

HIOKI

QUICK START MANUAL

8420-51

8421-51

8422-51

MEMORY HiLOGGER

HIOKI E. E. CORPORATION

Contents

Introduction	1
Safety Notes	2
1 Identification of Controls and Indicators	3
1.1 Identification of Controls and Indicators	4
2 Display Screen and Setting Items	9
2.1 Status Screen	9
2.2 Channel Screen	10
2.3 Waveform Screen	11
3 Measurement Examples	13
3.1 Voltage Measurement	13
3.2 Temperature Measurement Using a Thermocouple (K)	25
3.3 Integrating the Pulse Output from a Power Meter	34

Introduction

- This manual is a quick reference source with examples for the 8420-51, 8421-51, 8422-51 MEMORY HiLOGGER for measurement purposes.
For more detailed description of operations, refer to the Instruction Manual. In particular, before operating the instrument, be sure to read carefully and understand the Safety Notes and Chapter 2 "Measurement Preparations" (page 21) in the Instruction Manual.
- Refer to the Instruction Manual and the Communications/ Wave Viewer Instruction Manual provided with this instrument.

Safety Notes

The following symbols in this manual indicate the relative importance of cautions and warnings.



Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.



Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.



Indicates that incorrect operation presents a possibility of injury to the user or damage to the instrument.



Indicates advisory items related to performance or correct operation of the instrument.

Other Symbols



Indicates the prohibited action.



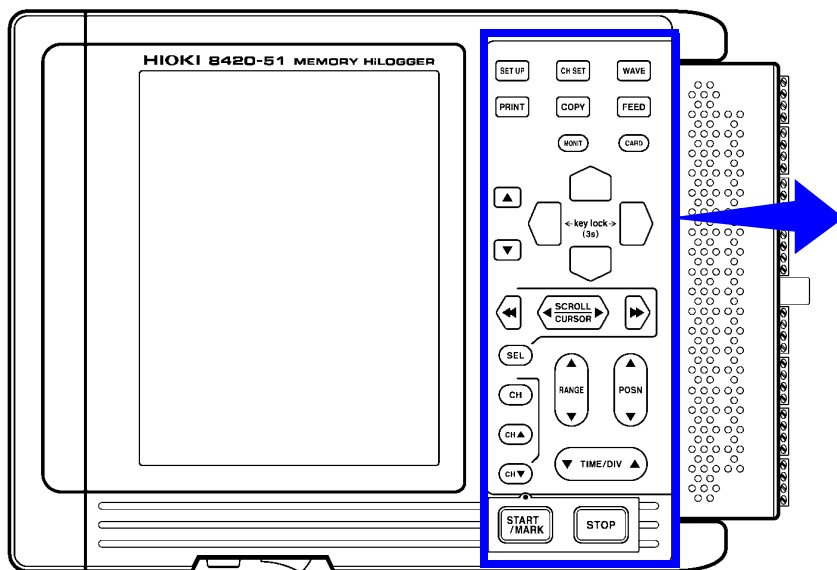
Indicates the reference.

Identification of Controls and Indicators

1










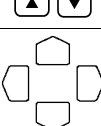
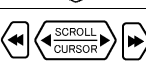





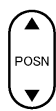



1.1 Identification of Controls and Indicators

Front Panel



This is the 8420-51.

Buttons Operations

	Displays the Status Screen.
	Displays the Channel Screen.
	Displays the Waveform Screen, and selects the display format of the Waveform Screen.
	Prints measurement data stored in memory; while measuring, starts and stops real-time printing.
	Prints the screen (or creates a screen image file); while measuring, prints the most recently logged data value.
	Feeds recording paper while pressed.
	Displays the Monitor Screen.
	Displays the File Screen (for loading and saving measurement data).
	Select and accept settings.
	Move the blinking cursor up, down, left and right.
	Scroll waveforms, move A-B cursors and search for event markers.
	Switches between scrolling waveforms, moving A-B cursors and searching for event markers.
	Displays the Channel Setup Window on the Waveform Screen, for entering settings.
	Changes the setting channel to the previous channel.
	Changes the setting channel to the next channel.
	Selects the range for each channel.
	Selects the zero position for each channel.
	Sets the time per division on the horizontal axis.
	Starts measurement; while measuring, the LED above the button is lit.
	Pressing this button twice stops measurement.

1.1 Identification of Controls and Indicators**Upper Panel****PC Card Slot**

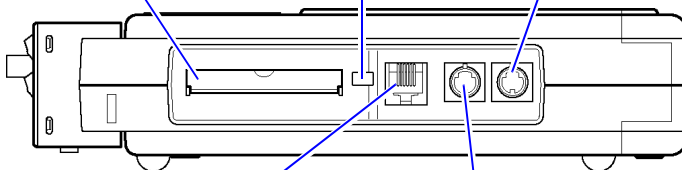
A PC Card can be inserted here.

Eject button

Pressing this button ejects the PC Card.

Pulse Probe Connector (PULSE)

These are the pulse input terminals, for connecting the 9641 CONNECTION CABLE.

**10BASE-T Ethernet Connector**

The 9642 LAN CABLE can be connected here.

RS-232C Connector

The 9612 RS-232C CABLE or 9721 RS-232C CABLE can be connected here.

Lower Panel**AC Adapter Connector**

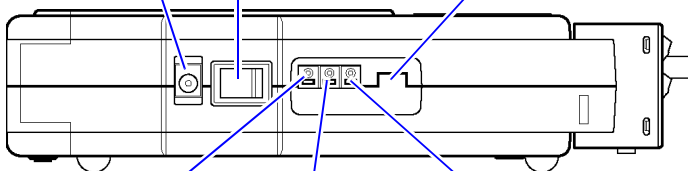
The AC adapter can be connected here.

Power Switch (POWER)

Turns the power on and off.

Contrast Adjustment Knob (CONTRAST)

Adjusts display contrast.

**External Trigger Terminal (EXT TRIG)**

External trigger source input.

Trigger Output Terminal (TRIG OUT)

Trigger signals are output at these terminals.

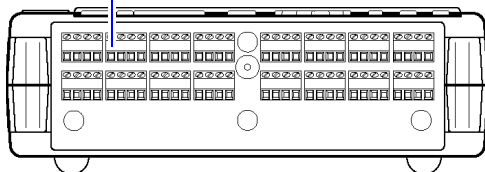
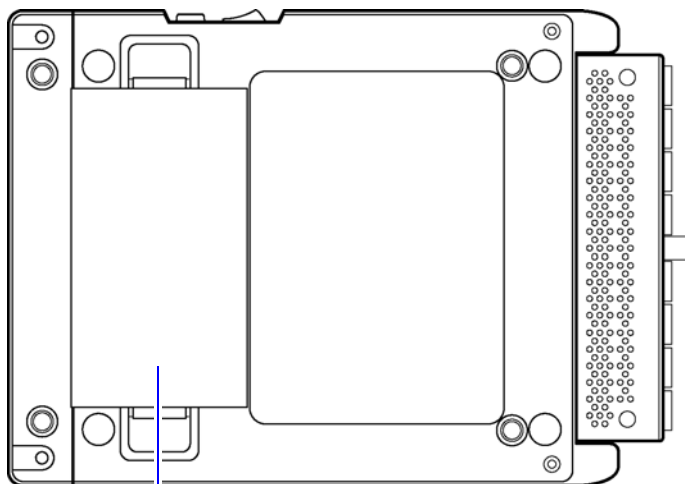
GND Terminal

This is the signal ground for use with the trigger terminal.

Right Panel**Analog Input Terminal Block**

These are the analog input terminals.

The 8420-51 has 8 input channels, the 8421-51 has 16 input channels, and the 8422-51 has 32 input channels.

