Shimaden, Temperature and Humidity Control Specialists

°C
%RH
SHIMADEN

Series **SR90**

SHIMADEN DIGITAL CONTROLLER

C€ c**ʀɴ**®US

BASIC FEATURES

☐ *Multi-input and multi-range performance*

☐ *Large 20mm bright display (SR93)*

☐ *Readable from a distance and in a low light area*

☐ *2-output heating and cooling control available*

☐ *RS232C or RS485 Interface available*

☐ *Dust and splash proof front panel equivalent to IP66*

☐ *A wide selection of additional functions (optional) is available to suit various needs.*

■ Display

● Digital display: Measured value (PV)/7 segments red LED 4 digits
Target set value (SV)/7 segments green LED 4 digits

● Display accuracy: ±(0.3%FS + 1 digit)
Excluding reference contact temperature compensation accuracy of thermocouple input.
Accuracy of readings lower than −100˚C of thermocouples K, T, U inputs is ±0.7%FS.
Accuracy guarantee not applicable to 400˚C (752˚F) and below of B thermocouple.

● Display accuracy maintaining range:
23˚C ± 5˚C (18~28˚C)

● Display resolution: Depends on measuring range (0.001, 0.01, 0.1 and 1)

● Measured value display range: −10%~110% of measuring range

● Display updating cycle: 0.25 seconds

● Action display/color: 7 type, LED lamp display
Control output (OUT1, OUT2)/Green
Event (EV1, EV2)/Orange
Auto tuning/Green
Manual control output (MAN)/Green
Set value bias, communication (SB/COM)/Green

■ Setting

● Setting method: By operating 4 keys (◎ , ▼ , ▲ and (ENT)) on the front panel

● Target value setting range: Same as measuring range (within setting limiter)

● Setting limiter: Individual setting for higher and lower limits, any value is selectable within measuring range (Lower limit value<Higher limit value)

■ Input

● Type of input: Selectable from multiple (TC, Pt, mV), voltage (V) and current (mA)

● Thermocouple: B, R, S, K, E, J, T, N, PL II, Wre5-26 {U, L (DIN 43710)}
Input impedance: 500kΩ minimum
External resistance tolerance: 100Ω maximum
Burnout function: Standard feature (up scale)
Reference junction compensation accuracy:
± 1˚C (within the accuracy maintaining range (23 ± 5˚C))
± 2˚C (between 5 and 45˚C of ambient temperature)

● R.T.D.: Pt100/JPt100, 3-wire type
Normal current: 0.25 mA
Lead wire tolerance: 5Ω maximum/wire (3 lead wires should have the same resistance.)

● Voltage mV: −10~10, 0~10, 0~20, 0~50, 10~50, 0~100mv DC
V: −1~1, 0~1, 0~2, 0~5, 1~5, 0~10V
Input impedance: 500kΩ minimum

● Current mA: 0~20, 4~20mA DC
Receiving impedance: 250Ω

● Input scaling function: Scaling possible for voltage (mV, V) or current (mA) input
Scaling range: −1999~9999 counts
Span: 10~5000 counts
Position of decimal point: None, 1, 2 and 3 digits on the right of decimal point

● Sampling cycle: 0.25 seconds

● PV bias: −1999~2000 units

● PV filter: 0~100 seconds

● Isolation: Control input not insulated from system, set value bias, and CT input but insulated from others

■ Control

● Control mode
With 1 output: Expert PID control with auto tuning function
RA (reverse action characteristic): Heating action
DA (direct action characteristic): Cooling action
With 2 outputs: Expert PID control with auto tuning function + PID control
PID (output 1) + PID (output 2)

RA (reverse action characteristic): Heating action (OUT1) and cooling action (OUT2)
DA (direct characteristic): 2-stage heating action

● Type of control/rating: Contact/1a 240V AC 2A (resistive load) 1.2A (inductive load)
(Common to Output 1 and 2): SSR drive voltage/12V±1.5V DC (Maximum load current 30mA)
Current/4~20mA DC (Maximum load resistance 600Ω)
Voltage/0~10V DC (Maximum load current 2mA)

● Control output resolution: Control output 1: approx. 0.0125% (1/8000)
Control output 2: approx. 0.5% (1/200)

