HIOKI

Measurement Guide

8430-20

MEMORY HiLOGGER

HIOKI E. E. CORPORATION

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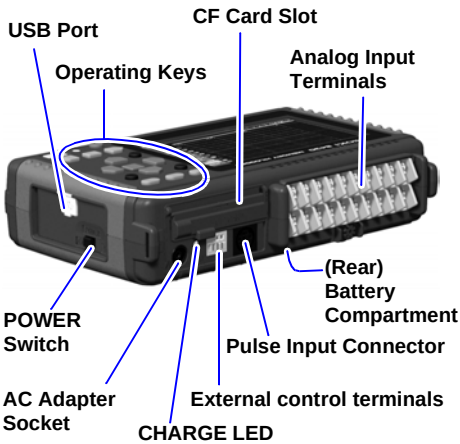
Introduction

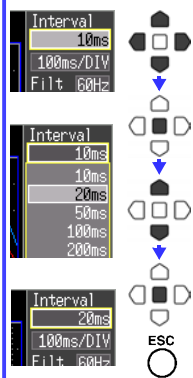
Thank you for purchasing the HIOKI "Model 8430-20 Memory HiLogger."
This Measurement Guide consists of some basic application examples. Before using the instrument, be sure to read the Instruction Manual carefully.

Operation and Screen Types (p. 2)	Describes the screen types and an overview of the operating keys.
Measurement Procedure (p. 6)	Describes procedures from measurement preparation to analysis.
Monitoring Voltage Fluctuations (p. 9)	This section describes voltage measurement using an AC transducer* to acquire voltage fluctuation data for one week, with the data automatically saved on a CF card. * The example transducer provides 0 - 10 V DC output proportional to 0 - 150 Vrms AC input.
Monitoring Temperature Changes (p. 11)	This section describes temperature measurement using a type K thermocouple to acquire temperature data once per second, for monitoring temperature changes. The post-measurement saving method is also described.
Monitoring Energy Consumption (p. 14)	This section describes pulse measurement using a watt-hour meter* to acquire integrated power consumption data for one month. * The example watt-hour meter provides an output of 50,000 pulses/kWh.
Analysis (p. 16)	View and calculate waveform measurement values using the A/B cursors.

Operation and Screen Types



Changing screen contents



Operating Keys

Choose a screen

■ **WAVE/DATA**
Selects among waveform screen displays (p. 3).

■ **SET**
Displays the Settings screens, and switches among the screen tabs with each press (p. 4).

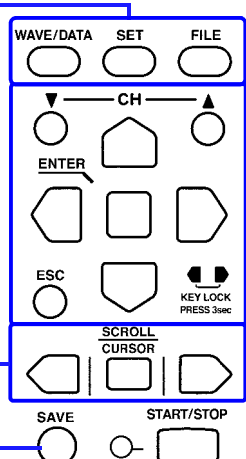
■ **FILE**
Displays file information (p. 5).

Scroll waveforms and read cursor values

Press the center key to select waveform scrolling or A/B cursor movement, then press the left and right cursor keys to scroll or move (p. 16).

Saving operations

Press to save data manually (p. 13).



Start and stop measurement

Start and stop measurement. The LED at the left lights green while measuring.

Setup and display

■ **CH▼/▲**
Select channels.

■ **ESC**
Cancels changes to settings.

■ **Cursor Keys**
Moves the position of the cursor (blinking selection) on the screen.

■ **ENTER**
Accepts displayed settings.

■ **KEY LOCK**
Disables keypad operations. Press and hold the left and right cursor keys simultaneously for three seconds to lock and unlock the keys.

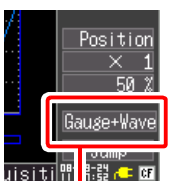
■ **(Zero Adjust)**
Performs zero adjustment.
Press the up and down keys simultaneously to execute.

Waveform/Numerical Screens

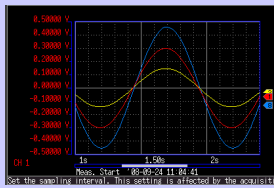
Selects between seven display types.

The screen switches each time you press the key.

Operational information is displayed along the bottom of the screen.

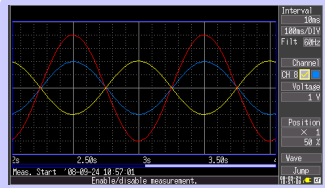


Selection is also available from the name of the current screen displayed near the bottom right



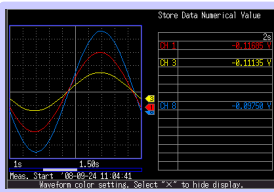
[Gauge+Wave] Screen

Measurement data is displayed as waveforms with gauges.



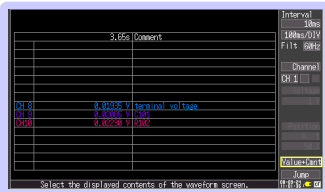
[Wave] Screen

Measurement data is displayed as waveforms.



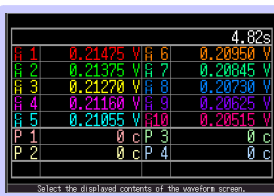
[Wave+Value] Screen

Measurement data is displayed as waveforms and numerical values.



