

°C

%RH

SHIMADEN

Series **SR107**

SHIMADEN HYBRID RECORDER



CE approved

The Slimmest and Lightest Recorder in the world

With a Thickness of only 197 (175) mm

Weight: SR107 Continuous Type (1.2Kg)

SR107 Dotting Type (1.5Kg)

BASIC FEATURES

- ☐ **Compact Housing**
- ☐ **High-Quality Ink Jet Clear Recording**
- ☐ **Easy Operation**
- ☐ **A Variety of Measurements**
- ☐ **Varied Digital Printing**

Indicating, key operation system

Indication: LED (7 segments) , 6 digits, green

Indication character:

7 segments, alphanumeral

Character height 10mm, width 5mm

Contents of indication:

Channel No.: 1 digit (1 to 6)

Measured value:

5 digits (including code for measurement below 0)

Temperature: 1 digit below decimal point

Voltage/current:

Scaling, -9999 is displayed for -10000 and under.

Status indication:

Alarm, burnout, carriage failure with symbolic code.

Measurement display cycle:

3 sec for channel selection,
1 sec for data update in the same channel

Operation key: 3 keys

keylock: soft key lock is possible with key operation.

Input system

Input points: 1, 2-continuous recording, 6-dot recording

Input signal: Thermocouple, B, R, S, K, E, J, T, N, W, L, U, PN

Resistance bulb, Pt100

DC voltage; 50mV, 500mV, 5V, 50V range

DC current; 4 to 20mA DC, 10 to 50mA

DC (with external resistor,
10Ω)

Designation of input signal:

Specify when ordering

1-continuous: 1 kind

2-continuous: Up to 2 kinds

6-dot: Up to 2 kinds

Input range: Specify when ordering

Refer to the attached sheet

"Table of input range codes"

1-continuous: 1 kind

2-continuous: Up to 2 kinds

6-dot: Up to 2 kinds

Measurement cycle:

1, 2-continuous: 0.2sec/point

6-dot: 30sec/all points

Burnout: When thermocouple or resistance bulb input is disconnected, the recording is deflected to 100%.

Input filter: Settable within the range of 0-255sec in 1sec steps.

Setting time prior of delivery is 3 sec.

Recording system

Writing system: Ink jet system, in 6 colors max.

Chart width: 100mm

Chart length: Z fold 15.08m

Recording color:

1-continuous: recording: purple
printing: purple

2-continuous: recording:
No.1 channel, red
No.2 channel, blue
printing: purple

6-dot recording:
No.1 channel, orange
No.2 channel, green
No.3 channel, purple
No.4 channel, red
No.5 channel, black
No.6 channel, blue
printing: black

Chart speed: 10, 20, 24, 30, 50, 120, 200, 300, 400, 1000, 1200, 1500 mm/h

Can be changed by key operation.

Setting speed prior to delivery is 20mm/h

(Note) in continuous type, it records data intermittently when the speed exceeds 400mm/h.

Chart speed accuracy:

±0.1% (continuous feed of more than 1m excluding expansion and contraction of paper)

Recording cycle: Continuous recording:

Depend on chart speed

[Calculation formula]

Recording cycle (sec)= $\frac{400}{\text{chart speed (mm/h)}}$

(not faster than 2 seconds.)

Dot recording: 30 sec/all points.

Recording range: Specify when ordering

Industrial unit: Specify when ordering

Printing function: [Printing during analog recording]

[Note] Chart speed of continuous type should be less than 400mm/h and that of dot type should be less than 50mm/h.

Channel No. printing: Beside of recording line

Periodic printing: Channel number, measurement value, unit, chart speed and lapsed time from the start of recording

[Note] Print period depends on chart speed.

Scale printing: This print out is effected alternately with periodic printing.

[Note] Print interval depends on chart speed.

Alarm printing: Channel number, kind of alarm and lapsed time from the start of recording when alarm is on or off.

Burnout printing: Channel number and lapsed time from the start of recording

[Printing independent of analog recording]

[Note] Printing is performed by key operation, while analog recording is interrupted. Completion of printing is following by a return to analog recording.

Instantaneous value list: Channel number, measured value, industrial unit, lapsed time from the start of recording

Parameter list (set value list) :
Input signal, input range, recording range, unit, alarm, input filter, chart speed, etc.

Scale line printing: Printing of scale line of any channel

Test pattern: All characters and color patterns can be printed.

[Other printing]

Recording start mark

Chart speed change mark

Alarm

Type: Absolute value alarm, high and low

Setting: Two levels for each channel (high: 2 levels, low: 2 levels, or each level at high / low)

Indication: Alarm level is indicated for each channel at occurrence of alarm.

