

General Specifications

SR10000 Recorder

GS 04P03B01-01E

The SR10000 is a compact recorder with a recording width of 100mm. The model family consists of 1, 2, 3, 4 pen and a 6 dot models. Pen model realizes continuous recording for each channel, whereas the 6-dot model realizes a high speed of 6 dot / 10 sec. The input is universal input. High reliability is realized by contact free technology, such as self-developed high withstand voltage semiconductor relays, and pen servo unit using an ultra-small stepping motors. The measured value, channel No., alarm status and date/time display are provided with 7 segments LED display.

The SR10000 can be used as a monitoring device and as a quality control instrument in many applications (such as process temperature monitoring, pollution, construction, furnaces, field of medical diagnosis, field of refrigerating, etc.).



SR10000
(6 dot model)

STANDARD SPECIFICATIONS

General Specifications

Construction

Mounting:

Flush Panel Mounting (vertical), mounting next to each other (horizontal and vertical).

Mounting may be inclined up to 30°, rear below front (with horizontal base).

Allowable panel thickness: 2 to 26mm

Material:

Case: Steel, front door: aluminium die casting.

Case color:

Case and door-frame: Charcoal gray light (Mansell 10B 3.6 / 0.3 or equivalent)

Door: Splash and dust-proof (based on DIN 40050-IP54).

Dimensions:

144 × 144 × 220mm (see dimensional drawings)

Weight (approx.):

1 pen	2.1kg	4 pen	2.4kg
2 pen	2.2kg	6 dot	2.5kg
3 pen	2.3kg		

Model

1, 2, 3, and 4 pen, 6 dot-model.

Input

- Inputs:
- DCV: Direct Current Voltage input
20mV to 50V, 1-5V range.
 - TC: Thermo couple.
 - RTD: Resistance Temperature Detector.
 - DI: Digital Input (contact or DC Voltage, TTL level).
 - DCA: Direct Current Input (using external shunt resistor (10Ω, 100Ω, 250Ω))

Measuring range: selectable per channel

Input Type	Range	Measuring Range	
DC V	20 mV	-20.00 to 20.00mV	
	60 mV	-60.00 to 60.00mV	
	200 mV	-200.0 to 200.0mV	
	2 V	-2.000 to 2.000V	
	6 V	-6.000 to 6.000V	
	20 V	-20.00 to 20.00V	
	50V	-50.00 to 50.00V	
	1-5V*1	1.000 to 5.000V	
TC	R*2	0.0 to 1760.0°C	32 to 3200°F
	S*2	0.0 to 1760.0°C	32 to 3200°F
	B*2	0.0 to 1820.0°C	32 to 3308°F
	K*2	-200.0 to 1370.0°C	-328 to 2498°F
	E*2	-200.0 to 800.0°C	-328.0 to 1472.0°F
	J*2	-200.0 to 1100.0°C	-328.0 to 2012.0°F
	T*2	-200.0 to 400.0°C	-328.0 to 752.0°F
	N*2	0.0 to 1300.0°C	32 to 2372°F
	W*3	0.0 to 2315.0°C	32 to 4199°F
	L*4	-200.0 to 900.0°C	-328.0 to 1652.0°F
	U*4	-200.0 to 400.0°C	-328.9 to 752.0°F
	WRe*5	0.0 to 2400.0°C	32 to 4352°F
	RTD*6	Pt100*6	-200.0 to 600.0°C
JPt100*6		-200.0 to 550.0°C	-328.0 to 1022.0°F
DI	DCV input	OFF: 2.4V less ON: 2.4V or greater	
	Contact input	Contact input ON/OFF	

*1: Only linear scaling can be used (burnout is available)

*2: R, S, B, K, E, J, T, N: IEC584-1(1995), DIN IEC584, JIS C1602-1995

*3: W: W-5% Re/W-26% Re(Hoskins Mfg. Co.), ASTM E988

*4: L: Fe-CuNi, DIN43710, U: Cu-CuNi, DIN43710

*5: WRe: W-3% Re/W-25% Re(Hoskins Mfg. Co.)

*6: Pt100: JIS C1604-1997, IEC751-1995, DIN IEC751-1996

JPt100: JIS C1604-1989, JIS C1606-1989

Measuring current: i=1mA

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Measurement Interval:
 Pen model: 125ms / channel
 Dot printing model:
 1s / 6 dot (AD integration time is 20ms or 16.7ms)
 2.5s / 6 dot (AD integration time is 100ms)
 A / D Integration Time:
 AUTO / FIX selectable
 AUTO: 20ms (50Hz) or 16.7ms (60Hz), automatically selected depending on the power supply frequency.
 FIX: 20ms (50Hz), 16.7ms (60Hz) or 100ms (50 / 60Hz)*1 can be selected.
 *1 100ms integration time: only for dot printing model (not available for 1s / 6 dot measurement interval)

TC Burnout:
 ON / OFF selectable (per channel).
 Burnout upscale / downscale selectable (per channel)
 Normal: less than 2kΩ, burnout: more than 10MΩ.
 Measuring current: approx. 10μA.

