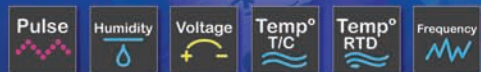
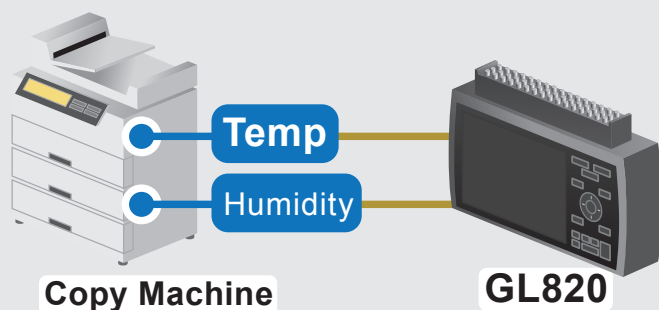


# GL820 midi LOGGER



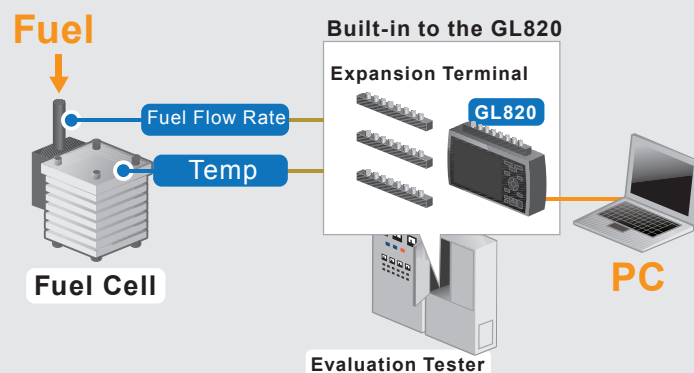
## Temp/Humidity Measurements for Internal Sorting Mechanism in Printers



**Target Industry:**  
Electronics/Business Machines

**Target Testing Environment:**  
R&D

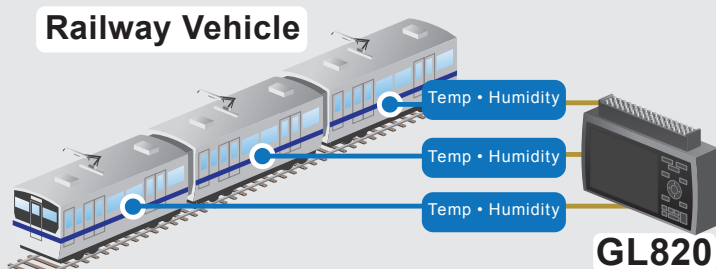
## Alternate Logging Device for Fuel-cell Flow Measurement & Testing



**Target Industry:**  
Electronics & Battery

**Target Testing Environment:**  
R&D

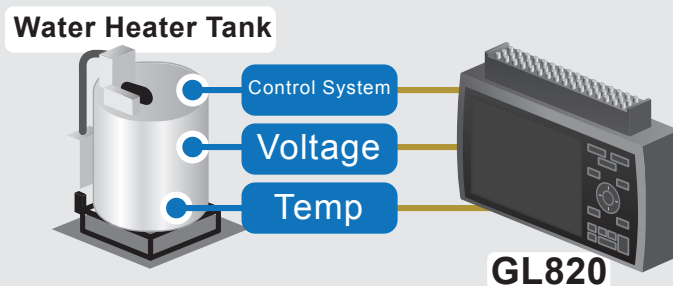
## Analysis of Temperature & Humidity Levels Inside Multi-decked Trains



**Target Industry:**  
Transportation

**Target Testing Environment:**  
Maintenance & Inspection

## Flow & Temperature Measurements for Water Heater Tanks



**Target Industry:**  
Utilities: Gas, Water, Electric

**Target Testing Environment:**  
Maintenance & Inspection

**MAX**  
10ms<sup>\*1</sup>  
Sampling

**Σ Δ**  
type  
A/D Converter

**Built-in**  
2GB Flash  
Memory

**Voltage** 20 mV to 50 V

**Logic** 4 channels<sup>\*3</sup>

**Temp**

**Humidity**

**Pulse**

**Thermocouple types:**  
K, J, E, T, R, S, B, N, W (WRe5-26)  
RTD types: Pt100 (IEC751), JPt100  
(JIS), Pt1000 (IEC751)

0 to 100% RH using the optional  
humidity sensor (B-530 option)

4 channels<sup>\*3</sup>  
Accumulating, Instant or RPM count

<sup>\*1</sup>: Maximum sampling is achieved only when 1 channel is being used.

<sup>\*2</sup>: The standard configuration has 20 analog input channels.