● Control output 1
Proportional band (P): OFF, 0.1~999.9% (ON-OFF action by OFF)
Integral time (I): OFF, 1~6000 seconds (P or PD action by OFF)
Derivative time (D): OFF, 1~3600 seconds (P or PI action by OFF)
Set value function: OFF, 0.01~1.00
ON-OFF hysteresis: 1~999 units (Effective when P=OFF)
Manual reset: −50.0~50.0% (Effective when I=OFF)
Higher/lower limit output limiter: Lower limit 0.0~99.9%, higher limit 0.1~100.0% (Lower limit value < Higher limit value)
Proportional cycle: 1~120 seconds (for contact and SSR drive voltage output)

● Control output 2 (option)
Proportional band (P): OFF, 0.1~999.9% (ON-OFF action by OFF)
Integral time (I): OFF, 1~6000 seconds (P or PD action by OFF)
Derivative time (D): OFF, 1~3600 seconds (P or PI action by OFF)
Set value function: OFF, 0.01~1.00
ON-OFF hysteresis: 1~999 units (Effective when P=OFF)
Dead band: −1999~5000 units (Overlap with a negative value)
Higher/lower limit output limiter: Lower limit 0.0~99.9%, higher limit 0.1~100.0% (Lower limit value < Higher limit value)
Proportional cycle: 1~120 seconds (for contact and SSR drive voltage output)

● Manual control
Output setting range: 0.0~100.0%
Setting resolution: 0.1%
Manual ↔ auto switching: Balanceless bumpless (within proportional range)

● Soft start: OFF, 1~100 seconds

● AT point: SV value in execution

● Control output characteristic: RA (reverse action characteristic)/DA (direct action characteristic) switching by front key or communication
With 2 outputs: RA (heating/cooling)/DA (2 stage heating)

● Isolation: Contact output isolated from all.
Analog output not insulated from SSR drive voltage, current and voltage but insulated from others. (In case another output is also SSR drive voltage, current or voltage, two outputs are not insulated from each other.)

■ Event output (option)

● Number of event points: 2 points of EV1 and EV2

● Types: Selectable from the following 9 types for EV1 and EV2:
`oFF` No selection
`Hd` H igher limit deviation
`Ld` Lower limit deviation
`od` Outside higher/lower limit deviations
`⊏d` W ithin higher/lower limit deviations
`HA` H igher limit absolute value
`LA` Lower limit absolute value
`So` Scaleover
`Hb` Heater break/loop alarm

● Event setting range: Absolute values (both higher limit and lower limit): Within measuring range
Deviations (both higher limit and lower limit): −1999~2000 units
Higher/lower limit deviations (within/outside): 0~2000 units

- Event action: ON-OFF action
- Hysteresis: 1~999 units
- Standby action: Selectable from the following 4 types
  EV1 and EV2: 1 Without standby action.
  2 Standby when power is applied.
  3 Standby when power is applied and when SV value in execution is changed.
  4 Control mode without standby action (No alarm is output at the time of abnormal input).
- Output type/rating: Contact (1a × 2 points common)/240V AC 1A (resistive load)
- Output updating cycle: 0.25 seconds

■ **Heater break/heater loop alarm (option)**
Break/loop detection only for OUT1 (Selectable when output type is contact or SSR drive voltage)

- Current capacity: 30A, 50A to be designated when CT is ordered.
- Alarm action: Heater current is detected by external CT provided as an accessory.
  When heater break is detected while control output is ON=Alarm output ON
  When heater loop alarm is detected while control output is OFF=Alarm output ON
- Current setting range: OFF, 0.1~50.0A (Alarm action is stopped by setting OFF)
- Setting resolution: 0.1A
- Current display range: 0.0~55.0A
- Display accuracy: ±2.0A (Sine wave at 50Hz)
- Minimum time to identify action: 0.25 seconds (every 0.5 seconds) common to ON and OFF
- Alarm retention mode: Selectable from lock (to retain) and real (not to retain).
- Standby action: Selectable from without (OFF) and with (ON).
- Sampling cycle: 0.5 seconds
- Isolation: CT input not insulated from system and other inputs but insulated from the others.

■ **Set value bias (option)**
- Setting range: −1999~5000 units
- Action input: Non-voltage contact or open collector (level action) about 5V DC, 1mA maximum
- Minimum level retention time: 0.15 seconds
- Isolation: Action input not insulated from system and other inputs but insulated from others

■ **Communication function (option)**
- Type of communication: RS-232C, RS-485
- Communication system: RS-232C 3-line type half duplex system
  RS-485   2-line type half duplex system
  {RS-485 is of half-duplex multi-drop (bus) system}
- Synchronization system: Start-stop synchronization system
- Communication distance: RS-232C The longest: 15 m
  RS-485   The longest 500 m (depending on conditions)
- Communication speed: 1200, 2400, 4800, 9600, 19200 bps
- Data format: 7 bits, even parity, 1 stop bit or
  8 bits, non-parity, 1 stop bit
- Communication address: 1~255
- Communication memory mode: EEP/RAM/r_E
- Communication BCC: Add/Add two's cmp/XOR/None
- Communication delay time: 1~100 (× 0.512 msec)
- Communication code: ASCII code
- Communication protocol: Shimaden's standard protocol
- Number of connectable instruments:
  RS-232   1
  RS-485 up to 31
- Isolation: Communication signals insulated from system, each input and each output.