1-5V Burnout:
 Burnout: less than 0.2V

Filter:
 Pen model:
 Signal damping: ON / OFF selectable per channel
 Time constant : 2, 5, 10sec

Dot printing model:
 Moving average: ON / OFF selectable per channel
 Moving average cycle: 2 to 16

Computation:
 Differential computation:
 Between any two channels, however reference channel number must be smaller than measuring channel number.
 Available for DCV, TC, and RTD range.
 Both channels must have same range.

Linear scaling:
 Available for DCV, TC, RTD and DI range.
 Scaling range: -19999 to 30000
 Data display & printout range: -19999 to 30000
 Decimal point: User selectable
 Unit: User settable, up to 6 characters (alphanumerical & special characters).

Square root:
 Available for DCV range.
 Scaling range: -19999 to 30000
 Data display & printout range: -19999 to 30000
 Decimal point: User selectable
 Unit: User settable, up to 6 characters (alphanumerical & special characters).
 Low level cut off: 0.0 to 5.0% of recording span
 Bias addition: -10.0 to 10.0% of recording span

Recording and Printing

Recording Method:
 Pen model: Disposable felt pens, Plotter pen
 Dot printing model: 6 color wire dot.
 Pen Offset Compensation:
 ON / OFF selectable (Pen model only)
 Effective Recording Width: 100mm
 Chart: Plain-paper Z-fold chart (16m)
 Step Response Time (pen): Approx. 1s /IEC 61143 method
 Recording Period:
 Pen model:
 Continuous for each channel.

Dot printing model:
 Max. 6 channel / 10sec(the shortest recording period)
 AUTO / FIX selectable
 AUTO: Analog recording interval is depending on the chart speed
 FIX: Analog recording interval is set to the shortest period

Chart Speed:
 Pen model: 10 to 12000mm/h (40 increments)
 Dot printing model: 10 to 1500mm/h (28 increments)
 Chart Speed Change:
 Speed 1, speed 2 change by remote control signals (option)
 Chart Speed Accuracy:
 Within ± 0.1% (for recordings longer than 1000mm, related to the grid of the chart paper)

Relation between Chart Speed and Printout:
 (Pen-model)

Chart Speed	• Periodic Printout	•Alarm Printout •Message Printout •Chart Speed Change Time Printout
10 to 1500mm/h 1800 to 12000mm/h	Available NA	Available NA

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(Dot-printing model)

Chart Speed	• Channel No. or Tag No.	• Periodic Printout	• Alarm Printout • Message Printout • Chart Speed Change Time Printout
10 to 100mm/h 120 to 1500mm/h	Available NA	Available NA	Available NA

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Relation between chart speed and printing intervals of periodic printouts (For AUTO interval setting):
 (Pen-model)

Chart Speed	Printing Interval of Periodic Printout
10 to 15mm/h	Every 8 hours
20 to 30mm/h	Every 4 hours
40 to 60mm/h	Every 2 hours
75 to 120mm/h	Every hour
150 to 180mm/h	Every 30 minutes
200 to 320mm/h	Every 20 minutes
360 to 1500mm/h	Every 10 minutes
1800 to 12000mm/h	NA

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(Dot-printing model)

Chart Speed	Printing Interval of Periodic Printout
10 to 15mm/h	Every 8 hours
20 to 30mm/h	Every 4 hours
40 to 75mm/h	Every 2 hours
80 to 100mm/h	Every hour
120 to 1500mm/h	NA

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Recording Colors:
 Pen model:
 pen1=red, pen2=green, pen3=blue, pen4=violet, plotter pen=purple

Dot printing model:
 ch1=purple, ch2=red, ch3=green, ch4=blue, ch5=brown, ch6=black (color can be assigned to any channel)

Recording Format:
 1. Analog recording:
 Analog recording ON/OFF selectable for each channel of dot model
 Zone recording:
 Span: More than 5mm (1mm step)