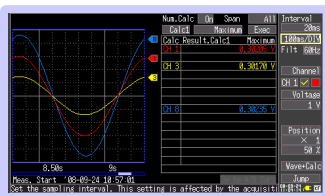
[Value+Cmnt] Screen

Measurement data is displayed as numerical values with comments.



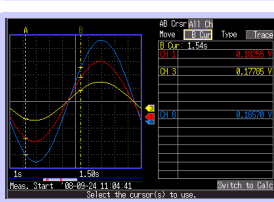
[Value] Screen

Measurement data is displayed as numerical values.



[Wave+Calc] Screen

Measurement data is displayed as waveforms with calculation results.



[Wave+Crsr] Screen

Measurement data is displayed as waveforms with cursor values.

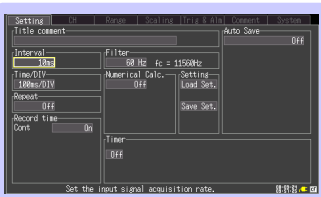
Settings Screens

Selects between seven display types.

The screen switches each time you press the key.

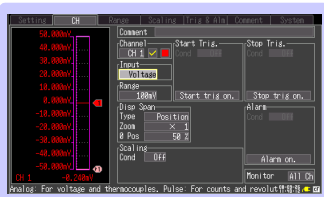
Operational information is displayed along the bottom of the screen.

Press the left/right cursor keys to select between the Settings screens.



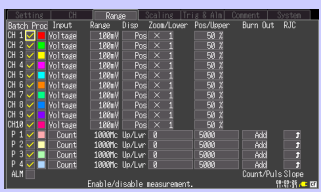
Setting Screen

Make settings for recording. Set numerical calculation, auto-saving and timers.



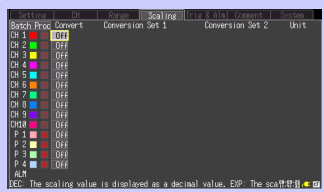
CH Screen

Make input channel settings while viewing the monitor display.



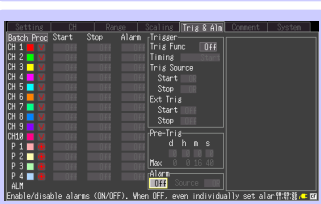
Range Screen

Make settings while viewing all channel settings.



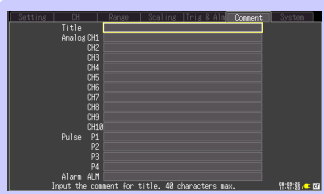
Scaling Screen

Make these settings to convert measured values to arbitrary units for display.



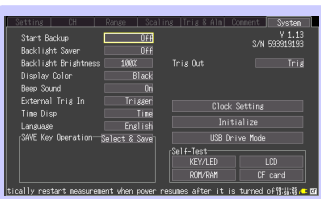
Trig&Alm Screen

Recording criteria (triggering) and warning sounds can be set for each channel.



Comment Screen

Enter channel comments.

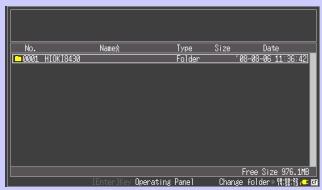


System Screen

Configure the system environment.

File Screen

Operational information is displayed along the bottom of the screen.



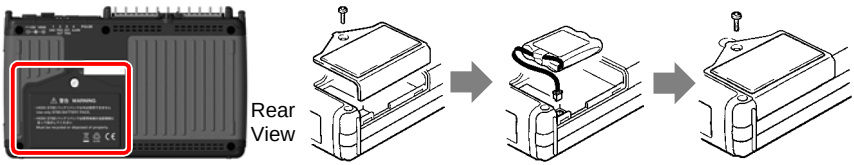
File Screen

View and manage files on the CF Card.

Measurement Procedure

Before measuring, be sure to read the "Usage Notes" in the Instruction Manual.

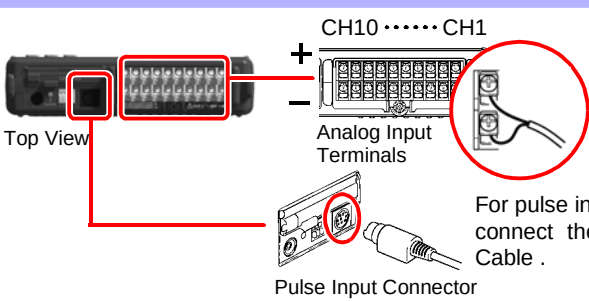
Install the battery pack (option)



We recommend using the battery pack to provide backup during power outages, and to preserve measurement data.

Connect the power cord

Connect the measurement cable



For voltage or temperature measurement: connect appropriate measurement or thermocouples leads.

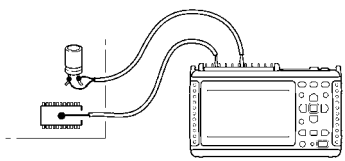
For pulse input signals: connect the Hioki 9641 Connection Cable .

