MEMORY HiLOGGER
LR8400-20, LR8401-20, LR8402-20

Portable Data Logger with 30 Standard Channels
Expandible to 60 Channels

Only the size of an A4 sheet of paper, the HIOKI LR8400-20 Series is the realization of our goal to build a logger that provides the existing functionality of a multi-channel data logger in a portable format. The new model comes with 30 channel capability as standard, to which another 30 channels can be added. All input channels for measuring temperature (with thermocouples), or voltage are isolated for safety, culminating in a powerful multi-measurement system that also offers pulse and logic inputs. Long-term logging is coupled with the capability to protect data against unexpected power outages and other problems for stable recordings over an entire year (see note).

Note: Continuous recordings lasting longer than 1 year are also possible.
In fuel cell, electric automobile and other development

■ High withstand voltage

The HiLOGGER measures not only fuel cells, but also batteries for UPS (uninterruptible power supplies) devices used in buildings as well as batteries consisting of cells and packaging connected in stacks that require multi-point measurements. In such measurements, high voltage for the whole stack is applied between channel-to-channel and channel-to-ground. Only a measuring instrument with isolated inputs and high-capacity withstand voltage characteristics can endure this.

■ Multi-channel measurements

In the development of fuel cells, multiple power-generating cells are connected to form a stack. Independent measurements of each cell require multi-channel measurements of DC voltage, DC current, temperature and other parameters. The LR8400-20 Series comes with 30 channels as standard, which can be expanded to 60 channels.

■ High-speed sampling

In the development of automobiles such as electric vehicles (EV) and plug-in hybrid vehicles (PHV) that use motors for propulsion, abrupt changes in load need to be measured. This makes the multi-channel, high-speed 10 ms sampling capability of the LR8400-20 Series an indispensable feature.
Measure and record:

- Temperature & humidity
- A variety of transducer outputs (DC voltage)
- Resistance values

Also comes with high withstand voltage; isolated inputs required when measuring and recording battery cell voltages

Voltage measurement (DC only)

- 30 input channels
  Note: The LR8400-20, LR8401-20 and LR8402-20 models differ in the combination of input functions and terminals.
- All input channels are isolated
  Note: Maximum rated voltage above ground between the HILOGGER and analog inputs is 300 V AC/DC.
  Note: Maximum channel-to-channel voltage is a high voltage of 30 V DC.

Temperature & humidity measurement

- Temperature measurements of thermocouples on 30 channels
- M3 screw terminal inputs enable secure connection of even thin thermocouples
- Special sensor permits humidity measurements on 30 channels (optional Z2000)
  Note: The sensor power supply is the M3 mm dia. screw terminal block on the left side.
  Note: Both universal input terminals and M3 mm dia. input terminals enable humidity measurements.

Temperature & resistance measurement

- Universal inputs support temperature measurements using Platinum resistance temperature sensor (Pt100/ JPt100), or resistance measurements (four wires)
  Note: These cannot be measured using the M3 screw input terminals units.
  Note: Supports resistance recording to enable assessment of changes in resistance in the device under test. 4-terminal method, measurement resolution 0.5 mΩ - testing current 1 mA

Voltage measurement

To record 4 - 20mA instrumentation signals, attach a commercially available 250Ω shunt resistance to the input terminals (between + and -) to convert the signals to 1 - 5 V. Then use the 1-5V or the 10V f.s. input range in the HILOGGER.

Pulse totalization measurement

- 8 channel inputs (pulse and digital input selectable for each channel)
- For measuring rotational irregularities of motors and drills
  - The input signal shares common ground with the HILOGGER
  Note: M3 screw input terminals provide direct connection

Pulse rotations measurement

- 8 channel inputs (pulse and digital input selectable for each channel)
- For measuring rotational irregularities of motors and drills
  - The input signal shares common ground with the HILOGGER
  Note: M3 screw input terminals provide simple connection

Logical 1-0 measurement

- 8 channel inputs (digital and pulse input selectable for each channel)
- 1 or 0 is recorded for each recording interval
  - The input signal shares common ground with the HILOGGER
  Note: M3 screw input terminals provide simple connection

A compact A4 size enhances mobility

A compact A4 size footprint makes it ideal for use in virtually any environment.

