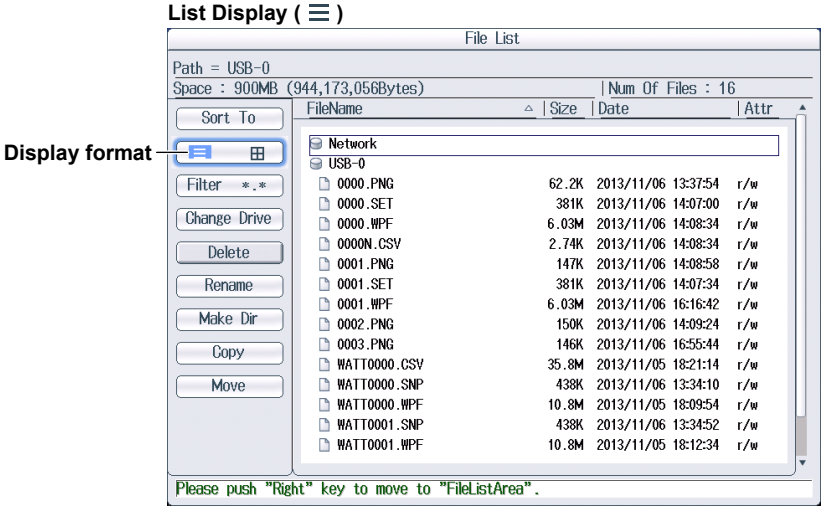


Display Format

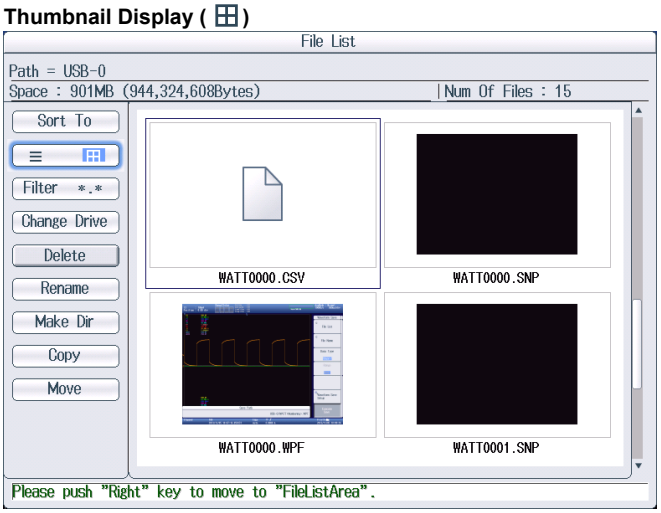
Select **display format** on the operation menu to display the following screens.

Press **SET** to switch between display formats.

List Display (☰)

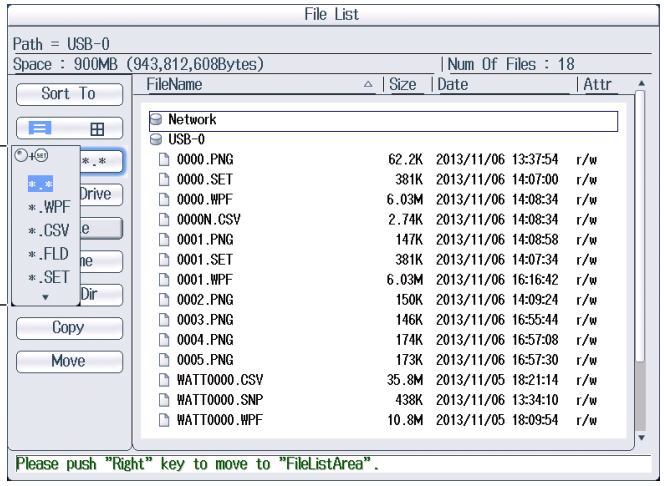


Thumbnail Display (⊞)



Selecting the Type of File to List (Filter)

Select **Filter** on the operation menu to display the following screen.

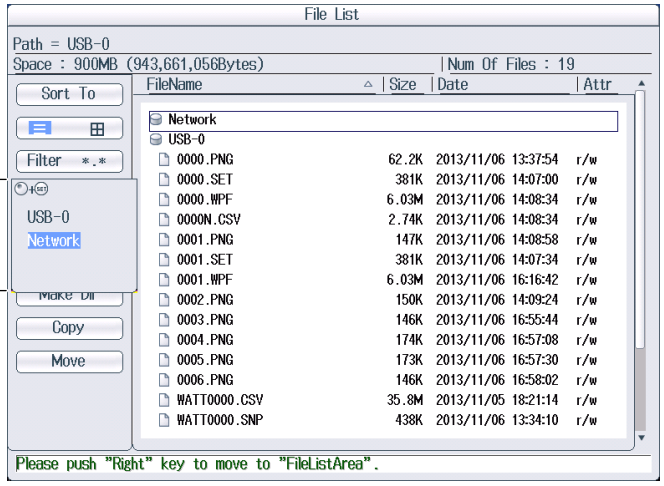


Select the type of files to list.

.: All files
*.WPF: Binary waveform files
*.CSV: ASCII waveform files
*.FLD: Floating-point waveform files
*.SET: Setup files
*.BMP: Bitmap image files
*.PNG: PNG image files
*.JPG: JPEG image files
*.SNP: Snapshot waveform files
*.TXT: Text files, custom display configuration files for numeric data, MATLAB waveform files
*.WDF: WDF binary waveform files

Changing the Storage Medium or Drive (Change Drive)

Select **Change Drive** on the operation menu to display the following screen.



Select the storage medium (drive).

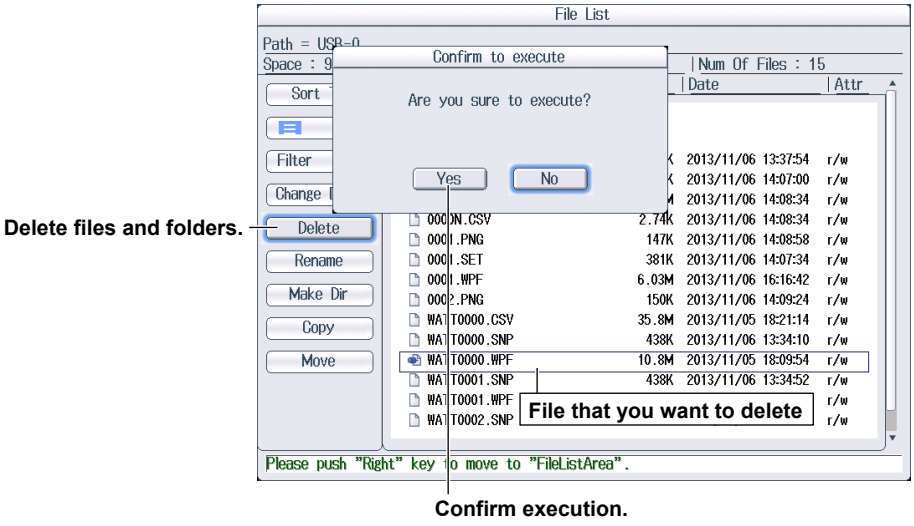
SD-1: SD card
USB-0: The first detected USB storage medium
USB-1: The second detected USB storage medium
Network: Network Drive

Note

You can also change the storage medium by highlighting the storage medium (drive) you want to change to in the file list and pressing **SET**.

Deleting Files and Folders (Delete)

1. Select the file or folder that you want to delete from the file list.
2. Select **Delete** on the operation menu to display the following screen.



Delete files and folders.

Confirm execution.

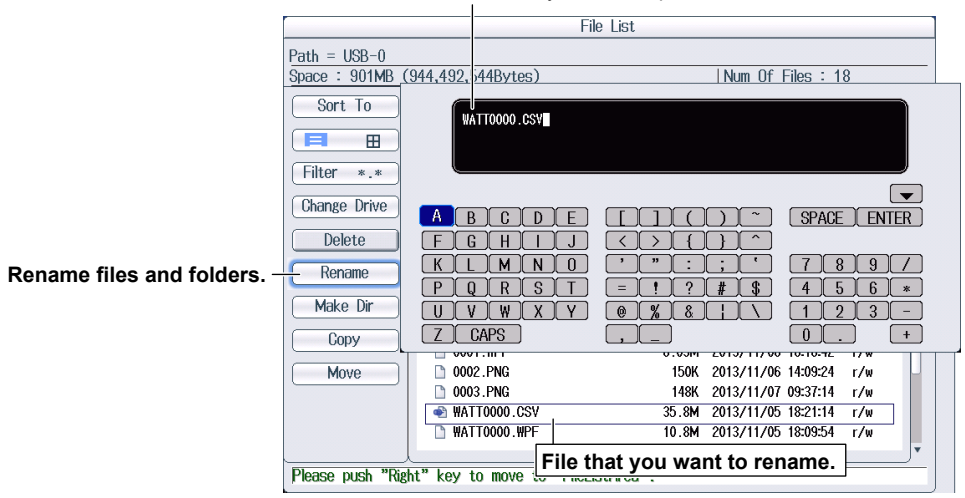
Note

- To delete multiple files or folders that are in the file list at the same time, move the cursor to the file or folder that you want to delete, and then carry out the following operations.
  Files: Press **SET** or the **SET/RESET** soft key on the Utility menu.
  Folders: Press the **SET/RESET** soft key on the FILE Utility menu. If the cursor is on a folder, pressing **SET** will open the folder. All the files and folders that you have selected up to that point will be canceled.
- You can abort file deleting. However, files that are already being processed are not applicable.

