

# 1/2/3 Pen Printing Model Smart Recorder SRF101/102/103

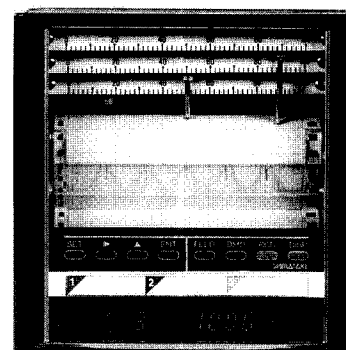
The Smart Recorder **SRF 101/102/103** Pen Printing Model accepts DC voltage, thermocouple and resistance temperature detector (RTD), communications and ON/OFF inputs. This 101/102/103-Pen Printing Model accommodates 100 mm wide charts.

Smart Recorder offers the dual features of functions and operator ease as a recorder for various equipment and instrumentation.

It also supports relay output, external switch inputs and communications as optional functions.

## FEATURES

- One of the following two groups can be specified each channel as input. Input types can be changed as desired within each group.
  - Thermocouple/DC voltage (mV, V) group
  - Resistance temperature detector (RTD)/DC voltage (mV, V) group
- Three recording formats are provided and can be freely selected:
  - Trend recording, trend + tabulation recording, trend + schedule demand recording
- Three measurement methods are provided and can be selected to each channel:
  - Measurement value (PV value), deviation value between channels, deviation value from fixed value
- Free power supply allows use anywhere:
  - 100 to 240V ac, 50/60 Hz
- Wide range of printing functions:
  - ① Printing at the following start conditions is possible:
    - Date - Time - Recording format
    - Chart feed speed - Recorder ID No.
  - ② Schedule printing
    - Marker, date, time, chart feed speed, engineering unit (6 characters per channel), recording scale and measurement value (PV value) are printed.
  - ③ Event occurrence, reset times and states are printed.
  - ④ Manual demand printing
    - Printing is started by DMD (demand) key or external switch input, time and measurement values (PV values) on each channel are printed.
  - ⑤ If the time (max. 4 times) is set when trend + schedule demand recording is selected as the recording format, that preset time and the measurement values (PV values) of each channel are automatically printed.
  - ⑥ Messages and times can be printed according to external switch input. (6 characters max. per message, max. 4 messages)



## ⑦ Printing OFF function

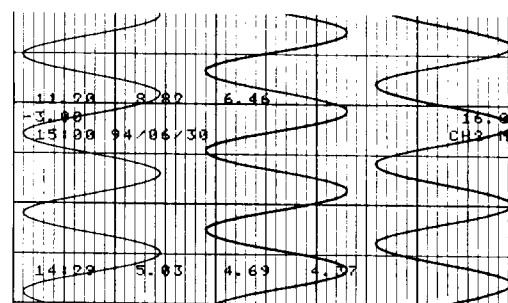
This function turns printing of date, time, scale and events OFF.

- Compensated pen phase synchronization is provided as standard. Two compensation types are available for you to choose from (compensation OFF can also be chosen).
  - Pen internal compensation and printing pen compensation (real time for printing pen)
    - Each pen records with a time delay that takes into account the mechanical gap with the printing pen.
  - Pen interval compensation and printing pen compensation (real time for trend pen and reference pen)
    - Each pen records ahead with the reference pen.
    - "Reference pen" refers to pen 1 type (No.1 pen), pen 2 type (No.2 pen) and pen 3 type (No.3 pen).
- Setup data is protected in EEPROM when the power is OFF.

