MEMORY HiLOGGER Model 8423 is a data acquisition system capable of measuring and recording multiple channels at high speed. Acquired data can be easily analyzed on a personal computer. This model is ideal for acquiring data for evaluation and testing at development sites. If your evaluation needs require faster data sampling than was available with former HIOKI MEMORY HiLOGGERs, or if you just need more measurement channels, this model has the capabilities you want.
Who needs 10 ms high-speed sampling?

- Answer -

To acquire data when converting automobile electronics for electric or hybrid vehicles

- Fastest measurement interval (sampling interval) is 10 ms
- Acquires up to 600 channels of data with 10 ms sampling interval
- Insulation withstand voltage between the measurement channels in each module is 200 V (Model 8948)

In the development of electric and hybrid automobiles, the need to capture sudden swings in various loads requires a measurement instrument with multi-channel high-speed sampling capability. For this purpose, HIOKI has developed a very economical logger that can measure with 10-ms sampling interval on all channels. Also included is a dual-sampling function that can measure at two different sampling rates simultaneously. This new model can follow waveforms that former 100-ms-sampling instruments could not.

A 5-Hz pulse waveform is measured using dual sampling: 10-ms (upper trace) and 100-ms sampling (lower trace) (Timebase: 50 ms/div).

Sudden-load-change testing of a fuel cell employs dual sampling to measure with 10-ms (upper trace) and 100-ms sampling (lower trace). (Timebase: 50 ms/div).
Who needs 120 or 600 channels?

To acquire multi-point temperature distribution data
To measure the voltage of each cell in a stack

- Expandable up to 120 channels with a single instrument
- Up to five instruments can be connected for measuring up to 600 channels
- Isolated to sustain up to 600 V between modules and earth

Temperature distribution is measured to evaluate air conditioning systems during development. A system to acquire data on up to 600 channels can be constructed with merely a LAN or USB connection, providing highly detailed temperature distribution measurements.

With all channels isolated and a 600V AC/DC maximum rated voltage to earth, even when the common mode voltage increases as is common with layered batteries, the voltage of each individual battery cell can be safely measured.

To evaluate heat radiation characteristics and copy machine operation, temperatures at many points inside the chassis and analog voltages from the control board are simultaneously measured.
“Simplicity” as a Design Concept

Installation

Because the terminal blocks are designed to be removable, thermocouples can be connected to the terminal block in hand before connecting the block to a HiLOGGER input module, with just one touch.

Easily add input modules; just align and mate the connectors on the left side of the instrument assembly, and turn the metal clasp. For added strength, attach the supplied mounting bracket on the rear, or attach a standard DIN rail to the rear for tray or rack mounting.

Measurement configuration settings

Logger configuration settings are made from a computer running the supplied application program. Settings can be easily made using familiar PC operations. To keep the process simple, the user is guided sequentially through the setting items.
Data is recorded on the computer in real time using the supplied Logger Utility PC application program. View a trend graph in a window and scroll back to view earlier waveform data, even while recording.

Post-measurement analysis (New Double-Thumb function*)

The newly developed Double-Thumb function simplifies analysis. Two windows are displayed side by side, each with a scroll bar at the bottom containing a thumb (scroll box) that corresponds to the length and position of that window’s displayed segment within the overall waveform. The thumbs in the scroll bars of the waveform display windows show you the position of the segments at a glance, greatly simplifying scrolling operations.
More Functional Details

Universal isolated inputs for temperature, voltage and pulses

With the modular input design, you can select the input modules appropriate for your measurement application. Select from voltage and temperature (thermocouple or Pt input*) and humidity.*1 *2 Also, Digital Pulse Module 8996 provides 15 input channels for totalization/rotation counts and Hi/Lo logic measurements. In addition to inter-channel input isolation, the PC connection interface is completely isolated from the measurement terminals, minimizing shock hazards and interference even when measuring thermocouple and voltage inputs at the same time.

Note: Isolation between channels is possible through the use of semi-conductor relays. Voltage exceeding the product specifications, such as that originating from lightning surges or other sources, should never be applied between each channel; otherwise the relays will short and the recorder will be damaged.

Real-time saving to CF Card

Each measurement can be saved to a CF Card in real time. Continuous long-term recording can be performed with high capacity CF Cards up to 1 GB. Data can be viewed on a PC using the supplied Logger Utility program.