Helps also in collecting automotive data

Ideal for testing and collecting data on the vibration characteristics of automotive parts
Enhanced noise suppression

A digital oversampling filter function reduces inverter switching noise and 50/60 Hz hum noise, a concern in earlier models, during recording.

**Note:** The noise reduction effect improves with longer recording intervals (i.e., at slower sampling speeds).

5.7 inch TFT LCD display is easy to view even at an angle

The LCD has a wider visual angle and is larger (5.7 inches, 640 × 480 dots) than the STN LCD in our previous model (8420-51s) to facilitate observation of waveforms on multiple channels.
### Store data securely for more than 1 year

#### Compatible with USB memory devices
For even greater convenience, the HiLOGGER now provides support for USB memory devices. Measurements can now immediately be written to a USB memory device in real-time. USB memory devices are also a handy means to transfer data to a PC.

*Note: Although USB memory devices enable real-time saving of data, for more reliable data protection we recommend use of HIOKI CF cards, which are guaranteed to work with the instrument, for real-time saving of data.*

#### Cards can be replaced during real-time recording
This function has been provided to enable removal of cards during recording to allow the user to analyze the data recorded so far. This makes it possible to replace USB memory devices and CF cards during real-time recording without having to stop measurements.

*Note: During high-speed recording, be sure to insert the new storage media within 2 minutes of removing a card.*

#### Saving data to CompactFlash (CF) card
Use only HIOKI CF cards, which are manufactured to strict industrial standards, for long-term storage of important data.

*Note: Operation of non-HIOKI CF cards is not guaranteed*

#### Recording Capacity

<table>
<thead>
<tr>
<th>Recording intervals</th>
<th>Recording of 30 analog channels only (no pulse measurement, alarm output or waveform processing data)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal memory (10 MB)</td>
</tr>
<tr>
<td>10 ms</td>
<td>46m</td>
</tr>
<tr>
<td>20 ms</td>
<td>1h 33m</td>
</tr>
<tr>
<td>50ms</td>
<td>5h 53m</td>
</tr>
<tr>
<td>100ms</td>
<td>7h 46m</td>
</tr>
<tr>
<td>200ms</td>
<td>13h 32m</td>
</tr>
<tr>
<td>500ms</td>
<td>1d 14h 50m</td>
</tr>
<tr>
<td>1s</td>
<td>3d 05h 40m</td>
</tr>
<tr>
<td>2s</td>
<td>6d 11h 20m</td>
</tr>
<tr>
<td>5s</td>
<td>16d 04h 21m</td>
</tr>
<tr>
<td>10s</td>
<td>32d 08h 43m</td>
</tr>
<tr>
<td>20s</td>
<td>64d 17h 26m</td>
</tr>
<tr>
<td>30s</td>
<td>97d 02h 10m</td>
</tr>
<tr>
<td>1min</td>
<td>194d 04h 20m</td>
</tr>
<tr>
<td>2min</td>
<td>388d 08h 40m</td>
</tr>
<tr>
<td>5min to 1 hour</td>
<td>★★</td>
</tr>
</tbody>
</table>

- Maximum recording time is inversely proportional to number of recording channels.
- Because the actual capacity of a CF card is less than that indicated, and because the header portion of waveform files is not included in capacity calculations, expect actual maximum times to be about 90% of those in the table.
- ★ means exceeds 1 year.
Up to two additional 15 channel input units can be added

The need for more measurement channels can be met even after purchasing the instrument. The instrument comes with 30 channels as standard, but another two 15 channel input units can be added to expand the total number of channels to 60.

Note: The units provided with the unit as standard cannot be removed.

Input setting screens with waveform monitoring

The HiLOGGER adopts the setting screens that earned its sister model (8430-20) a reputation for user-friendliness. Range settings, warnings, triggers, waveform processing and other measurement input settings can be taken in at a glance.
USB and LAN connection for easy setup
The supplied Logger Utility software allows you to set up the logger from a PC. Setup could not be easier. Just follow the numbered procedures to set up the instrument.