Printing: Channel No. alarm level and lapsed time from the start of recording are printed on chart paper.

Hysteresis: Approx. 0.2% of recording range

Alarm output: See "Optional specifications"

Performance and characteristics

Indication accuracy/Resolution *1:
Thermocouple input: (±0.3% + 1digit) of input range

[Note] Not guaranteed at 400°C or less of B thermocouple

:Resolution, 0.1°C

:Minimum input range
See input range table.

Resistance bulb : (±0.3% + 1digit) of input range

: Resolution, 0.1°C

DC voltage : (±0.3% +1digit) of input range

: Resolution, 1 digit minimum

DC current : Converted value to DC voltage guaranteed

Recording accuracy *1:
Indication accuracy ± 0.2%

Recording resolution:
0.1mm

Reference junction compensation accuracy:
K, E, J, T, N, L, U, PN: ±0.5°C
B, R, S, W : ±1°C

90% response time:
Less than 2 sec (continuous type only)

Maximum input voltage:
Thermocouple, resistance bulb and DC voltage (50mV, 500mV range) : ± 10V DC or less
DC 5V/50V range: ± 100V DC or less

Input resistance:
Thermocouple, 50mV voltage range >10MΩ

5V/50V range: >1MΩ

500mV range: >100kΩ

Isolation: 100MΩ (between each terminal and earth at 500V DC)

Channel to channel: 500V AC, 1min

Power terminal to ground: 2000V AC, 1min

Input terminal to ground: 500V AC, 1min

Power terminal to input terminal: 2000V AC, 1min

Alarm to alarm: 750V AC, 1min (leak current: 5mA or less)

Common mode noise rejection:
120dB (50/60Hz)

Series mode noise rejection:
30dB (50/60Hz)

[Note] *1 Measurement condition:
23±2°C, 65±10%RH, power voltage 100 to 120V, 200 to 240V, frequency 50/60Hz within 1%, warm-up time 30min or more, vertical mounting, and free from the effects of vibration, noise, etc.

Power requirement

Line supply: Specify when ordering

Rated voltage
100 to 120VAC or 200 to 240VAC

Usable voltage
85 to 132VAC or 180 to 264VAC

Frequency: 50/60Hz

Power consumption:

- 6-dotting type: 100-120V AC, without option, 13VA or less
- 6-dotting type: 200-240V AC, without option, 13VA or less
- 6-dotting type: 100-120V AC, with alarm, 15VA or less
- 6-dotting type: 200-240V AC, with alarm, 15VA or less

Operating environment

Temperature limits: 0 to 50°C

Humidity limits: 20 to 80%RH

(temperature×humidity<3200)

Mounting position:

Front inclination 0°, rear inclination 30°, left/right inclination 0°

Signal source resistance:

Thermocouple input: 1kΩ or less
Resistance bulb input: Less than 10kΩ per line resistance of each wire of 3-wire system should be balanced with others
Voltage input: Less than 0.1% of input resistance

Vibration: 10 to 60Hz, 0.2m/s² (0.02G) or less

Shock: None

Memory protection: Non-volatile memory

Contact capacity AC 250V/DC 30V 3A (resistance load.)

Alarm output unit is required.

External control input (DI):

1 point, no-voltage contact input is used for selection of chart speed in 2 steps.

Normally, operation is effected at main chart speed.

Sub-speed is selected with contact ON, and main speed with contact OFF.

Main/sub speed is set by key operation.

When sub-speed is set to 0mm/h, recording start/stop can be selected.

Alarm output unit and external control input unit are required.

Other functions

Printing/recording adjustment:

Make adjustment when characters kink and/or disturbance of record (round trip difference) occur.

Adjustment of zero/span of analog trend record position:

The position of ink cartridge is adjusted for correct recording on zero point (0% point) and span point (100% point) on chart paper. This adjustment should be made after replacement of ink cartridge or chart paper.

Measured value shift:

Indication of recording value is shifted by adding or subtracting calculation of measured value.

Sub chart speed:

This is for selecting chart speed with external control input. It is selected from the following.

0, 10, 20, 30, 50, 120, 200, 300, 400, 1000, 1200, 1500mm/h

Setting prior to delivery: 20mm/h

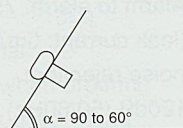
Channel skip: This is used to stop the operation of unused channel. Skipped channel stops all operations including display and alarm.