Renaming Files and Folders (Rename)

1. Select the file or folder that you want to rename from the file list.
2. Select **Rename** on the operation menu to display the following screen.

Use the keyboard to input the new file or folder name.

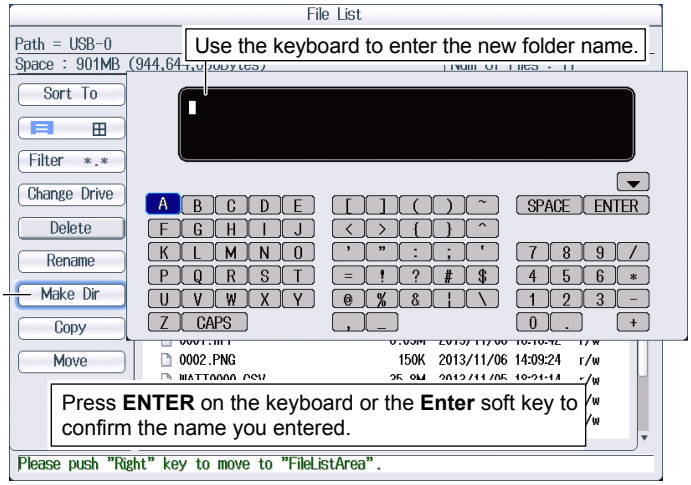


Rename files and folders.

Press **ENTER** on the keyboard or the **Enter** soft key to confirm the name you entered.

Making Folders (Make Dir)

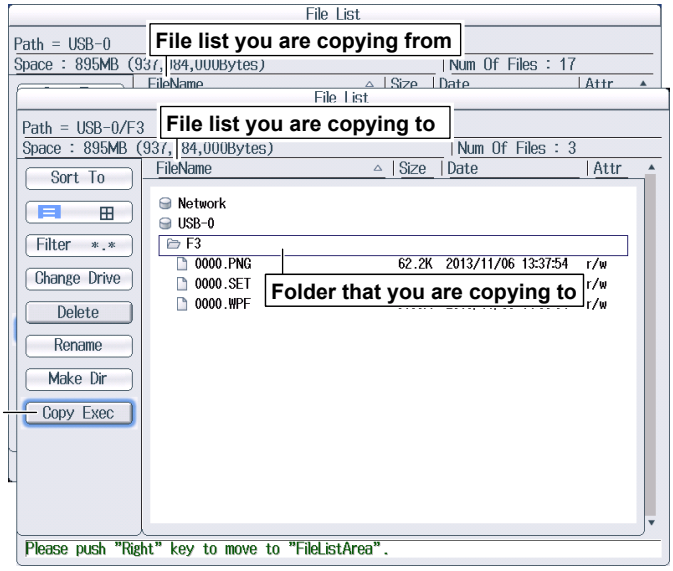
1. Select the drive or folder in the file list that you want to make the new folder in.
2. Select **Make Dir** on the operation menu to display the following screen.



Create folders (directories).

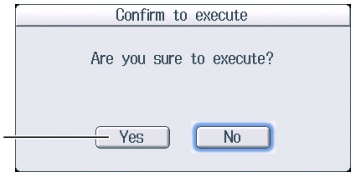
Copying Files (Copy)

1. Select the file that you want to copy from the file list.
2. Select **Copy** on the operation menu to display the following screen.



Copies the selected files and folders

3. Select the drive or folder on the file list that you are copying to.
4. Select **Copy Exec** on the operation menu to display the following screen.



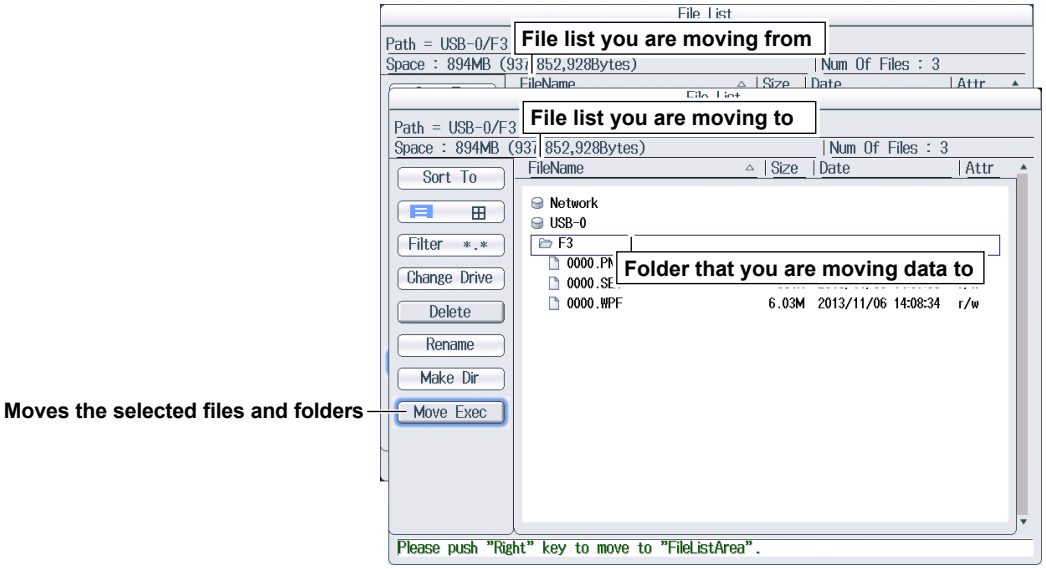
Confirm execution.

Note

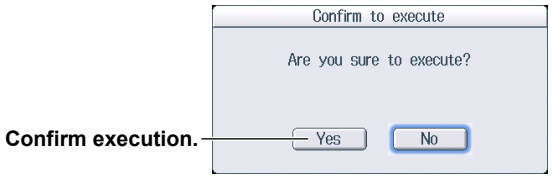
- The procedure for selecting multiple files or folders at the same time to copy them is the same as the procedure for selecting multiple files or folders at the same time to delete them. For more details, see the note on page 22-25.
- You can abort file copying.

Moving Files (Move)

1. Select the file that you want to move from the file list.
2. Select **Move** on the operation menu to display the following screen.



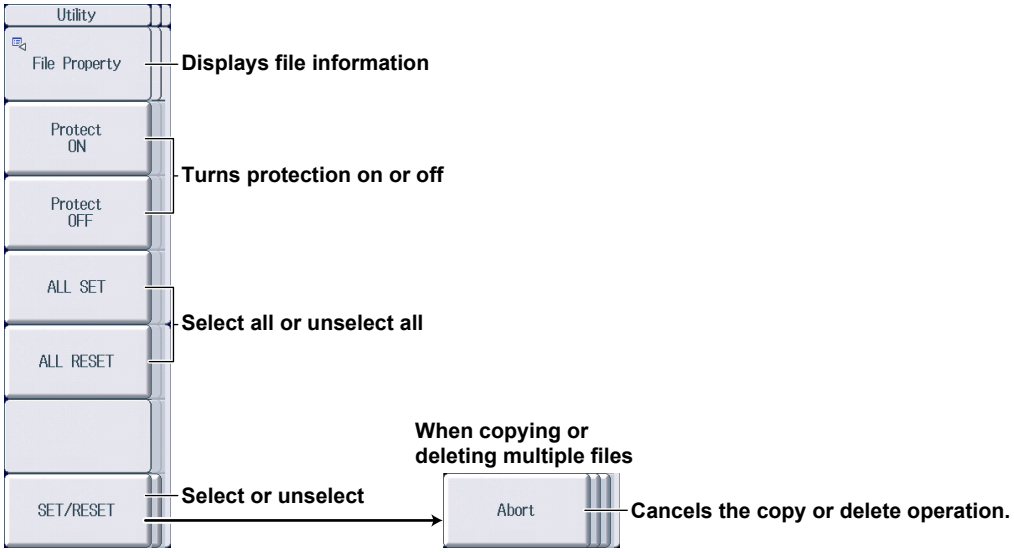
3. Select the drive or folder in the file list that you are moving to.
4. Select **Move Exec** on the operation menu to display the following screen.

