

PW3198 POWER QUALITY ANALYZER Measurement Guide

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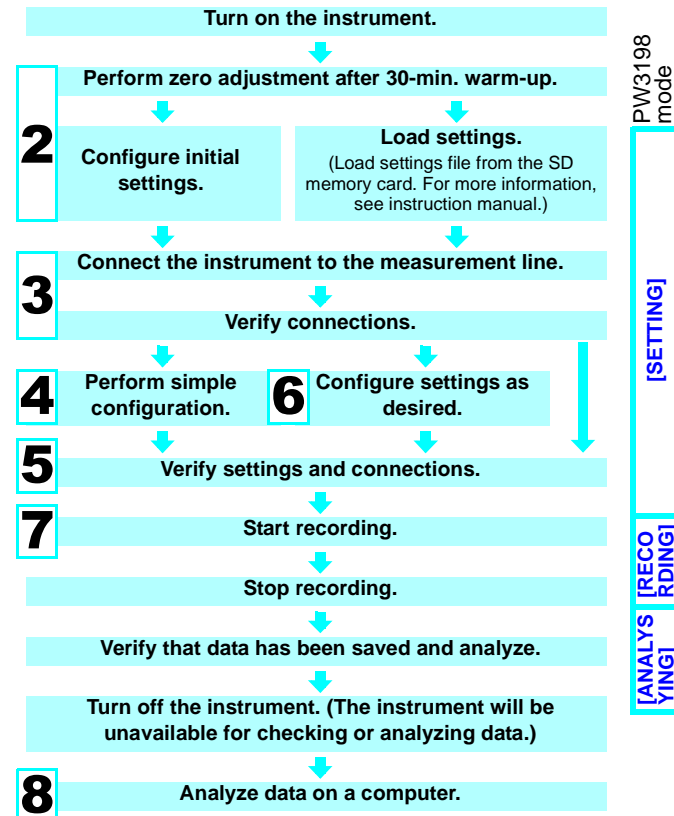
Thank you for purchasing the HIOKI PW3198 Power Quality Analyzer. This guide introduces the PW3198's basic measurement procedure to first-time users. Before using the instrument, be sure to read the instruction manual carefully.



Read First

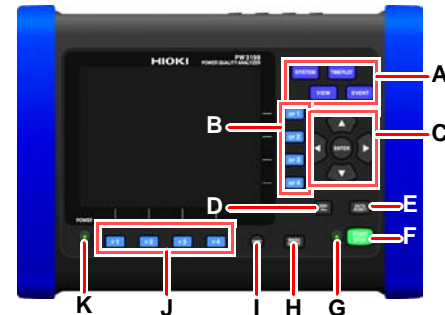
Measurement Procedure

(Number indicates reference step no.)



PW3198 mode
[SETTING]
[RECORDING]
[ANALYZING]