<sup>\*3</sup>: Select either Pulse input or Logic input, and use the optional Input / Output cable (B-513 option).

**GRAPHTEC**

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| GL820 main unit specifications  |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Item                            | Description                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Number of analog input channels | 20 ch, Expandable up to 200 ch by unit of 20 ch                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| External input output           | Input <sup>*8</sup>                                                                                                                                                                                                                  | Trigger or Sampling input 1 ch, Logic or Pulse input 4 ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                 | Output <sup>*9</sup>                                                                                                                                                                                                                 | Alarm output 4 ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Sampling interval               | 10 ms to 1 h (in 10ms to 50ms, voltage only and limited channel), External                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Time scale                      | 1 sec to 24 hour /division                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Trigger function                | Action                                                                                                                                                                                                                               | Start or stop capturing data by the trigger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                 | Source                                                                                                                                                                                                                               | Start: Off, Input signal, Alarm, External <sup>*8</sup> , Clock, Week or Time<br>Stop: Off, Input signal, Alarm, External <sup>*8</sup> , Clock, Week or Time<br>OR or AND condition at the level of signal or edge of signal                                                                                                                                                                                                                                                                                                                                                                                |
|                                 | Combination                                                                                                                                                                                                                          | OR or AND condition at the level of signal or edge of signal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                 | Condition                                                                                                                                                                                                                            | Analog: Rising, Falling, Window-in, Window-out<br>Pulse: Rising, Falling, Window-in, Window-out<br>Logic: Rising, Falling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                 | Alarm function                                                                                                                                                                                                                       | Detecting method: Level or edge of signal<br>Condition: Analog: Rising, Falling, Window-in, Window-out<br>Pulse: Rising, Falling, Window-in, Window-out<br>Logic: Rising, Falling                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Alarm function                  | Detecting method                                                                                                                                                                                                                     | Level or edge of signal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                 | Condition                                                                                                                                                                                                                            | Analog: Rising, Falling, Window-in, Window-out<br>Pulse: Rising, Falling, Window-in, Window-out<br>Logic: Rising, Falling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                 | Alarm output <sup>*8</sup>                                                                                                                                                                                                           | 4 channels, Output type: Open collector (pulled-up to 5 V by resistor 10 kΩ)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                 | Pulse input function <sup>*8</sup>                                                                                                                                                                                                   | Accumulating count mode: Accumulating the number of pulses from the start of measurement<br>Range: 50, 500, 5 k, 50 k, 500 k, 5 M, 50 M, 500 M counts/F.S.<br>Instant count mode: Counting the number of pulses per sampling interval<br>Range: 50, 500, 5 k, 50 k, 500 k, 5 M, 50 M, 500 M counts/F.S.<br>Rotation count (RPM) mode: Counting the number of pulses per second and then it is converted to RPM<br>Range: 50 rpm, 500 rpm, 5 krpm, 50 krpm, 500 krpm, 5 Mrpm, 50 Mrpm, 500 Mrpm /F.S.<br>Max. input pulse rate: 50 k pulses/sec or 50k counts per sampling interval (16 bits counter is used) |
|                                 | Calculation function                                                                                                                                                                                                                 | Between channels: Addition, Subtraction, Multiplication and Division for analog input<br>Statistical: Select two calculations from Average, Peak, Max., Min., RMS                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Search function                 | Search for analog signal levels, values of logic or pulse or alarm point in captured data                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Interface to PC                 | Ethernet (10 BASE-T/100 BASE-TX), USB (Full speed)                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Storage device                  | Built-in Flash memory (2 giga-bytes), USB memory device <sup>*9</sup>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Data saving function            | Captured data                                                                                                                                                                                                                        | Direct saving of data into built-in Flash memory or USB memory device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                 | Others                                                                                                                                                                                                                               | Setting conditions, Screen copy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Ring capturing mode             | Function: ON/OFF, Number of capturing point: 1000 to 2000000 (size of the capture data will be limited to 1/3 of available memory when in Ring Mode)                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| USB memory device emulation     | USB Memory emulation mode (Transfer or delete the file in built-in memory)                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Engineering scale function      | Set based on the reference point of the scaled output and input signal for each channel (Voltage measurement: four points are necessary to scale the output, Temperature measurement: two points are necessary to scale the output). |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Display                         | Size                                                                                                                                                                                                                                 | 5.7 inch TFT color LCD (VGA: 640 x 480 dots)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                 | Formats                                                                                                                                                                                                                              | Waveform + Digital, Waveform only, Calculation + Digital, Expanded digital                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Operating environment           | 0 to 45 °C, 5 to 85 %RH<br>(When operating with battery pack 0 to 40 °C, charging battery 15 to 35 °C)                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Power source                    | AC adapter (100 to 240 V, 50/60 Hz),<br>DC power (8.5 to 24 V DC, max. 26.4 V) <sup>*10</sup> , Battery pack <sup>*10</sup>                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Power consumption               | 32 VA or lower<br>(when operating with AC adapter, displaying LCD, charging battery pack)                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| External dimensions (WDDH)      | approx. 232 x 152 x 50 mm                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Weight                          | approx. 900 g (Excluding AC adapter and battery pack)                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