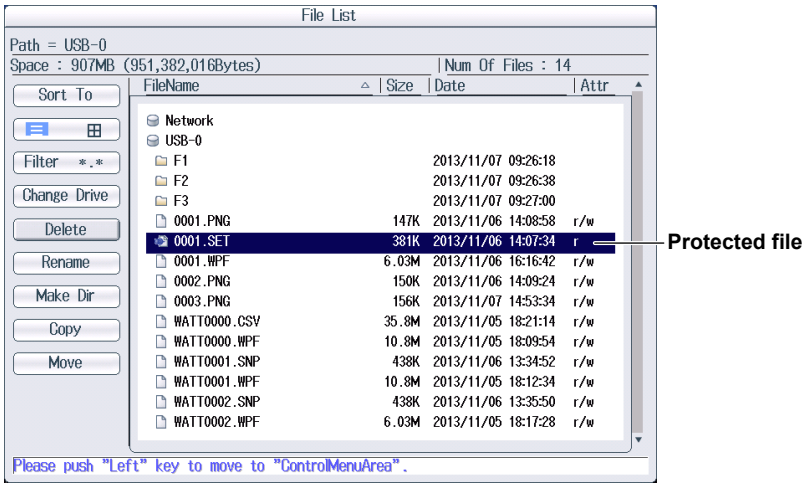


Note

The procedure for selecting multiple files or folders at the same time to move them is the same as the procedure for selecting multiple files or folders at the same time to delete them. For more details, see the note on page 22-25.

FILE Utility Menu





Turning Protection On or Off (Protect ON/OFF)

These soft keys turn protection on and off for the selected file. The change is reflected in the file attributes, displayed under the Attr column in the file list.

Protection	File Attribute	Description
ON	r	File protection is on for the selected file. The file can be read from. Writing is not allowed. Deleting is also not allowed.
OFF	r/w	File protection is off for the selected file. The file has read and write access.

ALL SET and ALL RESET

ALL SET: When a medium, folder, or file is highlighted in the file list, pressing this soft key selects all the files and folders in the corresponding medium or folder. Selection marks (see page 16-19) are displayed to the left of the selected files and folders.

ALL RESET: Pressing this soft key clears all the selected files and folders.

SET/RESET

This soft key selects the file or folder in the file list that is highlighted or clears the selection. Selection marks (see page 22-22) are displayed to the left of the selected files.

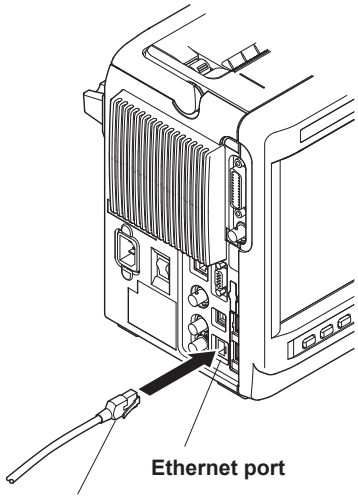
23.1 Connecting the PX8000 to a Network

This section explains how to connect the PX8000 to a network.

Ethernet Interface Specifications

There is a 1000BASE-T port located on the side panel of the PX8000.

Item	Specifications
Ports	1
Electrical and mechanical specifications	IEEE802.3 compliant
Transmission system	Ethernet (1000BASE-T, 100BASE-TX, 10BASE-T)
Communication protocol	TCP/IP
Supported services	Server: FTP and VXI-11 Client: FTP (Net Drive), SNTP, DHCP, and DNS
Connector type	RJ-45



Items Required to Connect the PX8000 to a Network

Cable

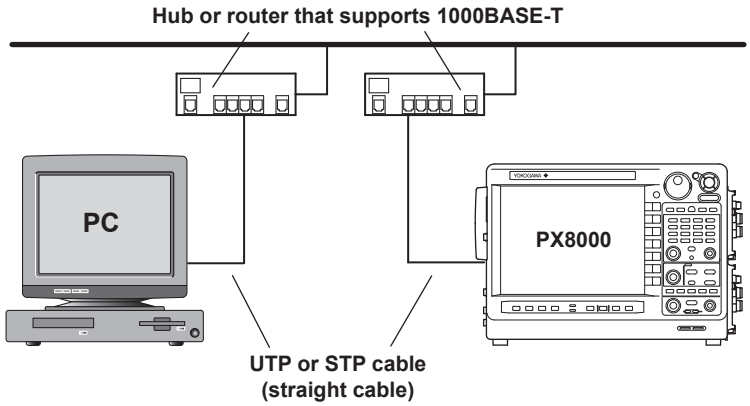
Use one of the following types of network cable that conforms to the transfer speed of your network.

- A UTP (Unshielded Twisted-Pair) cable
- An STP (Shielded Twisted-Pair) cable

Connection Procedure

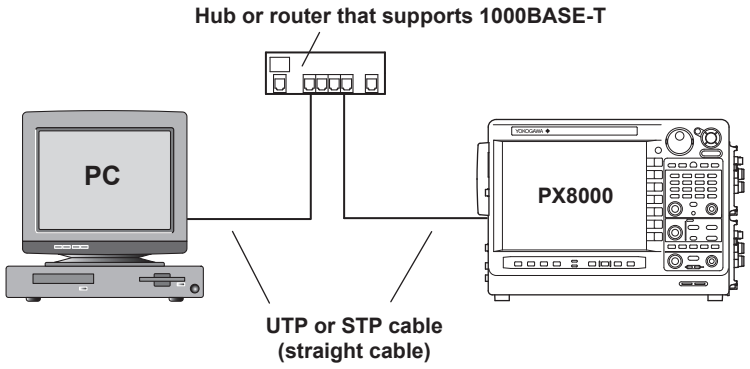
To Connect to a PC over a Network

1. Turn off the PX8000.
2. Connect one end of a UTP (or STP) cable to the ETHERNET 1000BASE-T port on the side panel.
3. Connect the other end of the UTP (or STP) cable to a hub or router.
4. Turn on the PX8000.



To Connect to a PC through a Hub or Router

1. Turn off the PX8000.
2. Connect one end of a UTP (or STP) cable to the ETHERNET 1000BASE-T port on the side panel.
3. Connect the other end of the UTP (or STP) cable to a hub or router.
4. Connect the PC to the hub or router in the same way.
5. Turn on the PX8000.



Note

- Use a hub or router that conforms to the transfer speed of your network.
- When you connect a PC to the PX8000 through a hub or router, the PC must be equipped with an auto switching 1000BASE-T/100BASE-TX/10BASE-T network card.
- Do not connect the PX8000 to a PC directly. Direct communication without a hub or router is not guaranteed to work.

23.2 Configuring TCP/IP Settings

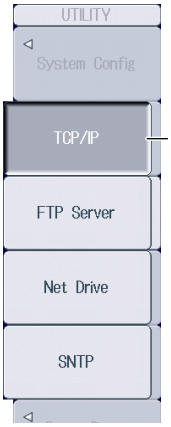
This section explains the following TCP/IP settings for connecting to a network.

- DHCP (IP address, subnet mask, and default gateway)
- DNS (domain name, DNS server IP address, and domain suffix)

► Features Guide: “TCP/IP (TCP/IP)”

UTILITY Network Menu

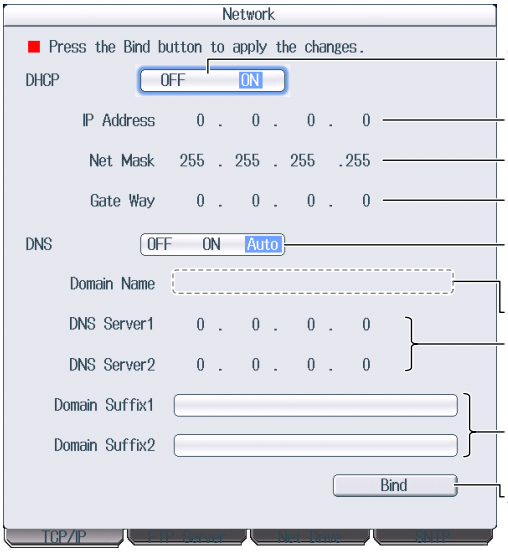
Press **UTILITY** and then the **Network** soft key to display the following menu.



Configure TCP/IP settings.

Configuring TCP/IP Settings (TCP/IP)

Press the **TCP/IP** soft key to display the following screen.



Turns DHCP on and off

Set these when DHCP is set to OFF.
- **IP address**
- **Subnet mask**
- **Default gateway**

Set the DNS (OFF, ON, Auto).*

Set these when DNS is set to ON.
- **Domain name**
- **DNS server IP address (1: primary, 2: secondary)**

Set these when DNS is set to ON or Auto.
- **Domain suffix (1: primary, 2: secondary)**

Apply the settings.