**Bottom Panel****Battery Compartment**

Contains the 9447 BATTERY PACK.

Display Screen and Setting Items

2

This chapter describes the major screens of the Memory HiLogger and parameters to be set on each screen.

2.1 Status Screen

Set the recording interval.
❖ See Section 4.2.

Set the recording period. The recording period is restricted, depending on the measurement channel settings.
❖ See Section 4.4.

Set the measurement channels on or off (input settings). Only those channels enabled here can be set in the channel screen.
❖ See Section 4.5.

Make the digital filter setting.
❖ See Section 4.7.

The screenshot shows the 'Status' screen of the Memory HiLogger. At the top, it displays the date and time: '04-01-21 11:18:43'. Below this, there are several sections with red boxes highlighting specific settings:

- Interval:** Set to 1s. A red box highlights this, with an arrow pointing to the text 'Set the recording interval. ❖ See Section 4.2.'
- Time/DIV:** Set to 10s/DIV. A red box highlights this, with an arrow pointing to the text 'Set the time axis (time per division.) ❖ See Section 4.3.'
- Record Time:** Set to 0 d 0 h 0 m 10 s. A red box highlights this, with an arrow pointing to the text 'Set the recording period. The recording period is restricted, depending on the measurement channel settings. ❖ See Section 4.4.'
- Store CH:** A list of channels (CH1, CH17, P1, P4) with checkboxes. A red box highlights this, with an arrow pointing to the text 'Set the measurement channels on or off (input settings). Only those channels enabled here can be set in the channel screen. ❖ See Section 4.5.'
- Digital Filter:** Set to 50Hz. A red box highlights this, with an arrow pointing to the text 'Make the digital filter setting. ❖ See Section 4.7.'
- Auto Save:** Set to Binary(Real) [AUTO]. A red box highlights this, with an arrow pointing to the text 'Set auto saving. Data can be saved to a PC card in real time. ❖ See Section 4.6.'
- Save Mode:** Set to Normal. A red box highlights this, with an arrow pointing to the text 'Set auto saving. Data can be saved to a PC card in real time. ❖ See Section 4.6.'
- Measurement...** A red box highlights this, with an arrow pointing to the text 'Switch to the corresponding application setting screen.'

At the bottom of the screen, it displays 'CH1 : Volt - 100mV'.

Enter the title comment.
❖ See Section 4.1.

Set the time axis (time per division.)
❖ See Section 4.3.

Set auto saving. Data can be saved to a PC card in real time.
❖ See Section 4.6.

Switch to the corresponding application setting screen.

NOTE

The reference pages referred to above are those in the instruction manual.

2.2 Channel Screen

The settings can be copied from another channel.

- ❖ See Section 5.1.
- ❖ See Section 5.2.

Shows the setting channel.

Set the input type.

- ❖ See Section 5.1.
- ❖ See Section 5.2.

Set the range.
The settings depend on the type of input.

- ❖ See Section 5.1.
- ❖ See Section 5.2.

Shows the waveform display range.

Set the scaling.

- ❖ See Section 5.4.

Enter an input channel comment.

- ❖ See Section 5.1.

Set the waveform display area (range.)

- ❖ See Section 5.1.5.

Set the waveform screen color.

- ❖ See Section 5.1.6.

Set the waveform magnification factor.

- ❖ See Section 5.1.7.

Set the waveform display position.

- ❖ See Section 5.1.8.

Set the waveform sheet.
It is possible to divide into wave sheets S1 to S4, for display and recording.

- ❖ See Section 5.1.9.

Set the display layout.
This can be set when there are Dual or Quad waveform display screens.

- ❖ See Section 5.1.10.

The screenshot shows the 'Channel' screen with the following settings highlighted by red boxes:









- Channel**: '00-09-19 10:28:01'
- Posn&Zoom**: 'Posn' (50%), 'Zoom' (x1)
- Wave Sheet**: 'S1'
- Graph**: 'G1'
- Up**: '50V', **Low**: '-50V'
- Scaling**: 'CH1 OFF', 'Ratio' (1), 'EU/V' ([+1.0000E+0]), 'Offset' ([+0.0000E+0])
- Input Type**: 'Mode' (Volt), 'Color' (~)
- Range**: 'Range' (100Vfs), '(Res' (5mV)
- Comment**: 'CH1 Comment'
- Copy**: '1 + []'

Arrows point from these settings to the following text boxes:

- From 'Posn&Zoom' to 'Set the waveform display area (range.)'
- From 'Color' to 'Set the waveform screen color.'
- From 'Zoom' to 'Set the waveform magnification factor.'
- From 'Posn' to 'Set the waveform display position.'
- From 'Wave Sheet' to 'Set the waveform sheet.'
- From 'Graph' to 'Set the display layout.'
- From 'Up' to 'Shows the waveform display range.'
- From 'Scaling' to 'Set the scaling.'
- From 'Mode' to 'Set the input type.'
- From 'Range' to 'Set the range.'
- From 'Comment' to 'Enter an input channel comment.'
- From 'Copy' to 'The settings can be copied from another channel.'


2.3 Waveform Screen


Display Marks

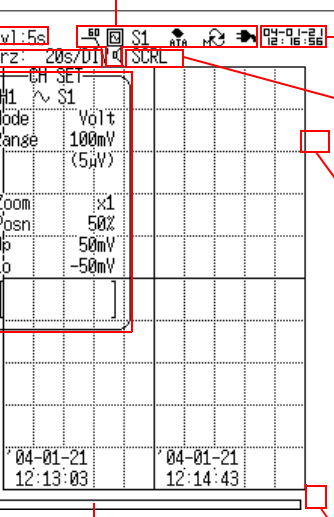
	Sets the digital filter.	❖ See Section 4.7.
	Switch the waveform display screen. This is also possible with the  button.	❖ See Section 6.2.
	Shows the wave sheet of the waveform being displayed.	❖ See Section 5.1.9.
	This indicates that a PC card is inserted.	❖ See Chapter 7.
	This indicates the method of changing channels for numeric display.	❖ See Section 6.3.
	This indicates the power supply.	❖ See Section 2.3.
	This indicates whether the speaker is on or off for the alarm function.	❖ See Section 12.2.

Shows the data recording interval.
❖ See Section 4.2.

Shows the time axis.
❖ See Section 4.3.

This is the channel setting window.
The  button turns the display on and off.
The input channels can be set in the waveform display screen.
❖ See Section 6.1.

The  icon appears while saving in real time.
❖ See Section 7.5.




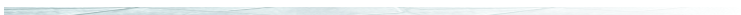
This shows the current date and time.

This indicates scroll mode.
❖ See Section 6.4.
❖ See Section 6.5.
❖ See Section 6.6.

This displays the display channels.

This shows the waveform range.

The  icon appears while printing in real time.
❖ See Section 11.2.2.



Measurement Examples

3

3.1 Voltage Measurement

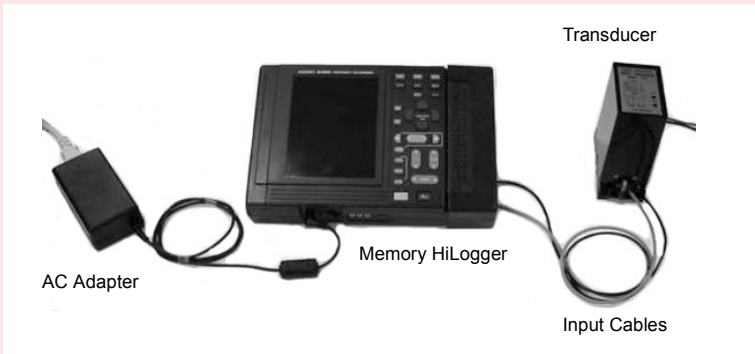
In the explanation below, we measure AC voltage fluctuations for a one-week period using an AC transducer (0~10 VDC rms value output for 0~150 VAC) as an example. Monitor voltage fluctuations for a one-week period by measuring the output voltage every minute.