■ **Analog output (option)**
- Number of output points: 1 point
- Type of analog output: Selectable from measured value, target value (SV in execution), control output 1 and control output 2.
- Output signal/rating: 4~20mA DC/Maximum load resistance 300Ω
  0~10V DC/Maximum load current 2mA
  0~10mV DC/Output resistance 10Ω
- Output scaling: Measured value, target value: Within measuring range (inversed scaling possible)
  Control output 1 and 2 0.0~100.0% (inversed scaling possible)
- Output accuracy: ±0.3% FS (with respect to displayed value)
- Output resolution: Approx. 0.01% (1/10000)
- Output updating cycle: 0.25 seconds
- Isolation: Analog output insulated from system and inputs but not insulated from control output except contact output.

■ **General specifications**
- Data storage: Non-volatile memory (EEPROM)
- Environmental conditions for instrument operation:
  Temperature: −10~50°C
  Humidity: 90% RH or less (no dew condensation)
  Height: 2000m from the sea level or lower
  Category: II
  Degree of pollution: 2
- Storage temperature: −20~65°C
- Supply voltage: Either 100-240V AC±10% 50/60Hz or 24V AC/DC±10% to be designated.
- Power consumption: SR91: 100-240VAC 11VA maximum for AC; 6W for DC 24V; 7VA for AC 24V
  SR92, SR93 and SR94: 100-240VAC 15VA maximum for AC; 8W for DC 24V; 9VA for AC 24V
- Input/noise removal ratio: 50 dB or higher in normal mode (50/60 Hz)
  130 dB or higher in common mode (50/60 Hz)
- Applicable standards: Safety: IEC1010 and EN61010-1
  EMC: EN61326
- Insulation resistance: Between input/output terminals and power terminal 500V DC 20MΩ or above;
  Between input/output terminals and protective conductor terminal 500V DC 20MΩ or above
- Dielectric strength: Between input/output terminals and power terminal 2300V AC/minute; Between power terminal and protective conductor terminal 1500V AC/minute
- Protective structure: Only front panel has dust-proof and drip-proof structure equivalent to IP66.
- Material of case: PPO resin molding (equivalent to UL94V-1)
- External dimensions:
  SR91: H48 × W48 × D111 (Panel depth: 100) mm
  SR92: H72 × W72 × D111 (Panel depth: 100) mm
  SR93: H96 × W96 × D111 (Panel depth: 100) mm
  SR94: H96 × W48 × D111 (Panel depth: 100) mm
- Mounting: Push-in panel (one-touch mount)
- Panel thickness: 1.0~4.0 mm
- Panel cutout: SR91: H45 × W45 mm
  SR92: H68 × W68 mm
  SR93: H92 × W92 mm
  SR94: H92 × W45 mm
- Weight: SR91: Approximately 170 g
  SR92: Approximately 280 g
  SR93: Approximately 330 g
  SR94: Approximately 240 g