- Partial expanded recording:
 - Boundary position: 1 to 99%
 - Boundary value: Within recording span
- 2. Digital printout:
 - Channel (dot model only):
 - Channel number or TAG will be printed during analog recording. Approx. every 25mm this print will occur.
 - ON / OFF selectable (common for all channels)
 - Alarm:
 - At the right side of the chart, CH. No. or TAG, Type of alarm, date/time of alarm ON / OFF will be printed. Time of alarm ON / OFF, time of alarm ON, OFF selectable (common for all channels).
 - Periodic printout contents:
 - Date (mm/dd/yy), time(hh:mm), measurement data of each channel , scale printout, recording color, chart speed
 - Measurement data of each channel:
 - a. ON/OFF selectable
 - b. Channel No. or tag, alarm status (for instantaneous mode), measured value, measuring unit (up to 6 characters)
 - Scale printout:
 - a. ON/OFF selectable (common for all channels)
 - b. 0 and 100% scale value (when using partial expanded recording, boundary value is recorded)
 - c. Printout available in case of more than 40 mm of recording span
 - Recording color:
 - Only for pen model (OFF selectable)
 - Periodic print interval*2:
 - a. Using internal timer
 - b. Standard time 00:00 to 23:00(on the hour)
 - c. Print interval setting (AUTO/MAN)
 - AUTO: Automatically set as chart speed
 - MAN: 10, 12, 15, 20, 30 minute, 1, 2, 3, 4, 6, 8, 12, 24 hour
 - Periodic printout mode:
 - Selectable from Instaneous value mode / OFF mode
 - a. Instantaneous value mode:
 - Measured value for each channel
 - b. OFF mode: Periodic printout is not executed.
 - Message printout:
 - With panel key or remote control option, up to 5 messages can be printed.
 - Contents: Date/time and message (up to 16 characters).
 - Batch message format (ON/OFF selectable for model with /BT1 option)
 - ON: Any (date/time, message (up to 16 characters), measured value) can be selected (up to 35 characters)
 - OFF: Date/time + message (up to 16 characters)
 - Record start time:
 - Date/time will be printed when recording starts, ON / OFF selectable.
 - Chart speed printout:
 - Date/time when chart speed is changed will be printed, ON / OFF selectable.

- List printout*1:
 - Listings of range and alarm setting, etc. will be printed.
- Manual printout*1:
 - With panel key or remote control option, measured value will be printed.
- SET UP printout*1:
 - Listings of settings in SET UP Mode will be printed.
- *1 During printout trend recording will be interrupted.
- *2 According to printout settings all the items are not printed.

Display

- Display method: LED (7 segment, 2+5 digits)
- Display items: Date, Time, Digital display
- Digital display:
 - AUTO: channel No., alarm kind, measured value (display by the order of channel No.)
 - MAN: channel No., alarm kind, measured value (display for the specified channel)
- Display update rate:
 - AUTO: 2s
 - MAN: 1s (pen model), same as measurement interval (dot model)
- The other display: Recording status display (RCD), common alarm status (ALM)

Power Supply

- Rated Power Voltage:
 - 100 to 240VAC, automatically selected depending on the power supply voltage
- Usable power voltage ranges:
 - 90 to 132, 180 to 264VAC
- Rated Power Frequency:
 - 50 / 60 Hz, automatically selected
- Power Consumption: (approx.)

	100VAC Power Source	240VAC Power Source	Maximum
1-4 pen	12VA*	17VA*	40VA
6 dot	13VA*	18VA*	40VA

* : In Balance

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Alarm

- Number of alarm levels:
 - Up to four levels for each channel
- Alarm types:
 - High and low limits, differential high and low limits
- Alarm delay time: 1 to 3600s
- Display:
 - On digital display, an alarm type indicator is shown.
 - Shared alarm display
- Hysteresis:
 - 0.0 to 1.0% (0.1% step) of recording span (only High, Low alarm, common for all channels and all levels).

Other Specifications

- Clock: With calendar function
- Summer and winter time:
 - Summer and winter time can be set.
- Clock Accuracy:
 - 100 ppm, however not including error due to turning ON / OFF power
- Panel Key Lock:
 - Protection by password
 - (Any of RCD, MENU, FEED key and functions (Printout, List printout, SETUP printout, Message, Buffer clear, Digital PRT, ribbone exchange (dot model), Pen exchange (only for pen model)) can be locked).
- Memory backup:
 - Lithium battery to protect setting parameters.

Life is approx. ten years (at room temperature, and for standard model) and is installed inside the recorder.

Insulation Resistance:

Each terminal to ground terminal: More than 20MΩ (measured at 500VDC).

Dielectric Strength:

- Power supply to ground terminal: 1500V AC (50 / 60Hz), 1 min
- Contact output terminal to ground: 1500V AC (50 / 60Hz), 1 min
- Measuring input terminal to ground: 1000V AC (50 / 60Hz), 1 min
- Between measuring input terminals: 1000V AC (50 / 60Hz), 1 min (except for RTD, since b-terminal is common).
- Between remote control terminal to ground: 500V DC, 1min.

Mechanical noise:

Machine Noise Information Ordinance 3. GSGV, Jan. 18, 1991:
The maximum sound pressure level is equal or less than 60dB (A) according to ISO7779.

Safety and EMC standards

CSA

CSA22.2 No.61010-1 (NRTL/C*) installation category II, measurement category II pollution degree 2

* For marking that includes NRTL, a mark with "US" (USA) printed on the right side of the CSA mark, and "C" (Canada) printed on the left side appears on this instrument.