Insert a CF Card (option)

Confirm that sufficient free space is available, and for auto-saving, that a CF card is inserted before measuring.

Turn the power on

Connect to the measurement object

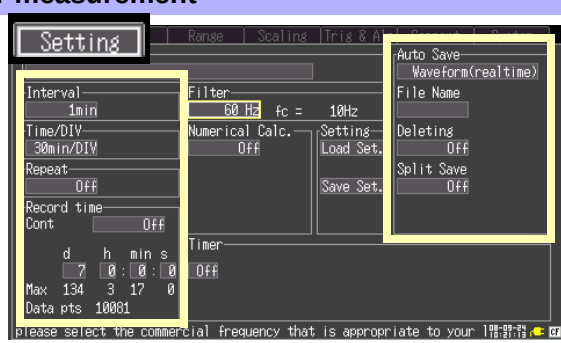


Configure settings for measurement

Configure recording settings on the Setting screen.

- Recording interval
- Recording length
- Auto-saving (if used)

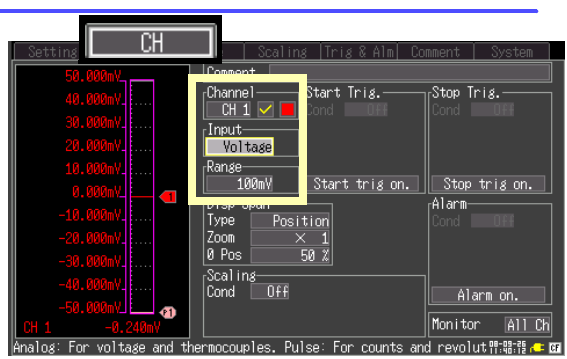
Make other settings as necessary.



Configure input channel settings on the CH screen.

- Channel selection
- Input type
- Measurement range

Make other settings as necessary.



Start and finish measuring

START/STOP

Start Measurement

Press to start and stop recording with the selected measurement conditions.

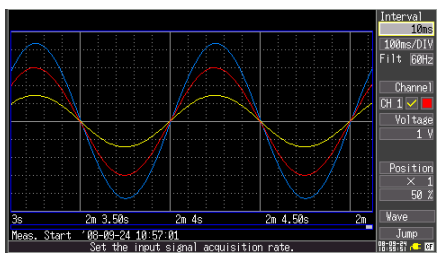
When [Repeat] is [Off] (default setting), one recording length is acquired, and recording stops automatically.
When [Repeat] is [On], recording proceeds continuously.

START/STOP

Stop Measurement

Analyze

WAVE/DATA SET FILE



Monitoring Voltage Fluctuations

This section describes voltage measurement using an AC transducer* to acquire voltage fluctuation data for one week.
* The example transducer provides 0 - 10 V DC output proportional to 0 - 150 Vrms AC input.

1 Prepare the Following Before Measuring

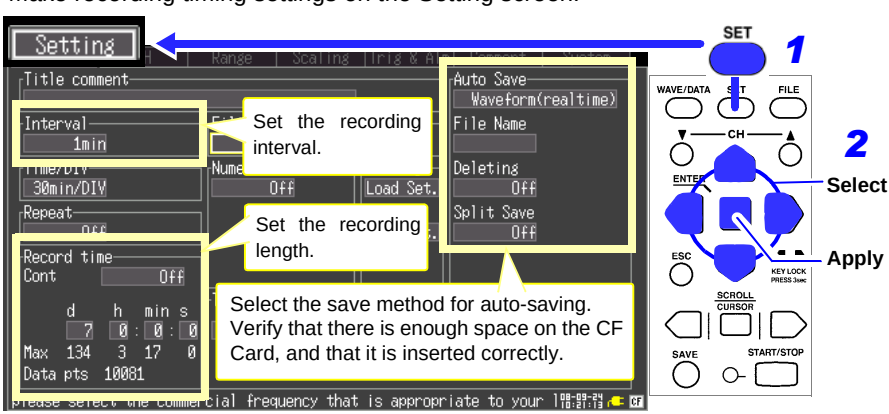
Items to prepare

- ☐ Model 8430-20 Memory HiLogger
- ☐ AC Adapter (supplied)
- ☐ Measurement (input) leads
- ☐ Transducer
- ☐ CF Card (Hioki option)

"Measurement Procedure" (p. 6)

2 Configure Measurement Settings

Make recording timing settings on the Setting screen.

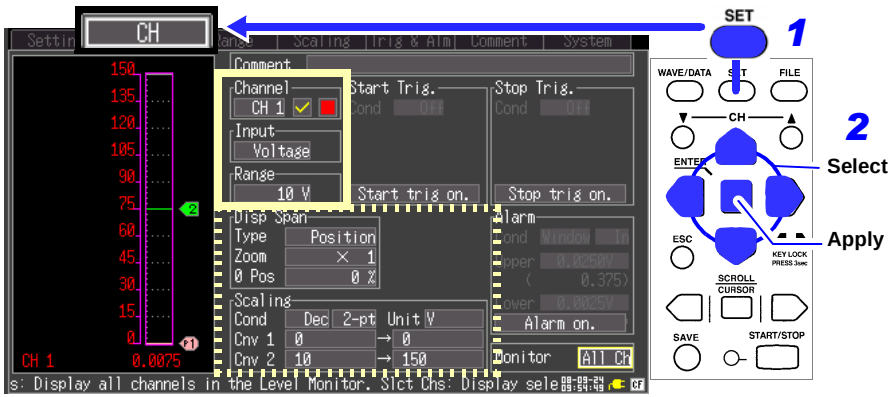


Setting Example
(Record at one-minute intervals for seven days automatically on the CF card)
Interval: 1min
Record time: Cont Off, 7 days
Auto Save: Waveform(realtime)

The default settings for the non-framed items can be left as-is. Change as needed.