Setting recording status at power ON:

Recording can be started again or disabled when power is ON or when power is recovered from failure.

Physical data

Mounting: Panel (may be inclined up to 30° backwards from the vertical)
Two more records can be mounted side by side.



Panel thickness: 2 to 30mm

Material: Case: mold Front door frame: mold

Finish color: Case: black Front door frame: black

Protective structure:

Front door: IEC IP50

Case size: Bezel 144×144mm

Depth 175mm (Continuous type)
197mm (dotting type)

Cutout 137×137mm

External terminals:

Screw terminals (M4 screw)

Mass: Approx: 1.2kg (continuous type)

Approx: 1.5kg (dotting type)

Optional specifications

Alarm output (DO):

2, 4 or 6 points N. O contact relay
(refer to ordering information)

Applicable standards

Safety Standards: IEC1010-1 (1990)

reinforce insulation
overvoltage category II except alarm output terminals
(overvoltage category I)
pollution degree2

EMC Standards: EN50081-1 (1992) , EN50082-1 (1992)

Dust/drip-proofing: IP50

INPUT	RANGE	CODE	INPUT	RANGE	CODE	INPUT	RANGE	CODE
B	400.0~1400.0°C	210	J	0.0~ 200.0°C	008	Pt100/ JPt100	-50.0 ~ 150.0°C	504
	600.0~1600.0°C	218		0.0~ 300.0°C	009		-50.0 ~ 50.0°C	502
	800.0~1600.0°C	221		0.0~ 400.0°C	010		0.0 ~ 100.0°C	006
R	0.0~1200.0°C	015		0.0~ 600.0°C	012		0.0 ~ 200.0°C	008
	0.0~1400.0°C	017		0.0~ 800.0°C	013		0.0 ~ 300.0°C	009
	0.0~1600.0°C	018		100.0~ 300.0°C	202		0.0 ~ 400.0°C	010
	600.0~1200.0°C	217		300.0~ 600.0°C	207		0.0 ~ 500.0°C	011
	800.0~1600.0°C	221	T	-50.0~ 150.0°C	504		0.0 ~ 600.0°C	012
S	0.0~1400.0°C	017		0.0~ 200.0°C	008		100.0 ~ 300.0°C	202
	0.0~1600.0°C	018		0.0~ 300.0°C	009		200.0 ~ 400.0°C	205
	600.0~1200.0°C	217	N	0.0~ 300.0°C	009	Voltage (Linear) Current (Linear)	0.00 ~ 10.00	001
	800.0~1600.0°C	221		0.0~ 600.0°C	012		15.00~ 35.00	101
K	0.0~ 300.0°C	009		0.0~1200.0°C	015		0.0 ~ 40.0	002
	0.0~ 400.0°C	010	W	0.0~1200.0°C	015		0.0 ~ 50.0	003
	0.0~ 500.0°C	011		0.0~1600.0°C	018		0.0 ~ 60.0	004
	0.0~ 600.0°C	012		600.0~1200.0°C	217		0.0 ~ 75.0	005
	0.0~ 800.0°C	013	L	0.0~ 300.0°C	009		0.0 ~ 100.0	006
E	0.0~1000.0°C	014		0.0~ 600.0°C	012		0.0 ~ 150.0	007
	0.0~1200.0°C	015		300.0~ 600.0°C	207		0.0 ~ 300.0	009
	0.0~ 300.0°C	009	U	-50.0~ 150.0°C	504		0.0 ~ 400.0	010
	0.0~ 400.0°C	010		0.0~ 200.0°C	008		0.0 ~ 600.0	012
	0.0~ 600.0°C	012		0.0~ 300.0°C	009		0.0 ~ 800.0	013
	100.0~ 300.0°C	202	PN	0.0~ 300.0°C	009		0.0 ~1200.0	015
	300.0~ 600.0°C	207		0.0~ 600.0°C	012		0.0 ~1600.0	018
				0.0~1200.0°C	015			

MAXIMUM INPUT RANGE
FOR EACH INPUT TYPE

Type of input		Range
Thermocouple	B	400.0 ~ 1760.0°C
	R	0.0 ~ 1760.0°C
	S	-200.0 ~ 1760.0°C
	K	-200.0 ~ 1370.0°C
	E	-200.0 ~ 800.0°C
	J	-200.0 ~ 1100.0°C
	T	-200.0 ~ 400.0°C
	N	0.0 ~ 1300.0°C
	W	0.0 ~ 1760.0°C
	L	-200.0 ~ 900.0°C
	U	-200.0 ~ 400.0°C
R.T.D	Pt100	-200.0 ~ 600.0°C
	JPt100	-200.0 ~ 600.0°C
DC. Voltage	±50mV	-50.00 ~ 50.00mV
	±500mV	-500.0 ~ 500.0mV
	±5V	-5.000 ~ 5.000V
	±50V	-50.00 ~ 50.00V
	Scaling	①Scaling is available within -32767~32767
		②6 digit (including code and decimal point). Decimal point can be set at randam.