## OPTIONAL FUNCTIONS

- Relay output (6 outputs; SPDT relay output)
- External switch inputs (4; Recording ON/OFF, Demand printing, Chart feed, Print messages. etc.)
- Communications (RS-485, RS-232C)

## Trend + tabulation recording:



## SPECIFICATIONS

Input	<b>Input type</b>	Thermocouple/DC Voltage Groups Thermocouple: R, S, B, K, E, J, T, Ni-Ni•Mo, WRe0-26, WRe5-26, PLII, N DC voltage: -14 to +14 mV, -25 to +25 mV, -70 to +70 mV, -5 to +5 V RTD/DC Voltage Groups RTD input: Pt 100 Ω, JPt 100 Ω DC voltage: -14 to +14 mV, -25 to +25 mV, -70 to +70 mV, -5 to +5 V (Note 2) See Table 1 (input type, range, indication accuracy) Note 1) In the case of DC current (4 to 20 mA), attach a converter resistor (sold separately, model No. 81446642-001 or 81401325), and convert to 1 to 5 V to input. Note 2) Externally attach one 1/1000 DC voltage divider input (sold separately, model No. 81446627-001) to each input that exceeds ±5 V for input. (max. input voltage: ±60 V)		
	<b>Number of input channels</b>	1, 2, 3 (according to model No.)		
	<b>Input measurement cycle</b>	Approx. 125 ms		
	<b>Input impedance</b>	DC voltage, thermocouple input: 8 MΩ min.		
	<b>Allowable wiring resistance</b>	DC voltage, thermocouple input (input signal source resistor): 1 kΩ max. RTD input (input wiring resistor): 10 Ω max. per line (However, resistance of three lines must be the same.)		
	<b>Burnout</b>	None		
	<b>Input bias current</b>	DC voltage, thermocouple input: ±100 nA max.		
	<b>Measuring current</b>	RTD input: Approx. 2 mA		
	<b>PV bias</b>	Can be set to each channel in range -19999 to 29999 (engineering unit including decimal point).		
	<b>Linear scaling</b>	Display and recording is possible at actual unit (engineering unit) at DC voltage input		
	<b>Measurement/calculation method</b>	• PV value • inter-channel deviation • deviation from fixed value		
	<b>Measurement range</b>	DC voltage input: Any measurement (upper/lower limit values) can be set for each of the measurement ranges.		
	<b>Engineering range</b>	DC voltage input: The engineering range (upper/lower limit value, decimal point position and unit) can be set within the range -19999 to 29999.		
	<b>Recording scale</b>	Any recording scale (including reverse scaling) can be set for each channel within the range -19999 to 29999.		
<b>Reference contact compensation</b>	Provided			
<b>Intrinsically safe system</b>	When an intrinsically safe system is required, connect a Zener barrier externally. If uneven resistance from the Zener barrier causes a temperature display error to occur, compensate for this by the PV bias. As the input wiring resistance exceeds 10 Ω, the accuracy compensation in Table 1 cannot be applied.			
Display	<b>Digital display</b>	<b>Display method</b>	Red and green 7-digit, 7-segment LED (5 digits are green LEDs for displaying measurement values.)	
		<b>Display cycle</b>	4s (channel refresh rate): 0.5s (data refresh rate)	
		<b>Display information</b>	• Measurement values (PV) • Channel No. • Alarm display • Date • Time • Chart feed speed • Other configuration data	
	<b>Lamp display</b>	<b>Display information</b>	• Lights during recording and occurrence of an event. • Lights and displays information in the configuration and operation modes.	
Recorder	<b>Recording method</b>	<b>Trend recording</b>	Continuous printing by cartridge (disposable type) pen	
		<b>Digital printing</b>	Dot printing by printing (disposable type) pen	
		<b>Pen balancing time</b>	2s (recording paper movement from 0 to 100%)	
		<b>Pen positions</b>	In order pen 1, pen 2, pen 3, printing pen from front (door side)	
		<b>Recording color</b>	Trend recording	Pen 1/red, pen 2/green, pen 3/blue
			Digital printing	Printing pen/purple
		<b>Character structure</b>	7 (V) x 5 (H) dot matrix	
		<b>Recording format</b>	• Trend recording • Trend+tabulation recording • Trend+schedule demand recording	
	<b>Character recording</b>	Recording at chart feed speed of 150 mm/h or less		
	<b>Chart</b>	<b>Shape</b>	Folding type	
		<b>Eff. recording width</b>	-0.5 to +100.5 mm of calibration position (0%)	
		<b>Total length</b>	16 m	
<b>Replacement warning mark</b>		Warning marks are output at 10 cm intervals from 60 cm from the end of the chart.		
<b>Chart feed method</b>		Stepping sprocket system		