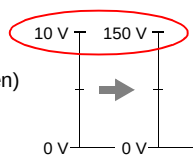
Enable [Deleting] (set to [On]) to delete old files when the CF card becomes full. Otherwise, when disabled (set to [Off]), saving stops when the card becomes full. Also, when you want measurements saved in multiple files at specific intervals, set [Split Save] to [On] or to [Ref Time] and set the interval as needed.

Make input channel settings on the CH screen.



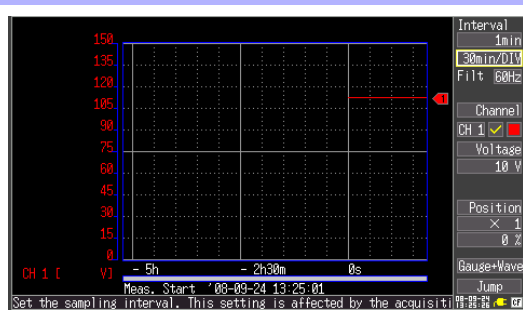
Setting Example
Channel: CH1, Input: Voltage, Range: 10V

Make other settings as necessary.
Disp Span: Position, 0 pos: 0% (displays zero volts at the bottom of the screen)
Scaling: Dec, 2-pt
Cnv 1: 0 V to 0 V , Cnv 2: 10 V to 150 V for display



3 Start and Stop Measurement

Press the **START/STOP** key.
The specified data length is recorded on the CF card.
Recording stops seven days after starting.



To interrupt recording, press the **START/STOP** key again.

Refer to "Analysis" (p. 16) for analysis methods.

Monitoring Temperature Changes

This section describes temperature measurement using a type K thermocouple to acquire temperature data once per second, for monitoring temperature changes. The procedure for saving measurement data to a CF card after measuring is also described.

1 Prepare the Following Before Measuring

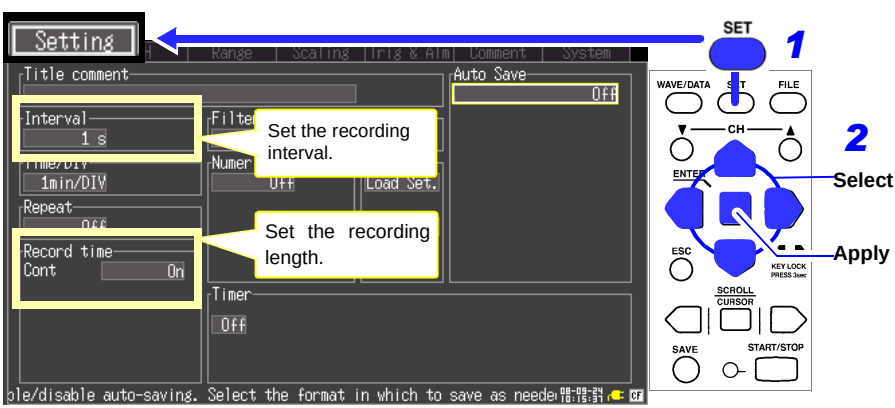
Items to prepare

- ☐ Model 8430-20 Memory HiLogger
- ☐ AC Adapter (supplied)
- ☐ ThermoCouples (K)
- ☐ CF Card (Hioki option)

"Measurement Procedure" (p. 6)

2 Configure Measurement Settings

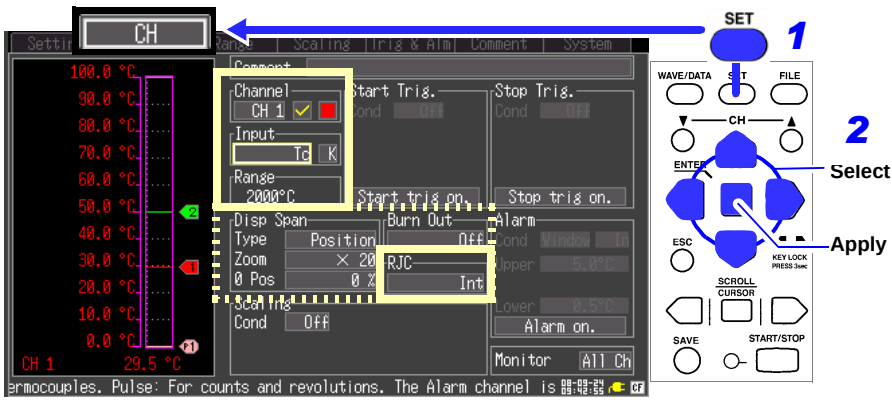
Make recording timing settings on the Setting screen.