Note: Data on an inserted CF card can be copied to a PC via USB connection.
Note: The Logger Utility will enable LAN access with software Ver. 1.20 or later.

USB and LAN connection for easy setup
An internal battery (optional accessory) is charged when the AC adapter is connected. Since the internal battery will automatically take over in the event of a sudden power outage, it permits uninterruptible operation.

■ Alarm output
The HiLOGGER outputs a signal when alarm criteria are satisfied and also sounds a buzzer. Four systems are provided as standard and separate criteria can be set for each input source enabling OR and AND criteria between channels.

Note: Open-collector output (5 V voltage output and relay drive capacity 5 to 30 V, 200 mA)

■ Protection of files being stored on external storage media
An internal high-capacity capacitor will provide enough power to store any data at risk on a CF card or USB memory device should a sudden power outage occur during long-term storage. This reduces the risk of data loss and corruption of the file system. Measurements will resume as soon as the power returns.

■ Real-time processing functions
The HiLOGGER comes with four arithmetic operation functions for processing between channels. Data processed in real-time can be displayed in graph form. In addition, processing results for 30 channels are stored in internal memory and can be handled as data for independent input channels.

■ Simultaneous recording to storage media and PC
Measurement data can be simultaneously saved to external storage media and a hard disk on a PC connected to a network to reduce the risk data loss.

Note: Data on an inserted CF card can be copied to a PC via USB connection.
Note: The Logger Utility will enable LAN access with software Ver. 1.20 or later.
Bundled user-friendly software for PC analysis

- The supplied Logger Utility software enables processing of measurement data on a PC.
- View past data during recording.
- Output PC data to a printer.

Control of measurements from a PC screen
Connect the PC to the HiLOGGER using USB or via LAN* (see note). Use the supplied Logger Utility software to record data on a PC in real-time. Scroll backwards through the displayed trend graph window to view past waveforms even while recording. Up to five HiLOGGERs can be connected to one PC.

Analyze after measuring
Our new “dual-knob function” greatly simplifies data analysis. Two separate waveform windows are provided, with the displayed waveforms showing different time-axis scales (time bases). This capability substantially simplifies long-term data analysis. (Patent pending)

Remote control through HTTP server function*
Without the need to install additional software, you can use an ordinary web browser on your PC to set up the HiLOGGER, acquire data and monitor data on the screen. Note: Waveform data cannot be downloaded from internal memory while measuring.

Data acquisition via FTP*
FTP allows the PC to acquire files stored on HiLOGGER storage devices or measurement data in internal memory. Note: Waveform data cannot be downloaded from internal memory while measuring.

Data transfer via FTP*
Data saved in real-time to storage media can be automatically transferred to an FTP server started from the PC either at regular intervals during measurements or when measurements end.

Be informed via E-mail*
Your PC or mobile device is notified of storage media full, internal memory full, stop trigger invoked, alarm occurrence and other events via E-mail.

*Note: LAN communication functions support planned from software Ver. 1.20.


**Product Specifications**

**General specifications (product and accuracy guaranteed for one year)**

- **Memory**
  - 16 Mega-bytes (6M data points)

- **Clock**
  - Auto calendar, Precision ±1.5 day (at 23 °C / 73 °F)

- **Accuracy**
  - ±0.2s/day on measurement (at 23 °C / 73 °F)

- **Back-up battery**
  - For clock and setting conditions: battery life 5 years (at 23 °C / 73 °F)

- **Operating temp. & humidity**
  - ±0.2°C (5°C to 40°C) / 80% RH or less (non-condensating, when charging 10°C / 50°F to 40°C / 104°F)

- **Storage temp. & humidity**
  - ±10°C (14°F) to 60°C (140°F), 80% RH or less (non-condensating)

- **Conformance standards**
  - Safety: EN61010-1, EMC: EN61326-1, EN61000-3-2, EN61000-3-3

- **Anti-vibration**
  - JIS D6105: 1995 5.3.1 (Corresponds to Class 1: a passenger car, Condition: class A)