* Auto is displayed when DHCP is on.

DNS Settings (DNS)

OFF: DNS is disabled.

ON: DNS is enabled. Set the domain name, and the DNS server’s primary and secondary IP addresses and domain suffixes.

Auto: DNS is enabled. Set the domain suffix. The domain name and the DNS server IP addresses are set automatically. This option can only be selected when DHCP is on.

23.3 Accessing the PX8000 from a PC (FTP Server)

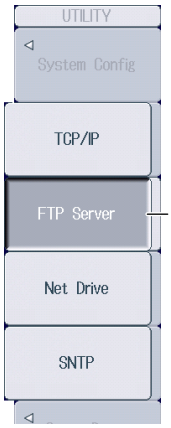
This section explains the following settings for accessing the PX8000 from a PC on a network.

- User name
- Password
- Timeout
- Starting an FTP Client

► Features Guide: “FTP Server (FTP Server)”

UTILITY Network Menu

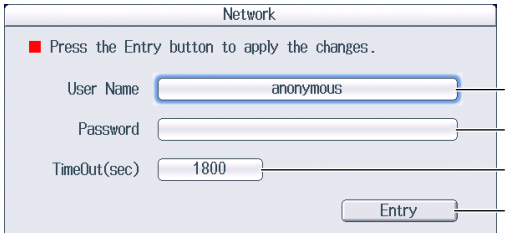
Press **UTILITY** an then the **Network** soft key to display the following menu.



Configure the FTP server settings.

Configuring FTP Server Settings (FTP Server)

Press the **FTP Server** soft key to display the following screen.



Settings for accessing the PX8000 from a PC

- **User name (up to 15 characters)**
- **Password (up to 15 characters)**
- **Set the timeout value (30-3600 s).**

Apply the settings.

Starting an FTP Client

Start an FTP client on a PC.

Enter the user name and password that you entered on the screen shown above to connect to the PX8000.

Note

If you set the user name to “anonymous,” you can connect to the PX8000 without entering a password.

23.4 Connecting to a Network Drive

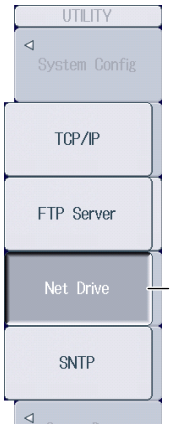
This section explains the following settings for accessing a network drive through an Ethernet connection to load or save various PX8000 data.

- FTP server (file server)
- Login name
- Password
- Turning FTP passive mode on and off
- Timeout
- Connecting to and disconnecting from network drives

► Features Guide: “Network Drive (Net Drive)”

UTILITY Network Menu

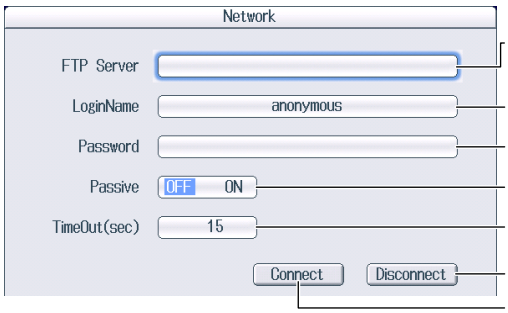
Press **UTILITY** an then the **Network** soft key to display the following menu.



Configure the network drive settings.

Configuring a Network Drive and Connecting to It (Net Drive)

Press the **Net Drive** soft key to display the following screen.



Settings used to connect to a network drive

- **Configure the FTP server settings (IP address; host name and domain name can be set when DNS is enabled).**
- **Login name (up to 15 characters)**
- **Password (up to 15 characters)**
- **Turns FTP passive mode on and off**
- **Set the timeout value (1-3600 s).**

Disconnects from the network drive

Connects to the network drive

23.5 Using SNTP to Set the Date and Time

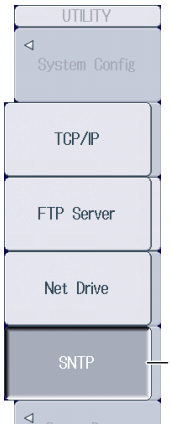
This section explains how to use SNTP to set the PX8000's date and time.

- SNTP server
- Timeout
- Executing time adjustment
- Automatic adjustment

► Features Guide: "SNTP (SNTP)"

UTILITY Network Menu

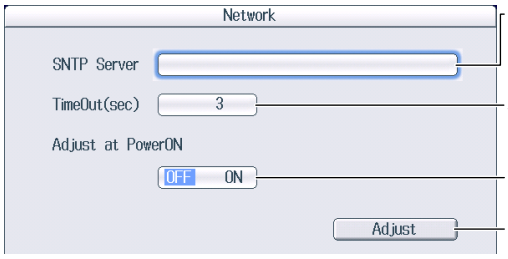
Press **UTILITY** and then the **Network** soft key to display the following menu.



Configure the SNTP settings.

Configuring SNTP Settings (SNTP)

Press the **SNTP** soft key to display the following screen.



Configure the SNTP server settings (IP address; host name and domain name can be set when DNS is enabled).

Set the timeout value (1-60 s).

Turns automatic adjustment on and off

Executes time adjustment

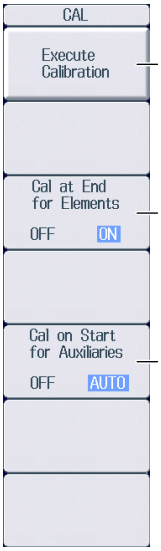
24.1 Calibrating the PX8000

This section explains how to calibrate the PX8000. Execute calibration when you want to make accurate measurements.

► Features Guide: “Calibration (Zero-level compensation, CAL)”

CAL Menu

Press **SHIFT+DISPLAY MODE** (CAL) to display the following menu.



Executes calibration

Turns on and off the calibration that is performed when a measurement is completed on an element

Set the calibration that is performed after starting signal acquisition on AUX modules (OFF, AUTO).
This command does not appear if AUX modules are not installed.

24.2 Using the NULL Feature

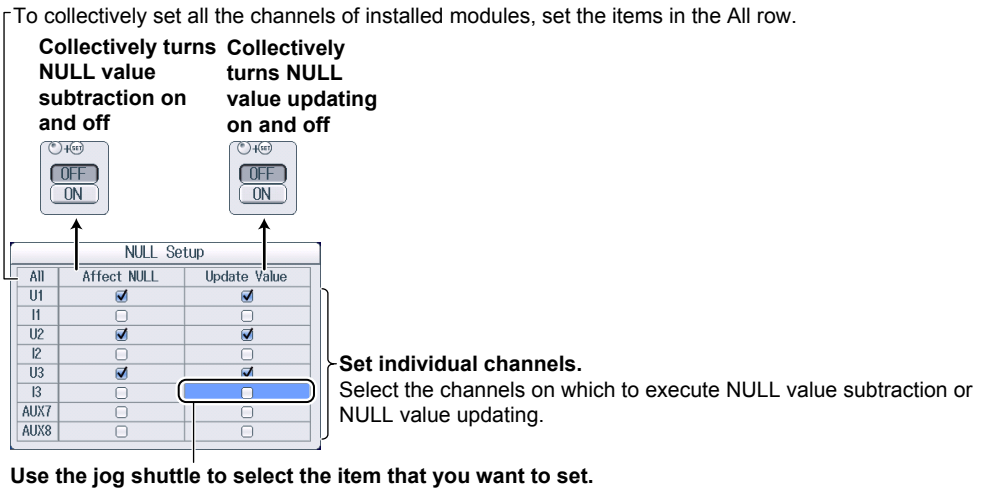
This section explains the following settings for the NULL feature.

- Turning NULL value subtraction on and off
  Turning on and off at once, setting each channel separately
- Turning NULL value updating on and off
  Turning on and off at once, setting each channel separately
- Enabling and Disabling the NULL Feature

► Features Guide: “NULL Feature (NULL SET)”

Configuring NULL Feature Settings

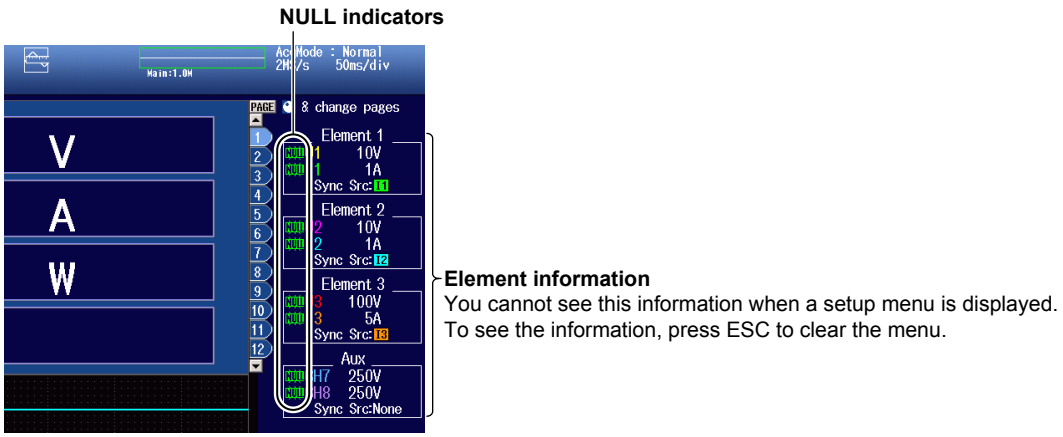
Press **SHIFT+NULL** (NULL SET) to display the following screen.