Enhanced data protection from power failures

This exclusive technology has been developed to preserve data as reliably as possible in the event of a power failure, by incorporating memory card technology with the know-how built into the MEMORY HILOGGER 8420-50, 8421-50 and 8422-50 series. The 8423 emphasizes the existing HILOGGER functions and maintains internal supply voltage with a large internal capacitor until all data has been saved to the card, resulting in greater reliability when acquiring large amounts of data.

A CF Card slot is included as a standard feature, supporting HIOKI CF Cards up to 1 GB (operation with non-HIOKI-brand cards is not guaranteed). Using a CF Card, instrument settings can be easily copied from one 8423 to another.

### Trigger function

Level, Window and Logic trigger functions are provided. You can have one criterion start recording and another stop recording.

### Recording Times with a 512 MB Card

<table>
<thead>
<tr>
<th>Recording intervals</th>
<th>512MB (using 1 channel)</th>
<th>512MB (using 15 channels)</th>
<th>512MB (using 30 channels)</th>
<th>512MB (using 60 channels)</th>
<th>512MB (using 120 channels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>20min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>50ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>100ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>200ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>500ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>1s</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10s</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10s</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
</tbody>
</table>

**Note:**

- Actual CF data capacity is less than total CF storage capacity, and waveform file headers are not included in these calculated values, so we recommend using 90% of these values for estimation purposes.
- **“”** Periods longer than 1 year is abbreviated.

### Recording Times with a 512 MB Card (Voltage, Temperature and Humidity Measurements, but no Pulse Channels)

<table>
<thead>
<tr>
<th>Recording intervals</th>
<th>512MB (using 1 channel)</th>
<th>512MB (using 15 channels)</th>
<th>512MB (using 30 channels)</th>
<th>512MB (using 60 channels)</th>
<th>512MB (using 120 channels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>20min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>50ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>100ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>200ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>500ms</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>1s</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10s</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10s</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>10min</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
<td>$\frac{1}{2}$</td>
</tr>
</tbody>
</table>

**Note:**

- Actual CF data capacity is less than total CF storage capacity, and waveform file headers are not included in these calculated values, so we recommend using 90% of these values for estimation purposes.
- **“”** Periods longer than 1 year is abbreviated.
**Dual Sampling**

Two different measurement intervals can be specified at the same time (one interval setting per input module). Using dual sampling, the appropriate measurement interval can be set for each type of object to be measured, optimizing use of internal memory and CF Card capacity.

**Enhanced PC Interface**

**USB Port Included**
A USB 2.0 (mini-B connector) port is included as standard. The 8423 instrument and a PC can be connected by a USB cable (A to mini-B) for transferring 8423 operating settings and data.

**LAN Terminal Included**
A 100Base-TX LAN terminal is included as standard. The 8423 instrument and a PC can be connected by a LAN cable for transferring 8423 operating settings and data.

**External Control Inputs Included**

Input terminals are provided for external triggering, external start and stop and external sampling. External signals can be applied as a trigger source and to start and stop measurements, so data can be acquired by controlled sampling timing.

*Note: External triggering and external sampling share a common terminal, so only one of these control input types can be used at a time.*
More Functional Details

All-Channel Synchronous Measurement Capability

When measuring up to 120 channels on combined modules, all input channels are sampled synchronously. When multiple 8423s are connected via LAN or USB for measuring up to 600 channels, the sampling of each instrument in the system can be synchronized using optional Connection Cable Model 9683. As well as PC-based data collection, measurement start and stop can be controlled by the [START/MARK] and [STOP] keys on a master 8423.

Note: Any 8423 may be designated as the master. Only the initial acquisition criteria setting needs to be performed on a PC via USB or LAN.

Enhanced Noise Immunity

A delta-sigma type A/D converter has been incorporated in the measurement circuitry. The effects of previously problematic inverter switching noise and 50/60 Hz hum noise have been greatly reduced by the digital filtering function using the oversampling principle inherent in this type of device.