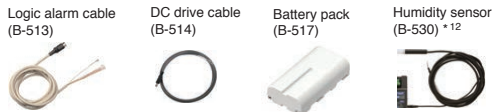
| Software specifications |                                                                                                   |  |
|-------------------------|---------------------------------------------------------------------------------------------------|--|
| Item                    | Description                                                                                       |  |
| Supported OS            | Windows XP / Vista / 7 (32 bits and 64 bits edition)                                              |  |
| Functions               | Control GL820, Real-time data capture, Replay data, Data format conversion                        |  |
| GL820 settings control  | Input settings, Memory settings, Alarm settings, Trigger settings                                 |  |
| Controlled units        | Up to 10 units or 500 channels                                                                    |  |
| Captured data           | Transfers data in real-time (in binary or CSV format), saved data in GL820 or the USB memory      |  |
| Displayed information   | Analog waveforms, Logic waveforms, Pulse waveforms, Digital values                                |  |
| Display modes           | Y-T waveforms, Digital values, Report, X-Y graph (specified period of data, data reply only)      |  |
| Warning functions       | Sends E-mail to the specified address when the alarms occur                                       |  |
| File format conversions | Converts the specified period data or all data to the CSV format (thinning function is available) |  |
| Report functions        | Creates the daily or monthly report automatically (can also export directly to Excel)             |  |

| Standard accessories |                                                                 |          |
|----------------------|-----------------------------------------------------------------|----------|
| Item                 | Description                                                     | Quantity |
| AC adapter           | 100 to 240 V AC, 50 / 60 Hz (with specified type of power cord) | 1 set    |
| CD-ROM               | User's manual (PDF format), Application software                | 1 piece  |
| Quick Start Guide    |                                                                 | 1 copy   |