Enabling and Disabling the NULL Feature

Press **NULL**. The NULL feature is executed, and a NULL indicator appears in the element information display area on the right side of the screen.

- The NULL value of each signal is used for those channel signals whose NULL feature is set to ON.
- If you press the NULL key again, the NULL feature is disabled, and the NULL indicator disappears.



Note

If the measured value of the input signal used as a NULL value is not available (no measured value or measurement error), even if “NULL value updating” of the signal is set to ON, an error will occur because the NULL value will not be updated.

24.3 Setting Time Synchronization (Option)

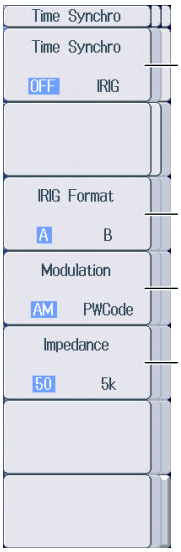
This section explains the following settings for synchronizing the PX8000 to GPS time.

- IRIG format
- Modulation type
- Input impedance

► Features Guide: “Time Synchronization Feature (Time Synchro; optional)”

UTILITY System Config Time Synchro Menu

Press **UTILITY**, the **System Config** soft key, and then the **Time Synchro** soft key to display the following menu.



Set the time synchronization feature (OFF, IRIG).

Set the IRIG format (A, B).

Set the modulation type (AM, PWCode).

Set the input impedance (50, 5k).

Note

To enable the changes that you have made to the time synchronization settings, restart the PX8000.

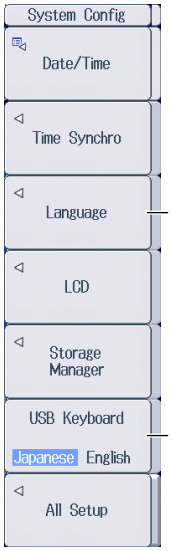
24.4 Changing the Message, Menu, and USB Keyboard Languages

This section explains the settings that you can use to change the message, menu, and USB keyboard languages.

► Features Guide: “Language (Language)”
“USB Keyboard Language (USB Keyboard)”

UTILITY System Config Menu

Press **UTILITY**, and then the **System Config** soft key to display the following menu.

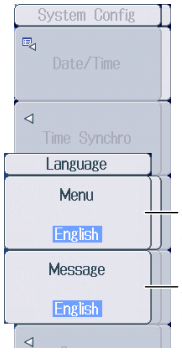


Configure the language settings.

Set the USB keyboard.

Setting the Language (Language)

Press the **Language** soft key to display the following menu.



Set the menu language (Japanese, English, German).

Set the message language (Japanese, English, German).

Note

Some terminology is always displayed in English.

Setting the USB Keyboard Language (USB Keyboard)

You can use the following keyboards that conform to USB Human Interface Devices (HID) Class Ver. 1.1.

English: 104-key keyboards

Japanese: 109-key keyboards

For details on how PX8000 keys are mapped to the keys on a USB keyboard, see appendix 10 in the Features Guide, IM PX8000-01EN.

24.5 Adjusting the Backlight

This section explains the following settings for adjusting the backlight.
Turning off the backlight
Automatically turning off the backlight
Adjusting the brightness

► Features Guide: “Adjusting the LCD (LCD)”

UTILITY System Config LCD Menu

Press **UTILITY**, the **System Config** soft key, and then the **LCD** soft key to display the following menu.

Turns off the backlight
You can turn on the backlight by pressing any key.

Enable or disable the automatic turning off of the backlight.

Set the amount of time before the backlight is automatically turned off (1min-60min).

Set the backlight brightness (1-10).

24.6 Initializing the Settings

This section explains how to initialize the PX8000 settings to their factory default values.

► Features Guide: “Initializing Settings (Initialize)”

UTILITY System Config All Setup Menu

Press **UTILITY**, the **System Config** soft key, and then the **All Setup** soft key to display the following menu.

Executes initialization

Undoes initialization

24.7 Configuring the Environment Settings

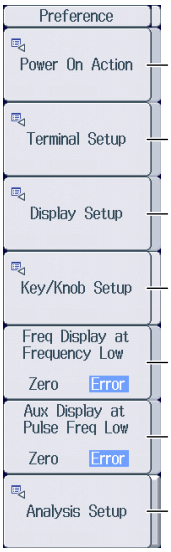
This section explains the following environment settings.

- Action to perform at power on
- Terminal (external I/O terminal) signal
- Display settings
  Font size, menu background color, scale value display, numeric display frame, number of digits to display for numeric data, intensity
- Key and knob control settings
  Turning the click sound on and off, start and stop response time, key lock type and release type
- Frequency display when the measured frequency is less than the lower limit
- AUX display when the measured pulse frequency is less than the lower limit
- Analysis settings
  Cursor read mode

► Features Guide: “Environment Settings (Preference)”

UTILITY Preference menu

Press **UTILITY** and then the **Preference** soft key to display the following menu.



Configure the action to perform at power on.

Set the terminal (external I/O terminal) signal.

Configure the display settings.

Configure key and knob control settings.

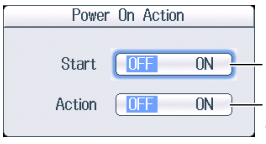
Set the frequency value that is displayed when the measured frequency is less than the lower limit (Zero, Error).

Set the AUX value that is displayed when the measured pulse frequency is less than the lower limit (Zero, Error).

Analysis settings

Setting the Action to Perform at Power On (Power On Action)

Press the **Power On Action** soft key to display the following screen.

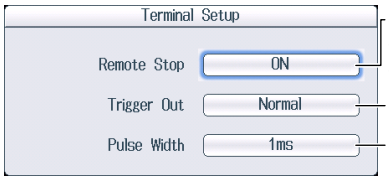


Sets whether to start waveform acquisition at power on (ON/OFF).

Sets the action mode at power on to the setting that was used when the power was turned off (ON) or sets the action mode to off (OFF)

Setting the Terminal (External I/O Terminal) Signal Settings (Terminal Setup)

Press the **Terminal Setup** soft key to display the following screen.



Set the remote stop feature.
- **ON: Enables the STOP signal**
- **OFF: Disables the STOP signal**

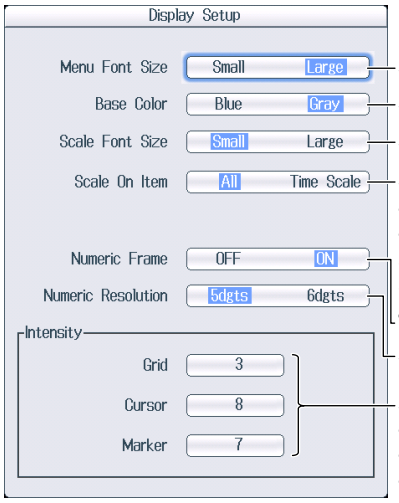
Set the trigger output (Normal, Pulse).

Set the pulse width (1ms, 50ms, 100ms, 500ms).

Configuring the Display Settings (Display Setup)

(Font size, menu background color, scale value display, numeric display frame, number of digits to display for numeric data, intensity)

Press the **Display Setup** soft key to display the following screen.



Sets the menu font size (Small, Large)

Sets the menu background color (Blue, Gray)

Sets the scale font size (Small, Large)

Sets the scale value display
- **All: Displays vertical and horizontal scale values**
- **Time Scale: Displays horizontal scale values**

Set the scale values to display when Scale Value on the WAVE SETTING menu (► section 8.1) is set to ON.

Turns the numeric display frame on and off

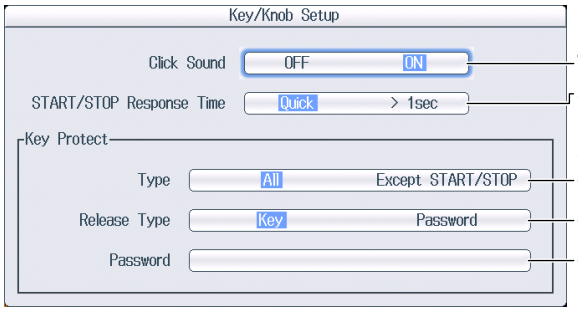
Sets the number of digits of numeric data to display (5dgts, 6dgts)

Set the intensity.
- **Grid (1-8)**
- **Cursor (1-8)**
- **Marker (1-8)**

Configuring Key and Knob Control Settings (Key/Knob Setup)

(Turning the click sound on and off, start and stop response time, key lock type and release type)

Press the Key/Knob Setup soft key to display the following screen.