Note: Optimum noise suppression is obtained with recording intervals of two seconds or longer.
### 8423 Hardware Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>LCD, 16 characters × 2 lines, 5 × 8 dots / characters</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>Total 16 M-word (about 16.77 million data points; 32 mega-bytes)</td>
</tr>
<tr>
<td>External control connectors</td>
<td>Push-button type terminal block : External trigger/External sampling input (exclusive OR), External start input, External stop input</td>
</tr>
<tr>
<td></td>
<td>External sampling : rise-up, or fall-down (selectable)</td>
</tr>
<tr>
<td></td>
<td>Rise-up : Low (0 to 10 V) to High (2.5 to 5.0 V)</td>
</tr>
<tr>
<td></td>
<td>Fall-down : High (2.5 to 5.0 V) to Low (0 to 1.0 V), or terminal short</td>
</tr>
<tr>
<td></td>
<td>Input voltage range : 5 to 10 V DC, Filter OFF/ON possible</td>
</tr>
<tr>
<td></td>
<td>Pulse width response : Over 1 ms at &quot;H&quot;, over 2 ms at &quot;L&quot; (at filter OFF), Over 2.5 ms at &quot;H&quot;, over 4 ms at &quot;L&quot; (at filter ON)</td>
</tr>
<tr>
<td></td>
<td>Maximum external sampling period : 10 ms (at digital filter OFF), 20 ms (at digital filter OFF, and synchronous measurement), 5 s (at digital filter ON, and combined with humidity measurement)</td>
</tr>
<tr>
<td></td>
<td>Synchronous sampling : Five-units maximum for synchronous connection, Function : Connect via the connection cable model 9683 for synchronous sampling</td>
</tr>
<tr>
<td>Clock</td>
<td>Auto calendar, leap year auto distinguish, Precision : ±0.2% / day at power ON, ±3% / day at power OFF (at 23 °C / 73 °F)</td>
</tr>
<tr>
<td>Accuracy of timebase</td>
<td>±0.2% / day on measurement (at 23 °C / 73 °F)</td>
</tr>
<tr>
<td>Recording intervals</td>
<td>10ms, 20ms, 50ms, 100ms, 200ms, 500ms, 1s, 2s, 5s, 10s, 20s, 30s, 1min, 2min, 10min, 30min, 1hr (5s to 1hr when combined with humidity measurement)</td>
</tr>
<tr>
<td>Recording length</td>
<td>Set to arbitrary length or continuous; Data storage : last 16-mega datas in internal memory (for one channel recording. For n channels, 16 M-datas / n data)</td>
</tr>
<tr>
<td>Number of data points</td>
<td>For analog &quot;n&quot; channels / 16 M-word datas / n / datas</td>
</tr>
<tr>
<td>Duration of battery</td>
<td>Backup battery for clock and setting conditions: battery life of at least 10 years, For measurement data: none (at 23 °C / 73 °F)</td>
</tr>
<tr>
<td>No. of connectable units</td>
<td>Maximum 8 units (total 120 channels)</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>Operating temperature and humidity : 0 (23) °C to 40 (104) °F, 30 to 80% rh, Storage temperature and humidity : 10 (50) °F to 50 (122) °F, 80% rh or less, non-condensing</td>
</tr>
<tr>
<td>Conforming standards</td>
<td>Safety : EN61010, EMC : EN61326, EN61000-3-2, EN61000-3-3</td>
</tr>
<tr>
<td>Power supply</td>
<td>(1) Using the AC ADAPTER 9418-15, 100 to 240 VAC, 50/60 Hz (2) External DC Power: 9.6 V to 15.6 VDC (Please contact HIOKI for connection cord)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Using the AC adapter 9418-15: 55 VA Max. (include AC adapter), 20 VA Max. (main unit only) (when connected with 8 units), External DC Power: 20 VA Max. (when connected with 8 units)</td>
</tr>
<tr>
<td>Dimensions &amp; Mass</td>
<td>Approx. 67 mm (2.64 in) W × 133 mm (5.24 in) H × 125 mm (4.92 in) D, 600 g (21.2 oz)</td>
</tr>
<tr>
<td>Accessories</td>
<td>Operating Manual x1, Quick Start Manual x1, AC ADAPTER 9418-15 x1, USB cable x1, Connection Plate x1, CD-R (data collection software L&quot;Logger Utility&quot;) x1, Connector cover x1, Ferrite clamp x1</td>
</tr>
<tr>
<td>PC Interface</td>
<td>CF card slot x 1 (Up to 1GB), MS-DOS format, Note: Cannot use with the 98.03 (2GB) card</td>
</tr>
<tr>
<td>Data storage media</td>
<td>LAN supports 100Base-TX, DHCP, DNS, USB : Ver 2.0, mini-B receptacle</td>
</tr>
</tbody>
</table>