- **External terminal**
  - External trigger input, Trigger output, 4-channel alarm outputs, ±12 V / 100 mA max, output, GND

**Dimensions & Mass**

- Approx. 272 mm (10.71 in) W × 182.4 mm (7.18 in) H × 66.5 mm (2.62 in)
- 2.6 kg (5.72 lb), 5.7 inch TFT color liquid crystal display (640 × 480 pixel), horizontal 15 division, vertical 10 division, selectable between English and Japanese displays, Back light available

**Communication function**

- USB 2.0 High-speed capable, series mini-B receptacle
- Data acquisition, condition settings used with the Logger Utility software supplied as standard
- Use the communication command to set and measure
- Data download via FTP server function (used in the CF card or the USB memory)
- Automatically transmit data via FTP client function
- Remote control via HTTP server function
- Send mail function via E-mail system

**Power supplies**

- Using the AC ADAPTER 9418-TX for connection cord (optional accessory, AC adapter has priority when used in combination with battery pack)
- Continuous operation time: 5 hours (at 23 °C, LCD brightness 25 %)
- Fast recharge time: 3 hours (using the AC adapter and main unit to recharge the battery, at 23 °C, reference value)
- Maximum rated power: 24 V A 100 W 250 Vac (Rechargeable battery 12 V to 16 VDC)

**Display section**

- 5.7 inch TFT color liquid crystal display (640 × 480 pixels)
- Horizontal 15 division, vertical 10 division, selectable between English and Japanese displays, Back light available

**Power consumption**

- 7 VA (with battery pack removed and maximum brightness)
- 10 V to 24 VDC (Rechargeable battery 12 V to 16 VDC, Please contact your HiOLDER distributor for connection cord)
- Maximum rated power: 24 V A 100 W 250 Vac (Rechargeable battery 12 V to 16 VDC)

**Pulse signal source**

- 8 channels of pulse totalizer inputs
- Level trigger: Triggers when rising or falling through preset level
- Window trigger: Triggers when entering or exiting range defined by preset upper and lower limit values

**Digital signal input**

- 8 channels of digital signal inputs
- Logic pattern trigger agreement (or disagreement) in the specified [U / O / S] pattern

**Timer trigger**

- Set up for: month / day / hour / minute / second

**Alarm output**

- Open collector (active low, with 5 V output), at least 10 ms pulse width
- M3 screw terminal

**Measurement**

- **Recording intervals**
  - (sampling period)
  - 10 ms/ch, 20 ms/ch, 50 ms/ch, 100 ms to 1 hr (19 selections)
  - No: Input channels are located at high speed during every recording interval
  - *Thermocouple burn-out detection OFF, and saving up to 15 channels, or Thermocouple burn-out detection ON, and saving up to 30 channels

**Graph time axis**

- 100 ms to 1 day / day (25 selections)
  - Side: Setting is independent from the recording interval

**Data saving**

- **Alarm output**
  - Level, Window, Logic pattern, Output latch / no latch, Cancel alarm
  - Simple divide: Save waveform data at pre-set times into separate files from the time measurement starts.
  - Endless loop saving: New file overwrites the oldest file when the CF card or USB memory capacity runs short.

**Data transfer**

- CF card: CF card slot ×1, HIOKI 9727 (256 MB), 9728 (1 GB), 9729 (1 GB), 9830 (2 GB), Data format: FAT, FAT32

**Data management**

- CF card slot: CF card slot ×1, HIOKI 9727 (256 MB), 9728 (1 GB), 9729 (1 GB), 9830 (2 GB), Data format: FAT, FAT32

**Network**

- IEEE 802.3 Ethernet 100BASE-TX, DHCP, DNS capable
- Power consumption: 7 VA (with battery pack removed and maximum brightness)
- Using the ADAPTER 9418-TX
- Power consumption: 7 VA (with battery pack removed and maximum brightness)
- Using the BATTERY PACK
- Power consumption: 7 VA (with battery pack removed and maximum brightness)
- Using the AC ADAPTER
- Power consumption: 7 VA (with battery pack removed and maximum brightness)