CE

EMC directive:

- EN61326 compliance (Emission: Class A, Immunity: Annex A)
- EN61000-3-2 compliant
- EN61000-3-3 compliant
- EN55011 compliant, Class A Group 1

Low voltage directive:

EN61010-1 compliant, installation category II measurement category II, pollution degree 2

C-Tick

AS/NZS CISPR11 compliant, Class A Group 1

Normal Operating Conditions

- Power voltage: 90 to 132, 180 to 264VAC
- Power frequency: 50Hz ± 2%, 60Hz ± 2%
- Ambient temperature: 0 to 50°C
- Ambient humidity: 20 to 80% RH (at 5 to 40°C)
- Vibration: 10 to 60Hz, 0.2m/s² or less
- Shock: Not acceptable
- Magnetic field: Less than 400A/m (DC and 50, 60Hz)
- Noise:

Normal Mode (50 / 60Hz):

- DCV Peak value including signal must be less than 1.2 times the measuring range.
- TC Peak value including signal must be less than 1.2 times the measuring thermal electromotive force.
- RTD less than 50mV.
- Common Mode (50 / 60Hz): Less than 250VAC rms. for the whole range
- Maximum noise voltage between channels (50 / 60Hz) : Less than 250VAC rms

Operating Position:

Frontward: 0° Backward: Within 30° from horizontal

Warm-up Time:

Min. 30 minutes after power has been turned ON.

Altitude: 2000M or less

Standard Performance

Measuring and Recording Accuracy:

(Following specifications apply to operation of the recorder under standard operation conditions: temperature 23 ± 2°C, humidity 55 ± 10%RH, power supply voltage 90 to 132V, 180 to 264V AC, power supply frequency 50/60Hz ± 1%, warm-up time at least 30 minutes, other ambient conditions like vibration should not adversely affect the recording operation).

Input	Range	Measuring (digital display)		Recording (analog)		
		Measurement Accuracy	Max. Resolution	Recording Accuracy	Resolution	
DC V	20mV	± (0.1% of rdg+2 digits)	10μV	Measurement accuracy ± (0.3% of recording span)	Pen model dead band: 0.2% of recording span Dot printing model resolution: 0.1mm	
	60mV		10μV			
	200mV		100μV			
	2V		1mV			
	6V		1mV			
	20V		10mV			
	50V		10mV			
	1-5V	± (0.1% of rdg+2 digits)	1mV			
TC	R	± (0.15% of rdg+1°C) but R, S : 0 to 100°C, ± 3.7°C 100 to 300°C, ± 1.5°C B: 400 to 600°C, ± 2°C, and is not guaranteed below 400°C	0.1°C	Measurement accuracy ± (0.3% of recording span)	Pen model dead band: 0.2% of recording span Dot printing model resolution: 0.1mm	
	S					
	B					
	K					± (0.15% of rdg+0.7°C) but -200 to -100°C ± (0.15% of rdg+1°C)
	E					± (0.15% of rdg+0.5°C) but J : -200 to -100°C ± (0.15% of rdg+0.7°C)
	J					± (0.15% of rdg+0.7°C)
	T					± (0.15% of rdg+0.7°C)
	W	± (0.15% of rdg+1°C)				
	L	± (0.15% of rdg+0.5°C) but L : -200 to -100°C ± (0.15% of rdg+0.7°C)				
	U	± (0.15% of rdg+0.7°C)				
	WRe	± (0.2% of rdg+1.0°C)				
RTD	Pt100 JPt100	± (0.15% of rdg+0.3°C)	0.1°C	Measurement accuracy ± (0.3% of recording span)	Pen model dead band: 0.2% of recording span Dot printing model resolution: 0.1mm	

NOTE: • Recording span is 100 mm.
• TC: Excluding the accuracy of reference junction compensation.

Accuracy in case of scaling:

Accuracy during scaling (digits) =

measuring accuracy (digits) × multiplier + 2 digits (rounded up)
Where the multiplier = scaling span digits / recording span digits

Example:

DCV 6V range
recording span: 1.000 to 5.000V
scaling span: 0.000 to 2.000
measuring accuracy = ± (0.3% 3 5V + 2 digits)
± (0.015V (15 digits) + 2)
± (17 digits)

multiplier = 2000 digits (0.000 to 2.000 / 4000 digits
(1.000 to 5.000V) = 0.5

Accuracy during scaling = 17 digits × 0.5 + 2 = 11 digits (rounded up)

Maximum Allowable Input Voltage:

- ± 10VDC (cont.) for less than 200mVDC ranges and TC, RTD, DI ranges
- ± 60VDC (cont.) for more than 2VDC

Reference Junction Compensation:

INT / EXT selectable (per channel)

Reference Junction Compensation Accuracy (above 0 °C):

- Type R, S, B, W, WRe: ± 1.0 °C
- Type K, J, E, T, N, L, U: ± 0.5 °C

Input Resistance:

More than 10MΩ (TC, 20mV, 60mV, 200mV range)
Approx. 1MΩ (More than 2V range).

Input Source Resistance:
DCV, TC: 2k Ω or less
RTD: 10 Ω or less / wire (The resistance of all three wires must be equal)

Input Bias Current:
Less than 10nA (except when burnout is specified).