Setting Example
(to record at one-second intervals from starting measurement until pressing the **START/STOP** key again)
Interval: 1s
Record time: Cont On

The default settings for the non-framed items can be left as-is. Change as needed.

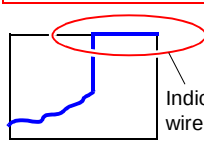
Make input channel settings on the CH screen.



Setting Example
Channel: CH1, Input: Tc, K (Thermocouple)
RJC: Int

The default settings for the non-framed items can be left as-is. Change as needed.

Set the open-circuit detection and display range as necessary. Enable [Burn Out] (set to [On]) to detect a broken thermocouple. When a thermocouple is broken, its waveform appears at the top of the screen as shown at the right.

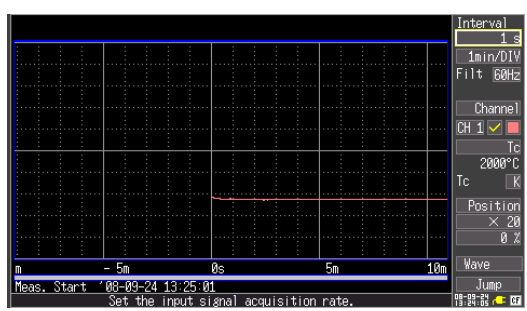


Indicates a broken wire.

3 Start and Stop Measurement

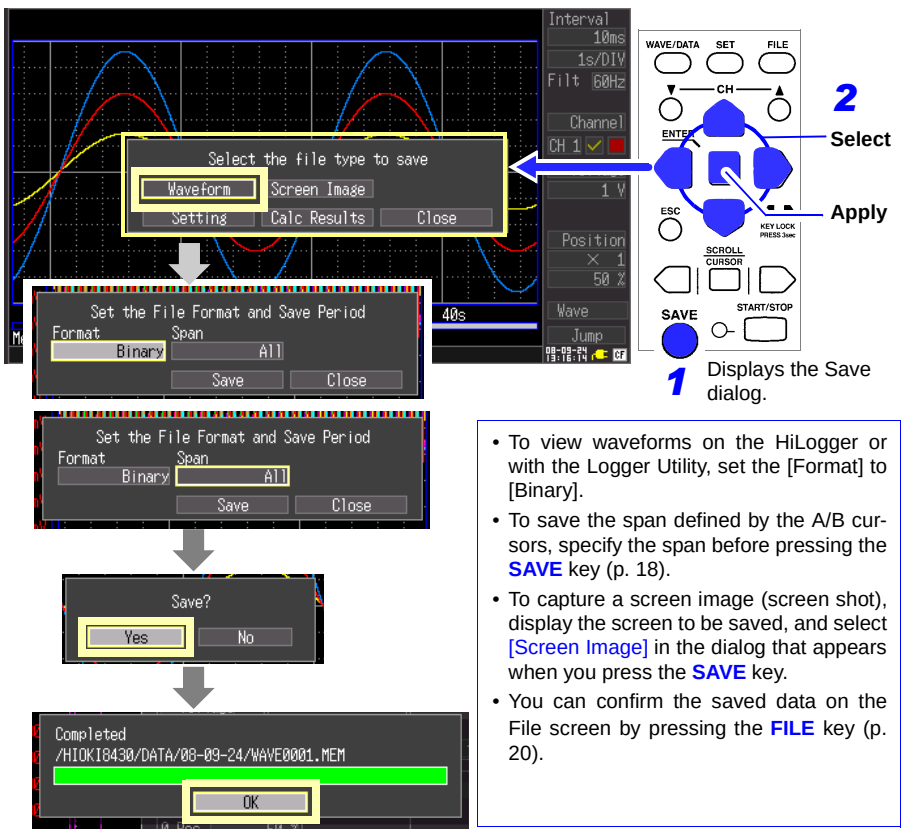
Press the **START/STOP** key.

In this case, measurement data is recorded until you press the **START/STOP** key again.



4 Saving Data After Measuring

This section describes how to save data after measuring.
Two methods are available for saving measurement data to a CF card after recording: [Select & Save] and [Quick Save].
Press the **SAVE** key and select [Select & Save] to set the saving data type and make other settings. [Quick Save] causes data to be saved immediately when the **SAVE** key is pressed, according to the settings made beforehand.
In this case, we use the default [Select & Save] method to save waveform data.



- To view waveforms on the HiLogger or with the Logger Utility, set the [Format] to [Binary].
- To save the span defined by the A/B cursors, specify the span before pressing the **SAVE** key (p. 18).
- To capture a screen image (screen shot), display the screen to be saved, and select [Screen Image] in the dialog that appears when you press the **SAVE** key.
- You can confirm the saved data on the File screen by pressing the **FILE** key (p. 20).

For long-term measurement, set the Auto-Save setting to [Waveform(realtime)] (p. 9). When [Cont] is enabled, data recording is limited to the size of the HiLogger's internal memory.
To avoid data loss, we recommend using both the AC adapter and battery pack.

Refer to "Analysis" (p. 16) for analysis methods.