**Round**

- Approx. 272 mm (10.71 in) W × 182.4 mm (7.18 in) H × 66.5 mm (2.62 in), 13.1 oz

**Calculation function**

- Numerical value calculations
  - No: 1 to 6, maximum 6 calculations can be conducted simultaneously
  - Selection: average value, peak value, maximum value, time at maximum value, maximum value at minimum value

- Data range of calculation
  - During measurement or after stopping: Store all data or data as A and B cursors into internal memory
  - Time: Calculated values at the last-determined 1 sec to 1 day intervals and display the latest value

- Calculation function
  - Possible: After the measured last calculated value is automatically saved to the CF card or USB memory as a text file
  - Time: Calculated values at the last-determined 1 sec to 1 day intervals and display the latest value

- Waveform calculations
  - 4 arithmetic calculations between each channel
  - Separate display of calculation graphs (only during measurement) and input waveforms
  - Real-time save of calculation graph data

**Other functions**

- **Event marking**
  - Search: Move to the event number entered and display the waveforms appearing before and after event
  - Number of events: Maximum 100 measurement

- **A-B cursor**
  - Measurement: time difference between A and B, electric potential difference, electric potential of A and B, etc.
  - Type: Trace the data, amplitude axis, time axis

- **Scaling**
  - Convert and display the measurement value of each channel as a scaled value

- **Rate adjustment**
  - Scaling can be set for each channel so that its value is the same as that for UNIT-CH1

- **Comment input**
  - Enter a title or a comment for each channel

- **Other**
  - Start backup, save ten types setting conditions into main unit, auto set up, start/stop key lock, key-lock, beep sound

**Pulse, Digital input**

- Number of channels
  - channels, (digital / pulse selectable for each channel, M3 screw terminal)
  - 8 channels, 2 terminals per channel, not isolated, common ground

- **Input condition**
  - No-voltage / B contact (normally open contact), open collector or voltage input, Input resistance: 1.1 MΩ

- **Max. allowable input**
  - 10 V to 50 VDC (maximum voltage between input terminals that does not cause damage)

- **Max. rated voltage between channels**
  - Not isolated (common ground)

- **Max. rated voltage to earth**
  - Not isolated (common ground)

- **Detect level**
  - 2 selectable levels (H: over 10 V, L: 0.5 V), (H: over 40 V, L: 1.5 V)

- **Pulse input period**
  - With filter OFF: 200 µs or more (both H and L periods must be at least 100 µs)
  - With filter ON: 100 µs or more (both H and L periods must be at least 50 µs)

- **Ramp**
  - Rising or falling edge can be set for each channel

- **Pulse measurement mode**
  - Totalized pulses: Integrated (pulse count integration from start, instantaneous (pulse count value at each sampling, and integrated value is reset each time)
  - Rotation count: Count input pulses during one second

- **Filter**
  - For contact bound resistant (ON/OFF for each channel)

**Measurement parameters**

- **Ranges**
  - **Finest Resolution**
  - **Ranges**
  - **Measurement Settings**

- **Pulse totalization**
  - Mulse totalization: 1 M pulse, 1 pulse
  - 9 to 1,600 M pulse

- **Pulse rotations**
  - 1,000 rotations
  - 5,000,000 rotations

- **Digital input**
  - Waveform input: Logic "1" or 0 at each sampling
### Optional Product Specifications

**VOLTAGE/TEMP UNIT LR8500**  
(Product and accuracy guaranteed for one year)

<table>
<thead>
<tr>
<th>Number of input channels</th>
<th>Measurement parameters</th>
<th>Measurement conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 channels (input type selectable from voltage, thermocouple, humidity, for each channel)</td>
<td>Voltage, Temperature with thermocouples (K, J, E, T, N, R, S, B)</td>
<td>200 V AC, DC (max. voltage from input terminals)</td>
</tr>
<tr>
<td>15 channels (input type selectable from voltage, thermocouple, humidity, resistance, for each channel)</td>
<td>Voltage: Temperature with thermocouples (K, J, E, T, N, R, S, B)</td>
<td>Max. rated voltage between isolated input channels</td>
</tr>
<tr>
<td>15 channels (input type selectable from voltage, thermocouple, humidity, resistance, for each channel)</td>
<td>Voltage: Temperature with thermocouples (K, J, E, T, N, R, S, B)</td>
<td>Max. rated voltage between isolated input terminals to ground</td>
</tr>
</tbody>
</table>