LEGEND CODE

Legend	Code	Legend	Code	Legend	Code
NON	00	inH ₂ O	20	m/s ²	40
°C	01	mmHg	21	rpm	41
°F	02	cmHg	22	mm	42
%RH	03	inHg	23	cm	43
%	04	1/S	24	m	44
K	05	kg/h	25	mm ³	45
mV	06	kg/cm ²	26	cm ³	46
V	07	kgf/cm ²	27	m ³	47
mA	08	Torr	28	in	48
A	09	mmAg	29	ib	49
W	10	1/min	30	g	50
μs/cm	11	1/h	31	kg	51
mbar	12	m ³ /min	32	t	52
bar	13	m ³ /h	33	l	53
psi	14	Nm ³ /min	34	ppm	54
psi g	15	Nm ³ /h	35	pH	55
Pa	16	mm/s	36	cal	56
kPa	17	m/s	37	kcal	57
mmH ₂ O	18	m/min	38		58
mH ₂ O	19	m/h	39		59

ITEMS	CODE	SPECIFICATIONS
1 SERIES	SR107-	Hybrid recorder, DIN 144×144
2 RECORDING SYSTEM	1	1 Continuous recording
	2	2 Continuous recording
	7	6 Dot recording
3 INPUT 1	☐	Select from input type of codes. 4~20mA available with shunt resistor (option)
	☐ ☐ ☐	Select from measuring range codes
	☐ ☐	Select from legend codes
4 INPUT 2 For item 4「000000」when selecting one input type	☐	Select from input type of codes
	☐ ☐ ☐	Select from measuring codes
	☐ ☐	Select from legend codes
5 POWER SUPPLY	84-	100-120V AC 50/60Hz
	85-	200-240V AC 50/60Hz
6 ALARM OUTPUT/EXTERNAL CONTROL	0	Without
	1	2-point alarm output (only 1 continuous)
	2	4-point alarm output (only 2 continuous)
	3	6-point alarm output (only 6 dotting)
	4	2-point alarm output + external control (only 1 continuous)
	5	4-point alarm output + external control (only 2 continuous)
7 REMARKS	0	Without
	9	With (Please consult before ordering)

Up to 2 kinds of input can only be selected for model with 6 dotting recording system.

※2 Example—NO.1~NO.3—R.T.D., NO.4~NO.6 K.

■ Standard Range (Factory-set when shipped)

Input	Standard/Rating	Range	Type of input	Range code	Legend code
Termocouple	K	0~1200°C	K	015	01
R.T.D.	Pt100	0~ 200°C	H	008	01
DC Voltage	0~5V DC	0~ 100°C	V	006	00

■ Input Type of Codes

Code	Type of code	Code	Type of code	Code	Type of code	Code	Type of code
B	B. thermocouple	R	R. thermocouple	S	S. thermocouple	K	K. thermocouple
E	E. thermocouple	J	J. thermocouple	T	T. thermocouple	N	N. thermocouple
W	W. thermocouple	L	L. thermocouple	U	U. thermocouple	P	P. thermocouple
G	JPt100	H	Pt100	A	0~10mV DC	M	0~100mV DC
Q	0~1V DC	V	1~5V DC	F	0~10V DC	I	4~20mA DC
0	*INPUT 2 is (0) when select at only INPUT 1						

CODING EXAMPLE

1. SR107-7H00801-000000 84-3C

No.1~No.6

6-dotting type with alarm, Pt100 input (0~200°C range), 20mm/h chart speed, 100~120V 50/60Hz.

2. SR107-7 H00801-K01501 84-0C

No.1~No.3(R.T. D)No.4~No.6(K)

6-dotting type without alarm, Pt100 input (No.1~No.3, 0~200°C range), and K input (No.3~No.6, 0~1200°C range), 20mm/h chart speed, 100~120V AC 50/60HZ.

3. SR107-1 H00801-000000 84-1C

No.1(input)

1-Continuous type with alarm, Pt100 input (0~200°C range), 20mm/h chart speed, 100~120V AC 50/60HZ.

