

General Specifications

Model SRHD (Style E) Intelligent Recorder

VIEW SERIES 80

SRHD Intelligent Recorder is a microprocessor-based, multi-pen recorder capable of performing event recording from four 1 to 5 V DC inputs or 0–70 VDC inputs and list printing of locally set data.

- Detects and corrects for expansion and contraction of the recording chart paper width to provide recording accuracy of $\pm 0.5\%$ of span.
- Square-root extraction and input bias can be set for each input.
- Process variables can be selected and displayed on a digital display and indicated by the pointer.
- Event recording provides the total of 700 process data in effect just before and after the occurrence of a selected trigger event.
- Automatic chart-paper loading.
- Recorder self-diagnostic functions can detect failures in the CPU, hardware and recording system.

STANDARD SPECIFICATIONS

Input and Output Signals

Analog Input: 4 points

| Model | Input Signal | Input Resistance |
|----------|------------------------------------|------------------------|
| SRHD-100 | 1 to 5 V DC (Non-Isolation) | 1 M Ω or more |
| SRHD-200 | 1 to 5 V DC (Isolation) | 1 M Ω or more |
| SRHD-300 | 0 to 10 V DC (Differential inputs) | 500 K Ω or more |

Input Signal Isolation: Isolated or unisolated* inputs (determined by suffix code specification).

* “—” terminal for each input terminal is used as a common terminal.

Trigger Input: One point. (use any as Event-recording or External Record Start/Stop Switching or External Chart Speed Selector).

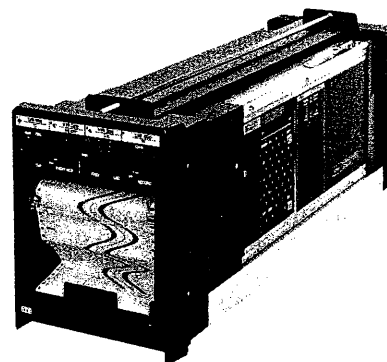
| Input | Trigger Input Status | ON | OFF |
|-------------------------------------|----------------------|--|---|
| | Mechanical Contact* | Open (Signal source resistance — 100 k Ω or greater) | Closed (Signal source resistance — 200 Ω or less) |
| Mechanical Contact or Voltage Level | Voltage Level | HIGH (Input voltage 4.5 to 25 V) | LOW (Input voltage — 1 to +1 V) |

* Signal source rating: 5 V DC, 20 mA or greater.

External Record Start/Stop Switching: RECORD OFF state when remote contact opens.

External Chart Speed Selector: Chart Speed 20 mm/min when remote contact shuts.

Trigger Mode: The following modes can be selected using side tuning panel keys.



Event data rerecording manual start, Event data rerecording automatic start, External record start/stop switching, External chart speed selector, Front-panel chart speed selector.

Alarm Output: Four points, transistor contact (isolated type).

Contact Rating: 30 V DC, 200 mA (resistive load).

Fail Output: One point, transistor contact (isolated type).

Contact Rating: 30 V DC, 200 mA (resistive load).

Input Processing Functions

Input Data Scan Period: 0.25 sec.

Signal Computation: Square-root extraction, zero bias correction.

Recording Mode: The following modes can be selected for each channel.

Instantaneous value dot printing, average value dot printing, maximum and minimum value dot printings, maximum/minimum value trace printings (for chart feed speed 10 mm/h, 20 mm/h and 1 mm/m only).

Recording System

Dot printing and trace recording by 4-color pen heads located in-line on a common axis.

Pen Head: Cartridge type pen.

Ink Color: Red, green, blue and black.

Recording Width: 100 mm.

Chart Feed Speed: 10 mm/h, 20 mm/h or 1 to 20 mm/min. (Uses the side tuning panel keys).

External Selector and Front-panel Selector in Chart Speed: 2 speeds; setting chart speed and 20 mm/min.

Chart: Folded chart, total length 16 m (sufficient for about 1 month use at a chart speed of 20 mm/h).

Recording Period: Automatically determined by chart feed speed setting as described below.

| Chart Feed Speed | Recording Period |
|------------------|------------------|
| 10mm/h | 90 sec. |
| 20mm/h | 45 sec. |
| 1 to 10mm/min | 15 to 1.5 sec. |
| 11 to 20mm/min | 1.5 sec. |

Recording Accuracy: $\pm 0.5\%$ of span.

Process Variable Indicator: Process Variable Pointer on the pen carriage — selected using the front panel data display selector switch — can be indicated while waiting for printing (for chart feed speed 10 mm/h and 20 mm/h only).