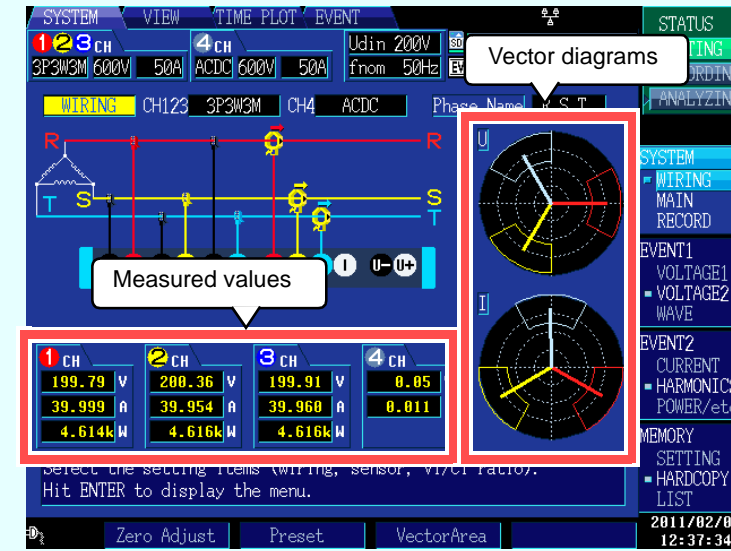
Key functions



- A. Menu keys**
SYSTEM: Configure various settings and event thresholds.
VIEW: Display instantaneous values and waveforms.
TIMEPLOT: Display measurement data as a time series graph.
EVENT: Display measured events as a list.
- B. DF keys**
Select detailed screen display from each screen.
- C. Cursor key, ENTER key**
Move cursors and accept settings.
- D. ESC key**
Cancel selections and changes.
- E. DATA RESET key**
Delete displayed measurement data. (Data stored on the SD memory card will not be deleted.)
- F. START/STOP key**
Start and stop recording.
- G. START/STOP LED**
Recording standby: Flashing green
Recording: Steady green
- H. MANU EVENT key**
Generate events.
- I. COPY key**
Record data on screen currently being displayed.
- J. F keys**
Select and change display content and settings.
- K. POWER LED**
When using AC adapter: Steady green
When using battery: Steady red

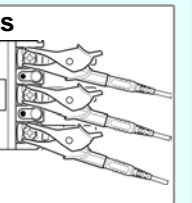
3 Verify connections to the measurement line.

Connect the instrument to the measurement line, referring to the connection diagram shown on the screen.



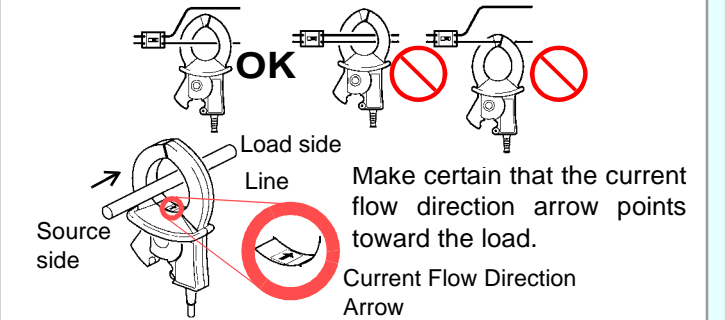
Attach voltage cords to measurement lines

Securely clip the leads to metal parts such as terminal screw terminals or bus bars. (Securely clip the leads to metal parts such as terminal screw terminals or bus bars.)



Connecting clamp sensors to lines to be measured

Be sure to attach each clamp around only one conductor. Correct measurement cannot be obtained if a clamp is attached around more than one conductor.



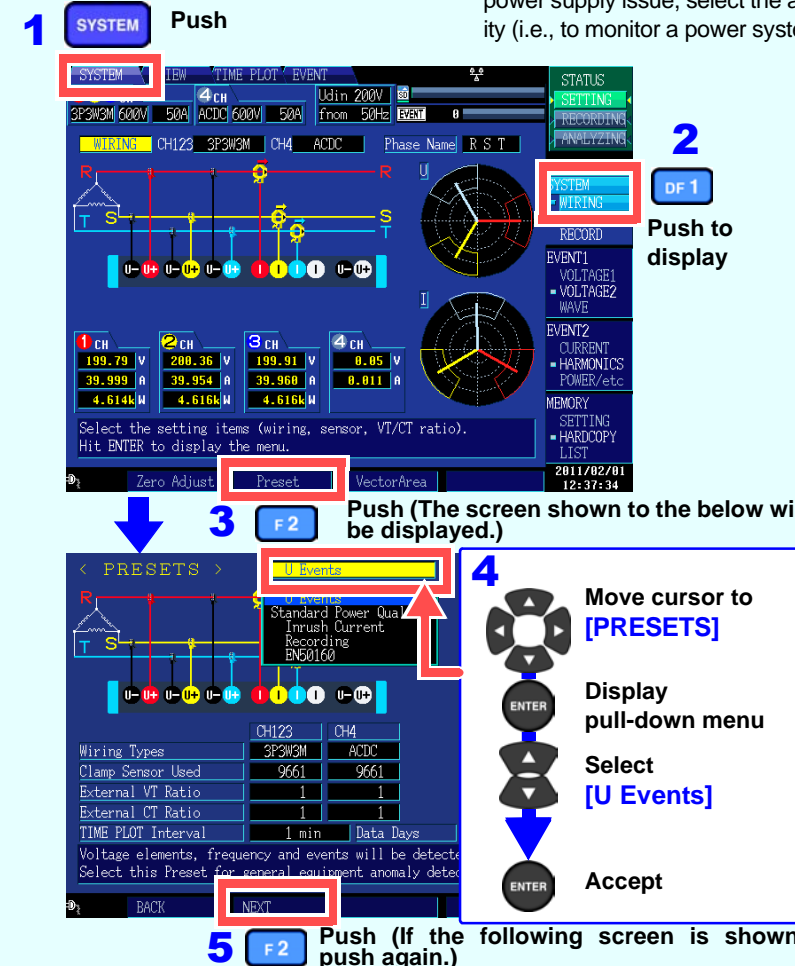
Verify that the connections are correct, referring to the vector diagrams and measured values on the [WIRING] screen. If you discover an error, verify the connections and return to step (2) to reconfigure the initial settings.