**Input conditions**  
Input resistance: 1 MΩ (thermocouple measurement)  
Max. rating: 100 V DC (max. voltage between input terminals without damage)  
Max. rated voltage between isolated input terminals | 300 V DC (max. voltage between input terminals without damage)  
Max. rated voltage between isolated input terminals to ground | Refer to MEMORY HILOGGER main unit specifications

**Humidity sensor Z2000 accuracy**  
50% rh f.s. 0.1% rh: ±1% rh  
90% rh f.s. 0.1% rh: ±1% rh

**Filter function**  
Thermocouple/Resistance temperature sensor, Voltage, Resistance, Humidity
Model Line-up

**Items**

**Specifications**

**Model LR8400-20** (with built-in VOLTAGE/TEMP UNIT × 2)

**Anallog input**

- Built-in 30 channels: Not isolated from each channel to chassis (UNIT-1, UNIT-2) M3 screw terminals × 30 channels (2 terminals per channel)
- Expandable by adding 30 more channels for a total of 60 input channels (optional input unit, Model LR8500 or LR8501, up to 2 units)

**Measurement parameters**

- Voltage, Temperature with thermocouples (K, J, E, T, N, R, S, B, W)
  - Note: Isolated between channels and from each channel to chassis
- Humidity with the sensor Z21000
  - Note: Not isolated between channels

**Maximum allowable input**

- ±100 V DC (max. voltage between input terminals without damage)

**Input resistance**

- 1 MΩ (voltage/thermocouple measurement)

**Maximum rated voltage from isolated terminals to ground**

- 300 V AC, DC (max. voltage from terminals to chassis ground without damage)

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**Items**

**Specifications**

**Model LR8401-20** (with built-in UNIVERSAL UNIT × 2)

**Anallog input**

- Built-in 30 channels: Not isolated from each channel to chassis (UNIT-1, UNIT-2) Push-button type terminals × 30 channels (4 terminals per channel)
- Expandable by adding 30 more channels for a total of 60 input channels (optional input unit, Model LR8500 or LR8501, up to 2 units)

**Measurement parameters**

- Voltage, Temperature with thermocouples (K, J, E, T, N, R, S, B, W)
  - Note: Isolated between channels and from each channel to chassis
- Platinum resistance temperature sensor (Pt 100, JPt 100, 3-wired/4-wired, testing current 1 mA)
  - Note: Not isolated between channels
- Resistance (4-wired, testing current 1 mA) Note: Not isolated between channels

**Maximum allowable input**

- ±100 V DC (max. voltage between input terminals without damage)

**Input resistance**

- 1 MΩ (voltage/thermocouple measurement)
- 2 MΩ (at resistance temperature sensor or, at resistance measurement)

**Maximum rated voltage from isolated terminals to ground**

- 300 V AC, DC (max. voltage from terminals to chassis ground without damage)

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**Bundle**

**Software features**

**Logger Utility** (bundled application software)

**Operating environment**

- One CD-R, CPU: Pentium III (390 MHz or more), at least 512 MB of memory
- Interface: USB, LAN (Not available with the Model 8400-20/21)
- OS: Windows 2000 (SP4 or later)/ XP (SP2 or later)/ Vista (32-bit/ 64-bit), (This software is compatible only to the MEMORY HiLOGGER LR8400-20s, LR8402-20s, 8423, 8430-20/-21)

**Real-time data acquisition**

- Measurements on multiple loggers connected by LAN* or USB can be controlled to sequentially acquire, display and save waveform data (for recording up to 10 million samples)
- Number of controllable instruments: up to 5 units
- Displays: Waveforms (multiple times can be displayed), Numerical values (logging), Alarm status at the same time, Numerical monitoring in a separate window, Waveform screen while measuring
- Data saving destination: Real-time data transfer to EXCEL (new function), or Real-time data acquisition file (LR format only for HiLOG)
- Event marks: can be applied while recording