Monitoring Energy Consumption

This section describes pulse measurement using a watt-hour meter* to acquire integrated power consumption data for one month.
* The example watt-hour meter provides an output of 50,000 pulses/kWh.

1 Prepare the Following Before Measuring

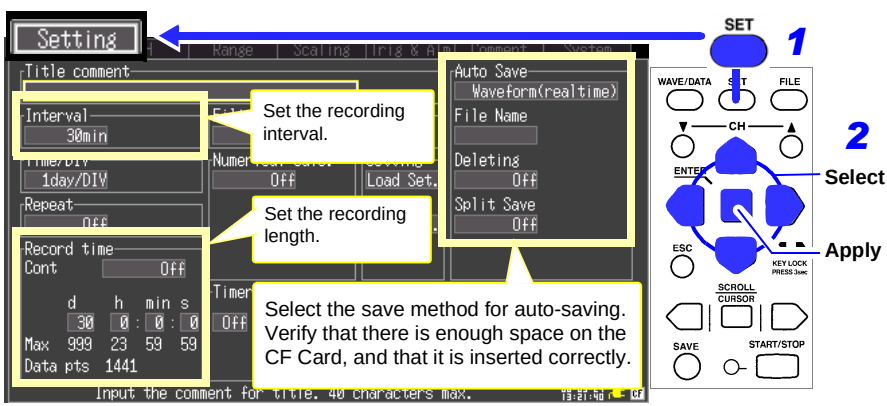
Items to prepare

- ☐ Model 8430-20 Memory HiLogger
- ☐ AC Adapter (supplied)
- ☐ Model 9641 Connection Cable (Hioki option)
- ☐ Watt-Hour Meter
- ☐ CF Card (Hioki option)

"Measurement Procedure" (p. 6)

2 Configure Measurement Settings

Make recording timing settings on the Setting screen.

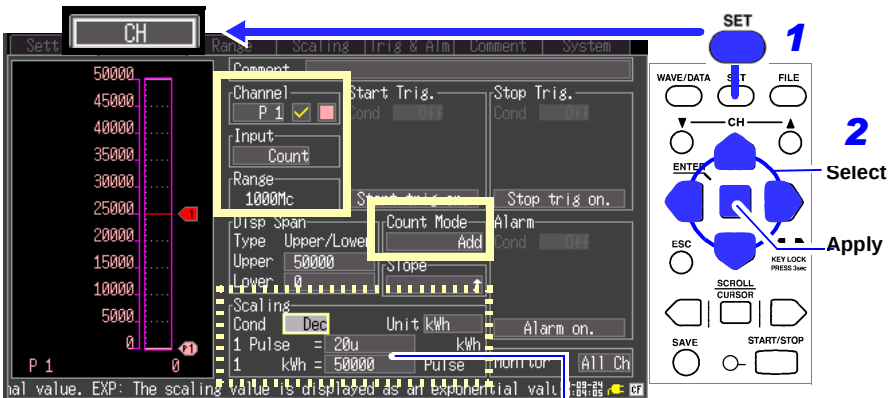


Setting Example
(Record at 30-minute intervals for 30 days, and automatically store on the CF card)
Interval: 30min
Record time: Cont Off, 30 days
AutoSave: Waveform(realtime)

The default settings for the non-framed items can be left as-is. Change as needed.

Enable [Deleting] (set to [On]) to delete old files when the CF card becomes full. Otherwise, when disabled (set to [Off]), saving stops when the card becomes full. Also, when you want measurements saved in multiple files at specific intervals, set [Split Save] to [On] or to [Ref Time] and set the interval as needed.

Make input channel settings on the CH screen.



Setting Example
Channel: P1, Input: Count, Count Mode: Add

Use the scaling function to display values in kWh units.
Cond: Dec, Unit: kWh, 1 Pulse = 20u [kWh],
1 kWh=50000 Pulse
The display range changes automatically when scaling is used.

(+/ -)

(E/P/T/G/M/k/ (blank) /m/u/n/p/f/a)

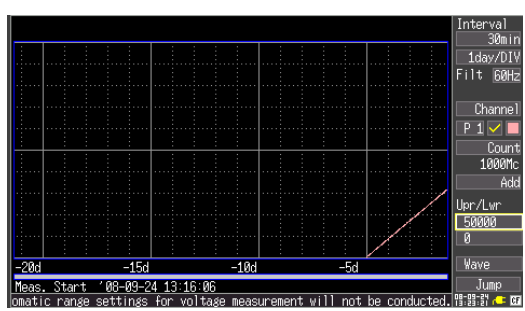
Select digit position

Select digit value

3 Start and Stop Measurement

Press the **START/STOP** key.
The specified length of data is recorded and stored on the CF card.

Recording stops thirty days after starting.



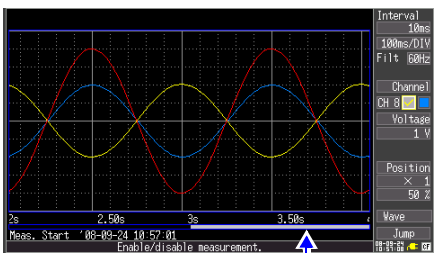
To interrupt recording, press the **START/STOP** key again.