Settings:

Voltage is input to Channel 1.

Recording interval: 1 min., Time axis: 1 hour, Recording period: 7 days

Data will be saved onto a PC card in real time.

**Instrument and Accessories Required for Measurement**

- Memory HiLogger
- AC adapter
- PC card
- Input cables
- Flat blade screwdriver

3.1 Voltage Measurement

Settings

Status '03-12-25 14:16:57

Status []

Interval 1min Time/DIV 1h/DIV

Record Time 7 d 0 h 0 m 0 s Cont:OFF
(Data Num) (10081 Point)

Store CH

CH1 ☒ ☐ 16

CH17 ☐ 32

P1 ☐ ☐ ☐ ☐ P4

Auto Save Binary(Real) [AUTO]

Save Mode Normal Full

Digital Filter 60Hz

Alarm... Measurement...

Printer... Wave Calc...

Copy&Comm... Trigger...

System...

<Status Screen>

Interval : 1min
 Time/DIV : 1h/DIV
 Record Time : 7 d
 Store CH : CH1
 Auto Save : Binary (Real)
 File Name : AUTO (default)
 Save Mode : Normal Full
 Digital Filter : 60 Hz

Channel '03-12-25 14:17:27

Analog Posn&Zoom

CH1 ☒ [] ☒ ☐ ☐

Mode Volt Color ~

Range 10Vf.s. Zoom x1

(Res 500μV) Posn 0%

Wave Sheet S1

Graph G1

Up 150 Low 0

Scaling 2 Point

CH1 ENG ☒ [V] ☒ ☐ ☐ °C °F

A : [+0.0000E+00] → [+0.0000E+00]

B : [+1.0000E+01] → [+1.5000E+02]

<Analog Channel Screen>

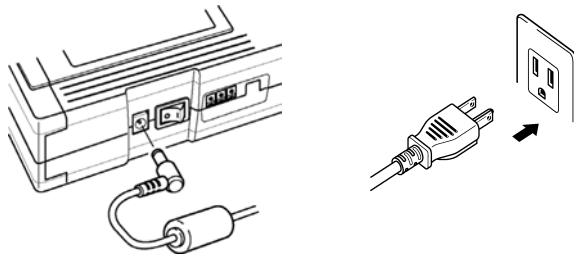
Display Area : Posn&Zoom
 Mode : Voltage
 Range : 10Vf.s.
 Posn : 0%

Scaling : 2 point
 Display Format : ENG
 Unit : V
 A: +0.0000E+00 → +0.0000E+00
 B: +1.0000E+01 → +1.5000E+02

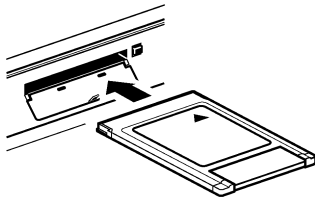


- To avoid the danger of electric shock, never connect the power line to which the measurement cable is connected to this unit while the power line is live.
- Never apply more than 30 Vrms AC or 60 VDC between analog inputs, or between analog inputs and chassis ground.

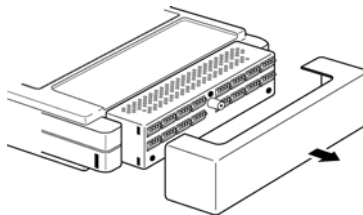
1. Make sure the instrument is OFF.
2. Connect the AC adapter to the instrument.
3. Plug the AC adapter into the power outlet.
❖ See Section 2.1 "Connecting Power" (page 21) of Instruction Manual.



4. Insert the PC card.
❖ See Section 7 "Saving Measurement Data" (page 113) of Instruction Manual.



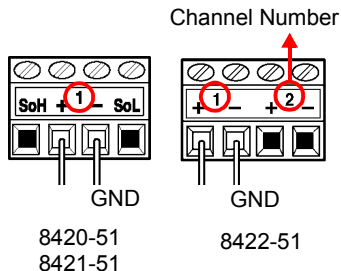
5. Remove the terminal board cover.



3.1 Voltage Measurement

6. Using the supplied flat blade screwdriver, connect the measurement cables to channel 1 on the terminal board. Be sure that the polarity of the cable connection is correct.

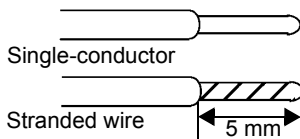
❖ See Section 2.2 "Connecting Measurement Cables" (page 25) of Instruction Manual.



Recommended Lead Wire

Single-conductor: 0.14 to 1.5 mm²

Stranded wire: 0.14 to 1 mm²
AWG : AWG26-AWG16



When connecting the input cable to a transducer, refer to the instruction manual of the transducer and be sure to connect the cable correctly.

7. Replace the terminal board cover to protect the terminal board, and for safety.
8. Turns on the power switch.

❖ See Section 2.3 "Powering On/Off" (page 31) of Instruction Manual.
9. Set the parameters of this instrument.

Display the Status Screen.

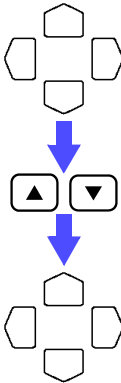


Display the Status Screen.

```

Status          '03-12-25 14:07:26
┌──Status───┐
├──Interval 200ms Time/DIV 1s/DIV┤
├──Record Time┤
│ 0 d 0 h 0 m 10 s Cont: ON      │
│ (Data Num)          Cont       │
├──Store CH┤
│ CH1 ██████████ ██████████16   │
│ CH17██████████ ██████████32   │
│                               │
│                               │
│ P1□□□□P4                     │
│                               │
├──Auto Save      OFF [AUTO]  ──┤
│                               │
├──Digital Filter      OFF    ──┤
│                               │
├──Alarm...           Wave Calc...┤
├──Printer...         Trigger...  ┤
├──Copy&Comm...       System...   ┤
└──▲,▼ Key to Show Copy&Comm Screen.┘
  
```

Set the recording interval to "1minute."



Move the blinking cursor to the position shown.

```

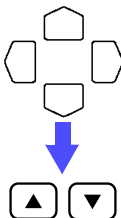
Status          '03-12-25 14:08:05
┌──Status───┐
├──Interval 1min Time/DIV 2min/DIV┤
└──────────┘
  
```

Select "1min."

The setting becomes effective immediately after being selected.

Close the list of settings.

Set the time axis (Time/DIV) to "1h/DIV."



Move the blinking cursor to the position shown.

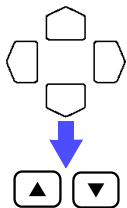
```

Status          '03-12-25 14:08:44
┌──Status───┐
├──Interval 1min Time/DIV 1h/DIV┤
└──────────┘
  
```

Select "1h/DIV."

3.1 Voltage Measurement

Set the recording period (Record Time) to "7 days."



Move the blinking cursor to the position shown.

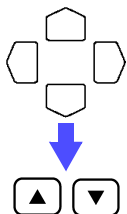
Interval	1min	Time/DIV	1h/DIV
Record Time	7 d	0 h	0 m 0 s
Cont: OFF			

Select "7 d."

NOTE

To set an arbitrary recording period, choose "OFF" for "Continuous" and then set the desired time.

Turn on the channel 1 (CH1) of the Store CH.



Move the blinking cursor to the position shown.