ITEM	CODE							SPECIFICATIONS	
SERIES	SR91-							MPU-Based Auto-Tuning PID Digital Controller, DIN H48× W48 ×D110mm	
INPUT		8	Multi input					Thermocouple: B, R, S, K, E, J, T, N, PLII, Wre5-26 {U, L (DIN 43710)} R.T.D.: Pt100 Ω /JPt100 Ω Voltage: -10~10, 0~10, 0~20, 0~50, 10~50, 0~100mV DC	For voltage and current input: Scaling Possible Range: -1999~9999 Span: 10~5000
		4						Current (mA): 0~20, 4~20mA DC Receiving impedance: 250 Ω	
		6						Voltage (V): -1~1, 0~1, 0~2, 0~5, 1~5, 0~10V DC	Note: Inverse scaling is not possible
CONTROL OUTPUT (1)			Y-					Contact: 1a, Contact capacity: 240V AC 2.5A/resistive load Proportional cycle: 1~120 sec.	
			I-					Current: 4~20mA DC Load resistance: 600 Ωmax.	
			P-					SSR drive voltage: 12V 1.5V DC/30mA max. Proportional cycle: 1~120 sec.	
			V-					Voltage: 0~10V DC Load current: 2mA max.	
POWER SUPPLY				90-				100~240V AC 10%, 50/60Hz	
				08-				24V AC/DC 10%, 50/60Hz	
EVENT OUTPUT (OPTION)					0			None	
					1			Contact output (2a) Ev1, Ev2: 240V AC 1A/resistive load	
OPTION						N		None	
	Control output (2)					Y		Contact: 1a, Contact capacity: 240V AC 2.5A/resistive load Proportional cycle: 1~120 sec.	
						I		Current: 4~20mA DC Load resistance: 600 Ωmax.	
						P		SSR drive voltage: 12±1.5V DC/30mA max. Proportional cycle: 1~120 sec.	
						V		Voltage: 0~10V DC Load current: 2mA max.	
	Heater break alarm					1		Current setting range: 0.1~30.0A (with CT 30A)	Note: Avaialble only when control output (1) is Y or P and when event output is selected.
						2		Current setting range: 0.1~50.0A (with CT 50A)	
	Analog output					3		Voltage: 0~10mV DC, Output resistance: 10 Ω	
						4		Current: 4~20mA DC, Load resistance: 300 Ωmax.	
						6		Voltage: 0~10V DC, Load current: 2mA max.	
	Communication					5		RS-485	
	Set value bias					8		1 point (setting range: -1999~5000), Non-voltage contact or Open collector input Open collector input rating: approx. 5V/1mA max.	
REMARKS							0	Without	
							9	With (Please consult before ordering.)	

Note:

When you purchase a two-output type controller and use it in a one output capacity, larger overshooting or undershooting may happen as a result of integral operation. Therefore, we recommend you to choose a one-output type.

The cause of the above-mentioned problem is that the positional relationship between the proportional band (PB) and the set value (SV) of a one-output type controller differs from that of a two-output type.

ITEM	CODE							SPECIFICATIONS	
SERIES	SR92-							MPU-Based Auto-Tuning PID Digital Controller, DIN H72 × W72 × D110mm	
INPUT		8	Multi input					Thermocouple: B, R, S, K, E, J, T, N, PLII, Wre5-26 {U, L (DIN 43710)} R.T.D.: Pt100Ω /JPt100Ω Voltage (mV): -10~10, 0~10, 0~20, 0~50, 10~50, 0~100mV DC	For voltage and current input: Scaling Possible Range: -1999~9999 Span: 10~5000 Note: Inverse scaling is not possible.
		4						Current (mA): 0~20, 4~20mA DC Receiving impedance: 250Ω	
		6						Voltage (V): -1~1, 0~1, 0~2, 0~5, 1~5, 0~10V DC Input resistance: 500kΩ min.	
CONTROL OUTPUT (1)			Y-					Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1~120 sec.	
			I-					Current: 4~20mA DC Load resistance: 600Ω max.	
			P-					SSR drive voltage: 12V±1.5V DC/30mA max. Proportional cycle: 1~120 sec.	
			V-					Voltage: 0~10V DC Load current: 2mA max.	
CONTROL OUTPUT (2) (OPTION)				N-				None	
				Y-				Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1~120 sec.	
				I-				Current: 4~20mA DC Load resistance: 600Ω max. (RA when shipped)	
				P-				SSR drive voltage: 12V±1.5V DC/30mA max. Proportional cycle: 1~120 sec.	
				V-				Voltage: 0~10V DC Load current: 2mA max.	
POWER SUPPLY					90-			100V~240V AC±10%, 50/60Hz	
					08-			24V AC/DC±10%, 50/60Hz	
EVENT OUTPUT/ HEATER BREAK ALARM (OPTION)						0		None	
						1		Event output (2a) Ev1, Ev2 Contact capacity: 240V AC 1A/resistive load	
						2		Event output (Ev1) + Heater break alarm (with CT30A)	Note: Available only when control output (1) is Y or P is selected.
						3		Event output (Ev1) + Heater break alarm (with CT50A)	
ANALOG OUTPUT (OPTION)							0	None	
							3	Voltage: 0~10mV DC, Output resistance: 10Ω	
							4	Current: 4~20mA DC, Load resistance: 300Ω max.	
							6	Voltage: 0~10V DC, Load current: 2mA max.	
COMMUNICATION OR SV BIAS (OPTION)								0	None
								5	RS-485
								7	RS-232C
								8	1 point (setting range: -1999~5000), Non-voltage contact or Open collector input Open collector input rating: approx. 5V/1mA max.
REMARKS								0	Without
								9	With (Please consult before ordering.)