4. SR107-2 H00801-K01501 84-2C

No.1 (input) No.2 (input)

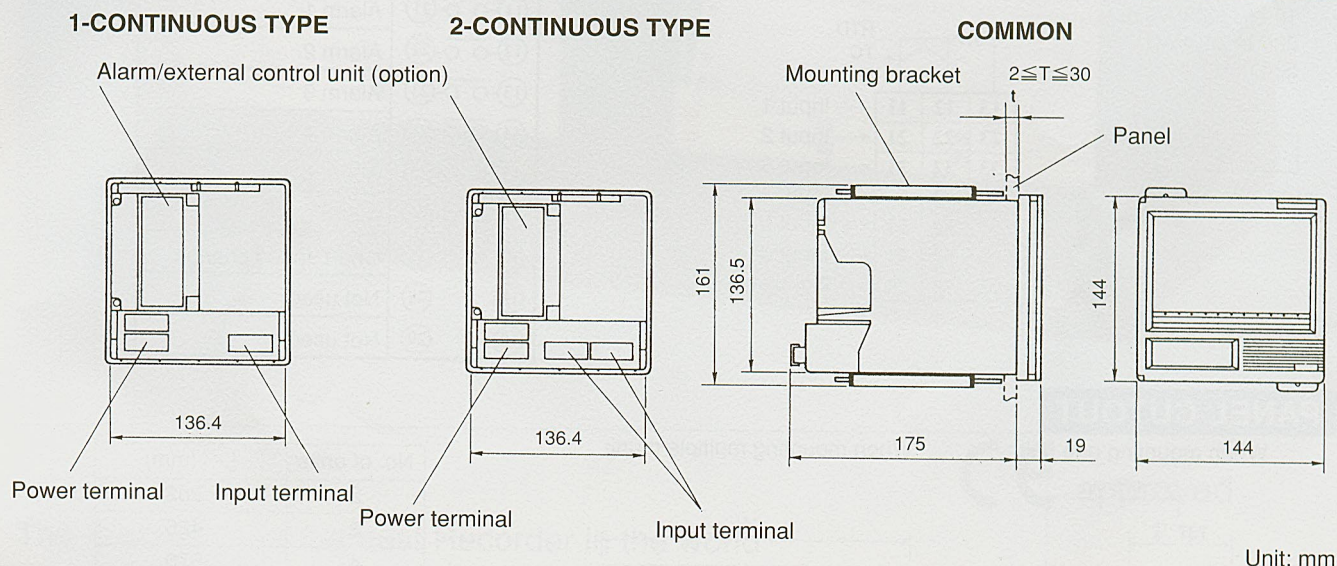
2-Continuous type with alarm, Pt100 input (1st, 0~200°C range), and K input (2nd, 0~1200°C range), 20mm/h chart speed, 100~120V 50/60HZ.

■ Spare and Optional Parts

Items	Type	Remarks
Chart paper (50 divisions)	SRX00DL-5000S	6 charts / box
Recording head	SRZH2002 (PHZH2002)	1,2 continuous
Recording head	SRZH1001 (PHZH1002)	6 dotting
Shunt resistor $10\Omega \pm 0.1\%$	SRZT8101	For 4-20mA DC
2-point alarm output	SRZE1101	only 1 continuous
4-point alarm output	SRZE1201	only 2 continuous
6-point alarm output	SRZE0301	only 6 dotting
2-point alarm output + external control	SRZE1A01	only 1 continuous
4-point alarm output + external control	SRZE1B01	only 2 continuous
6-point alarm output + external control	SRZE0C01	only 6 dotting

*4~20mA available with shunt resistor (option)

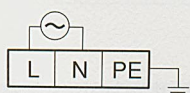
EXTERNAL DIMENSIONS (I)



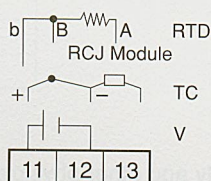
TERMINAL ARRANGEMENT

1-CONTINUOUS TYPE

Power terminal
100 to 120VAC or
200 to 240VAC
50/60Hz



Input terminal



Alarm/External

⑪	①	②①	Alarm 1
⑫	②	②②	Alarm 2
⑬	③	②③	Alarm 3
⑭	④	②④	Alarm 4
⑮	⑤	②⑤	Not used
⑯	⑥	②⑥	Not used
⑰	⑦	②⑦	Chart speed change
⑱	⑧	②⑧	Not used
⑲	⑨	②⑨	Not used

2-CONTINUOUS TYPE

Power terminal
100 to 120VAC or
200 to 240VAC
50/60Hz



Input terminal