4 Simple configuration

Example: Configuring settings for the abnormal voltage detection pattern

Settings such as the current range, nominal input voltage, measurement frequency, and event thresholds will be automatically configured based on the selected connection mode.

(You will need to set the measurement line type, clamp sensor type, and external VT/CT ratio.) Select from the five available patterns according to your objective. To investigate the cause of a power supply issue, select the abnormal voltage detection pattern. To investigate power supply quality (i.e., to monitor a power system), select the basic power supply quality measurement pattern.



Simple configuration patterns

Setting Contents	Description
U Events	Monitors voltage factors (dips, swells, interruptions, etc.) and frequency to detect events. This pattern is used to investigate the cause of equipment malfunctions. The TIMEPLOT interval will be set to 1 minute.
Standard Power Quality	Monitors voltage factors (dips, swells, interruptions, etc.), frequency, current, voltage and current harmonics, and other characteristics to detect events. This pattern is primarily used to monitor systems. The TIMEPLOT interval will be set to 10 minutes.
Inrush Current	Measures rush current. The TIMEPLOT interval will be set to 1 minute, and the rush current threshold will be set to 200% of the RMS current (reference value) set during simple configuration.
Recording	Records measured values over an extended period of time using a TIMEPLOT interval of 10 minutes. All event detection functionality other than manual, start, and stop events is turned off.
EN50160	Performs EN51060-compliant measurement. Standard-compliant evaluation and analysis can be performed by analyzing data using HIOKI's 9624-50 PQA Hi-View Pro software. The EN50160 analysis function is only available using Model 9624-50 PQA-HiView Pro software when the interval time is set to 10 minutes.

For more information about settings, see the instruction manual.

1 Getting ready

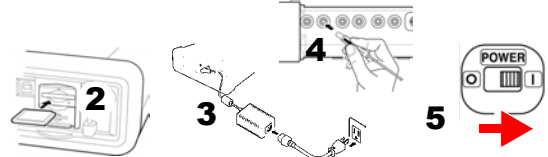
For more information, see the instruction manual.

After purchasing the instrument (first time only)

- Attach the Z1003 Battery Pack to the instrument.
- Turn on the instrument and set its clock.

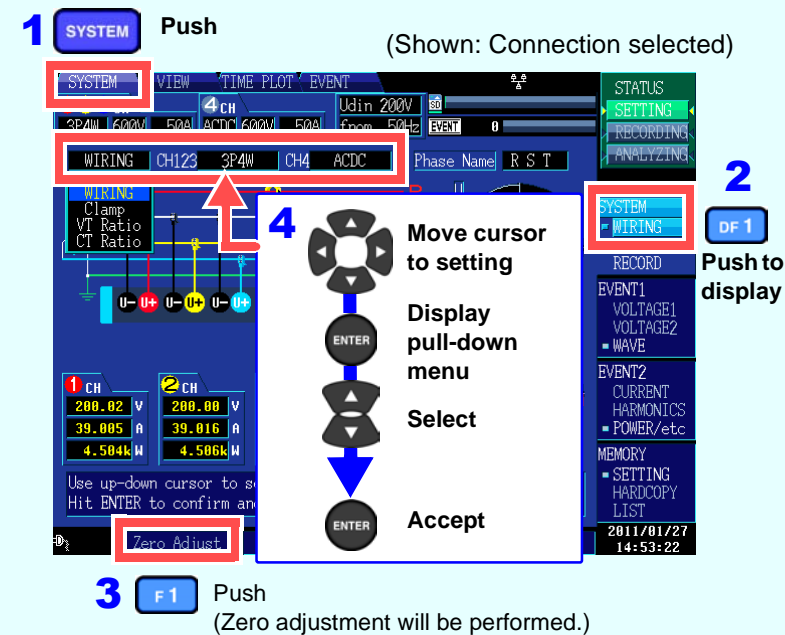
Before measurement

- 1 Perform the pre-measurement inspection.
- 2 Insert an SD memory card into the instrument. (Be sure to close the cover.)
- 3 Connect the AC adapter.
- 4 Connect the voltage cords and current sensors.
- 5 Turn on the instrument.