Maximum Common Mode Voltage:
250VAC rms (50 / 60Hz)

Maximum Differential Noise between Channels:
250VAC rms (50 / 60Hz)

Interference between Channels:
120dB (Input external resistance 500 Ω , the deviation in the case that 60V is applied to another channel)

Common Mode Rejection Ratio:
120dB (50/60Hz \pm 0.1%, 500 Ω imbalance between '-' terminal and ground)

Normal Mode Rejection Ratio:
40dB (50 / 60Hz \pm 0.1%)

Effect of Operating Conditions

Effect of Ambient Temperature:
Effect of ambient temperature variation of 10°C.
Digital display: Within \pm (0.1% of rdg+1 digit)
Recording: Within Digital display \pm 0.2% of recording span (excluding RJC error)

Effect of Power Supply:
Effect of variation within 90 to 132V or 180 to 264VAC in rated power supply voltage: (50 or 60Hz)
Digital display: Within \pm 1 digit
Recording: Within \pm 0.1% of recording span
Effect of rated power frequency variation of \pm 2Hz (at 100VAC):
Digital display: Within \pm (0.1% of rdg+1 digit)
Recording: Same as digital display

Effect of Magnetic Field:
Effect of AC (50 / 60Hz) or DC 400AT/m field:
Digital display: Within \pm (0.1% of rdg+10 digits)
Recording: Less than \pm 0.5% of recording span

Effect of Input Source Resistance:
Effect of Input Source Resistance variation of +1k Ω :
DCV range:
Ranges less than 200mV: Within \pm 10 μ V
Ranges more than 2V: Within $-$ 0.1% of rdg
TC range:
Within \pm 10 μ V

RTD range:
- Effect of 10 Ω per wire (resistances of three wires must be equal):
Digital display: Within \pm (0.1% of rdg+1 digit)
Recording: Within Digital display \pm 0.1% of recording span
- Effect of difference of three wires:
Digital display: 0.1°C per 40 m Ω (approx.) for Pt100 range.

Effect of Operating Position:
Digital display: Within \pm (0.1% of rdg+1 digit) (within 30° backwards)
Recording: Within Digital display \pm 0.1% of recording span (within 30° backwards)

Vibration:
Effect when sine-wave motion of frequency 10 to 60Hz and acceleration of 0.2m/s² is applied to the instrument in the direction of three axes for two hours:
Digital display: Within \pm (0.1% of rdg+1 digit)

Recording: Within Digital display \pm 0.1% of recording span

Transport and Storage Conditions

No malfunction will occur under these conditions, however when returning to normal operation conditions, calibration might be necessary.

Temperature: $-$ 25°C to 60°C
Humidity: 5 to 95% RH (no condensation)
Vibration: 10 to 60Hz, 4.9m/s²
Shock: Less than 392m/s² (while being packed)

OPTIONAL SPECIFICATIONS

/ A1: Alarm Output Relay (2 contacts)

/ A2: Alarm Output Relay (4 contacts)

/ A3: Alarm Output Relay (6 contacts)

When alarm occurs, output relay on rear terminal will be activated.

- AND / OR selectable.
- Energized/ deenergized selectable (common for all relays).
- Hold type/ non-hold type selectable (common for all relays).
- Reflash relay:
Alarms can be assigned to an output relay (I01-I03)
- Relay contact rating: DC 250V / 0.1A
AC 250V / 3A
- Type of relay output: NO-C-NC

/ C3: RS-422A / 485 Communication Interface

By using this communication function, setting and control of data can be done by a host-computer.

Data can also be output to the host-computer.

- Synchronization method:
start-stop asynchronous transmission
- Specifications:
Conform to EIA RS-422A / 485 standard
- Communication method:
4-wire half-duplex multi-drop connection (1: N (N=1 to 32))
- Transfer rate:
1200, 2400, 4800, 9600, 19200, 38400bps
- Data length: 7 or 8 bit
- Stop bit: 1 bit
- Parity: Odd, even or none
- Communication distance: Up to 1.2km
- Communication mode:
ASCII (control / setting / measured data) or
Binary (measured data)
- Modbus communication: RTU SLAVE
Output of measured data and alarm status

/ C7: Ethernet Interface

- Electrical and mechanical specifications:
Conforms to IEEE 802.3
- Transmission media: 10 Base-T
- Protocol: TCP, IP, UDP, ICMP, ARP

/ CC1: Calibration correction

Corrects the measurement value of each channel using segment linearizer approximation.

- Number of segment points: 2 to 16
- Setting method: Bias, Absolute value
- Target Channel: Measurement channel
- Target range:
Input range (DCV, TC, RTD)
Linear scaling range (DCV, TC, RTD, 1-5V)
However DI, differential computation and square root are not included.

/ N1: Cu10, Cu25 RTD input

This option allows Cu10 and Cu25 RTD inputs to be added to the standard input types.