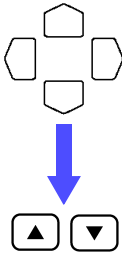
Store CH	
CH1	<input checked="" type="checkbox"/> 16
CH17	32
P1 P4	

Turn on the channel 1, by putting a check mark ☒ in the CH1 box of Store CH.

NOTE

Unless the Store CH setting is on, it is not possible to make input settings in the channel screen.

Set the automatic saving to "Binary (Real time)."



Move the blinking cursor to the position shown.

Store CH	
CH1	<input checked="" type="checkbox"/> 16
CH17	<input type="checkbox"/> 32
P1	<input type="checkbox"/> P4
Auto Save	Binary(Real) [AUTO]
Save Mode	Normal Full

Select "Binary (Real)."

NOTE

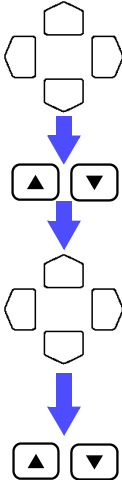
If a file name has already been entered, the file is automatically saved with that name. For continuous saving, a number is appended to the file name.

✦ See Section 14 "Text Entry Procedure" (page 225) of Instruction Manual.

If no file name has been entered, default file naming is used ([AUTO, AUTO0001], etc.)

✦ See Section 7.5 "Automatic Data Saving" (page 133) of Instruction Manual.

Set the Save Mode to "Normal" and "Full."



Move the blinking cursor to the position shown.

Auto Save	Binary(Real) [AUTO]
Save Mode	Normal Full

Select "Normal."

Move the blinking cursor to the position shown.

Auto Save	Binary(Real) [AUTO]
Save Mode	Normal Full
Digital Filter	OFF

Select "Full."

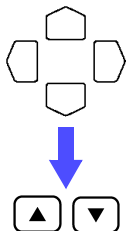
NOTE

One file is created for each measurement session. When the PC card is full, saving ends.

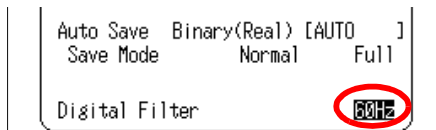
✦ See Section 7.5 "Automatic Data Saving" (page 133) of Instruction Manual.

3.1 Voltage Measurement

Set the digital filter to "60 Hz."



Move the blinking cursor to the position shown.



Select "60 Hz."

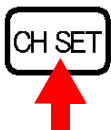
NOTE

A digital filter can be used on analog channels to remove noise in the input signals.

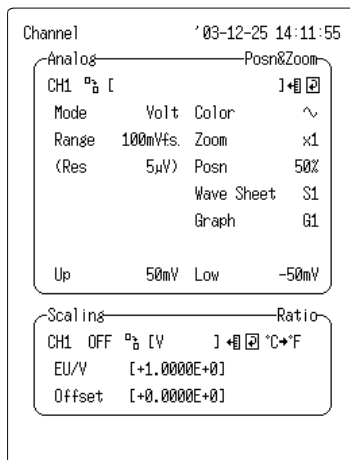
The longer the recording interval is, the larger the noise reduction effect becomes; this ensures highly accurate measurement with little scatter.

Set the filter to 50Hz in areas where the supply frequency is 50Hz.

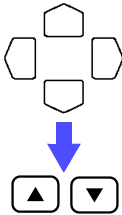
Display the Analog Channel Screen.



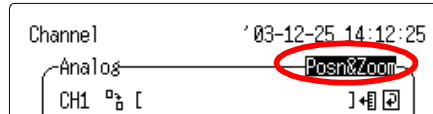
Display the Analog Channel Screen for channel 1.



Set the display area to "Posn&Zoom."

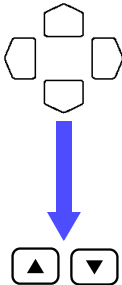


Move the blinking cursor to the position shown.

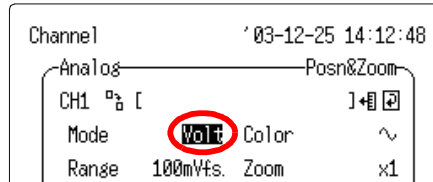


Select "Posn&Zoom."

Set the input type (Mode) to "Voltage."

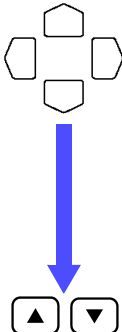


Move the blinking cursor to the position shown.

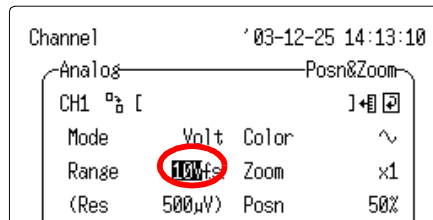


Select "Volt."

Set the range to "10Vf.s.."

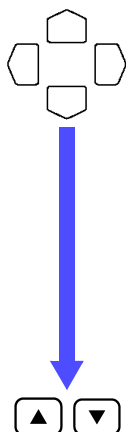


Move the blinking cursor to the position shown.

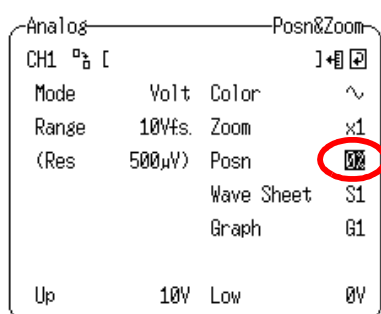


Select "10Vf.s.."

Set the display position to "0%."

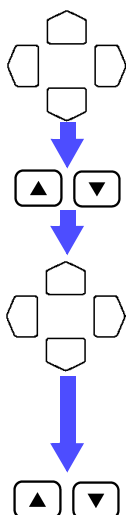


Move the blinking cursor to the position shown.

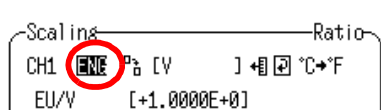


Select "0%."

Set the scaling.

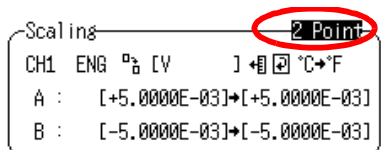


Move the blinking cursor to the position shown.

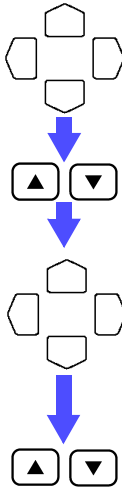


Set the display format to "ENG."


Move the blinking cursor to the position shown.



Set the scaling method to "2 Point."




Move the blinking cursor to the position shown.

```
Scaling-----2 Point
CH1 ENG  $\mu$  V [V]  °C→°F
A : [+5.0000E-03]→[+5.0000E-03]
```

Set the scaling unit to "V."

Move the blinking cursor to the position shown.

```
Scaling-----2 Point
CH1 ENG  $\mu$  V [V]  °C→°F
A : [+0.0000E+00]→[+0.0000E+00]
B : [-1.0000E+01]→[+1.5000E+02]
```

Enter the following:

A: +0.0000E+00 → +0.0000E+00

B: +1.0000E+01 → +1.5000E+02

❖ See Section 5.4 "Setting Scaling" (page 86) of Instruction Manual.

Upper limit value: 150 V, Lower limit value: 0 V

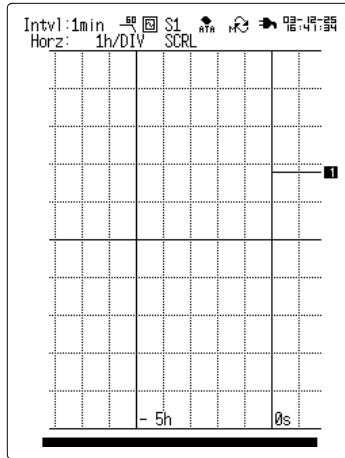
NOTE


- Setting the scaling to correspond to the transducer conversion ratio allows the measurement values to be read off directly.
- With the origin Posn setting at "0%" the range from 0 to 150 V is displayed.