2 Initial settings

Perform zero adjustment. Configure the connection and clamp sensor settings.



5 Verifying settings and connections

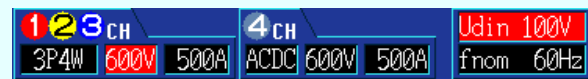
-1. Are measured values or crest factors out of range?

If you see any warning indicators, the clamp sensor, range, or connection settings may be incorrect. Verify the connections and return to step (2) to reconfigure the initial settings.

Warning indicators: Values shown in red as below.



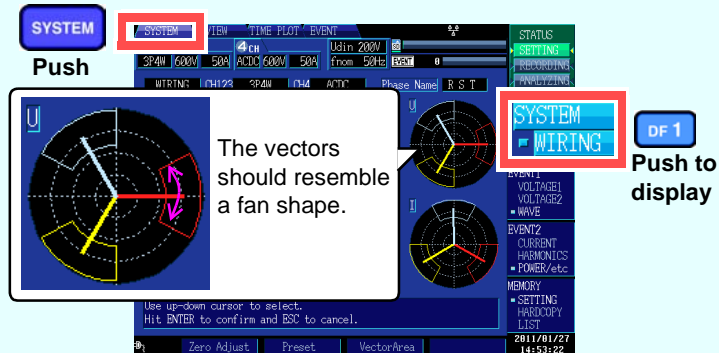
(Current and crest factor out of range)



(Voltage and crest factor out of range)

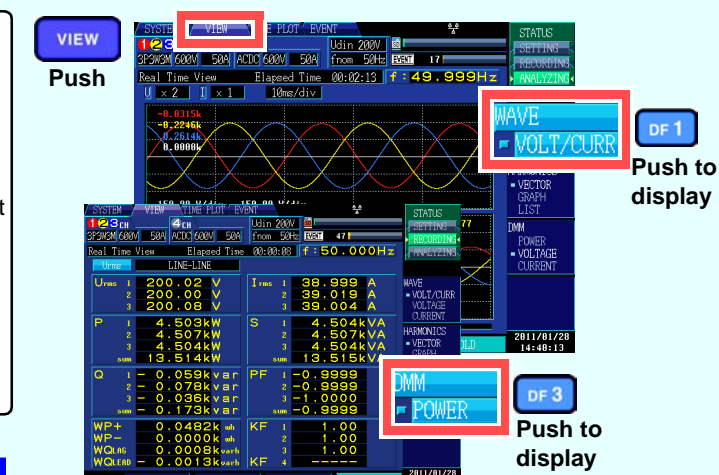
-3. Are the voltage and current phase relationships shown properly in the vector diagrams?

If not, the wiring (connections) to the measurement line or clamp sensor orientations may be incorrect. Verify the connections and clamp sensor orientations.



-4. Are waveforms and measured values shown properly?

If waveforms and measured values are not shown properly, the clamp sensor, range, or connection settings may be incorrect. Return to step (2) to reconfigure the initial settings. Alternately, wiring (connections) to the measurement line or clamp sensor orientations may be incorrect.

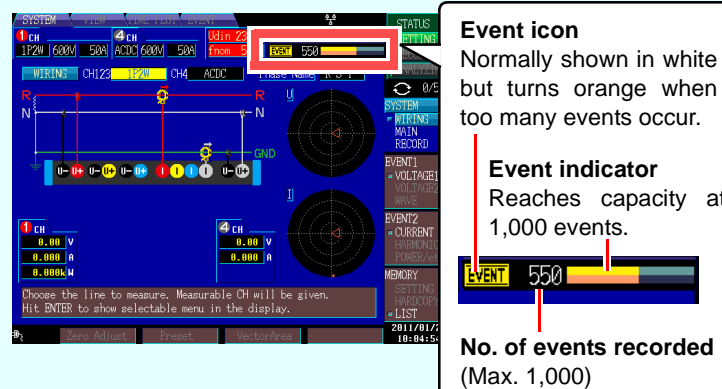


-2. Are too many events occurring?

