

Temperature Limit Controller SA100L



Specifications

Input

Input

- a) Thermocouple : K, J, R, S, B, E, T, N (JIS/IEC), PLII (NBS) W5Re/W26Re (ASTM), U, L (DIN)
- Influence of external resistance : Approx. 0.2 μ V/ Ω
 - Input break action : Up-scale
- b) RTD : Pt100 (JIS/IEC), JPt100 (JIS)
- Influence of input lead resistance : Approx. 0.01[%/ Ω] of reading
 - Maximum 10 Ω per wire
 - Input break action : Up-scale
- c) DC voltage : 0 to 5V, 1 to 5V, 0 to 10V (0.0 to 100.0% Default value)
- DC voltage input can be used for the input of 0 to 20mA (in case of 0 to 5V) and 4 to 20mA (1 to 5V) by attaching 250 Ω shunt resistor (sold separately) to input terminal.
 - Refer to the Input and Range Code Table for details.
 - Input break action : Down-scale

Sampling Time

0.5 sec

Input digital filter

0 to 100 sec (OFF when 0 is set.)

PV Bias

- span to +span

PV Ratio

0.500 to 1.500

Performance

Measuring Accuracy

- a) Thermocouple
- \pm (1% of reading + 1 digit) or \pm 2 $^{\circ}$ C (4 $^{\circ}$ F) whichever is larger
 - Accuracy is not guaranteed between 0 and 399 $^{\circ}$ C (0 and 799 $^{\circ}$ F) for type R, S and B.
 - Accuracy is not guaranteed less than -100.0 $^{\circ}$ C (-158.0 $^{\circ}$ F) for type T and U.
- b) RTD
- \pm (0.3% of reading + 1 digit) or \pm 0.8 $^{\circ}$ C (1.6 $^{\circ}$ F) whichever is larger
- c) DC voltage and DC current
- \pm (0.3% of span + 1 digit)

Insulation Resistance

More than 20M Ω (500V DC) between measured terminals and ground
More than 20M Ω (500V DC) between power terminals and ground

Dielectric Strength

1000V AC for one minute between measured terminals and ground
1500V AC for one minute between power terminals and ground

Action

Limit Action

- High limit control
- De-energized or energized output can be selected
 - Low limit control is available.
 - The control output contact goes OPEN (CLOSED when set to energized) when measured value exceeds the set value, and it is retained until reset operation is executed. The reset can be made by front key operation, communication, or digital input.
 - The state of control output contact when power-up can be configured. The output contact is OPEN when power-up for standard de-energized type.

Limit Action Output

Relay contact output, Form A contact, 250V AC, 3A (resistive load)

- Electrical life: 300,000 times or more (rated load)

Other Standard Functions

Hold Function

- Memorizes the maximum value and the minimum value.
- Hold value can be reset by front key operation, communication, or digital input.
 - Hold value is reset when the controller is turned off.

Integrated Time Measuring

Counts up the time during the measured value exceeds the set value (High limit or Low limit).

- Integrated time can be reset by front key operation, communication, or digital input.
- Integrated time is reset when the controller is turned off.

Display :

Less than 100 min : 0 min 00 sec (0.00) to 99 min 59 sec (99.59)
100 min or more : 100 min 0_ sec (100.0) to 999 min 5_ sec (999.5_)
More than 1000 min : "----" display

Optional Functions

Output

- Can be set for limit control, alarm or retransmission function.
- Output can be set for energized/de-energized action.
 - Output can be set for AND/OR logic calculation.
- Number of outputs : 2 points

Output Type

- a) Relay contact output, 240V AC 3A (Resistive load) Form C contact
b) Current output : 0 to 20mA DC (Load resistance : less than 400 Ω)
4 to 20mA DC (Load resistance : less than 400 Ω)
- Measurement terminals and output terminals are not isolated.

Optional Functions

Temperature Alarms

- a) Number of points : 2 points
Deviation High, Deviation Low, Deviation High/Low, Band, Process High, Process Low
Set value high, Set value low
(Hold action is available)
- c) Differential gap : 0 to span (Less than 9999 digit)
- d) Other function : Selection of action for input abnormality.
Alarm timer function, Interlock function.

