Thank you for purchasing the Hioki PQ3198 Power Quality Analyzer. This guide introduces the basic measurement procedure to first-time users. Before using the instrument, be sure to read the instruction manual carefully.

**Measurement Procedure**

1. **Turn on the instrument.**
   - Perform zero adjustment after 30-min. warm-up.

2. **Configure initial settings.**
   - Load settings.

3. **Connect the instrument to the measurement line.**
   - Verify connections.

4. **Perform simple configuration.**
   - Verify settings and connections.

5. **Start recording.**

6. **Stop recording.**

7. **Verify that data has been saved and analyze.**

8. **Analyze data on a computer.**

**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**
  - Select 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

**Simple configuration**

Example: Configuring settings for the abnormal voltage detection pattern

1. **Push**

2. **Push to display**

3. **Select a setting**
   - Display pull-down menu

4. **Select [Easy setting course] display pull-down menu**

5. **Select [Voltage event detection] Accept**

6. **Verify [Declared input voltage] and [Frequency]**
   - These values will be set automatically. Change the values if they are incorrect.

7. **Push (Zero adjustment will be performed.)**

**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, current 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.

**Easy setting course patterns**

- **Setting Contents**
  - **Voltage event detection**
    - 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**
  - Monitors 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.

- **Record measured value**
  - Measures rush current. The TIMEPLOT interval will be set to 1 minute. All event detection functionality other than manual start and stop events is turned off.

- **EN50160**
  - Performs EN50160-compliant measurement. Standard-compliant evaluation and analysis can be performed by analyzing data using the application software PG ONE, which is supplied with the instrument.

**For more information about settings, see the instruction manual.**

**Connect the instrument 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.
  - (Example: Secondary side of breaker)

Applying clamp sensors to lines to be measured

- Always clamp the instrument around only one conductor.
  - Clamping the instrument around two or more of conductors current regardless of whether the measurement target is a single-phase or three-phase circuit.

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.
### 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)

2. Are too many events occurring? (Is the 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. Alternatively, wiring (connections) to the measurement line or current sensor orientations may be incorrect. Return to step 2 to reconfigure the initial settings.

### 6 User settings (changing settings)

- Example: To change the [Recording]
  - Example: To change the [Time Start] start date and time (example: set to 12:00)

- Example: To change the [User settings] RMS (Upper limit)
  - Example: To change the [User settings] level setting (upper limit)

### 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.)

### 8 Analysis

After recording has stopped, data can be analyzed on a computer using the application software PQ ONE, which is supplied with the instrument.

- For more information, see the PQ ONE instruction manual (on the included CD-ROM).
- Viewing data
  - Use event statistics functionality to analyze measurement data at a high level of detail. By reviewing event occurrence by date or time, you can discover events that are likely to occur at a specific time or on a specific day of the week.

- Creating reports
  - Output information shown on the screen as-is in the form of a report. Create reports that suit your needs without the need to configure complex settings.

- Displaying files in list format
  - Drag and drop folders containing measurement data to display a list of settings information and event occurrence data for all the data contained in the folder.

- Converting data
  - Convert event data and time plot data (binary data) to the CSV format so that it can be opened with a spreadsheet application on a computer.

- Calculating demand and integral power
  - Display a demand graph, or display the maximum and level setting for all the data contained in the folder.

- Easily create graphs to suit your needs
  - Organize time plot graphs by convenient times or group three phases of data together on a single graph.

- Converting data
  - Convert event data and time plot data (binary data) to the CSV format so that it can be opened with a spreadsheet application on a computer.