Note:

When you purchase a two-output type controller and use it in a one output capacity, larger overshooting or undershooting may happen as a result of integral operation. Therefore, we recommend you to choose a one-output type.

The cause of the above-mentioned problem is that the positional relationship between the proportional band (PB) and the set value (SV) of a one-output type controller differs from that of a two-output type.

ITEM	CODE					SPECIFICATIONS	
SERIES	SR93-					MPU-Based Auto-Tuning PID Digital Controller, DIN H96 × W96 × D110mm	
	SR94-					MPU-Based Auto-Tuning PID Digital Controller, DIN H96 × W48 × D110mm	

INPUT	8	Multi input				Thermocouple: B, R, S, K, E, J, T, N, PLII, Wre5-26 {U, L (DIN 43710)}
						R.T.D.: Pt100Ω /JPt100Ω
						Voltage: -10~10, 0~10, 0~20,
						    0~50, 10~50, 0~100mV DC
							For voltage and current input:
							Scaling Possible
							Range: -1999~9999
							Span: 10~5000
							Note: Inverse scaling
							    is not possible

	4					Current (mA): 0~20, 4~20mA DC Receiving impedance: 250Ω	
	6					Voltage (V): -1~1, 0~1, 0~2, 0~5, 0~10V DC Load resistance: 600Ω max.	
CONTROL OUTPUT (1)		Y-				Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1~120 sec.	
		I-				Current: 4~20mA DC Load resistance: 600Ω max.	
		P-				SSR drive voltage: 12V±1.5V DC/30mA max. Proportional cycle: 1~120 sec.	
		V-				Voltage: 0~10V DC Load current: 2mA max.	
CONTROL OUTPUT (2) (OPTION)			N-			None	
			Y-			Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1~120 sec.	
			I-			Current: 4~20mA DC Load resistance: 600Ω max.	
			P-			SSR drive voltage: 12V±1.5V DC/30mA max. Proportional cycle: 1~120 sec.	
			V-			Voltage: 0~10V DC Load current: 2mA max.	
POWER SUPPLY				90-		100~240V AC±10%, 50/60Hz	
				08-		24V AC/DC±10%, 50/60Hz	
EVENT OUTPUT/ HEATER BREAK ALARM (OPTION)					0	None	
					1	Event output (2a) Ev1, Ev2 Contact capacity: 240V AC 1A/resistive load	
					2	Event output (Ev1) + Heater break alarm (with CT30A)	Note: Available only when control output (1) is Y or P is selected.
					3	Event output (Ev1) + Heater break alarm (with CT50A)	
OPTION						00	None
	Analog output					30	Voltage: 0~10mV DC, Output resistance: 10Ω
						40	Current: 4~20mA DC, Load resistance: 300Ω max.
						60	Voltage: 0~10V DC, Load current: 2mA max.
	Set value bias (S V bias)					08	1 point (setting range: -1999~5000), Non-voltage contact or Open collector input Open collector input rating: approx. 5V/1mA max.
	Analog output + Set value bias (S V bias)					38	Voltage: 0~10mV DC, Output resistance: 10Ω SV bias 1 point
						48	Current: 4~20mA DC, Load resistance: 300Ω max. SV bias 1 point
						68	Voltage: 0~10V DC, Load current: 2mA max. SV bias 1 point
	Communication					05	RS-485
						07	RS-232C
REMARKS						0	Without
						9	With (Please consult before ordering.)

Note:

When you purchase a two-output type controller and use it in a one output capacity, larger overshooting or undershooting may happen as a result of integral operation. Therefore, we recommend you to choose a one-output type.
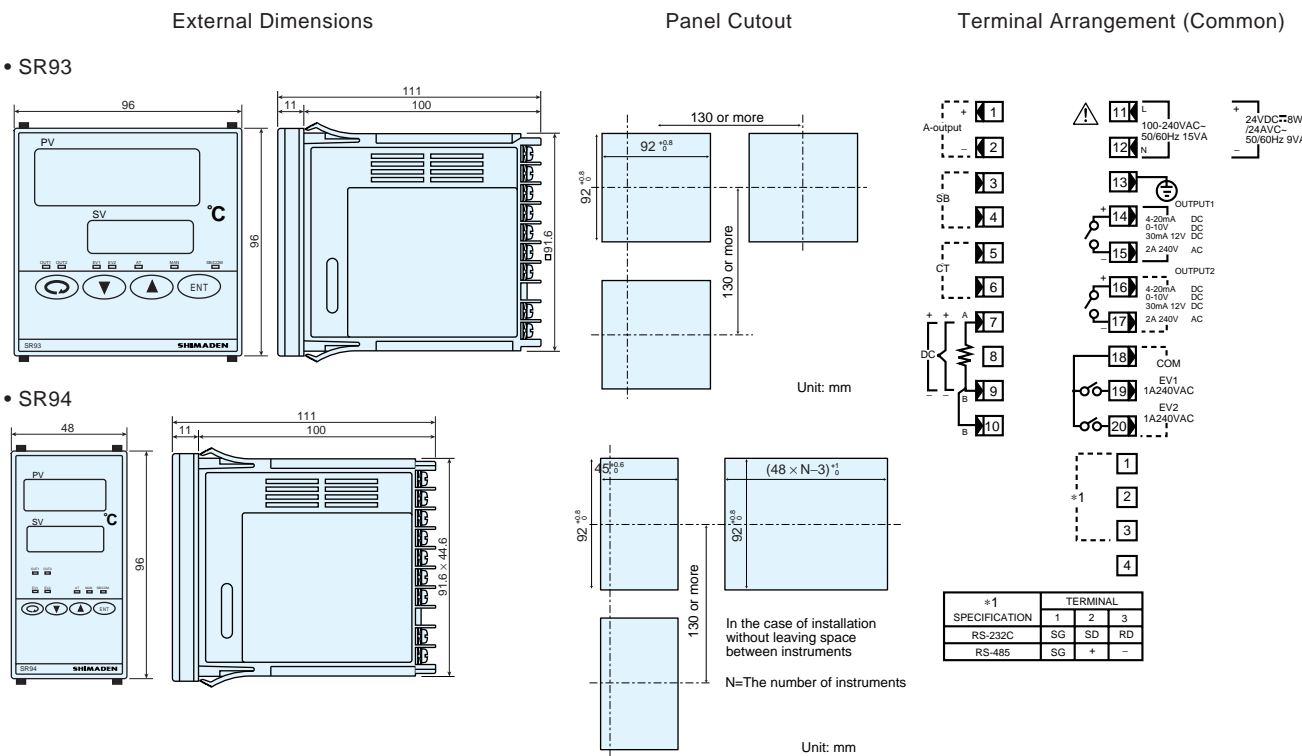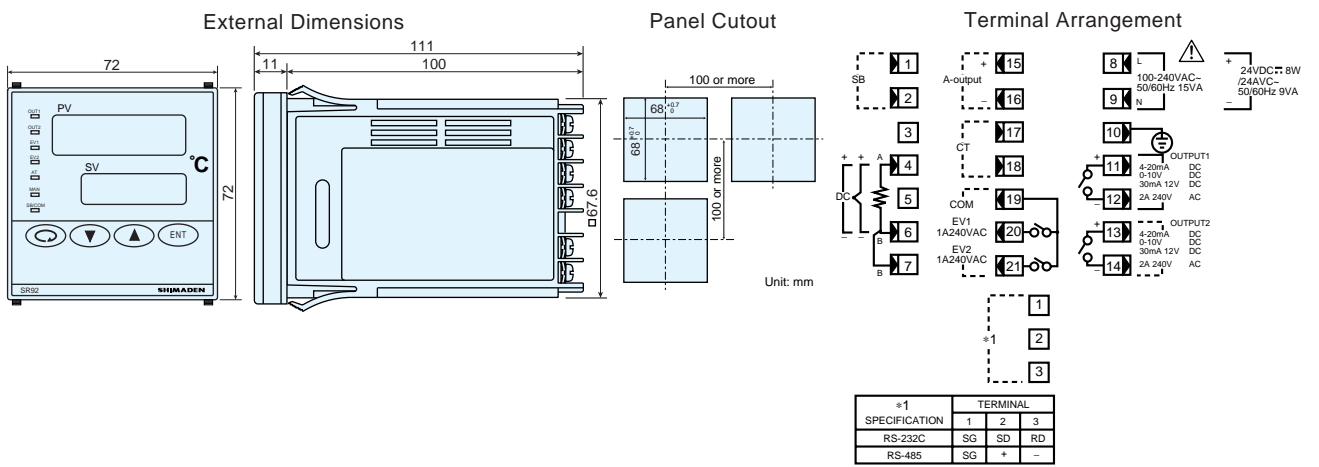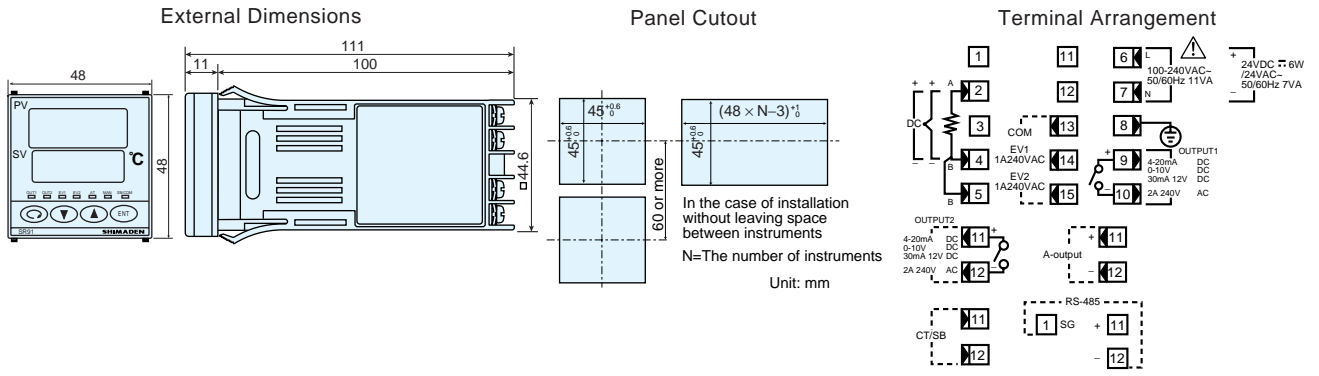
The cause of the above-mentioned problem is that the positional relationship between the proportional band (PB) and the set value (SV) of a one-output type controller differs from that of a two-output type.