Communications

- a) Communication method : RS-485 (2-wire)
c) Protocol : ANSI X3.28 (1976) 2.5 A4, MODBUS
b) Communication speed : 1200, 2400, 4800, 9600, 19200 BPS
c) Bit format
- | | |
|--------------|--------------------------------|
| Start bit : | 1 |
| Data bit : | 7 or 8 • For MODBUS 8 bit only |
| Parity bit : | Without, Odd, or Even |
| Stop bit : | 1 or 2 |
- d) Maximum connection : 31 (Address can be set from 1 to 99.)

Contact Input

- a) Number of points : 2 point
b) Input method : Non-voltage contact input
- Resistance at OPEN : 500K Ω or more
 - Resistance at CLOSE : 10 Ω or less
- c) Function :
- DI1: Limit Output Reset Function
DI2: Interlock Reset Function

Retransmission

Retransmission output is allocated to OUT1.

a) Type : Process value, Set value, Deviation, Manipulated value

Waterproof/Dustproof

IP66

- Dustproof and waterproof protection are effective only from the front direction when installed on a panel.

General specifications

Supply Voltage

- a) 85 to 264V AC (Including supply voltage variation)
[Rating : 100 to 240V AC] (50/60Hz common)
- b) 21.6 to 26.4V AC (Including supply voltage variation)
[Rating : 24V AC] (50/60Hz common)
- c) 21.6 to 26.4V DC (Ripple rate 10% p-p or less) [Rating : 24V DC]

Power Consumption

Less than 7VA for standard AC type
Less than 4VA for 24V AC type
Less than 100mA for 24V DC type

Power Failure Effect

Not affected by power failure shorter than 20msec, otherwise reset to the initial state.

Operating Environments : 0 to 50 $^{\circ}$ C [32 to 122 $^{\circ}$ F] , 45 to 85% RH

Memory Backup : Backed up by non-volatile memory.
Number of writing : Approx. 100,000 times
Data retaining period : Approx. 10 years

Net Weight

Approx. 120g

External Dimensions (W x H x D)