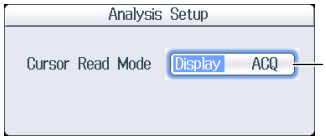
Turns the click sound on and off

Sets the start/stop response time (Quick, > 1sec)

Set the key lock type and release method.
- **Type (All, Except START/STOP)**
- **Release method (Key, Password)**
- **Password (up to 8 characters)**

Configuring Analysis Settings (Analysis Setup)

Press the **Analysis Setup** soft key to display the following screen.



Sets the cursor read mode
- **Display: Performs cursor measurement on P-P compressed display data**
- **ACQ: Performs cursor measurements on sampled data in acquisition memory**

24.8 Storing and Recalling Setup Data

This section explains how to store the PX8000 settings to the internal memory and how to recall settings from the internal memory.

► Features Guide: “Storing and Recalling Setup Data (Setup Data Store and Recall)”

UTILITY Store/Recall Menu

Press **UTILITY** and then the **Setup Data Store/Recall** soft key to display the following menu.

Specify the store/recall number (1-16).

Date and time when the data was stored*

Set comments.

Starts storing

Starts recalling*

Clears the stored setup data*

* This appears when data is stored in the internal memory at the specified store/recall number.

24.9 Locking the Keys

This section explains how to lock the panel keys, which prevents you from unintentionally changing the current state of the PX8000.

► Features Guide: “Key Lock (KEY PROTECT)”

Key Lock (KEY PROTECT)

Press **KEY PROTECT** to lock the panel keys. The KEY PROTECT key illuminates. When the keys are locked, pressing any keys other than **KEY PROTECT** has no effect. Press **KEY PROTECT** again to release the key lock and enable the panel keys. The KEY PROTECT key turns off.

Note

When the keys are locked, you cannot use a USB mouse or keyboard to operate the PX8000 either.

25.1 Messages and Corrective Actions

Message

Messages may appear on the screen during operation. This section describes the error messages and how to respond to them. With a few exceptions, you can display the messages in the language that you specify through the operations explained in section 24.4. If servicing is necessary to solve the problem indicated by a message, contact your nearest YOKOGAWA dealer.

In addition to the following error messages, there are also communications error messages. These messages are explained in the Communication Interface User's Manual (IM PX8000-17EN).

Information

Code	Message	Chapter or Section
53	Initializing is in progress.	24.6
54	Initializing has been completed.	24.6
55	Undo is in progress.	24.6
56	Undo has been completed.	24.6
59	Calibration is running...	24.1
60	Calibration is complete.	24.1
61	Media format is running.	22.2
62	Media format is complete.	22.2
64	File access is aborted.	—
65	Executed the firmware overwriting of the frequency module.	25.3
66	Overwriting firmware of the frequency module…	25.3
67	Key response time is more than 1 second. Push it more than 1 second.	24.7
68	Executed the firmware overwriting of the built-in parts.	25.3
69	Overwriting the built-in parts firmware.	25.3
70	Exit from GO/NO-GO mode.	Chapter 17
71	Image printing was aborted.	21.2
72	Completed action.	18.1
73	Aborted the search.	Chapter 19, section 20.2
74	Executed the search, but no record was found that matched the conditions.	Chapter 19, section 20.2
75	Executed the search, but no record was found that matched the pattern.	Chapter 19, section 20.2
77	Aborted the statistical measurement.	14.2, 14.3
80	Input module configuration was changed. Relevant settings have been initialized.	Appendix 11*
84	Turned on pressing the RESET key. Will initialize.	Appendix 11*
85	The instrument is set to remote mode by the communication control. Press the SHIFT + CLEAR TRACE key to change to local mode.	—
86	Push 'Zoom Mag' knob or 'Zoom Position' knob when change a target window.	12.1
87	Sensed the firmware version change. Will initialize.	Appendix 11*
92	Be careful not to exceed a current supply limit value to use the power supply for a current sensor.	2.11**
94	Executing abort process. It takes a few seconds.	—
96	Calibration failure of power measurement element has occurred. Power-supply frequency exceeded acceptable range for calibration.	24.1

* Features Guide, IM PX8000-01EN
**Getting Started Guide, IM PX8000-03EN

Code	Message	Chapter or Section
97	The history has been cleared due to one of the following reasons. - Wiring was changed. - Element Independent was changed. - Ext Sensor for Current Module or sense type for Aux Module was changed. - Executed “Elements Copy to” or “Aux Copy to”.	1.1, 2.2, 2.4, 2.7
98	A module,which accuracy is not guaranteed, is installed. Or pairs of modules,which accuracy is not guaranteed, is installed. Check modules on the overview display (UTILITY-Overview).	25.3

File Errors

Code	Message	Chapter or Section
500	File access failure.	—
501	Invalid file name. The name contains prohibited characters, or file name is duplicated.	22.3, chapter 24*
502	Pass name over maximum number of characters. Full pass name should under 255 characters.	—
504	Out of disk space.	22.10
505	File not found. Check the file.	22.10
506	Duplicate file or directory name. Change the name.	22.10
507	The file name is not set. Set the file name.	22.3
508	Save data not found. Check for presence of data and channel.	22.3, 22.6
509	File system failure.	—
510	Cannot load this file format. Files stored on other models cannot be loaded.	22.7
511	File is now being accessed. Execute after access is made.	—
512	Cannot be executed while running. Press the START/STOP key to stop acquisition.	4.2
513	The specified file cannot be loaded on this Firmware version or this model.	22.7
514	No ch is displayed. Turn ON the display of the appropriate channel.	22.3
517	Unknown file format.	Chapter 22
518	Writing prohibited in the media. Unlock write protection of the media.	—
519	Cannot save in this format at the current record length. Specify a range and save a section of the data. * Cannot create a file of size 2 GB or larger.	22.3
520	Media error.	22.1
521	Directory can not be deleted.	22.1
522	Cannot load these files on a network drive. - The File which larger than 50 Mbyte. - The File which is saved by HistoryAll format. Copy the file to the local drive before loading it.	23.3
530	Assigned path does not exist. Check the network setting and configuration.	Chapter 23
531	Assigned file does not exist. Check the network setting and configuration.	Chapter 23
532	Assigned path does not exist. Check the network setting and configuration.	Chapter 23
533	Writing prohibited in this file.	22.10
534	An error occurred while network access. Confirm network conditions.	Chapter 23
535	Current path is not suitable. Set other path while use action on trigger.	22.3

* Features Guide, IM PX8000-01EN

Code	Message	Chapter or Section
536	Destination path is same as source path, or sub folder of source path.	—
538	Module configuration is not matched, so it couldn't loaded. Configuration of saved data can see by File property.	22.7
539	Module configuration is not matched, so it couldn't loaded. Configuration of saved data can see by File property.	22.7
541	Cannot detect the medium. Check the presence of the medium.	22.1
544	Cannot execute file operations or initialization while measure is in progress. To execute, wait for the end of measure or turn measure off.	14.1
545	Data read error.	—
547	Cannot execute file operations or initialization while numeric calculations are in progress. To execute, wait for the end of numeric calculation or turn numeric off.	7.1
548	Cannot load this bitmap file. Use file of 16-bit color or 24-bit color mode with less or equal size 800x654.	6.6, chapter 8*
549	Cannot load this text file. Confirm the contents of file.	6.6, chapter 8*

* Features Guide, IM PX8000-01EN

Printer Errors

Code	Message	Chapter or Section
570	Close the printer cover.	21.1
571	Paper empty. Load a roll chart.	21.1
572	The printer head temperature is abnormality. Printing will be aborted. Printing will not be possible until the printer head temperature comes normal.	—
573	Printer over heat. Power off immediately.	—
574	Printer power supply error. Maintenance service is required.	—
575	Printer time out. Maintenance service is required.	—
576	Printer error.	—

Network Errors

Code	Message	Chapter or Section
600	Unable to connect to the server. Check the network settings and configuration.	Chapter 23
601	Has not connect with ftp server yet. Confirm the network settings and connection.	Chapter 23
602	This ftp function in not supported.	—
603	FTP Error: Client Handle Confirm the network settings and connection.	Chapter 23
604	Cannot send data to a network printer. Confirm the network settings and connection.	Chapter 23
608	Failed to acquire time from SNTP server. Confirm the network settings and connection.	Chapter 23