Refer to "Analysis" (p. 16) for analysis methods.

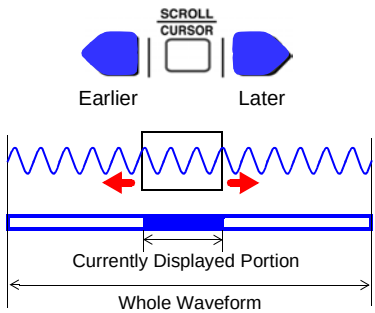
Analysis

Viewing a Measurement Waveform

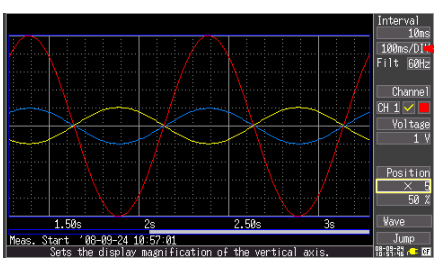
Scrolling the Waveform



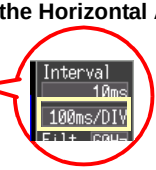
The portion of a waveform that is currently displayed can be confirmed by the position of the scroll bar.

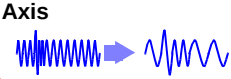


Zooming the Waveform View



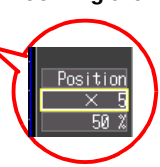
Zooming (Magnifying and Reducing) the Horizontal Axis

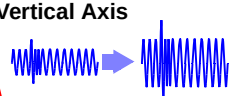




Specify the time per division for the horizontal axis.

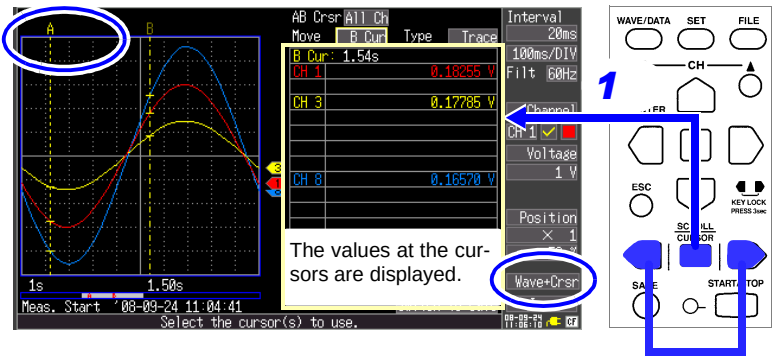
Zooming the Vertical Axis





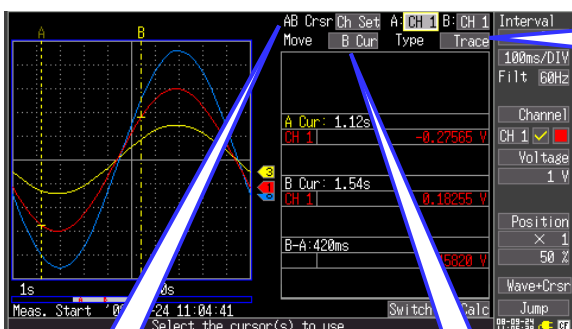
Specify the magnification factor for the vertical axis.

View Measurement Values



The values at the cursors are displayed.

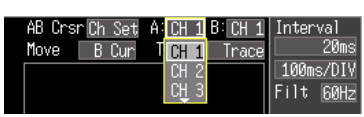
2 Press these keys to move the cursor on the displayed waveform.



To change the cursor type, select from the [Type] setting items.

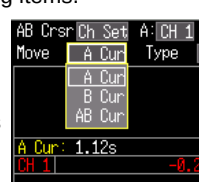
- Trace
  (time value and measurement value)
- Vert (Vertical, time value)
- Horz
  (Horizontal, measurement value)

To view only the cursor values for specified channels, Select [Ch set] from the [AB Crsr] settings, and select the channels for which to display cursor values.

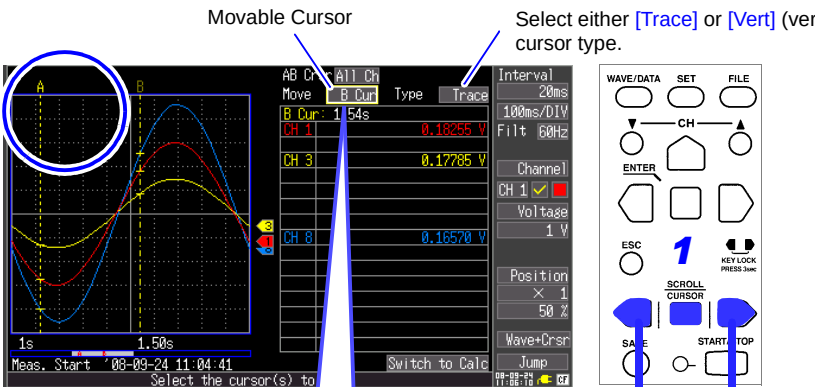


To select which cursor(s) to move, select from the [Move] setting items.