48 x 48 x 70mm

Compliance with Standards

- CE Mark
- UL/cUL Recognized
- FM Approved



Temperature Limit Controller SA100L

Model and Suffix Code

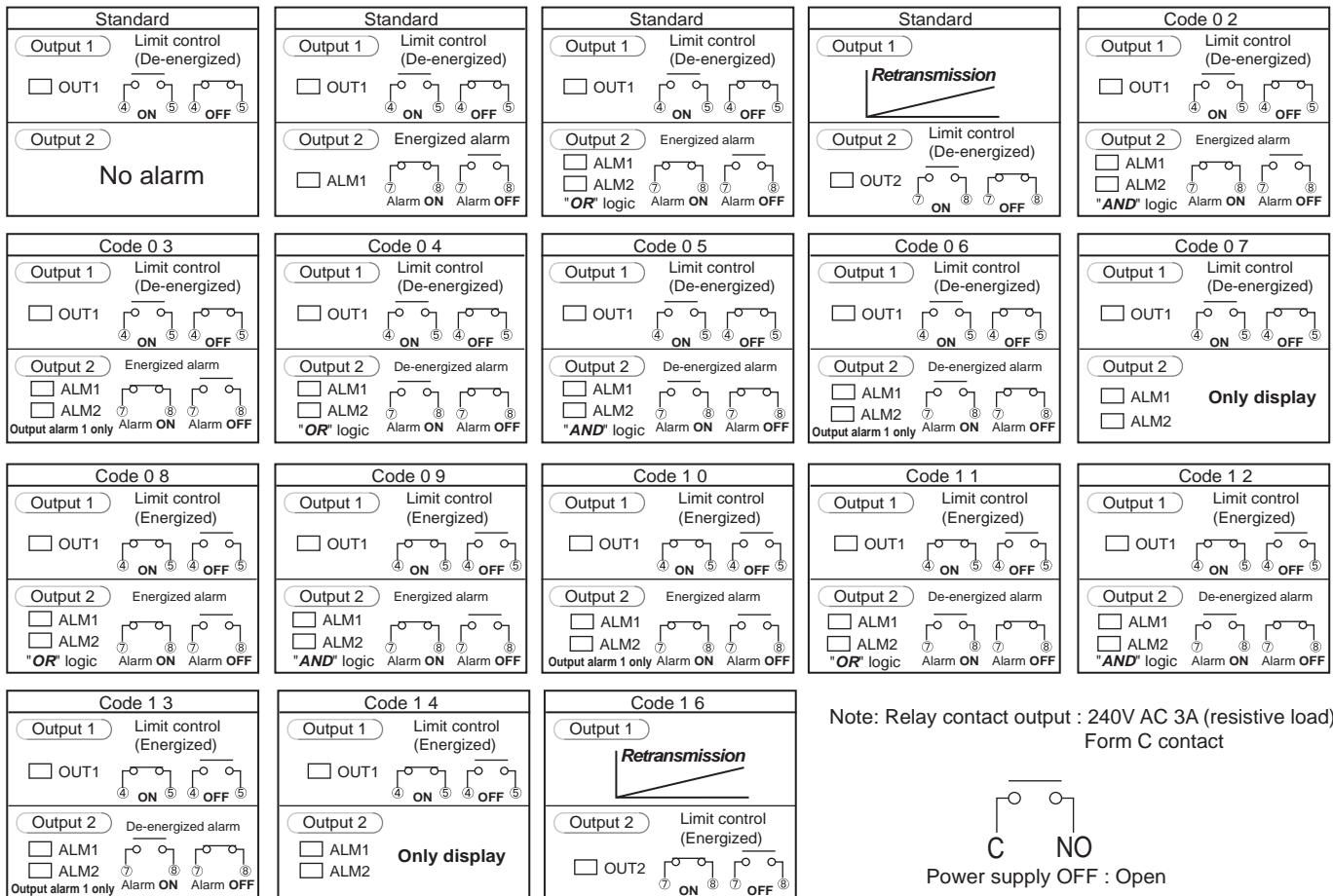
Alarm Code Table

A	Deviation High	B	Deviation Low	C	Deviation High/Low	D	Deviation Band
E	Deviation High with Hold	F	Deviation Low with Hold	G	Deviation High/Low with Hold	H	Process High
J	Process Low	K	Process High with Hold	L	Process Low with Hold	V	Set value High
		W	Set value Low				

Output Allocation Code Table

Code	Specifications		
	Control methods	Output 1	Output 2
0 2	Limit control + Alarm 1, 2	Limit Control output (De-energized)	AND logic output of Alarm 1 and Alarm 2 (Energized)
0 3	Limit control + Alarm 1, 2	Limit Control output (De-energized)	Alarm 1 output (Energized)
0 4	Limit control + Alarm 1, 2 or only Alarm 1	Limit Control output (De-energized)	OR logic output of Alarm 1 and Alarm 2 (De-energized)
0 5	Limit control + Alarm 1, 2	Limit Control output (De-energized)	AND logic output of Alarm 1 and Alarm 2 (De-energized)
0 6	Limit control + Alarm 1, 2	Limit Control output (De-energized)	Alarm 1 output (De-energized)
0 7	Limit control + Alarm 1, 2 or only Alarm 1	Limit Control output (De-energized)	No output
0 8	Limit control + Alarm 1, 2 or only Alarm 1	Limit Control output (Energized)	OR logic output of Alarm 1 and Alarm 2 (Energized)
0 9	Limit control + Alarm 1, 2	Limit Control output (Energized)	AND logic output of Alarm 1 and Alarm 2 (Energized)
1 0	Limit control + Alarm 1, 2	Limit Control output (Energized)	Alarm 1 output (Energized)
1 1	Limit control + Alarm 1, 2 or only Alarm 1	Limit Control output (Energized)	OR logic output of Alarm 1 and Alarm 2 (De-energized)
1 2	Limit control + Alarm 1, 2	Limit Control output (Energized)	AND logic output of Alarm 1 and Alarm 2 (De-energized)
1 3	Limit control + Alarm 1, 2	Limit Control output (Energized)	Alarm 1 output (De-energized)
1 4	Limit control + Alarm 1, 2 or only Alarm 1	Limit Control output (Energized)	No output
1 6	Retransmission + Limit control	Retransmission output	Limit Control output (Energized)

¹ The alarm monitor can only be confirmed by front LCD display or serial communication.