Cu10, Cu25 Measurement Range

	Input Type	Measurement Range
RTD	Cu10(GE)	-200 to 300°C (-328 to 572°F)
	Cu10(L&N)	
	Cu10(WEED)	
	Cu10(BAILEY)	
	Cu10 : α = 0.00392 at 20°C	
	Cu10 : α = 0.00393 at 20°C	
	Cu25* : α = 0.00425 at 0°C	

*Measuring current i=1mA

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Measurement / Recording Accuracy

Input Type	Measurement Accuracy	Recording Accuracy
Cu10(GE) Cu10(L&N) Cu10(WEED) Cu10(BAILEY) Cu10 : α = 0.00392 at 20°C Cu10 : α = 0.00393 at 20°C	± (0.4% of rdg + 1.0°C)	Measurement Accuracy ± (0.3% of recording span)
Cu25 : α = 0.00425 at 0°C	± (0.3% of rdg + 0.8°C)	

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/N3: Expansion Inputs

This option allows 14 types inputs such as Pt50, PR40-20, PLATINEL inputs to be supported besides the standard input types.

/N3 Measurement Range

Input	Measuring Range	
TC	PR40-20	0.0 to 1900.0°C / 32 to 3452°F
	PLATINEL	0.0 to 1400.0°C / 32 to 2552°F
	NiNiMo	0.0 to 1310.0°C / 32 to 2390°F
	W/WRe26	0.0 to 2400.0°C / 32 to 4352°F
	Type N(AWG14)	0.0 to 1300.0°C / 32 to 2372°F
	Kp vs Au7Fe	0.0 to 300.0K / —
RTD (Measuring contact i=1mA)	Pt25	-200.0 to 550.0°C / -328.0 to 1022.0°F
	Pt50	-200.0 to 600.0°C / -328.0 to 1112.0°F
	Ni100(SAMA)	-200.0 to 250.0°C / -328.0 to 482.0°F
	Ni100(DIN)	-60.0 to 180.0°C / -76.0 to 356.0°F
	Ni120	-70.0 to 200.0°C / -94.0 to 392.0°F
	J263*B	0.0 to 300.0K / —
	Cu53	-50.0 to 150.0°C / -58.0 to 302.0°F
	Cu100*1	-50.0 to 150.0°C / -58.0 to 302.0°F

*1: Cu100: a = 0.00425 at 0°C

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Measurement / Recording Accuracy

Input	Measuring Accuracy	Recording Accuracy
PR40-20 0 to 450°C 450 to 750°C 750 to 1100°C 1100 to 1900°C	Not guaranteed ± (0.9% of rdg+3.2°C) ± (0.9% of rdg+1.3°C) ± (0.9% of rdg+0.4°C)	Measurement Accuracy ± (0.3% of recording span)
PLATINEL	± (0.25% of rdg+2.3°C)	
NiNiMo	± (0.25% of rdg+0.7°C)	
W/WRe26 0 to 400°C 400 to 2400°C	within ± 15.0°C ± (0.2% of rdg+2.0°C)	
Type N(AWG14)	± (0.2% of rdg+1.3°C)	
Kp vs Au7Fe 0 to 20K 20 to 300K	± 4.5K ± 2.5K	
Pt25	± (0.15% of rdg+0.6°C)	
Pt50	± (0.3% of rdg+0.6°C)	
Ni100(SAMA) Ni100(DIN) Ni120	± (0.15% of rdg+0.4°C)	
J263*B 0 to 40K 40 to 300K	± 3.0K ± 1.0K	
Cu53	± (0.15% of rdg+0.8°C)	
Cu100	± (0.2% of rdg+1.0°C)	

Note: PR40-20 : No reference junction compensation (0°C fix)
TC : Excluding the accuracy of reference junction compensation T1003.EPS

/ R1: Remote Control

5 types of control are selectable from the below.

	Number of settings	Signal
- Recording start / stop	1	edge
- Chart speed change	1	level
- Message printout start*1	5	trigger
- Manual printout start	1	trigger
- Time adjustment (Adjusting the time to a preset time)	1	trigger
- Batch comment switch*2	1	level
- Priority remote recording*2	1	level

*1 Up to 5 messages can be set

*2 Available for the model with /BT1 option

/ P1 : 24VDC/AC Power Supply

Rated power supply: 24VDC/AC

Allowable power supply voltage range:
21.6 to 26.4 VDC/AC

Dielectric strength:

Power supply to ground terminal: 1000VAC

Power Consumption: (approx.)

Supply Voltage	1-4 pen	6 dot	Max.
24VDC	7VA*	8VA*	25VA
24VAC (50/60Hz)	13VA*	13VA*	35VA

* In Balance

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/BT1: Header printout

Batch name, comment, time, chart speed are printed in record Start/Stop.

Message printout including measured value is available.