| Analog input specifications         |                       |                                                                                                                                      |                                                                          |                                                                          |  |
|-------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|--|
| Item                                |                       | Description                                                                                                                          |                                                                          |                                                                          |  |
| Type of input terminal              |                       | Screw terminal (M3 screw)                                                                                                            |                                                                          |                                                                          |  |
| Input method                        |                       | Scans by the photo-MOS-relay, all channels isolated, balanced input                                                                  |                                                                          |                                                                          |  |
| Measurement range                   | Voltage               | 20, 50, 100, 200, 500 mV, 1, 2, 5, 10, 20, 50 V, and 1-5 V/F.S.                                                                      |                                                                          |                                                                          |  |
|                                     | Temperature           | Thermocouple: K, J, E, T, R, S, B, N, and W (WRe5-26)<br>Resistance Temperature Detectors (RTDs): Pt100, JPt100(JIS), Pt1000(IEC751) |                                                                          |                                                                          |  |
|                                     | Humidity              | 0 to 100%<br>(using humidity sensor (B-530 optional), power is supplied to only one sensor)                                          |                                                                          |                                                                          |  |
| Filter                              |                       | Off, 2, 5, 10, 20, 40 (moving average in selected number)                                                                            |                                                                          |                                                                          |  |
| Measurement accuracy <sup>*11</sup> | Voltage               |                                                                                                                                      | 0.1 % of F.S.                                                            |                                                                          |  |
|                                     | Temperature           | Thermocouple                                                                                                                         | Measurement range                                                        | Measurement accuracy                                                     |  |
|                                     |                       | R/S                                                                                                                                  | 0 °C ≤ TS ≤ 100 °C                                                       | ± 5.2 °C                                                                 |  |
|                                     |                       |                                                                                                                                      | 100 °C < TS ≤ 300 °C                                                     | ± 3.0 °C                                                                 |  |
|                                     |                       |                                                                                                                                      | R: 300 °C < TS ≤ 1600 °C                                                 | ± (0.05 % of reading + 2.0 °C)                                           |  |
|                                     |                       |                                                                                                                                      | S: 300 °C < TS ≤ 1760 °C                                                 | ± (0.05 % of reading + 2.0 °C)                                           |  |
|                                     |                       | B                                                                                                                                    | 400 °C ≤ TS ≤ 600 °C<br>600 °C < TS ≤ 1820 °C                            | ± 3.5 °C<br>± (0.05 % of reading + 2.0 °C)                               |  |
|                                     |                       | K                                                                                                                                    | -200 °C ≤ TS ≤ -100 °C<br>-100 °C < TS ≤ 1370 °C                         | ± (0.05 % of reading + 2.0 °C)<br>± (0.05 % of reading + 1.0 °C)         |  |
|                                     |                       | E                                                                                                                                    | -200 °C ≤ TS ≤ -100 °C<br>-100 °C < TS ≤ 800 °C                          | ± (0.05 % of reading + 2.0 °C)<br>± (0.05 % of reading + 1.0 °C)         |  |
|                                     |                       | T                                                                                                                                    | -200 °C ≤ TS ≤ -100 °C<br>-100 °C < TS ≤ 400 °C                          | ± (0.1 % of reading + 1.5 °C)<br>± (0.1 % of reading + 0.5 °C)           |  |
|                                     |                       | J                                                                                                                                    | -200 °C ≤ TS ≤ -100 °C<br>-100 °C < TS ≤ 100 °C<br>100 °C < TS ≤ 1100 °C | ± 2.7 °C<br>± 1.7 °C<br>± (0.05 % of reading + 1.0 °C)                   |  |
|                                     |                       | N                                                                                                                                    | 0 °C ≤ TS ≤ 1300 °C                                                      | ± (0.1 % of reading + 1.0 °C)                                            |  |
|                                     |                       | W                                                                                                                                    | 0 °C ≤ TS ≤ 2000 °C                                                      | ± (0.1 % of reading + 1.5 °C)                                            |  |
|                                     |                       | Reference Junction Compensation (R.J.C.): ±0.5 °C                                                                                    |                                                                          |                                                                          |  |
|                                     |                       | RTD                                                                                                                                  | Measurement range                                                        | Measurement accuracy                                                     |  |
|                                     |                       | Pt100                                                                                                                                | -200 °C to 850 °C (FS = 1050 °C)                                         | ±1.0 °C                                                                  |  |
|                                     |                       | JPt100                                                                                                                               | -200 °C to 500 °C (FS = 700 °C)                                          | ±0.8 °C                                                                  |  |
|                                     |                       | Pt1000                                                                                                                               | -200 °C to 500 °C (FS = 700 °C)                                          | ±0.8 °C                                                                  |  |
|                                     |                       | A/D Converter                                                                                                                        |                                                                          |                                                                          |  |
|                                     |                       |                                                                                                                                      |                                                                          | ΣΔ type, 16 bits (effective resolution: 1/40000 of measuring full range) |  |
|                                     |                       | Maximum input voltage                                                                                                                | Between + / - terminal                                                   | 60 V p-p                                                                 |  |
|                                     | Between channels      |                                                                                                                                      | 60 V p-p                                                                 |                                                                          |  |
|                                     | Between channel / GND |                                                                                                                                      | 60 V p-p                                                                 |                                                                          |  |
|                                     | Withstand voltage     | Between channels                                                                                                                     | 350 V p-p (1 minute)                                                     |                                                                          |  |
|                                     |                       | Between channel(-)/ GND                                                                                                              | 350 V p-p (1 minute)                                                     |                                                                          |  |

- <sup>\*8</sup> : Logic alarm cable (B-513) option is required.  
Input signal of External sampling, Logic, Pulse; Maximum voltage: 24 V, Threshold: approx. 2.5 V, Hysteresis: approx. 0.5 V
- <sup>\*9</sup> : Size of the USB memory device is unlimited. Maximum file size is limited to 2GB.
- <sup>\*10</sup>: DC drive cable (B-514) or battery pack (B-517) option is required.
- <sup>\*11</sup>: Subject to the following conditions;  
• Room Temperature is 23°C ±5°C.  
• When 30 minutes or more have elapsed after power was turned on.  
• Filter is set to 10.  
• Sampling rate is set to 1s with 20 channels.  
• GND terminal is connected to ground.

| Options and accessories        |              |                                                    |
|--------------------------------|--------------|----------------------------------------------------|
| Item                           | Model number | Remarks                                            |
| Logic alarm cable              | B-513        | 2 m long (no clip on end of cable)                 |
| DC drive cable                 | B-514        | 2 m long (no clip on end of cable)                 |
| Battery pack                   | B-517        | 1 piece (7.4 V 2200 mAh, 17Wh)                     |
| Humidity sensor <sup>*12</sup> | B-530        | 3 m long (with power plug)                         |
| Extension terminal base kit    | B-537        | Terminal base, cable                               |
| 20 ch extension terminal set   | B-538        | Terminal base, terminal unit (20 ch), fixing plate |



Extension terminal base kit (B-537)      20ch extension terminal set (B-538)



<sup>\*12</sup>: Operating environment: -25°C to 80°C

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