<b>Recorder</b>	<b>Chart</b>	<b>Chart feed speed</b>	1 to 599 mm/h, 10 to 200 mm/min.	
		<b>Trend recording resolution</b>	0.05 mm	
		<b>Recording accuracy</b>	PV axis: Accuracy indicated in Table 1 + ( $\pm 0.5\%$ of recording full scale)	
			Time axis: $\pm 0.5$ mm/1 m	
[Reference] Chart shrinkage/elongation: When the ambient humidity has changed from 60% to 85%RH: → Chart stretches by approx. 0.7%FS. When the ambient humidity has changed from 60% to 45%RH: → Chart shrinks by approx. 0.2%FS.				
<b>Display/recording mode</b>	One of the following three modes can be selected and set for each channel: • Display/recording OFF • Display only • Display/recording ON			
<b>Recording format</b>	<b>Trend recording</b>	<b>Trend</b>	• PV value (analog)	
		<b>Scale printing</b>	• Marker/time/date/tag/scale unit Or, • Marker/time/chart feed speed/tag/scale unit	
		<b>Event</b>	• Channel No./time/event No./state (occurrence or reset) When a state occurs (is reset) before printing has finished, the next 48 items are memorized and printed.	
	<b>Trend+tabulation recording</b>	<b>Trend</b>	• PV value (analog)	
		<b>Scale printing</b>	• Marker/time/date/tag/scale unit Or, Marker/time/chart feed speed/tag/scale unit • Scale upper- and lower-limit values	
		<b>Tabulation</b>	• PV value (CH1, CH2, CH3 from left) Tabulation is carried out after printing of the scale. • Tabulation Cycle Once every 40 to 80 mm	
		<b>Event</b>	• Channel No./time/event No./state (occurrence or reset) When a state occurs (is reset) before printing has finished, the next 48 items are memorized and printed.	
	<b>Trend+schedule demand recording</b>	<b>Trend</b>	• PV value (analog)	
		<b>Scale printing</b>	• Marker/time/date/tag/scale unit Or, Marker/time/chart feed speed/tag/scale unit • Scale upper- and lower-limit values	
		<b>Schedule demand</b>	• Time/PV value (CH1, CH2, CH3 from left)	
		<b>Event</b>	• Channel No./time/date/event No./state (occurrence or reset) When a state occurs (is reset) before printing has finished, the next 48 items are memorized and printed.	
	<b>Event</b>	<b>Setting</b>	<b>Number of set events</b>	2 events can be set for each channel.
<b>Setting range</b>			-19999 to +29999	
<b>Differential</b>			0 to 29999	
<b>Action</b>		Event action is carried out even while recording has stopped (RCD OFF) except when the following event settings are OFF. • PV upper limit • PV lower limit • Absolute value deviation upper limit • Absolute value deviation lower limit • Rate-of-change upper limit • Rate-of-change lower limit		
<b>Action result</b>		<b>Recording</b>	• Channel No. • Event occurrence/reset time and state • Event level • Output relay No. (when even relay output is supported)	
		<b>Display</b>	• Event state and measurement value when an event occurs • Event occurrence/reset state on other channels	
		<b>Buffer</b>	• Up to 48 recording actions are memorized. (These are cleared when the power is turned OFF.)	
	<b>Relay output</b>	Optionally supportable as event output		
<b>Optional functions</b>	<b>External switch inputs (RSW)</b>	<b>Number of inputs</b>	4	
		<b>Functions</b>	• RSW1: Recording start (OPEN→CLOSE)/stop (CLOSE→OPEN) • RSW2: Print on demand (DMD) (OPEN→CLOSE) • RSW3: Chart feed (chart feed 40 mm every OPEN→CLOSE) • RSW4: Print message 1 (printing at OPEN→CLOSE) Above function assignments are fixed on body. However, the following functions can be freely assigned to each RSW (1 function per RSW) by the Smart Handy Loader in addition to the above functions. • Message 2 printed • Message 3 printed • Message 4 printed	
		<b>Contact hold time</b>	500 ms min.	
		<b>Switch type</b>	Dry contacts or open collector	
		<b>Open voltage</b>	Approx. 5 V	
		<b>Short-circuit current</b>	Approx. 1.6 mA	