- Printout contents:

Batch name:Batch number-Lot number
(ON/OFF selectable)

Batch number: Up to 26 characters can be set

Lot number: 4 digits/6 digits/OFF selectable

Start/Stop comment:

Up to 32 characters × 5 lines can be set

Start/Stop time: ON/OFF selectable

Start/Stop chart speed: (ON/OFF selectable)

- POC output (pen model):

Recording ON/OFF of POC data in batch end

- Batch comment switch setting:

Two setting of batch start/stop printout can be switched with remote control

APPLICATION SOFTWARE

With Ethernet (/C7), RS-422A/485 (/C3), or Interface unit, SR10000 setting can be configured.

• RXA10 Configuration Software

System requirements:

OS: Windows 2000/XP

Processor: Pentium III/600 MHz or superior
(Pentium III/800 MHz or any other superior processor is recommended.)

Memory: 256 MB min. (512 MB or larger memory is recommended)

Disk device: CD-ROM drive compatible with Windows 2000/XP

Hard disk capacity:

Free space of at least 10 MB (100 MB or larger free space is recommended)

Display unit:

A model provided with a display module compatible with Windows 2000/XP and capable of handling at least 32000 colors (a display module capable of handling at least 64000 colors is recommended)

Main functions (as a package):

Configuration software:

Configuration via communication:

Configures the station, excluding the communication setting, or sets it in set mode.

• **Interface unit (attached with RXA10 configuration software)**

Method of power supply: Power supply from SR10000

Connector type: D-Sub 9-pin plug (male)

Electrical and mechanical specifications:

Conforms to EIA-574 (9-pin EIA-232 (RS232))

RS422A/485 communication interface (/C3) and interface unit cannot work together.

Model Codes

Model Code	Suffix Code	Option Code	Description
SR10001			SR10000 1 pen recorder
SR10002			SR10000 2 pen recorder
SR10003			SR10000 3 pen recorder
SR10004			SR10000 4 pen recorder
SR10006			SR10000 6 dot recorder
Language	-2		English, degF & DST
Option	/A1		Alarm output relay (2 contacts)*1
	/A2		Alarm output relay (4 contacts)*1
	/A3		Alarm output relay (6 contacts)*1
	/BT1		Header printout
	/C3		RS-422A/485 communication interface *2
	/C7		Ethernet communication interface *2
	/CC1		Calibration correction
	/D6		Green Display
	/N1		Cu10, Cu25 inputs
	/N3		Expansion inputs *3
/R1		Remote control 5 contacts	
/P1		24VDC/AC Power supply	

Model Code	Description	OS
RXA10-03	RXA10 Configuration software	Windows 2000/XP
RXA10-04	RXA10 Configuration software (With interface unit)	Windows 2000/XP

*1: Only one of /A1, /A2, /A3 can be specified

*2: /C3 and /C7 can not be specified together

*3: 14 types inputs: Pt50 RTD, PR40-20, PLATINEL TC etc.

STANDARD ACCESSORIES

Name	1 pen	2 pen	3 pen	4 pen	6 dot	
Z-fold chart	1	1	1	1	1	
6 color ribbon cassette	-	-	-	-	1	
Disposable felt-pen cartridge	Red	1	1	1	-	
	Green	-	1	1	1	
	Blue	-	-	1	1	-
	Violet	-	-	-	1	-
Plotter pen	Purple	1	1	1	1	-
Mounting brackets	2	2	2	2	2	
Instruction Manual(CD-ROM)	1	1	1	1	1	
Operation Manual	1	1	1	1	1	

SPARES/OPTIONAL ACCESSORIES

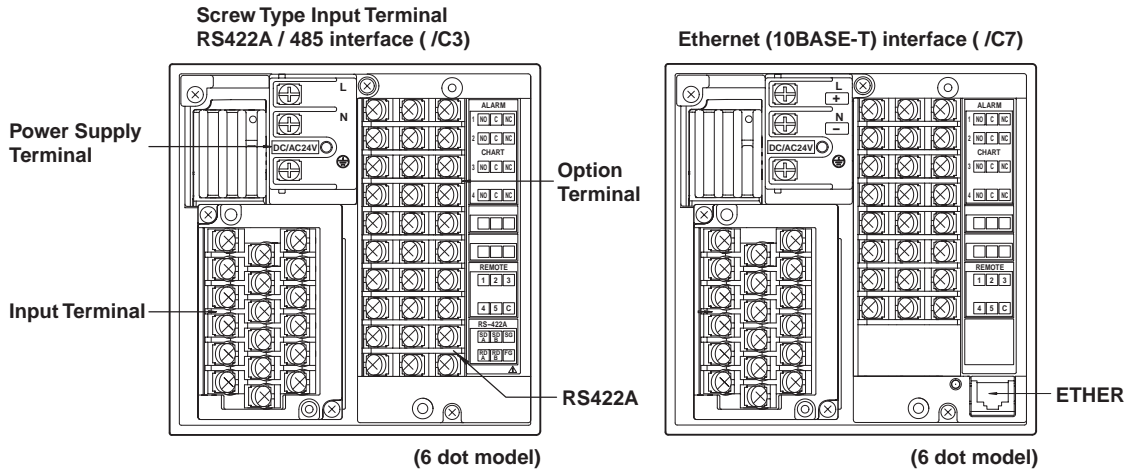
Name	Model Code (Parts No.)	Specification	
Z-fold chart	B9565AW	10 (sales unit)	
6 color ribbon cassette	B9901AX	1 (sales unit)	
Disposable felt-pen cartridge	Red	B9902AM	1 (sales unit, 3 pieces/unit)
	Green	B9902AN	1 (sales unit, 3 pieces/unit)
	Blue	B9902AP	1 (sales unit, 3 pieces/unit)
	Violet	B9902AQ	1 (sales unit, 3 pieces/unit)
Plotter pen	Purple	B9902AR	1 (sales unit, 3 pieces/unit)
Mounting brackets	B9900BX	2 (sales unit)	
Shunt resistor	(for screw input terminal)	4159 20	250Ω ± 0.1%
		4159 21	100Ω ± 0.1%
		4159 22	10Ω ± 0.1%