3.1 Voltage Measurement

10. Press the  key to start measurement.

The Waveform Screen is displayed.



Press the  key twice to abandon measurement while it is in progress.

11. Measurement ends when seven days has elapsed.

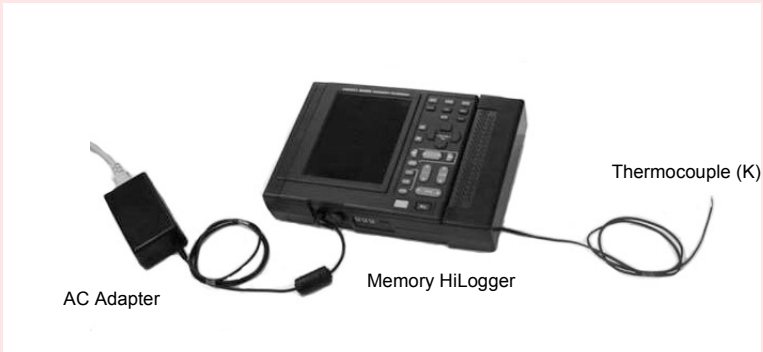
3.2 Temperature Measurement Using a Thermocouple (K)

Measure indoor temperature changes using a thermocouple. Observe temperature changes by measuring the temperature every second.

Settings:

Temperature is input to Channel 1.

Recording interval: 1 sec., Time axis: 1 min., Recording period: Continuous
Data is viewed on the screen of the Memory HiLogger after measurement is complete.



Instrument and Accessories Required for Measurement

- Memory HiLogger
- AC adapter
- Thermocouple (K)
- Flat blade screwdriver

NOTE

Because data is saved to the internal memory, a PC card is not used. When the measurement extends over a long period, we recommend you save data to a PC card in real time to avoid data being lost in the event of a power outage.

3.2 Temperature Measurement Using a Thermocouple (K)

Settings

Status '03-12-25 14:25:36

Status []

Interval 1s Time/DIV 1min/DIV

Record Time 0 d 0 h 0 m 10 s Cont: ON
(Data Num) Cont

Store CH

CH1 ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 16

CH17 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 32

P1 ☐ ☐ ☐ ☐ P4

Auto Save OFF [AUTO]

Digital Filter 60Hz

Alarm... Measurement...

Printer... Wave Calc...

Copy&Comm... Trigger...

System...

<Status Screen>

Interval : 1s
 Time/DIV : 1min/DIV
 Record Time : Continuous
 Store CH : CH1
 Auto Save : OFF
 Digital Filter : 60 Hz

Channel '03-12-25 14:25:58

Analog Posn&Zoom

CH1 ☐ ☐ [] ☒ ☐ ☐

Mode TC Color ~

Range 100°Cfs. Zoom x1

(Res 0.01°C) Posn 0%

Senser K Wave Sheet S1

RJC Int Graph G1

Burn Out OFF

Up 100°C Low 0°C

Scaling Ratio

CH1 OFF ☐ [V] ☒ ☐ ☐ °C→°F

EU/V [+1.0000E+0]

Offset [+0.0000E+0]

<Analog Channel Screen>

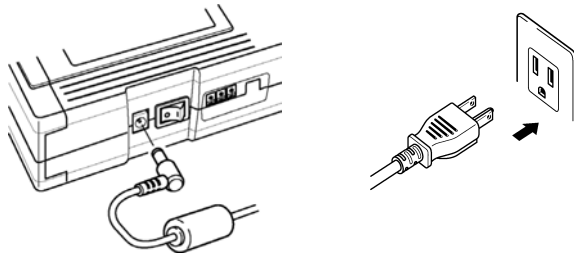
Display Area : Posn&Zoom
 Mode : Thermocouple
 Range : 100°Cf.s.
 Posn : 0%

3.2 Temperature Measurement Using a Thermocouple (K)

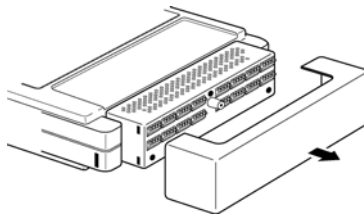


To avoid the danger of electric shock, never connect the power line to which the thermocouple is connected to this unit while the power line is live.

1. Make sure the instrument is OFF.
2. Connect the AC adapter to the instrument.
3. Plug the AC adapter into the power outlet.
❖ See Section 2.1 "Connecting Power" (page 21) of Instruction Manual.



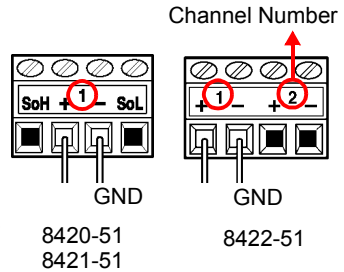
4. Remove the terminal board cover.



3.2 Temperature Measurement Using a Thermocouple (K)

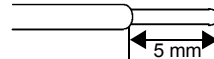
5. Using the supplied flat blade screwdriver, connect the thermocouple (K) to channel 1 on the terminal board.
Be sure that the polarity of the cable connection is correct.

❖ See Section 2.2 "Connecting Measurement Cables" (page 25) of Instruction Manual.



Recommended Lead Wire

Wire diameter : 0.32 mm
Wire stripping length : 5 mm



6. Replace the terminal board cover, to protect the terminal board, and for safety. If the input terminals are exposed to a strong wind, this can upset the thermal balance of the input unit, and cause incorrect readings.
7. Attach the thermocouple (K) to the object whose temperature is to be measured.
8. Turns on the power switch.
❖ See Section 2.3 "Powering On/Off" (page 31) of Instruction Manual.
9. Set the parameters of this instrument.

3.2 Temperature Measurement Using a Thermocouple (K)

Display the Status Screen.

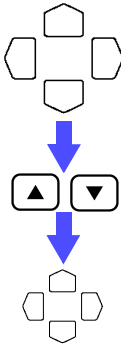


Display the Status Screen.

```

Status          '03-12-25 14:07:26
┌──────────┐
│ Status──┐ │
│ Interval 200ms Time/DIV 1s/DIV │
│ Record Time │
│   0 d 0 h 0 m 10 s Cont: ON │
│ (Data Num)   Cont │
│ Store CH │
│ CH1 ██████████ ██████████16 │
│ CH17████████ ██████████32 │
│          P1□□□□P4 │
│ Auto Save      OFF [AUTO] │
│
│ Digital Filter      OFF │
│
│ Alarm...           Measurement...
│ Printer...         Wave Calc...
│ Copy&Comm...       Trigger...
│                   System...
└──────────┘
▲▼ Key to Show Copy&Comm Screen.
  
```

Set the recording interval to "1s."



Move the blinking cursor to the position shown.

```

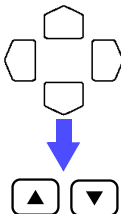
Status          '03-12-25 14:19:27
┌──────────┐
│ Status──┐ │
│ Interval 1s Time/DIV 2s/DIV │
└──────────┘
  
```

Select "1s."

The setting becomes effective immediately after being selected.

Close the list of settings.

Set the time axis (Time/DIV) to "1min/DIV."



Move the blinking cursor to the position shown.

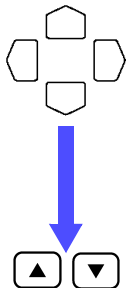
```

Status          '03-12-25 14:19:56
┌──────────┐
│ Status──┐ │
│ Interval 1s Time/DIV 1min/DIV │
└──────────┘
  
```

Select "1min/DIV."