Optional functions	External switch inputs (RSW)	Allowable open collector	ON residual voltage	3 V max. (under recommended operating conditions)		
			OFF leakage current	100 $\mu$ A max. (under recommended operating conditions)		
	Event output	Number of relay outputs		6		
		Output action		2 event actions (max. 6 actions) preset to each channel can be freely combined to select OR output.		
		Output type		Transfer contact (NC, NO contact).. Event relay excitation is normal operation.		
		Contact rating		100V ac, 0.2 A, 30V dc, 0.3 A (max. allowable contact voltage 125V ac, 110V dc) Min. load 10 mV, 10 $\mu$ A		
	Communications	Communications standard	Standard	RS-232C		RS-485
			Number of signal lines	3 (including SG)		5 (including SG)
			Transmission distance	15 m max.		300 m max.
		Protocol	Standard	Conforming to Yamatake Co. CP communications protocol		Conforming to Yamatake Co. CP communications protocol
			Network	1-1		Multi-drop (max. 31 nodes)
			Function	Slave instrument function		Slave instrument function
			Master instrument	Not specified		Not specified
Communications system			Synchronization	Start-stop synchronization		Start-stop synchronization
		Communications flow	Half duplex		Half duplex	
		Transmission speed	4800, 9600 bps		4800, 9600 bps	
		Data length	8 bits		8 bits	
		Parity	Even parity, no parity		Even parity, no parity	
		Stop bit	1 stop bit, 2 stop bits		1 stop bit, 2 stop bits	
General specifications	Memory protection	Setup data	EEPROM			
		Clock backup	Lithium cell (Battery life is about 10 years when unit is operated for 8 hours per day within temperature range of 0 to 40°C.)			
	Vibration resistance	0.1 m/s <sup>2</sup> max. (0 to 100 Hz)				
	Insulation resistance	Min. 20 M $\Omega$ across each terminal and GND terminal (by 500V dc megger)				
	Dielectric strength	Power supply and event output (leak current 5 mA max.):				
		Across power terminal and GND terminal:		1500V ac 50/60 Hz for 1 minute		
	Across event output and GND terminal:		1500V ac 50/60 Hz for 1 minute			
	Input (leak current 2 mA max.):					
	Across measurement input terminal and GND terminal:		1000V ac 50/60 Hz for 1 minute			
	Across measurement input terminals:		500V ac 50/60 Hz for 1 minute (excluding RTD input)			
	Across external contact input terminal and GND terminal:		500V ac 50/60 Hz for 1 minute			
	Across communications terminal and GND terminal:		500V ac 50/60 Hz for 1 minute			
	Induction resistance	Common mode rejection ratio:		130 dB (50/60 Hz $\pm$ 0.1 Hz, input impedance 500 $\Omega$ , across terminals and ground)		
		Normal mode rejection ratio:		50 dB (50/60 Hz $\pm$ 0.1 Hz)		
	Operating conditions	Ambient temperature	0 to 50°C			
		Ambient humidity	30 to 90%RH (condensation not allowed)			
	Transportation/storage conditions	Ambient temperature	-20 to +60°C			
Ambient humidity		5 to 95%RH (condensation not allowed)				
Shock resistance		294 m/s <sup>2</sup> max. (continuously for 11 ms max.)				
Vibration resistance		4.9 m/s <sup>2</sup> max.				
Rated power voltage	100 to 240V ac (50/60 Hz)					
Allowable voltage fluctuation	90 to 250V ac (50/60 Hz)					
Power consumption	Approx. 40 VA					
Material	Case	Steel plate				
	Door frame	Glass-fiber filled polycarbonate				
	Door window	Acryl				