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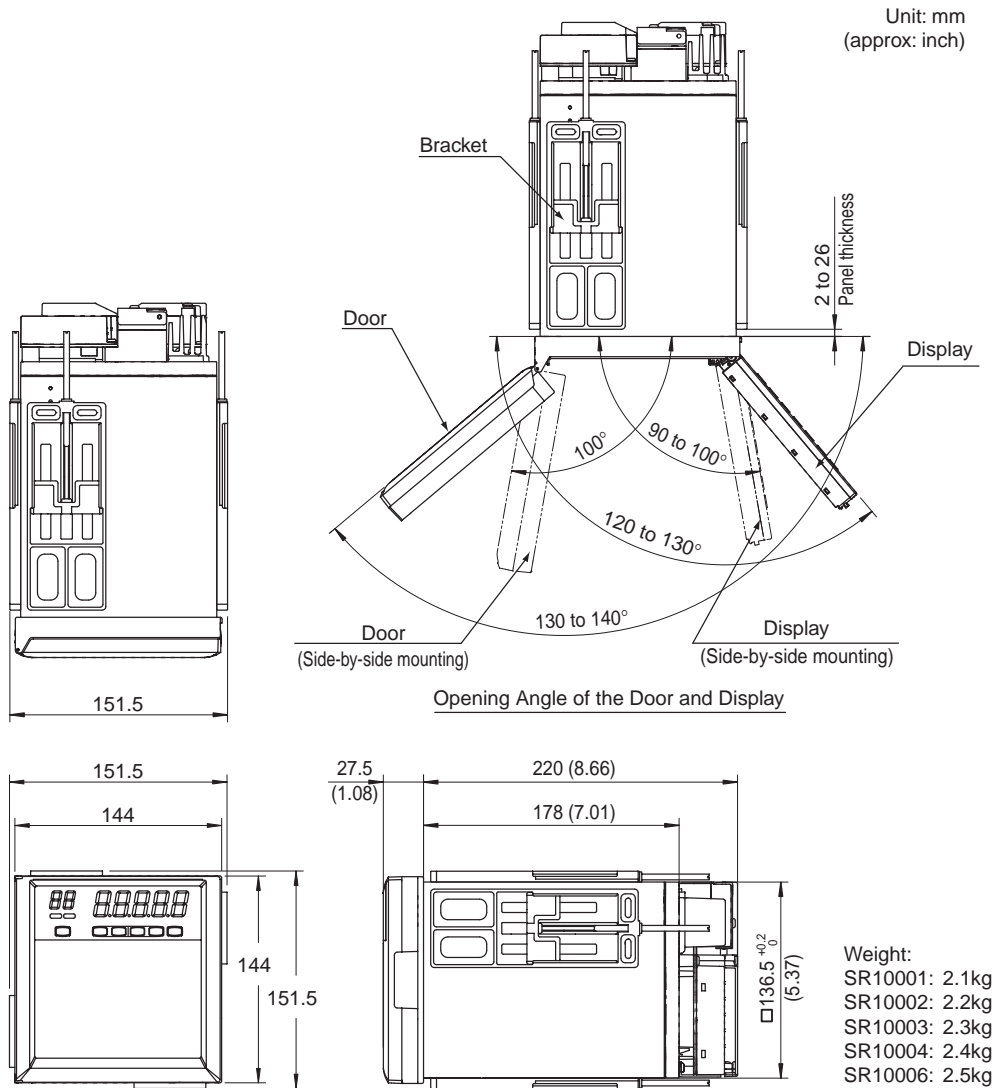
REAR TERMINAL ARRANGEMENTS



NOTE: Compatibility with Input Terminals and Option Terminals of Older Models

The input and option terminals of this instrument are specific to this instrument. Do not connect to the input terminals or option terminals of the SR1000, or other models as malfunction can result.

DIMENSION



Note: If not specified, the tolerance is ± 3%. However, in case of less than 10 mm the tolerance is ± 0.3 mm.

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