Indicator Accuracy: $\pm 1.0\%$ of span.

Internal Lighting: Fluorescent lamp can be continually lighting.

Process Variable Display: Process variable display can be selected using the front panel data display selector switch.

Displayed Data: Sign plus 4-digits in engineering units.

Display Accuracy: $\pm 0.3\%$ of span.

Printing Functions

List Printing (list/data set internally): Dot-printing system.

Print Start: Uses the front panel push-button switch.

Printed Items: Year, month, day, time, recorder number, chart-feed speed, tag number, recording mode, input filter time constant, unit, range, input bias, square-root extraction, alarm setpoint, event recording parameters (including scan period, number of predata, number of post-data, trigger source).

Hourly Printing: Time and date (only when the chart feed speed is set to 10 mm/h or 20 mm/h).

Scale Printing: Scale (0% value, 100% value), engineering unit, channel no.

Scale items can be printed in order for each 120 mm (for chart feed speed 10 mm/h and 20 mm/h only).

Alarm Printing: Alarm occurrence/release time, mark, channel no., alarm kinds (for chart feed speed 10 mm/h and 20 mm/h only).

Event Recording Functions

Data — instantaneous data — for all channels can be collected.

Event Trigger: Stores event data using remote contact input or internal set alarm. ON state when remote contact opens — for 500 msec min.

Event trigger can be occurred by the internal alarm set up trigger source.

Retained Data: 700 process data for each channel.

700 process data (predata plus post-data) — in effect just before and after the occurrence of a particular event — can be selected.

Scan Period: 0.25 to 10 sec. (in increments of 0.25 sec.).

Collection Period: Scan Period \times Retained Data

Rerecording Time: Approx. 18 min. (for recording 700 process data).

Number of Recording Data: 40 data/10 mm.

Rerecording Start: Automatic start after completion of data collection or manual start after event trigger occurs using the front panel push-button switch (AUTO/MAN can be set using side tuning panel keys).

Alarm Functions

Setting Point: Independent high/low limit and velocity limit settings for each input.

Velocity Limit Alarm Setting Range: 0.0 to 100.0 (non-discriminative alarm).

Velocity Limit Alarm Setting Time: 0 to 9999s.

Output Points: Four NC (normally closed) or NO (normally open) contacts. Logical OR connections can be made between individual setting points.

Alarm Setting Accuracy: $\pm 0.5\%$ of span.

Alarm Lock-up Band: 2% or less of span.

Setting Functions

Setting Method: Interactive method on side tuning panel.

Display: 16 digits (liquid crystal).

Data Memory Backup Functions

Data Memory Backup During Power Failure: Uses built-in battery.

Life of Backup Battery (ambient temperature up to 45°C):

At least five years (normal operation)

At least one year (backup operation)

Self-Diagnostic Functions

Fail: FAIL LED illuminates if the CPU or A/D converter fails.

Alarm: ALM LED illuminates with ROM test error, RAM test error, computation overrange, servo-mechanism failure, chart loading error, chart paper end detection, time error, local data loss, input overrange, and input alarm occurrence.

ALM LED flashes when built-in battery voltage drops.

Normal Operating Conditions

Ambient Temperature: 0 to 50°C.

Ambient Humidity: 5 to 85% relative humidity (without condensation).

Power Supply: Two versions, for "100 V" (standard) or "220 V" (option/A2ER). Both versions may use AC or DC, without change to the instrument:

| Version | 100V | 220V |
|--------------------------|-------------|--------------|
| DC (polarity reversible) | 20 to 130 V | 120 to 340 V |
| AC (47 to 63Hz) | 80 to 138 V | 138 to 264 V |

Current and Power Consumption:

| | 24V DC (mA) | 100V AC (VA) | 220V AC (VA) |
|----------|-------------|--------------|--------------|
| SRHD-100 | 590 | 22 | 27 |
| SRHD-200 | 630 | 23 | 28 |
| SRHD-300 | 630 | 23 | 28 |

Insulation Resistance: 100 M Ω or greater using a 500 V DC megger — between an input terminal and ground pin, between input channel terminals (model with isolated input lines), and between the power supply and ground pins.

Dielectric Resistance: Instruments must withstand 500 V AC for one minute between the input terminal and ground pin and between input channel terminals (for isolated input line model only). Also, instruments must withstand 1000 V AC (100 V version) and 1500 V AC (220 V version) for one minute between the power supply and ground pins.