General specifications	Color	Case	Gray (Munsell N7 or equivalent)				
		Door frame	Gray (DIC555 or equivalent)				
	Weight	W/out optional functions	Pen 1: 3.6 kg, Pen 2: 3.8 kg, Pen 3: 4.0 kg				
		W/ optional functions	Pen 1: 3.9 kg, Pen 2: 4.1 kg, Pen 3: 4.3 kg				
	Mounting	Panel mount					
Mounting angle	Bottom rear angle to 30° and top rear angle to 3° from horizontal position						
Standard accessories	Item Name	Part No.	Q'ty	Consumable parts (ordered separately)	Item Name	Part No.	Q'ty
	Folding chart	—	1		Folding chart	81406088-001	10
	Cartridge pen	—	Pens 1, 2, 3 according to model No.		Replacement pen 1	81446293-001	3
					Replacement pen 2	81446294-001	3
				Replacement pen 3	81446295-001	3	
	Printing pen	—	1	Printing pen	81446296-001	3	
	Mounting bracket	—	1 set	Auxiliary parts (ordered separately)	250 Ω conversion resistor (accuracy ±0.02%)	81401325	1
	Tag No. plate	—	1		250 Ω conversion resistor (accuracy ±0.05%)	81446642-001	2
	Terminal screw (spare)	—	5		RS-232C cross cable (8 m)	CBL-RS232Z08	1
	Lubricating oil	—	1		—	—	—
User's Manual	CP-UM-1667E	1					

● Table 1 Input Types, Ranges and Display Accuracy

Input			Range		Display accuracy	Resolution
Type	Symbol	Code	mV/V input	mV/V indication range		
DC voltage	mV	100	-14.00 to +14.00 mV	-19999 to +29999	± (0.2% of FS+1 digit)	10 μV
		101	-25.00 to +25.00 mV	-19999 to +29999	± (0.2% of FS+1 digit)	10 μV
		102	-70.00 to +70.00 mV	-19999 to +29999	± (0.2% of FS+1 digit)	10 μV
	V	105	-5.000 to +5.000 V	-19999 to +29999	± (0.2% of FS+1 digit)	1 mV
Type	Symbol	Code	°C Range	Display accuracy		Resolution
Thermocouple (Indication accuracy does not include reference contact compensation accuracy.)	R	200	0.0 to 1760.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
	S	210				
	B	220	0.0 to 1820.0°C	Less than 400°C ±50°C ± (0.3% of FS+1 digit) or 0.1°C whichever is larger		Not specified 0.1°C
	K	230	-200.0 to +1370.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
		231	-200.0 to +600.0°C			
	E	232	-200.0 to +300.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
		240	-200.0 to +900.0°C			
	J	241	-200.0 to +350.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
		250	-200.0 to +1100.0°C			
	T	251	-200.0 to +450.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
		260	-200.0 to +400.0°C			
	N	261	-200.0 to +250.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
		270	0.0 to 1300.0°C			
		271	0.0 to 700.0°C			
	WRe0-26	280	0.0 to 2320.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
	WRe5-26	290	0.0 to 2320.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
PLII	310	-100.0 to +1390.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C	
	311	-100.0 to +600.0°C				
Ni-Ni•Mo	312	-100.0 to +300.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C	
	320	0.0 to 1310.0°C				
Resistance temperature detector (RTD)	Pt100Ω	401	-200.0 to +300.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
		402	-140.0 to +150.0°C			
		403	-100.0 to +100.0°C			
	JPt100Ω	411	-200.0 to +300.0°C	± (0.3% of FS+1 digit) or 0.1°C whichever is larger		0.1°C
		412	-140.0 to +150.0°C			
		413	-100.0 to +100.0°C			