SR91

External Dimensions

48

PV
SV
℃

SR91   SHIMADEN

111
11
100

48
□44.6

Panel Cutout

$45^{+0.6}_{0}$
$45^{+0.6}_{0}$
$45^{+0.6}_{0}$
$(48 \times N-3)^{+1}_{0}$
60 or more

In the case of installation without leaving space between instruments

N=The number of instruments

Unit: mm

Terminal Arrangement

1		11		6	⚠	100-240VAC– 50/60Hz 11VA	24VDC 6W /24VAC– 50/60Hz 7VA
2	A	12		7			
3	COM	13		8	⊕		
4	EV1 1A240VAC	14		9	OUTPUT1 4-20mA DC 0-10V DC 30mA 12V DC		
5	EV2 1A240VAC	15		10	2A 240V AC		

DC + A − B

OUTPUT2
4-20mA DC
0-10V DC
30mA 12V DC
2A 240V AC
11
12

A-output
+ 11
12

CT/SB
11
12

RS-485
1 SG
+ 11
− 12

SR92

External Dimensions

72

OUT1 OUT2 EV1 EV2 AL1 MAN REMCOM

PV
SV
℃

ENT

SR92   SHIMADEN

111
11
100

72
□67.6

Panel Cutout

100 or more
$68^{+0.7}_{0}$
$68^{+0.7}_{0}$
100 or more

Unit: mm

Terminal Arrangement

SB	1		A-output	+	15		8	L	⚠	100-240VAC– 50/60Hz 15VA	24VDC 8W /24AVC– 50/60Hz 9VA
	2			−	16		9	N			
	3		CT		17		10	⊕			
DC + A	4				18		11	OUTPUT1 4-20mA DC 0-10V DC 30mA 12V DC			
	5		COM		19		12	2A 240V AC			
− B	6		EV1 1A240VAC		20		13	OUTPUT2 4-20mA DC 0-10V DC 30mA 12V DC			
	7		EV2 1A240VAC		21		14	2A 240V AC			

*1
1
2
3

*1 SPECIFICATION	TERMINAL		
	1	2	3
RS-232C	SG	SD	RD
RS-485	SG	+	−

SR93 AND SR94

External Dimensions

• SR93

96

PV
SV
℃

OUT1 OUT2 EV1 EV2 AL1 MAN REMCOM

ENT

SR93   SHIMADEN

111
11
100

96
□91.6

Panel Cutout

130 or more
$92^{+0.8}_{0}$
130 or more

Unit: mm

Terminal Arrangement (Common)