Mounting:

Flush panel mounting. Instruments are in housings, and may be mounted individually or side-by-side. For inclined mounting, instruments may be inclined up to 75° from vertical (rear of instrument lower than front).

Wiring:

Signal Wiring to/from the Field: ISO M4 size (4mm) screws on terminal block.

Power and Ground Wiring:

100 V version; JIS C 8303 two-pin plug with earthing contact, (IEC A5-15, UL498).

220 V version; CEE 7 VII (CENELEC standard) plug.

Cable Length: 300 mm.

Nameplate: Cream semi-gloss finish (upper front panel).

Dimensions: Approx. 8 mm high × 140 mm wide with four blocks.

OPTIONS

/A2ER: For "220 V version" power supply.

/MTS: Recorder supplied with kit for individual mounting. For group mounting, see GS 1B4F1-E.

/SCF-G□M: Mounting kit bezel color change from standard color (black). Choose color from set of optional colors (see GS 22D1P1-E). Specify color code in space.

/NHSD: Instrument without housing. See GS 1B4F1-E to order housing separately.

/NP: Lettering on front panel nameplate (see GS 22D1C4-E).

/NPE: Letters engraved on front panel nameplate (see GS 22D1C4-E).

ACCESSORIES

| Parts Name | Quantity | Description |
|-----------------------------|-----------|---|
| Chart paper 0 to 1000(Unit) | 6 boxes | One box contains one sheaf of strip charts (chart no. E9721NB) good for about 1 month at a chart feed speed of 20mm/h per sheaf |
| Cartridge type pen (red) | 3 pens | Part No. E9721PF |
| Cartridge type pen (green) | 3 pens | Part No. E9721PH |
| Cartridge type pen (blue) | 3 pens | Part No. E9721PG |
| Cartridge type pen (black) | 3 pens | Part No. E9721PE |
| Fuse | 1 fuse | 1 A |
| Applicator | 20 pieces | |
| Brush | 2 pieces | |
| Sheet | 1 piece | |
| Channel color seal | 4 seals | Red, green, blue and black seals |

Display Characters: In black, max. 8 alphanumeric characters in each block — upper stage, tag numbers; lower stage, engineering units.

Front Panel Finish: Dark green (Munsell 2.5G Y3/1).

Housing: Open front.

Bezel: Aluminum diecast, black backed-enamel finish.

External Dimensions: 182.5 (H) × 157 (W) × 480 ((D): depth behind panel surface) (mm).

Weight:

Recorder: 5 kg (excluding housing).

Housing: 2.5 kg (excluding mounting kit).

MODEL AND SUFFIX CODES

| Model | Suffix Code | Description |
|------------|---|--|
| SRHD | | Intelligent Recorder |
| | -1 | 1 to 5V DC inputs (non-isolation) |
| | -2 | 1 to 5V DC inputs (isolation) |
| | -3 | 0 to 10V DC inputs (Differential inputs) |
| | 00 | Always 00 |
| Style Code | *E | Style E |
| Option | /A2ER /MTS /SCF-G□M /NHSD /NP /NPE | 220V power supply *2 With mounting kit Bezel color change Without housing Nameplate lettering Nameplate engraving |

Note:

*1: Each input terminal (—) is used as a common terminal for use with Yew Series 80.

*2: When ordering housing separately, specify /A2/NHSD.

TERMINAL CONNECTIONS

| Terminal Designation | Description | Terminal Designation | Description |
|----------------------|--|----------------------|----------------------------|
| 1 | + | 17 | |
| 2 | - > Input 1 | 18 | |
| 3 | + | 19 | + |
| 4 | - > Input 2 | 20 | - > Alarm output 3 |
| 5 | + | 21 | - FAIL output (- terminal) |
| 6 | - > Input 3 | A | |
| 7 | | B | |
| 8 | | C | |
| 9 | + | D | |
| 10 | - > Input 4 | F | |
| 11 | + | H | |
| 12 | - > Event trigger input or Record Start/Stop trigger input or Chart Speed Selector trigger input | J | + |
| 13 | | K | - > Alarm output 1 |
| 14 | | L | + |
| 15 | + | M | - > Alarm output 2 |
| 16 | - > Alarm output 4 | N | - FAIL output (+ terminal) |

===== ORDERING INSTRUCTIONS =====

Specify the following when ordering:

1. Model, suffix and option codes.
2. Nameplate letters required (see GS 22D1C4-E).
3. Mounting kit (option /MTS) when the recorder is mounted alone.