Reference contact compensation accuracy (at 0°C input);

- Type: K, E, J, T, PL-II, N: ±0.5°C/±1°F
- Type: R, S, B, WRe0-26, WRe5-26, Ni-Ni•Mo: ±1°C/±2°F

Table 1 (continued)

Type	Symbol	Code	°F Range	Display accuracy	Resolution
<b>Thermocouple</b> <b>(Indication accuracy does not include reference contact compensation accuracy.)</b>	R	500	32 to 3200°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
	S	510			
	B	520	32 to 3308°F	Less than 752°F ±90°C ± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
	K	530	-328 to +2498°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
		531	-328 to +1112°F		
		532	-328 to +572°F		
	E	540	-328 to +1652°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
		541	-328 to +662°F		
	J	550	-328 to +2012°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
		551	-328 to +842°F		
	T	560	-328 to +752°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
		561	-328 to +482°F		
	N	570	32 to 2372°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
		571	32 to 1292°F		
		572	32 to 662°F		
	WRe0-26	580	32 to 4208°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
WRe5-26	590	32 to 4208°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F	
PLII	610	-148 to +2534°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F	
	611	-148 to +1112°F			
	612	-148 to +572°F			
Ni-Ni•Mo	620	32 to 2390°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F	
<b>Resistance temperature detector (RTD)</b>	Pt100Ω	701	-328.0 to +572.0°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
		702	-220.0 to +302.0°F		
		703	-148.0 to +212.0°F		
	JPt100Ω	711	-328.0 to +572.0°F	± (0.3% of FS+1 digit) or 1°F whichever is larger	1°F
		712	-220.0 to +302.0°F		
		713	-148.0 to +212.0°F		

Reference contact compensation accuracy (at 0°C input);

- Type: K, E, J, T, PL-II, N: ±0.5°C/±1°F
- Type: R, S, B, WRe0-26, WRe5-26, Ni-Ni•Mo: ±1°C/±2°F

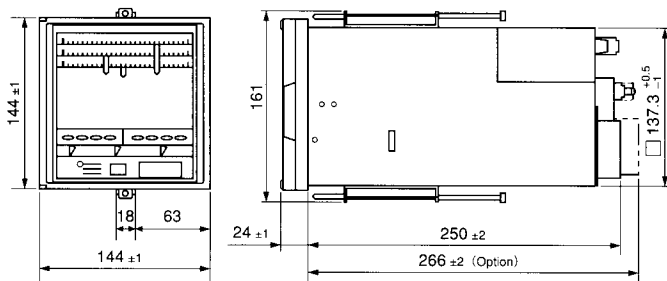
● MODEL SELECTION GUIDE I II III IV V VI VII VIII

Example: SRF102AA11000

I	II	III	IV	V	VI	VII	VIII	Description							
Basic Model No.	Power	Input	Option 1	Option 2	Option 3	Addition 1	Addition 2								
SRF101												100 mm Pen 1 recorder			
SRF102												100 mm Pen 2 recorder			
SRF103												100 mm Pen 3 recorder			
	A											100 to 240V ac			
												Model No.	Pen 1	Pen 2	Pen 3
	A											SRF101	T/C•voltage	—	—
												SRF102	T/C•voltage	T/C•voltage	—
												SRF103	T/C•voltage	T/C•voltage	T/C•voltage
	B											SRF101	RTD•voltage	—	—
												SRF102	RTD•voltage	RTD•voltage	—
												SRF103	RTD•voltage	RTD•voltage	RTD•voltage
	C											SRF102	T/C•voltage	RTD•voltage	—
												SRF103	T/C•voltage	RTD•voltage	RTD•voltage
	D											SRF102	RTD•voltage	T/C•voltage	—
												SRF103	RTD•voltage	T/C•voltage	T/C•voltage
	E											SRF103	T/C•voltage	T/C•voltage	RTD•voltage
	F											SRF103	RTD•voltage	RTD•voltage	T/C•voltage
			0									None			
			1									Relay outputs (6)			
			2									Relay outputs (6) + external switch (4)			
				0								None			
				1								RS-485			
				2								RS-232C			
					0							None			
						0						None			
							0					None			
								D				Inspection certificate provided			
								T				Tropical treatment			
								B				Tropical treatment + Inspection certificate provided			
									0			None			