**Data acquisition settings**

- Data acquisition settings for the HiLOGGER
- Saving: The setting for multiple HiLOGs can be saved together in one file (LUS format), Instrument configuration settings can be sent and received

**Waveform display**

- Processed data file: Real-time data acquisition file (LW format), Record to internal memory data (MEM format)
- Display format: Simultaneously display waveform and numerical value, (time-axis divided display possible)
- Maximum number of channels: 300 channels (measurement data, used with the LR8400-20s, LR8400-21s + 60 channels for waveform processing data)
- Others: Waveform display on sheet for each channel, scroll, record event mark, cursor, hard copy, numerical value display

**Data conversion**

- Target data: Real-time data acquisition file (LW format), Record to internal memory data (MEM format), Waveform processing data
- Converted sections: All data, designation section
- Format: CSV format (separate by comma, space, tab), transfer to EXCEL spreadsheet, arbitrary data dimensioning

**Parameter calculations**

- Calculation items: average, peak, maximum values, time to maximum values, time to minimum values, ON time, OFF time, count the number of ON time and OFF time, standard deviation, integration, area values, totalization

**Search function**

- Target data: Real-time data acquisition file (LW format), Record to internal memory data (MEM format), Data acquired in real time, Waveform processing data
- Search mode: event mark, time and date, maximum position, minimum position, maximum pole, minimum pole, alarm position, level, window, amount of change

**Print function**

- Supported printer: printer compatible with the OS
- Target data: Real-time data acquisition file (LW format), Record to internal memory data (MEM format), Waveform processing data
- Print format: waveform image, report format, list print (channel settings, event, cursor value)
- Print area: the entire area, area between cursors A and B
- Print preview: supported

**Wavelform processing**

- Processing items: Four arithmetic operations
- Number of processing channels: 60 channels
Main units and Options in Detail

**LR8400-20** (with built-in VOLTAGE/TEMP UNIT × 2)

Built-in units are equivalent to the VOLTAGE/TEMP UNIT LR8500 (15 ch) × 2

*Caution:* Built-in units cannot be removed or changed

**LR8401-20** (with built-in UNIVERSAL UNIT × 2)

Built-in units are equivalent to the UNIVERSAL UNIT LR8501 (15 ch) × 2

*Caution:* Built-in units cannot be removed or changed

**LR8402-20**

(with built-in UNIVERSAL UNIT × 1, VOLTAGE/TEMP UNIT × 1)

Built-in units are equivalent to the UNIVERSAL UNIT LR8501 (15 ch) × 1, and VOLTAGE/TEMP UNIT LR8500 (15 ch) × 1

*Caution:* Built-in units cannot be removed or changed

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**Measurement and input options**

- **VOLTAGE/TEMP UNIT LR8500**
  - Combination of 3 input option types: 10 channels Voltage, Temperature with thermocouple, or Humidity measurement

- **UNIVERSAL UNIT LR8501**
  - Combination of 6 input option types: 10 channels Voltage, Temperature with thermocouple, Platinum Resistance temperature sensor, Humidity, or Resistance measurement

- **HUMIDITY SENSOR Z2000**
  - 3 m (9.84 ft) length

**Removable storage (CF Card)**

- Supplied with PC Card adapter

**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.

**Power supplies**

- **BATTERY PACK Z1000**
  - NiMH, Charges while installed in the HiLOGGER

- **LAN CABLE 9642**
  - Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.41 ft) length

**Humidity Sensor Z2000**

- HUMIDITY SENSOR Z2000
  - 3 m (9.84 ft) length

**Measurement and input options**

- **PC CARD 2G 9830**
  - (2 GB capacity)

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

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

- **PC CARD 256M 9727**
  - (256 MB capacity)

**Cases**

- **CARRYING CASE C1000**
  - Includes compartments for options

- **FIXED STAND Z5000**
  - For wall-hanging and slanted bench mounting

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