(Is the **EVENT** icon shown continuously?)

If too many events are occurring, check which events are being generated on the event list on the **[EVENT]** screen (see step [7]) after recording some data and then change the thresholds for the problematic events.

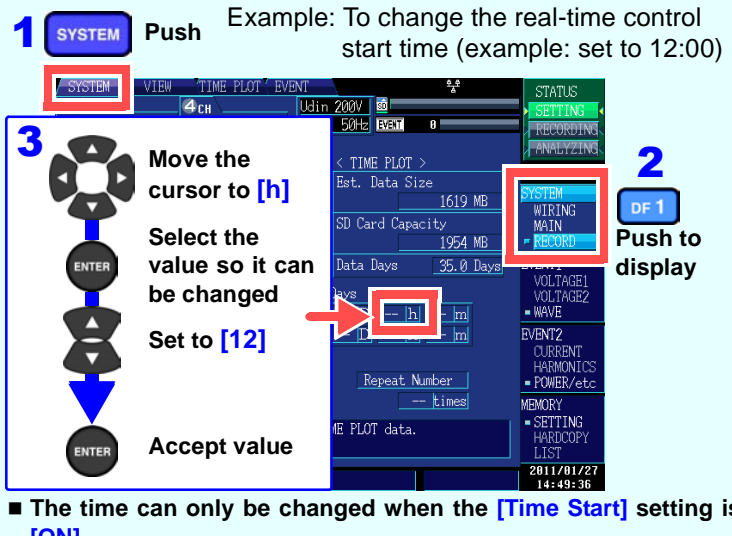
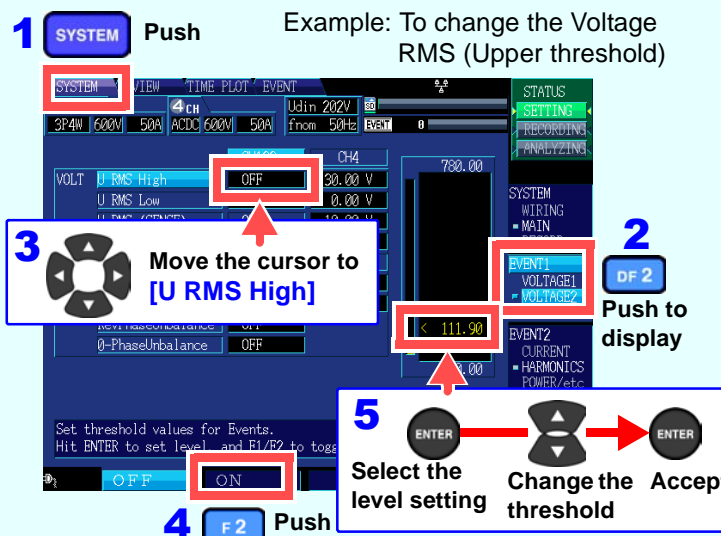
Alternately, wiring (connections) to the measurement line may be incorrect. Verify the connections.



■ Up to 1,000 events can be recorded. Measurement data continues to be recorded even when the number of events exceeds 1,000.

6 User settings (changing settings)

You can change event thresholds, the recording start time, recorded items, and other settings as desired.



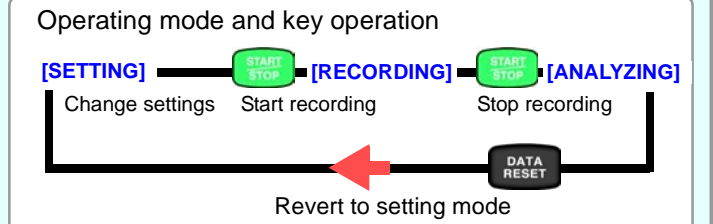
■ The time can only be changed when the **[Time Start]** setting is **[ON]**.

7 Starting recording

Press the **START/STOP** key to start recording. Data will be automatically saved to the SD memory card.