3.2 Temperature Measurement Using a Thermocouple (K)

Set the recording period (Record Time) to "Cont: ON."

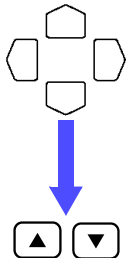


Move the blinking cursor to the position shown.

Status	'03-12-25 14:20:28
Status	[
Interval	1s Time/DIV 1min/DIV
Record Time	0 d 0 h 0 m 10 s Cont: ON
(Data Num)	Cont

Select "Cont: ON."

Turn on the channel 1 (CH1) of the Store CH.



Move the blinking cursor to the position shown.

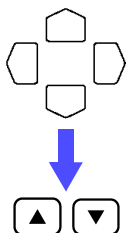
Record Time	0 d 0 h 0 m 10 s Cont: ON
(Data Num)	Cont
Store CH	
CH1	<input checked="" type="checkbox"/> 000000000000000016
CH17	000000000000000032

Turn on the channel 1, by putting a check mark ☒ in the CH1 box of Store CH.

NOTE

Unless the Store CH setting is on, it is not possible to make input settings in the channel screen.

Set the digital filter to "60 Hz."



Move the blinking cursor to the position shown.

Auto Save	OFF [AUTO]
Digital Filter	60Hz

Select "60 Hz."

NOTE

A digital filter can be used on analog channels to remove noise in the input signals.

The longer the recording interval is, the larger the noise reduction effect becomes; this ensures highly accurate measurement with little scatter.

Set the filter to 50Hz in areas where the supply frequency is 50Hz.

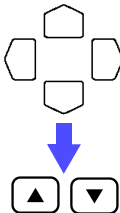
Display the Analog Channel Screen.



Display the Analog Channel Screen for channel 1.

Channel		'03-12-25 14:11:55	
Analog		Posn&Zoom	
CH1	□□ [] + []	
Mode	Volt	Color	~
Range	100mVfs.	Zoom	x1
(Res	5μV)	Posn	50%
		Wave Sheet	S1
		Graph	G1
Up	50mV	Low	-50mV
Scaling		Ratio	
CH1	OFF	□□ [V] + [] °C*°F
EU/V	[+1.0000E+0]		
Offset	[+0.0000E+0]		

Set the display area to "Posn&Zoom."

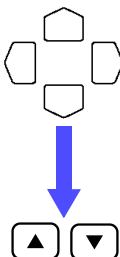


Move the blinking cursor to the position shown.

Channel		'03-12-25 14:12:25	
Analog		Posn&Zoom	
CH1	□□ [] + []	

Select "Posn&Zoom."

Set the input type (Mode) to "TC (Thermocouple)."



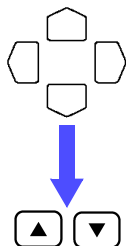
Move the blinking cursor to the position shown.

Channel		'03-12-25 14:22:36	
Analog		Posn&Zoom	
CH1	□□ [] + []	
Mode	TC	Color	~

Select "TC."

3.2 Temperature Measurement Using a Thermocouple (K)

Set the range to "100°Cf.s.."

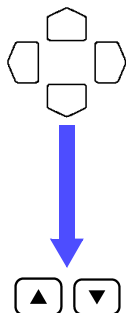


Move the blinking cursor to the position shown.

Analog		Posn&Zoom	
CH1	°C [] + []	
Mode	TC	Color	~
Range	100°Cf.s.	Zoom	x1

Select "100°Cf.s.."

Set the thermocouple type (Sensor) to "K."

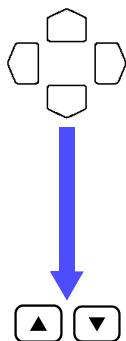


Move the blinking cursor to the position shown.

Analog		Posn&Zoom	
CH1	°C [] + []	
Mode	TC	Color	~
Range	100°Cf.s.	Zoom	x1
(Res	0.01°C)	Posn	50%
Sensor	K	Wave Sheet	S1

Select "K."

Set the appropriate compensation (RJC) to "Int (Internal)."



Move the blinking cursor to the position shown.

Analog		Posn&Zoom	
CH1	°C [] + []	
Mode	TC	Color	~
Range	100°Cf.s.	Zoom	x1
(Res	0.01°C)	Posn	50%
Sensor	K	Wave Sheet	S1
RJC	Int	Graph	G1

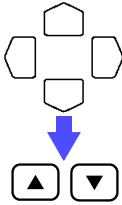
Select "Int."

NOTE

Reference junction compensation is performed within the Memory HiLogger. When a thermocouple is connected directly to the Memory HiLogger, choose "Int."

3.2 Temperature Measurement Using a Thermocouple (K)

Set the burn out detection (Burn Out) to "OFF."

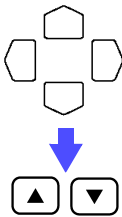


Move the blinking cursor to the position shown.

Senser	K	Wave Sheet	S1
RJC	Int	Graph	G1
Burn Out	OFF		

Select "OFF."

Set the display position to "0%."



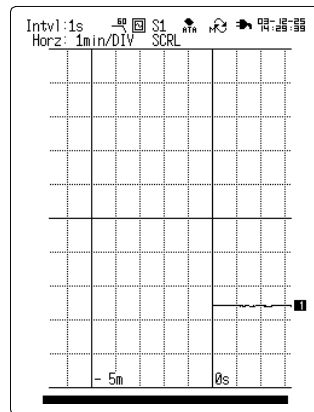
Move the blinking cursor to the position shown.


Mode	TC	Color	~
Range	100°Cfs	Zoom	x1
(Res	0.01°C)	Posn	0%

Select "0%."

Upper limit value: 100°C, Lower limit value: 0°C

10. Press the  key to start measurement.



11. Press the  key twice to abandon measurement.

12. Monitor changes in temperature on the Waveform Screen.

❖ See Section 6 "Waveform Screen" (page 99) of Instruction Manual.

3.3 Integrating the Pulse Output from a Power Meter

Prepare a watt-hour meter capable of outputting 50,000 pulses/kWh pulse and capture pulses from the meter to measure the integrated watt-hour for a one-month (30-day) period. Observe the integrated watt-hours for a one-month period by measuring the output pulses of the watt-hour meter every 30 minutes.

Settings:

Pulse is input to Pulse Channel 1 (P1).

Recording interval: 30 min., Time axis: 1 day, Recording period: 30 days



Instrument and Accessories Required for Measurement

- Memory HiLogger
- AC adapter
- PC card
- Input cables
- Flat blade screwdriver
- 9641 CONNECTION CABLE

Settings

Status '03-12-25 16:45:32

—Status— []

Interval 30min Time/DIV 1d/DIV

Record Time
30 d 0 h 0 m 0 s Cont:OFF
(Data Num) (1441 Point)

Store CH
CH1 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 16
CH17 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 32
P1 ☒ ☐ ☐ ☐ P4

Auto Save Binary(Real) [AUTO]
Save Mode Normal Full

Digital Filter OFF

Alarm... Measurement...
Printer... Wave Calc...
Copy&Comm... Trigger...
System...