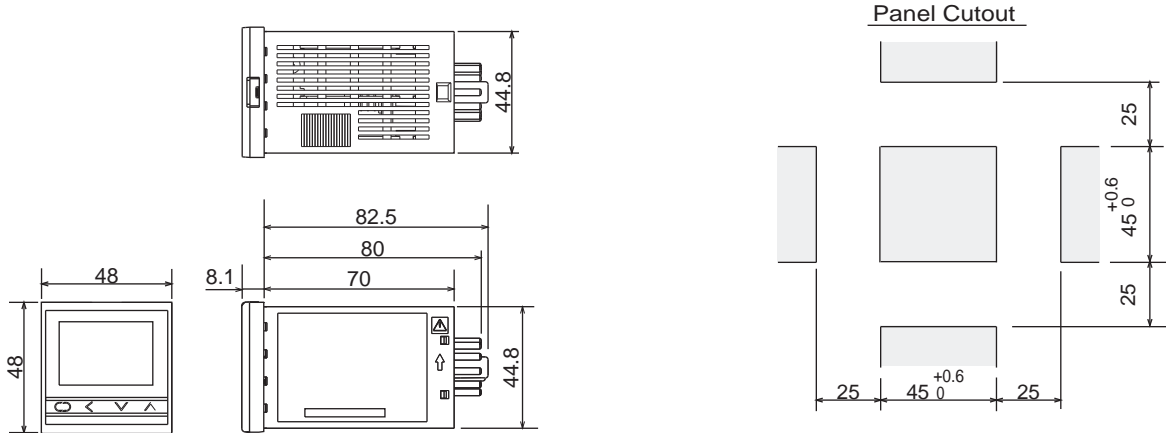


Accessories

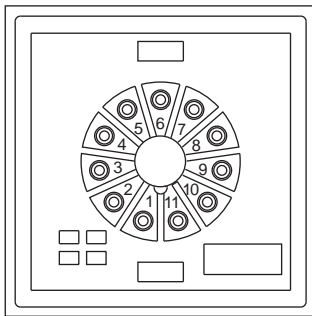
Name	Model code
Shunt resistor for DC current input	KD100-55
Terminal cover	KSA200-56A

External Dimensions and Rear Layout

Units : mm

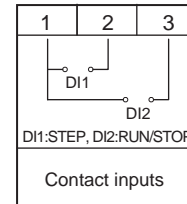
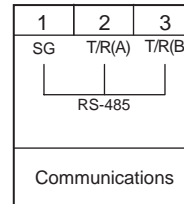


- Panel thickness must be between 1-10mm.
- Mounting frame is optional.



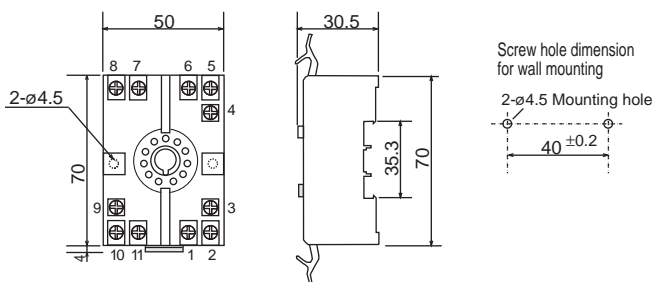
PIN	1	2	3	4	5	6	7	8	9	10	11
Contents											
	① Thermocouple ② RTD ③ Voltage			① Relay contact ② Current			Relay contact			100 to 240V AC 24V AC/DC	
	Measured input			Output 1			Output 2			Power supply	

Communication function and contact input are optional.
 Connect connector to bottom of instrument.
 A connector and connector cable for connecting the input block is necessary to be prepared by the customer.
 Housing: XHP-3 (J.S.T. Mfg. Co., Ltd. product)
 Recommended cable size: AWG30 to 22
 Optional cable with connector is sold separately.
 1. With terminating resistor and no connector on open end. (Length : 1m)
 Model : W-BO-01-1000
 2. Without terminating resistor and no connector on open end. (Length :1m)
 (Can be used for contact input.) Model : W-BO-02-1000



• Socket (Optional) External Dimensions

DIN rail mounting socket type
 Model : ATC180041 (Matsushita Denko product)



Rear terminal socket type
 Model : AT78051 (Matsushita Denko product)