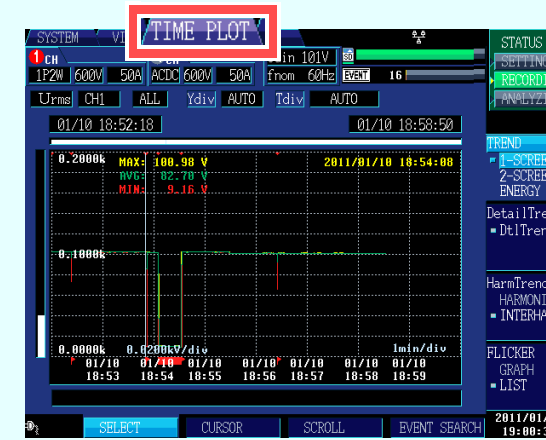
- When recording, the operating mode indicator on the top right of the screen will show **[RECORDING]**.
- To change a setting, set the operating mode to **[SETTING]**. (Settings cannot be changed while recording or analyzing.)



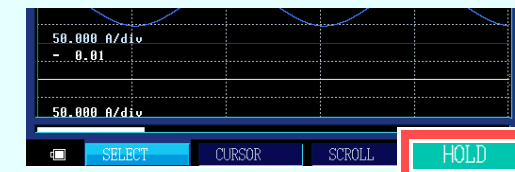
TIMEPLOT Monitoring fluctuations in measured values

You can view measured items in the form of a time series graph. You can also display flicker values as a graph or list.

Press the **TIMEPLOT** key to display the **[TIMEPLOT]** screen. You can change the screen display with the DF keys.



■ To hold waveforms and values

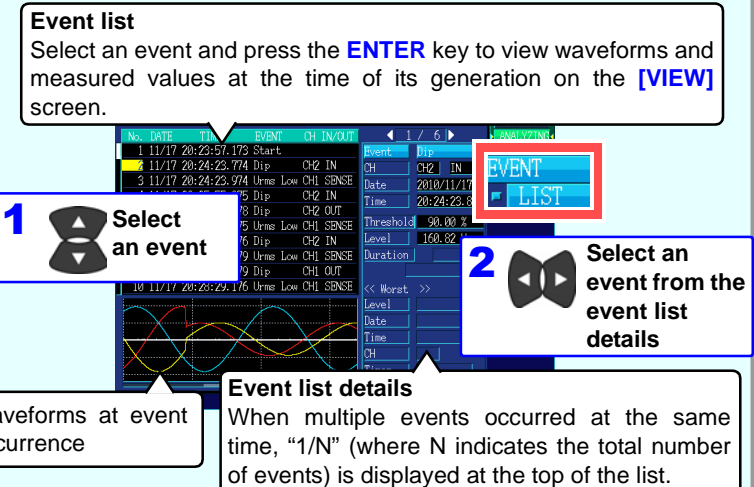


Note: HOLD function is valid on the **[VIEW]** screen only.

EVENT Monitoring event generation

You can check whether events are occurring and the number of events occurring with the event list.

Press the **EVENT** key to display the **[EVENT]** screen.



■ To active the key lock

ESC / On Press and hold for at least 3 seconds. To cancel the key lock, press and hold for at least 3 seconds again.

■ To check instantaneous values

VIEW Push (Switch screens with the DF key.)

8 Analysis

After recording has stopped, data can be analyzed on a computer using the optional 9624-50 PQA Hi-View Pro application.

■ For more information, see the 9624-50 PQA Hi-View Pro instruction manual.

- ★ **Viewing data**
You can view and analyze event data, TIMEPLOT data measured values, and waveforms on a computer.
- ★ **Downloading data**
You can download data to a computer via an SD memory card, USB interface, or LAN interface.
- ★ **Converting data**
You can convert event data and TIMEPLOT data (binary data) to text data for use in a spreadsheet such as Excel.

- ★ **Creating reports**
You can create reports summarizing loaded measurement data and either print them or save them as rich text format (RTF) files.
- ★ **Printing data**
You can print individual screens from the instrument. You can also group all open **[TIMEPLOT]** screens onto a single page for printing.
- ★ **Calculating demand and integral power**
You can calculate maximum values, average demand values, and integral power from measurement data.