<Status Screen>

Interval : 30min
Time/DIV : 1d/DIV
Record Time : 30 d
Store CH : P1
Auto Save : Binary (Real)
File Name : AUTO (default)
Save Mode : Normal Full
Digital Filter : OFF

Channel '03-12-25 14:05:35

—Pulse— —Posn&Zoom—

P1 ☐ [] ☒ ☒

Mode Count Color ~

Range 2500Mcf.s. Zoom x1

(Res 50000c) Posn 0%

Count Mode Add Wave Sheet S1

Slope Up Graph G1

Filter ON

Up 50000 Low 0

—Scaling— —TYPE 2—

P1 ENG ☐ [kWh] ☒ ☒

1 pulse =[000020.00u] [kWh]

1[kWh]=[000050.00k] pulse

<Pulse Channel Screen>

Display Area : Posn&Zoom
Mode : Count
Range : 2500Mcf.s.
Posn : 0%

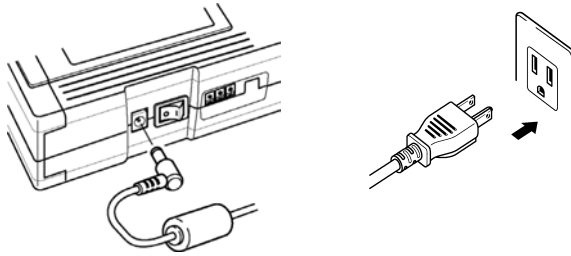
Scaling : Type2
Display Format : ENG
Unit : kWh
1kWh = 50.00 k pulse

3.3 Integrating the Pulse Output from a Power Meter

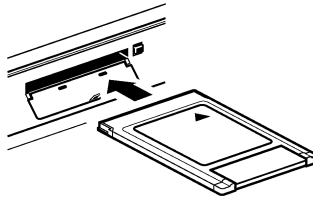
! WARNING

To avoid the danger of electric shock, never connect the power line to which the measurement cable is connected to this unit while the power line is live.

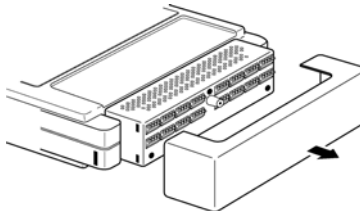
1. Make sure the instrument is OFF.
2. Connect the AC adapter to the instrument.
3. Plug the AC adapter into the power outlet.
❖ See Section 2.1 "Connecting Power" (page 21) of Instruction Manual.



4. Insert the PC card.
❖ See Section 7 "Saving Measurement Data" (page 113) of Instruction Manual.

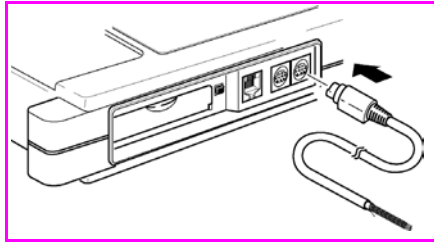


5. Remove the terminal board cover.

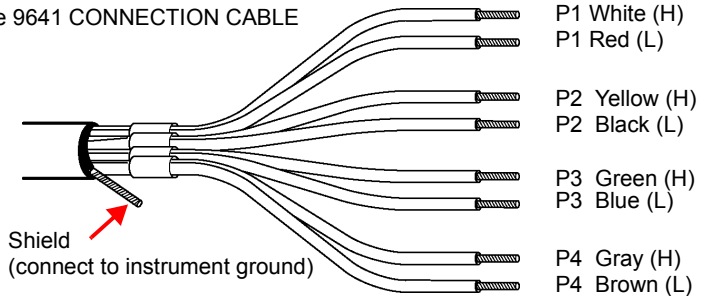


3.3 Integrating the Pulse Output from a Power Meter

6. Connect the 9641 CONNECTION CABLE to this instrument. The 9641 CONNECTION CABLE is terminated as follows.



Ends of the 9641 CONNECTION CABLE



❖ See Section 2.2.3 "Connecting the 9641 CONNECTION CABLE (for pulse input)" (page 29) of Instruction Manual.

7. Connect the 9641 CONNECTION CABLE to the pulse output terminals of the power meter.
For details of connections, refer to the instructions supplied with the power meter, and take great care that the connections are correct.

For P1, the white lead is high, and the red lead is low.

8. Turns on the power switch.

❖ See Section 2.3 "Powering On/Off" (page 31) of Instruction Manual.

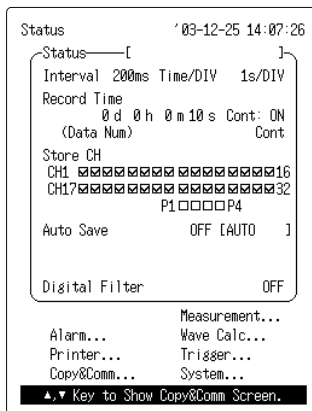
9. Set the parameters of this instrument.

3.3 Integrating the Pulse Output from a Power Meter

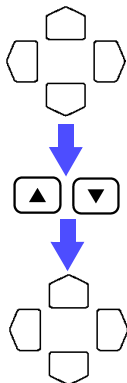
Display the Status Screen.



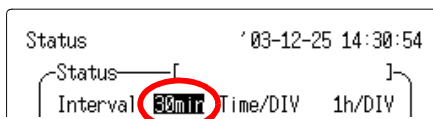
Display the Status Screen.



Set the recording interval to "30min."



Move the blinking cursor to the position shown.

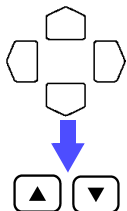


Select "30min."

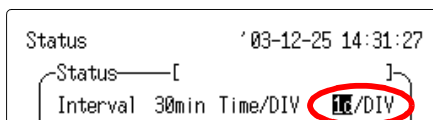
The setting becomes effective immediately after being selected.

Close the list of settings.

Set the time axis (Time/DIV) to "1d/DIV."

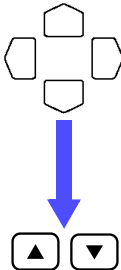


Move the blinking cursor to the position shown.



Select "1d/DIV."

Set the recording period (Record Time) to "30 days."



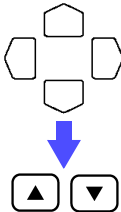
Move the blinking cursor to the position shown.

```

Status                               '03-12-25 14:32:09
┌───┴───┐
Status───┐
Interval 30min Time/DIV 1d/DIV
Record Time 30 d 0 h 0 m 0 s Cont:OFF
  
```

Select "30 d."

Turn on the pulse channel 1 (P1) of the Store CH.



Move the blinking cursor to the position shown.

```

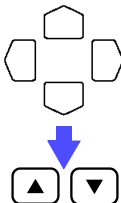
Store CH
CH1 0000000000000000000016
CH17 0000000000000000000032
P1 ☒ P4
  
```

Turn on the pulse channel 1, by putting a check mark ☒ in the P1 box of Store CH.

NOTE

Unless the Store CH setting is on, it is not possible to make input settings in the channel screen.

Set the automatic saving to "Binary (Real time)."



Move the blinking cursor to the position shown.

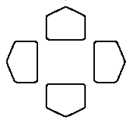
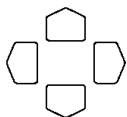
```

Auto Save Binary(Real) AUTO
Save Mode normal Full
  
```

Select "Binary (Real)."

3.3 Integrating the Pulse Output from a Power Meter

Set the saving mode to "Normal" and "Full."



Move the blinking cursor to the position shown.

Auto Save	Binary(Real)	[AUTO]
Save Mode	Normal	Full

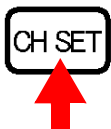
Select "Normal."

Move the blinking cursor to the position shown.

Auto Save	Binary(Real)	[AUTO]
Save Mode	Normal	Full

Select "Full."

Display the Pulse Channel Screen.



Display the Pulse Channel Screen for P1.