**Function Specifications**

| Major Functions                              | Control the input units, or output units, Communication to the PC, Data storage to the CF card |
| Measurement parameters                       | Depending on the connected measurement unit: Temperature (thermocouple, Pt), voltage, humidity (use optional sensor), totalized pulses (addition, instantly), rotation count, digital count |
| Real time save                               | Measurement data are saved as binary data to the CF Card in real time, and can be saved to separate files at preset times, selectable as full files or an endless loop with automatic deletion of obsolete data |
| Dual sampling                                | Two (high-speed and low-speed) recording intervals can be specified for every input module from the following: 10, 20, 50, 100, 200 and 500 ms; 1, 2, 5, 10, 20 and 30 s; 1, 2, 5, 10, 20, 30 and 1 hr (the high-speed setting divided by the high-speed setting must be an integer less than 1,000) |
| Marking                                      | Event mark input : Press (Start / Stop) key at measurement |
| Trigger function                             | Mode : Single / Repeat, Timing : Start / Stop / Start & Stop, Pre-Trigger : records period before trigger, can be set for real-time saving |
| Trigger source                               | Analog input : Maximum 120 channels, depend on number of the input unit. Pulse totalizer inputs : Maximum 120 channels, depend on number of the input unit. Logic inputs : Maximum 120 channels, depend on number of the input unit. External trigger : Rise up or fall down of the external input signal (selectable) Logical AND or OR for each trigger source, Trigger condition selectable for each channels |
| Trigger type                                 | Level : Triggers when rising or falling through preset level. Trigger level resolution : 0 ± 0.1 % f.s. Logic : 1, 0, × Pattern trigger |
| External trigger signal                      | Rise up : Low level (0 to 1.0 V) to High level (2.5 V to 5.0 V) Fall down : High level (2.5 V to 5.0 V) to Low level (0 to 1.0 V), or terminal short. Input voltage range : 5 to 10 V DC, Filter OFF/OFF possible. Pulse width response : more than 1 ms (High period), more than 2 ms (Low period) at filter OFF, more than 4 ms (Low period) at filter ON |
| Alarm output                                 | Alarm Module 8997 can be connected along with various measurement modules (although it cannot be connected alone) |
| Alarm type                                   | Level : Triggers when rising or falling through preset level. Window: Triggers when entering or exiting range defined by preset upper and lower limit values. Logic pattern : agreement (or disagreement) in the specified pattern. Output latch setting : latch / no latch |
| Start backup                                 | Possible |
## Specification

### Bundled software specifications

**Logger Utility** (bundled application software)

- **Supported units:** Model 8423, 8430-20, LR8431-20, LR8400-20, LR8401-20, LR8402-20, and LR8410-20
- **Operating environment:** Windows 10/8/7 (32bit/64bit), Vista (32bit/64bit), XP (with SP2 or later)

**Real-time data acquisition**

- **Bundled software specifications**
  - **Waveform display:** Processing items: Four arithmetic operations
  - **Parameter calculations:** Target data: Real-time data acquisition file (LUW format), record to internal memory data (MEM format)
  - **Search functions:** Target data: Real-time data acquisition file (LUW format), record to internal memory data (MEM format)

**Data acquisition settings**

- **Data acquisition settings for the logger or logging station:** Save: The setting for multiple loggers or logging stations can be saved together in one file (LUW format); Instrument configuration settings can be sent and received

**Waveform display**

- **Processed data file:** Real-time data acquisition file (LUW format), Record to internal memory data (MEM format)

**Data conversion**

- **Target data:** Real-time data acquisition file (LUW format), record to internal memory data (MEM format)

**Waveform processing**

- **Processing items:** Four arithmetic operations

**Parameter calculations**

- **Number of processing channels:** 60 channels

**Search functions**

- **Target data:** Real-time data acquisition file (LUW format), record to internal memory data (MEM format)

**Print functions**

- **Supported printer:** Printer compatible with the OS

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### Measurement parameters

**Input**

- **Measurement parameters:** Voltage, Thermocouples (K, E, J, T, N, W, R, S, B)

**Terminal:** M3 (smt) screw terminals (2 terminals/1ch), terminal block removable, supplied terminal block cover

**Number of channels:** 15 channels isolated from each other and chassis, (voltage or thermocouple selectable for each channel)

**Input impedance:** 1MΩ

**Input range:**

- Voltage: 0V f.s. - 1V f.s.
- Thermocouples: N, R, S, B, W

**Setting Range:**

- Voltage: K, 100˚C f.s.
- Thermocouples: 0.05% f.s.

**Accuracy:**

- Voltage: ±0.5% f.s.
- Thermocouples: ±0.05% f.s.