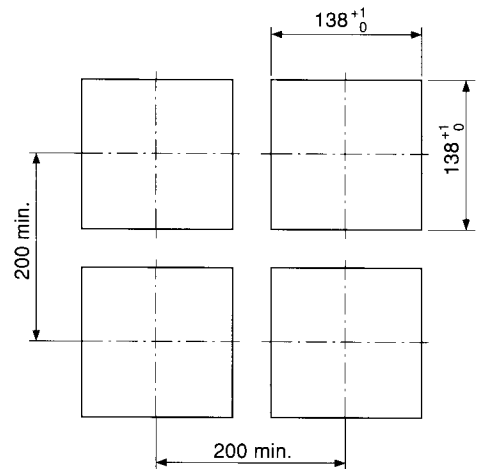
\* Conventions Used for Indicating Input Type  
 T/C•voltage Thermocouple/DC voltage group  
 RTD•voltage Resistance temperature detector/  
 DC voltage group

EXTERNAL DIMENSIONS

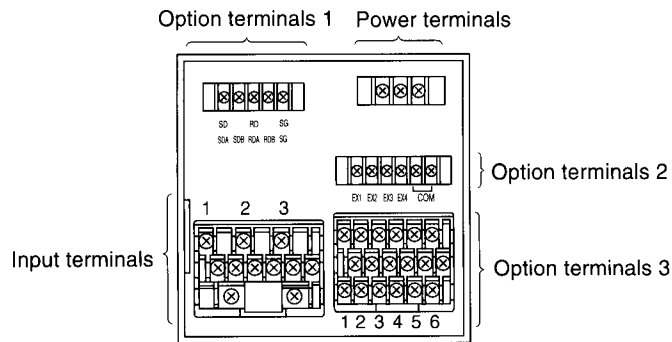


PANEL CUTOUT

(Unit: mm)



# WIRING



<p style="text-align: center;">Power terminals</p> <p>Power supply for instrument 100 to 240V ac 50/60 Hz</p> <p style="text-align: center;">(compatible crimped terminal: M4)</p>	<p style="text-align: center;">Input terminals</p> <p>1 2 3</p> <p>T/C • mV (+) or RTD (A) — T/C • mV (-) or RTD (B) — RTD (B) —</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>DC voltage</td> <td>Thermocouple</td> <td>Resistance temperature detector</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>mV, V</td> <td></td> <td>A B C</td> </tr> </table> <p style="text-align: center;">(compatible crimped terminal: M3.5)</p>	DC voltage	Thermocouple	Resistance temperature detector				mV, V		A B C	<p style="text-align: center;">Option terminals 1 (communications)</p> <p style="text-align: center;">RS-485</p> <p style="text-align: center;">RS-232C</p> <p style="text-align: center;">(compatible crimped terminal: M3)</p>
DC voltage	Thermocouple	Resistance temperature detector									
mV, V		A B C									
<p style="text-align: center;">Option terminals 2 (External switch inputs)</p> <p>External switch input No.1 External switch input No.2 Common Common External switch input No.4 External switch input No.3</p> <p style="text-align: center;">(compatible crimped terminal: M3)</p>	<p style="text-align: center;">Option terminals 3 (relay output)</p> <p>NO C NC</p> <p>1 2 3 4 5 6</p> <p style="text-align: center;">(compatible crimped terminal: M3.5)</p>										

Specifications are subject to change without notice.

**YAMATAKE**

**Savemation**

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