Channel
03-12-25 14:34:19

Pulse
Posn&Zoom

P1
0% [
] + []

Mode
Count
Color
~

Range
50000cts.
Zoom
x1

(Res
1c)
Posn
0%

Count Mode
Add
Wave Sheet
S1

Slope
Up
Graph
G1

Filter
OFF

Up
50kc
Low
0kc

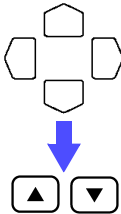
Scalings
TYPE 1

P1
OFF
0% [
] + []

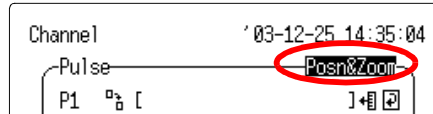
1 pulse
=[000001.00] [c
]

1[c
]=[000001.00] pulse

Set the display area to "Posn&Zoom."

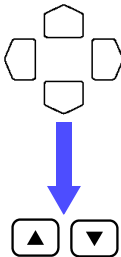


Move the blinking cursor to the position shown.

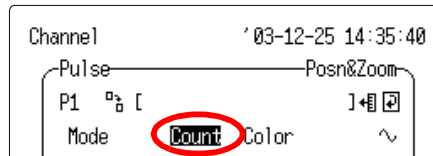


Select "Posn&Zoom."

Set the input type (Mode) to "Count."

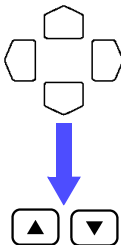


Move the blinking cursor to the position shown.

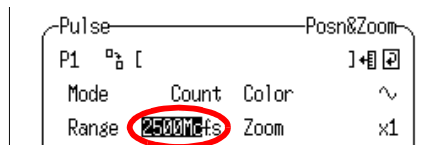


Select "Count."

Set the range to "2500Mcf.s.."



Move the blinking cursor to the position shown.



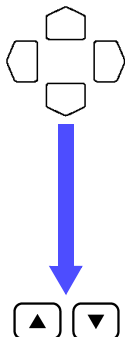
Select "2500Mcf.s.."

NOTE

As 1 kWh is 50,000 pulses, the Memory HiLogger can measure up to a monthly total power level of 50,000 kW.

3.3 Integrating the Pulse Output from a Power Meter

Set the count mode to "Add."

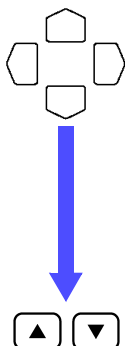


Move the blinking cursor to the position shown.

Pulse			Posn&Zoom	
P1	α	[] * []	
Mode	Count	Color	~	
Range	2500Mcfs.	Zoom	x1	
(Res	50000c)	Posn	0%	
Count Mod	Add	Wave Sheet	S1	
Slope	Up	Graph	G1	

Select "Add."

Set the slope type to "Up."

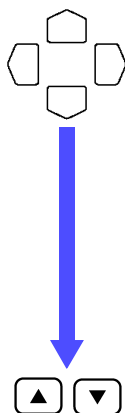


Move the blinking cursor to the position shown.

Pulse			Posn&Zoom	
P1	α	[] * []	
Mode	Count	Color	~	
Range	2500Mcfs.	Zoom	x1	
(Res	50000c)	Posn	0%	
Count Mod	Add	Wave Sheet	S1	
Slope	Up	Graph	G1	

Select "Up."

Set the filter to "ON."



Move the blinking cursor to the position shown.

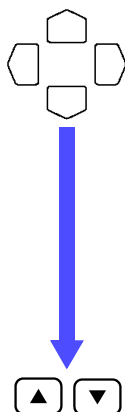
Pulse				Posn&Zoom	
P1	□	[1+1 2
Mode	Count	Color			~
Range	2500Mcfs.	Zoom			x1
(Res	50000c)	Posn			0%
Count Mode	Add	Wave Sheet			S1
Slope	Up	Graph			G1
Filter					ON
Up	2.5Gc	Low			0.0Gc

Select "ON."

NOTE

When a mechanical contact output device is connected to the Memory HiLogger, turn the filter to "ON."

Set the display position to "0%."



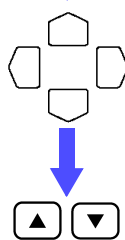
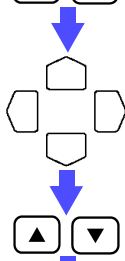
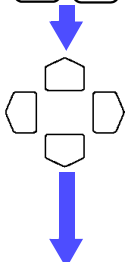
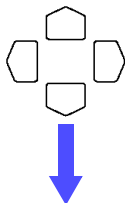
Move the blinking cursor to the position shown.

Pulse				Posn&Zoom	
P1	□	[1+1 2
Mode	Count	Color			~
Range	2500Mcfs.	Zoom			x1
(Res	50000c)	Posn			0%
Count Mode	Add	Wave Sheet			S1
Slope	Up	Graph			G1
Filter	ON				
Up	2.5Gc	Low			0.0Gc

Select "0%."

3.3 Integrating the Pulse Output from a Power Meter

Set the scaling.



Move the blinking cursor to the position shown.

```
Scaling-----TYPE 1
P1 OFF % [c ] + [ ]
1 pulse = [000001.00] [c ]
1[c ] = [000001.00] pulse
```

Set the display format to "ENG."

Move the blinking cursor to the position shown.

```
Scaling-----TYPE 2
P1 ENG % [c ] + [ ]
1 pulse = [000001.00] [c ]
1[c ] = [000001.00] pulse
```

Set the scaling method to "TYPE 2."

Move the blinking cursor to the position shown.

```
Scaling-----TYPE 2
P1 ENG % [kWh] + [ ]
1 pulse = [000001.00] [kWh]
1[kWh] = [000001.00] pulse
```

Set the scaling unit to "kWh."

Move the blinking cursor to the position shown.

```
Scaling-----TYPE 2
P1 ENG % [kWh] + [ ]
1 pulse = [000020.00u] [kWh]
1[kWh] = [000050.00u] pulse
```

Enter the following:

1 [kWh] = [50000.00] pulse

❖ See Section 5.4 "Setting Scaling" (page 86) of Instruction Manual.

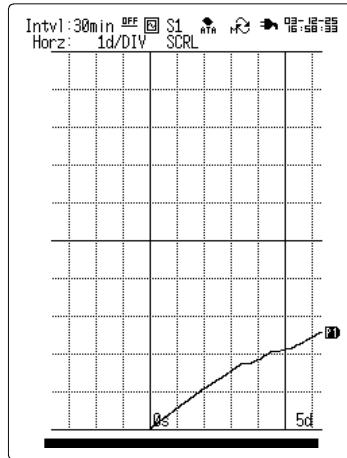
Upper limit value: 50,000 kWh, Lower limit value: 0


NOTE

When scaling is selected, measurements will be read directly in kWh units.

3.3 Integrating the Pulse Output from a Power Meter

10. Press the  key to start measurement.



Press the  key twice to abandon measurement while it is in progress.

11. Measurement ends when a month has elapsed.

3.3 Integrating the Pulse Output from a Power Meter

**HIOKI 8420-51, 8421-51, 8422-51 MEMORY HiLOGGER
Quick Start Manual**

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Technical Support Section

All inquiries to International Sales and Marketing Department
81 Koizumi, Ueda, Nagano, 386-1192, Japan

TEL: +81-268-28-0562 / FAX: +81-268-28-0568

E-mail: os-com@hioki.co.jp

URL <http://www.hioki.co.jp/>

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HIOKI

HIOKI E. E. CORPORATION

HEAD OFFICE

81 Koizumi, Ueda, Nagano 386-1192, Japan

TEL +81-268-28-0562 / FAX +81-268-28-0568

E-mail: os-com@hioki.co.jp / URL <http://www.hioki.co.jp/>

HIOKI USA CORPORATION

6 Corporate Drive, Cranbury, NJ 08512, USA

TEL +1-609-409-9109 / FAX +1-609-409-9108

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