Execution Errors (650 to 799)

Code	Message	Chapter or Section
650	Data is invalid.	—
651	The option is not equipped, so it cannot execute.	—
652	Undo is not possible since data that existed immediately before initialization is not available.	—
653	Can not be executed while running. Press START/STOP key to stop acquisition.	4.2
654	Cannot manipulate files while image printing is in progress. Wait until image printing is complete.	—
656	Calibration failure. Disconnect the input and execute again. If it fails again, servicing is necessary.	24.1
660	Can not operate while data out. Wait until output is completed.	—
663	Cannot start.	—
664	GO/NO-GO is available while trigger mode is - 'Single' or 'Normal' - 'Auto' or 'AutoLevel' (Faster than 50ms/div)	3.1
666	Failed to measure statistics. Waveform data may be missing. If Cycle Statistics is specified, the instrument may be configured in a way that fails to detect the cycle.	14.2, 14.3
667	Executing file access. Abort or wait until it is complete.	—
668	Image is being printed or saved. Wait until the execution of the command is complete.	—
672	Cannot be executed when the time base setting is to be an External clock.	4.1
674	Average practice can't be done because the record length of the history exceeds the record length that it can be carried out.	20.1
675	Average practice can't be done because the record length of the history exceeds the record length that it can be carried out.	20.1
677	Cannot do while selftest is executing.	25.2
679	Cannot start at the current record length. Shorten the record length or meet the following condition. - Set the trigger mode to Auto, decrease T/Div to less than 100 msec/div to enable roll mode. - Set the trigger mode to Single or On Start.	2.8, 3.1
680	Averaging mode is not possible when the trigger mode is Single, SingleN, or On Start. Change the trigger mode.	3.1
684	Cannot start when the time base set to external clock while the acquisition mode set to envelope.	4.1
686	Cannot be executed when the acquisition mode is set to average. Change the mode.	4.1
693	Cannot be executed when GO/NO-GO mode is Zone.	17.1
695	Set acquisition mode to Normal when using a wave window trigger.	4.1
696	The wave window trigger cannot be used if the sampling rate is faster than 500 kS/s or slower than 10 kS/s.	2.8
702	All search conditions are OFF. At least one condition should ON.	Chapter 19, section 20.2
703	Display setting of search source is OFF. Set it to ON.	8.1
704	Cannot execute Time search while T/div is faster than 100msec/div.	2.8
705	Cannot start Action mode while trigger mode is SingleN.	3.1
706	Cannot be executed when GO/NO-GO mode is ON. Set the GO/NO-GO mode to OFF.	Chapter 17
707	Cannot execute search while searched No. reached Maximum(1000).	—
708	Cannot execute or set while AutoScroll processing. Stop AutoScroll.	12.1
712	Cannot start while No GO/NO-GO condition.	Chapter 17
713	Cannot make wave zone from less than 2,000 points data, from more than 10,000,000 points data, or from less than 10division data.	—
714	Cannot start Action mode while PrintImage target is "File". Change target to "printer".	21.2
716	Set the Math and FFT Window to OFF to Start GO/NO-GO.	Chapter 15, section 16.1
717	Cannot abort this process.	—

Code	Message	Chapter or Section
719	Cannot execute Time search when the time base setting is to be an External clock.	4.1
723	Cannot update null value. No measured value, calculated by numeric, is available to set.	24.2
724	Calibration error occurred. Restart this machine. If it occurred again, maintenance service is required.	—
725	Cannot execute when GO/NO-GO traces contain an AUX channel with the sense type set to pulse.	2.4 to 2.6
726	Cannot execute when search trace contains an AUX channel with the sense type set to pulse.	2.4 to 2.6
727	Cannot execute when trigger sources contain an AUX channel with the sense type set to pulse.	2.4 to 2.6
728	Cannot execute or change while running. Press the START/STOP key to stop acquisition.	4.2
729	No measurable channel.	—

Setup Errors (800 to 899)

Code	Message	Chapter or Section
800	Illegal date-time. Set the correct date and time.	—
801	Cannot set these file name. - Over 32 characters. - Include inhibit characters. - Inhibit MS-DOS file name. Enter an other file name.	22.3
803	Cannot change this parameter while running. Press the START/STOP key to stop acquisition.	4.2
804	Cannot change settings during GO/NO-GO. Stop the GO/NO-GO (Stop the Acquire).	Chapter 17
805	Can not change display points with this T/div setting.	2.8
806	Cannot be changed when trigger A is not X. Set the state of the channel corresponding to condition A to 'X'.	3.8 to 3.10
807	Cannot set while TimeSynchro setting not Off.	24.3
808	Cannot change when Channel Display is OFF or Math settings are invalid. Set the channel display ON or make appropriate Math settings.	8.1, chapter 15
809	Cannot change when External Clock is active.	4.1
810	Cannot change while running.	4.2
811	Illegal math expression. Input a correct computing equation.	15.5
812	Cannot set this model	—
813	Cannot set anything other than Low Pass for a Gaussian filter. Change the Filter Type to another filter besides Gaussian.	15.5
815	Cannot change settings during Action mode. Stop the Action.	18.1
816	Cannot set the channels which do not have modules installed.	Chapter 2, section 25.3
817	Cannot Set or Execute.	—
818	If the trigger mode is set to Single, Single(N), or OnStart, the acquisition mode cannot be set to Average.	3.1
819	If the acquisition mode is Average, the trigger mode cannot be set to Single, Single (N), or OnStart.	4.1
820	The acquisition mode cannot be set in the current record length.	4.1
822	Cannot be configured or executed during the search operation.	Chapter 19
823	Cannot be configured or executed during the history search operation.	20.2
824	The record cannot be selected.	Chapter 20
825	History record does not exist.	Chapter 20
826	Cannot be configured or executed while computation is in progress. Aborted when history display mode is set to One.	20.1
827	Cannot be configured or executed while updating the history all display. Aborted when history display mode is set to One.	20.1

Code	Message	Chapter or Section
829	Zones cannot be edited in the following cases: - When the main window is not displayed. - When the relevant waveform is not displayed.	5.1, 8.1, 11.1, 12.1, 16.1, 17.1
830	The zone waveform does not exist.	17.1
832	Zones determination is not possible in the following cases: - When the main window is not displayed. - When the relevant waveform is not displayed. - When the zone waveform does not exist.	5.1, 8.1, 11.1, 12.1, 16.1, 17.1
833	Processing statistics. To perform other operations, abort the statistical processing.	14.2
834	The channel which couldn't be set up was specified.	—
835	Cannot be set when the acquisition mode is set to average.	4.1
836	Cannot be changed when VScale is SPAN.	8.1
838	It is an unacceptable parameter to set up to the present module.	—*
840	Cannot be set to a range of 20 sec/div to 2 min/div during roll display.	2.8
842	Zooming is not available when the number of displayed points of the FFT waveform is less than 50 in the Zoom window.	12.1, 15.5, 16.1
846	P-P compression cannot be used to save when a record length is 1K.	—
852	Cannot set Math to OFF while FFT Window ON.	16.1
853	Cannot select this trace because it already selected.	—
855	Cannot change to such Record length while running. Set the trigger mode to Auto, decrease T/Div to less than 100 msec/div to enable roll mode, or set the trigger mode to Single or On Start.	2.8, 3.1
856	Cannot Display setting to ON. This CH didn't acquisition to memory.	—
858	Cannot set while action mode is ON.	18.1
867	Cannot be specified when the print style is Numeric.	—
869	Cannot set while GO/NO-GO mode. Turn OFF GO/NO-GO mode first.	Chapter 17
871	No effective channel for Math Setup.	—
872	No effective channel for History Search Setup.	—
874	Cannot set Save Range except 'Main' while PP-Comp save mode.	—
876	Cannot frame setting to ON, except Image format on JPEG.	21.3
877	Cannot set to display points under 100.	12.1
879	Cannot set GO/NO-GO mode while Math or FFT Window is ON.	Chapter 15, section 16.1
882	Cannot set while Single-N running.	3.1
890	Illegal math expression. Input a correct computing equation.	7.4
891	Cannot simultaneously set current range when sense types differ. To copy or set ranges to other current channels, first unify sense type.	2.2
892	Cannot set when current module types differ.	2.2
893	Cannot execute. Select copy destination channels(elements).	2.7

* Communication Interface User's Manual, IM PX8000-17EN

System Errors (900 to 999)

Code	Message	Chapter or Section
900	No module installed. Install the module.	2.3*
901	Failed to backup setup data. Will initialize. Backup battery may be low.	2.4*
902	The firmware is not suitable for this system. Install the proper firmware.	—
903	The USB device's power consumption exceeded the capacity of the USB hub.	7.9*
906	Fan stopped. Maintenance service is required.	—