**Switching:**

- Internal switching

**A/D conversion**

- Resolution: 16 bit

**Filter function**

- Digital filter: OFF, 50 Hz, 60 Hz (With 50 and 60 Hz settings, the digital filter is automatically set according to recording interval)

**Max. allowable input**

- Max. allowable input: 100 V DC (maximum voltage between input terminals that does not cause damage).
  - Max. rated voltage to earth: 600 V DC, AC
  - Upper limit voltage that does not cause damage when applied to input channel and chassis, and between each input channel

**Conforming standards**

- Safety: EN60101, EMC: EN61326

**Dimensions & Mass**

- Approx. 38.5 mm (1.52 in) W × 133 mm (5.24 in) H × 141.2 mm (5.61 in) D mm, 550 g (19.4 oz)

**Accessories**

- Connection Plate x1, Operating Manual x1
### Specification

#### Universal Unit 8949

**Measurement parameters:** Voltage, Thermocouples (K, E, J, T), N, W, R, S, B. Resistance temperature sensor (Pt 100, JPt 100). Humidity only use with the Model 9701 sensor

**Terminal:** Screw terminals (4 terminals/CH), terminal block removable, supplied terminal block cover

**Number of channels:** 15 channels (input type selectable for each channel). Isolated from each other and chassis (at voltage or thermocouples). Not isolated from each other and common GND (at resistance temperature sensor or humidity)

**Input Impedance:**
- **1MΩ** (55Ω when open-circuit polling is enabled at thermocouples), **2MΩ** (when resistance temperature sensor)

<table>
<thead>
<tr>
<th>Setting Range</th>
<th>Measurement range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 V fs.</td>
<td>0 to +110 V</td>
<td>±0.1% f.s.</td>
<td>±0.1% f.s.</td>
</tr>
<tr>
<td>1 V fs.</td>
<td>1.5 V to +1.5 V</td>
<td>±0.5% f.s.</td>
<td>±0.5% f.s.</td>
</tr>
</tbody>
</table>

**Thermocouples**
- Exclude the standard reference contact accuracy

<table>
<thead>
<tr>
<th>Setting Range</th>
<th>Measurement range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>K 100 °C</td>
<td>-200 °C to 200 °C</td>
<td>±0.05 °C</td>
<td>±0.05% f.s.</td>
</tr>
<tr>
<td>K 500 °C</td>
<td>-200 °C to 200 °C</td>
<td>±0.05 °C</td>
<td>±0.05% f.s.</td>
</tr>
<tr>
<td>E 500 °C</td>
<td>-200 °C to 200 °C</td>
<td>±0.05 °C</td>
<td>±0.05% f.s.</td>
</tr>
<tr>
<td>J 200 °C</td>
<td>-200 °C to 1200 °C</td>
<td>±0.1 °C</td>
<td>±0.1% f.s.</td>
</tr>
<tr>
<td>T 100 °C</td>
<td>-200 °C to 100 °C</td>
<td>±0.01 °C</td>
<td>±0.01% f.s.</td>
</tr>
<tr>
<td>J 500 °C</td>
<td>-200 °C to 400 °C</td>
<td>±0.1 °C</td>
<td>±0.1% f.s.</td>
</tr>
<tr>
<td>N 100 °C</td>
<td>-200 °C to 200 °C</td>
<td>±0.01 °C</td>
<td>±0.01% f.s.</td>
</tr>
<tr>
<td>N 200 °C</td>
<td>-200 °C to 100 °C</td>
<td>±0.01 °C</td>
<td>±0.01% f.s.</td>
</tr>
</tbody>
</table>

**Humidity**
- 10% to 90% RH, ±1.0% RH (at 23 ±5 °C / 73 ±9 °F, 30 to 80% RH, from 30 minutes after power on and after zero point adjustment, accuracy and post-adjustment accuracy and product guaranteed for 1 year)

### Digital/Pulse Unit 8996

**Input signal condition:** No-voltage input (normally open contact), open collector or voltage input, Digital / Pulse input selectable for each channel

**Measurement parameters:** Voltage, Totalized pulses (integrated or instantaneous), Rotation count, ON/OFF digital signal

**Terminal:** M3 (mm) screw terminals (2 terminals/1CH), terminal block removable, supplied terminal block cover

**Number of channels:** 15 channels (digital / pulse selectable for each channel) (common ground for CH-1 to CH-5, common ground for CH-6 to CH-10, common ground for CH-11 to CH-15, each channel and chassis, and between each channel)

**Measurement parameters:**
- **Voltage:**
  - 100V fs.
  - 50V fs.
  - 10V fs.
- **Totalized pulses:**
  - 0 to 1,000,000 pulses
  - 0 to 10,000,000 pulses
- **Rotation count:**
  - 0 to 10,000,000 pulses