- A Cur
- B Cur
- AB Cur
  (Move both cursors at the same time)

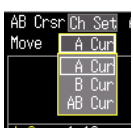


Specifying a Range



2 Specify the Range.

To select which cursor(s) to move

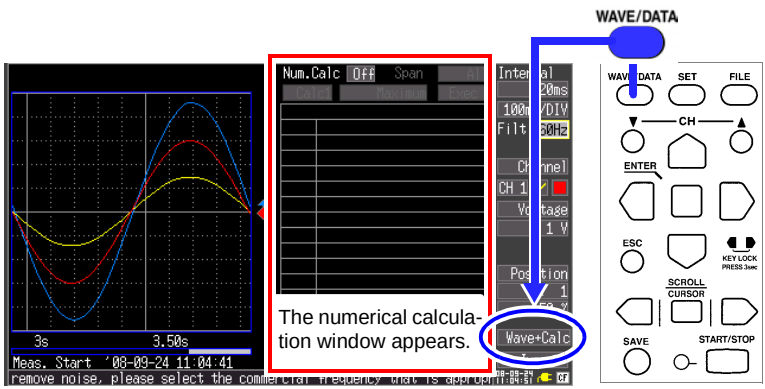


Select whether to move Cursor A, Cursor B, or both together.

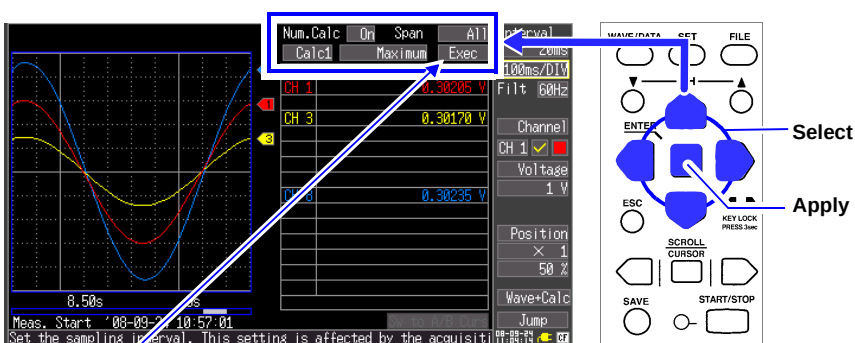
Calculate Measurement Data

Up to four types of calculations can be applied at the same time.
Calculation types: Average, peak value, maximum, minimum, time to maximum and time to minimum

1 Press the **WAVE/DATA** key several times to display **[Wave+Calc]**.



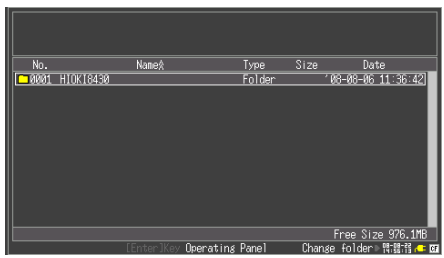
2 Enable **[Num.Calc]** (set to On), and set up to four calculation types (1 to 4).

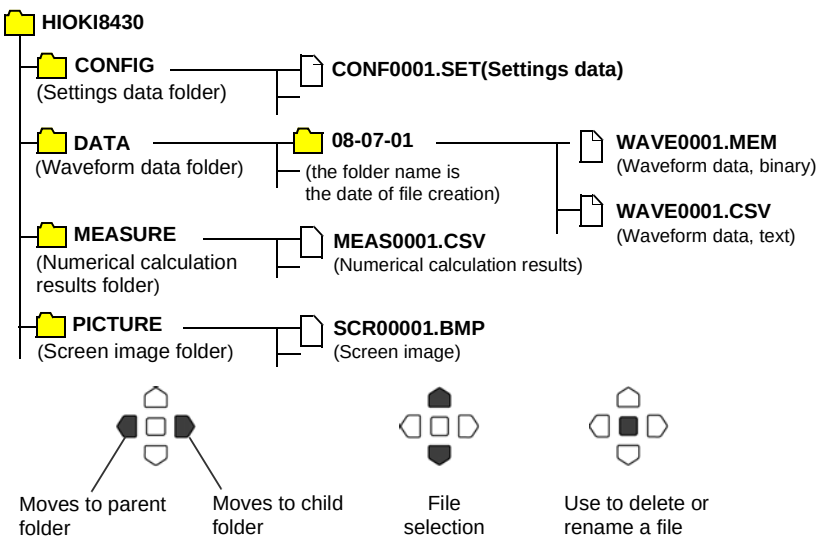


3 Select **[Exec]** and press the **ENTER** key to display calculation results.

View CF Card Contents

Data saved by the 8430-20 can be confirmed on the File screen. It is stored on the CF Card as follows. The numbers in the file names are automatically generated sequentially.





Analyzing HiLogger Data on a Computer

Recorded data can be analyzed and HiLogger settings can be changed using a computer running the supplied application program. Not only waveforms, but also numerical values and alarm output states can be monitored in real time. Measurement data from up to five 8430-20 HiLoggers can be collected by one computer using USB connections.

To access the HiLogger's CF card from a computer, first select the USB Drive Mode on the [System] screen, then connect the USB cable.

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