* Getting Started Guide, IM PX8000-03EN

Code	Message	Chapter or Section
907	Internal temperature is too high. Maintenance service is required. It will shutdown automatically.	—
908	Check the measured current and the number of probes that you are using.	2.12*
910	Key protect is enabled. To release the protection, press the PROTECT key or enter the password.	24.9
911	Fan for Input modules stopped. Cannot start. Maintenance service is required.	—
912	Fan for CPU stopped. Maintenance service is required. It will shutdown automatically.	—
913	LCD BackLight Failure. Maintenance service is required.	—
914	Cannot start while this module configuration. 760811 should use in Slot 1,Slot 3,Slot 5,Slot 7. 760812 should use in Slot 2,Slot 4,Slot 6,Slot 8. 760813 should use in Slot 2,Slot 4,Slot 6,Slot 8. 760851 should use in Slot 3,Slot 5,Slot 7. Slot 1 and slot 2 must be installed.	2.3*
915	It installed the module which cannot support by this machine. Or it installed the module which cannot be used in the slot.	2.3*
917	Hardware configuration error occurred. Restart this machine. If it occurred again, maintenance service is required.	—
918	Error occurred while ImageFile process.	—
919	Key operate not available while system error occurred	—
920	Firmware overwriting error occurred.	—
922	Internal hardware communication error has occurred.	—
923	An error has occurred in the power measurement element. Power off immediately. Maintenance service is required.	—
924	Unable to start because there is an error in the suffix code. Maintenance service is required.	—

* Getting Started Guide, IM PX8000-03EN

Note

If servicing is required, first see if initializing the instrument fixes the problem.

25.2 Carrying Out Self-Tests (Selftest)

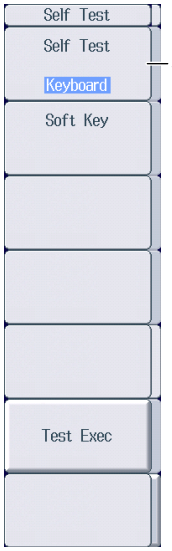
This section explains the following settings for testing whether the PX8000's keyboard, memory, SD card interface, and printer are functioning properly.

- Test type
- Executing tests

► Features Guide: "Self-Test (Self Test)"

UTILITY Self Test Menu

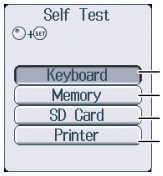
Press **UTILITY** and then the **Self Test** soft key to display the following menu.



Set the test type.

Setting the Test Type (Self Test)

Press the **Self Test** soft key to display the following menu.



Keyboard test
Memory test
SD card test
Printer test

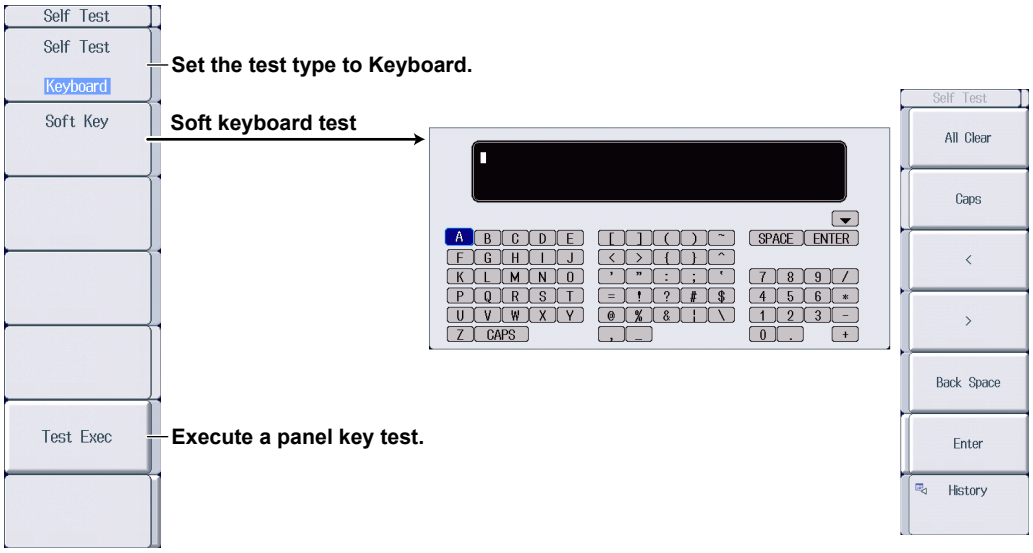
Keyboard: Tests whether or not the front panel keys are operating correctly and whether or not the soft keyboard accepts input properly. They are operating properly if the background color of the keys that you press changes from red to another color. The soft keyboard is operating properly if you can enter the specified characters.

Memory: Tests whether or not the internal CPU board RAM and ROM are operating properly. If they are operating properly, "Pass" appears. If an error occurs, "Error" appears.

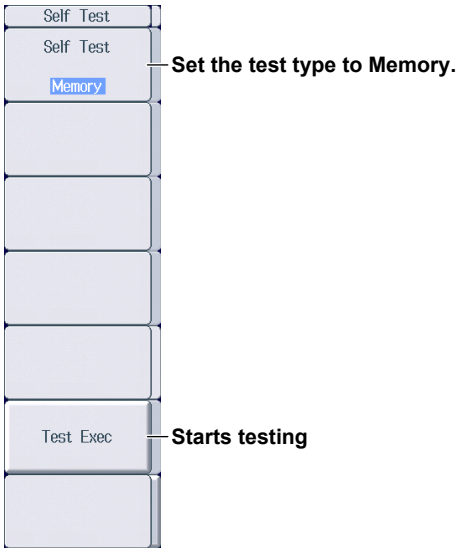
SD Card: Tests whether the SD card interface is operating properly. If an error occurs, "Error" appears.

Printer: Tests whether or not the optional built-in printer is operating properly. The built-in printer is operating properly if the print density is correct. If an error occurs, the print density will not be correct.

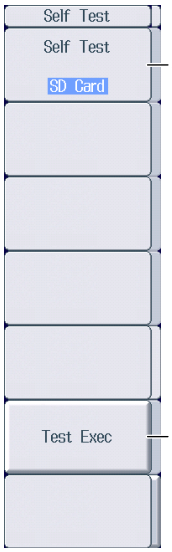
Keyboard Test



Memory Test



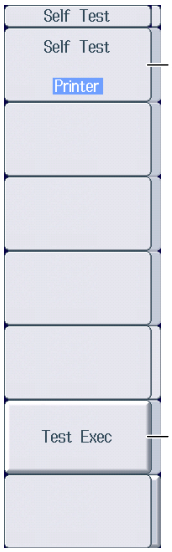
SD Card Test



Set the test type to SD Card.

Starts testing

Printer Test



Set the test type to Printer.

Starts testing

If an Error Occurs during a Self-Test

If an error occurs even after you carry out the following procedure, contact your nearest YOKOGAWA dealer.

- Execute the self-test again several times.
- Confirm whether or not the media being tested is properly inserted.
- Check that the paper is set properly in the built-in printer and that paper is not jammed.

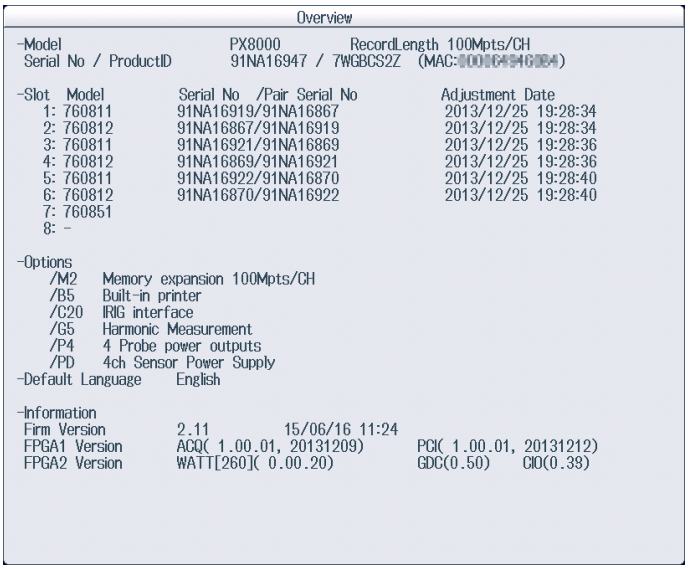
25.3 Viewing System Information (Overview)

This section explains how to view the PX8000 system information.

► Features Guide: “Overview (Overview)”

Viewing System Information (Overview)

Press **UTILITY** and then the **Overview** soft key to display the following screen.



Displayed Information

Model, Record Length	Model and record length
Serial No / ProductID	Serial number and product number
Slot	Model and serial number of the module installed in each slot
Options	Installed options
Default Language	Default language
Information	Firmware and FPGA versions and other information

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