**Setting Range**

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 V fs.</td>
<td>±0.1% f.s.</td>
<td>±0.1% f.s.</td>
</tr>
<tr>
<td>100 V fs.</td>
<td>±0.5% f.s.</td>
<td>±0.5% f.s.</td>
</tr>
</tbody>
</table>

**Pulse input**

- **200 μs** or more (both H and L periods must be at least 100 μs)
- **100 μs** or more (both H and L periods must be at least 50 μs)

**Filter**
- Chatter-prevention filter: can be set ON/OFF for each channel

**Digital input**

- **Logic level detection:**
  - HIGH = at least 1.0 V, LOW = 0 to 0.5 V
  - HIGH = at least 4.0 V, LOW = 0 to 1.5 V

**Max. allowable input**

- **50 V DC, AC** (maximum voltage between input terminals that does not cause damage)

**Max. rated voltage to earth**

- **50 V DC** (maximum voltage between input terminals that does not cause damage)

**Max. rated voltage to chassis**

- **50 V DC** (maximum voltage between input terminals that does not cause damage)

**Conforming standards**

- **Safety:** EN61010-1, IEC 61010-030
- **EMC:** EN61326
- **Dimensions & Mass:** Approx. 38.5 mm × 133 mm (5.24 in) H × 141.2 mm (5.65 in) D mm, 530 g (18.7 oz)

**Accessories**

- Flat-blade Screwdriver x (for terminal block), Connection Plate x1, Operating Manual x1

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**ALARM Unit 8997**

**Output type:** Open collector (active low)

**Alarm parameters:** Use up to 15 channels in response to analog input, pulse input, rotation count, or ON/OFF digital signal

**Terminal:** M3 (mm) screw terminals (2 terminals/CH)

**Number of channels:** 15 channels isolated from each other and chassis

**Output sink current:** Maximum switching capability: 5 to 60 V DC @10 mA (open collector drive)

**Output refresh**

**Output latch settings:** Latch / No latch at every recording interval

**Max. rated voltage to earth**

- **50 V DC, AC** (maximum voltage between input terminals that does not cause damage)

**Max. rated voltage to chassis**

- **50 V DC** (maximum voltage between input terminals that does not cause damage)

**Conforming standards**

- **Safety:** EN61010-1, IEC 61010-030
- **Dimensions & Mass:** Approx. 38.5 mm × 133 mm (5.24 in) H × 141.2 mm (5.65 in) D mm, 500 g (17.6 oz)

**Accessories**

- Connection Plate x1, Operating Manual x1
**Model : MEMORY HILOGGER 8423**

Model No. (Order Code) (Note)
8423 (main unit only)

Note: 8423 cannot operate alone. You must install one or more optional input modules in the unit.
Thermocouples are not provided by HIOKI and must be purchased from a separate vendor.

### Input/Output Modules

- **VOLTAGE/TEMP UNIT 8948**
  - 15-channels, Voltage, Thermocouple input

- **UNIVERSAL UNIT 8949**
  - 15-channels, Voltage, Thermocouple, Resistance temperature sensor, Humidity measurement

- **DIGITAL/PULSE UNIT 8996**
  - 15-channels, ON/OFF logic signal, Totalized pulses (integrated or instantaneous), Rotation count

- **ALARM UNIT 8997**
  - 15-channels, Open-collector output

- **UNIVERSAL UNIT 8949**
  - 15-channels, Voltage, Thermocouple, Resistance temperature sensor, Humidity measurement

### Input Options

- **HUMIDITY SENSOR 9701**
  - 1-channel, for Universal unit 8949

### Other Options

- **CONNECTION CABLE 9683**
  - For synchronization, cable length 1.5 m (4.92 ft)

- **AC ADAPTER 9418-15**
  - 100 to 240V AC

- **PC CARD 1G 9729**
  - 1 GB capacity

- **PC CARD 512M 9728**
  - 512 MB capacity

### Storage Media

- **PC CARD 1G 9729**
  - 1 GB capacity

- **PC CARD 512M 9728**
  - 512 MB capacity

### PC Card Precaution

- Use only PC Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.

### Example: Connect up 8 measurement modules for a 120-channel system

<table>
<thead>
<tr>
<th>Model 8423</th>
<th>Model 8948</th>
</tr>
</thead>
<tbody>
<tr>
<td>× 1</td>
<td>× 16</td>
</tr>
</tbody>
</table>

Synchronization cable 9683 × 5

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