A-output	+	1		⚠	11	100-240VAC– 50/60Hz 15VA	24VDC 8W /24AVC– 50/60Hz 9VA
	−	2		N	12		
SB		3		⊕	13		
		4			14	OUTPUT1 4-20mA DC 0-10V DC 30mA 12V DC	
CT		5			15	2A 240V AC	
		6			16	OUTPUT2 4-20mA DC 0-10V DC 30mA 12V DC	
DC + A	7			17	2A 240V AC		
	8			18	COM		
− B	9			19	EV1 1A240VAC		
	10			20	EV2 1A240VAC		

*1
1
2
3
4

*1 SPECIFICATION	TERMINAL		
	1	2	3
RS-232C	SG	SD	RD
RS-485	SG	+	−

• SR94

48

PV
SV
℃

SR94   SHIMADEN

111
11
100

96
91.6 × 44.6

Panel Cutout

$45^{+0.6}_{0}$
$92^{+0.8}_{0}$
$92^{+0.8}_{0}$
$(48 \times N-3)^{+1}_{0}$
130 or more

In the case of installation without leaving space between instruments

N=The number of instruments

Unit: mm

Input Type			Code	Measuring range (°C)			Measuring range (°F)		
Multi-input	Thermo-couple	B *1	01	0	～	1800	0	～	3300
		R	02	0	～	1700	0	～	3100
		S	03	0	～	1700	0	～	3100
		K *2	04	-199.9	～	400.0	-300	～	750
		K	05	0.0	～	800.0	0	～	1500
		K	06	0	～	1200	0	～	2200
		E	07	0	～	700	0	～	1300
		J	08	0	～	600	0	～	1100
		T *2	09	-199.9	～	200.0	-300	～	400
		N	10	0	～	1300	0	～	2300
		PLII *3	11	0	～	1300	0	～	2300
		WRe5-26 *4	12	0	～	2300	0	～	4200
		U *5	13 *2	-199.9	～	200.0	-300	～	400
		L *5	14	0	～	600	0	～	1100
	R.T.D.	Pt100	31	-200	～	600	-300	～	1100
			32	-100.0	～	100.0	-150.0	～	200.0
			33	-50.0	～	50.0	-50.0	～	120.0
			34	0.0	～	200.0	0.0	～	400.0
		Jpt100	35	-200	～	500	-300	～	1000
			36	-100.0	～	100.0	-150.0	～	200.0
			37	-50.0	～	50.0	-50.0	～	120.0
			38	0.0	～	200.0	0.0	～	400.0
Voltage (mV)		-10 ～ 10	71	Scaling possible					
		0 ～ 10	72						
		0 ～ 20	73	Refer to the information					
		0 ～ 50	74	on the right.					
		10 ～ 50	75						
		0 ～ 100	76						
Voltage (V)		-1 ～ 1	81						
		0 ～ 1	82						
		0 ～ 2	83						
		0 ～ 5	84						
		1 ～ 5	85						
		0 ～ 10	86						
Current (mA)		0 ～ 20	91						
		4 ～ 20	92						

Owing to scaling function, any measuring range can be set within the following range.

Scaling range: -1999 to 9999 counts
Span: 10 to 5000 counts on condition of lower side < higher side

*1 Thermocouple:
   B: Accuracy guarantee not applicable to 400°C (752°F) and below.

*2 Thermocouple
   K, T, U: Accuracy of those whose readings are below -100°C is ±0.7% FS

*3 Thermocouple
   PLII: Platinel

*4 Thermocouple
   Wre5-26: A product of Hoskins

*5 Thermocouple
   U, L: DIN 43710

NOTE:
Unless otherwise specified, the measuring range will be set as listed below during the shipment from the factory.

Input	Specification/Rating	Measuring range
Multi-input	K thermocouple	0.0 ~ 800.0°C
Voltage (V)	0 ~ 10V DC	0.0 ~ 100.0
Current (mA)	4 ~ 20mA DC	0.0 ~ 100.0

TERMINAL COVER (AVAILABLE SEPARATELY)
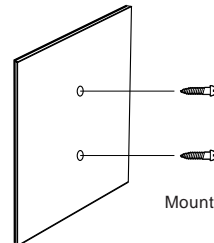
Model		Mounting
SR91	QCR001	One-touch mount
SR92	QCR002	One-touch mount
SR93	QCR003	One-touch mount

Material/Appearance: PVC/transparent
Thickness: 1 mm
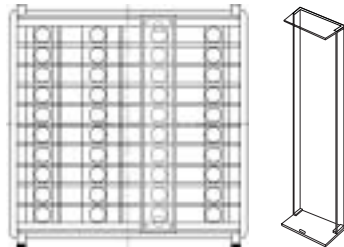
Model		Mounting
SR94	QCR004 (Individual mounting)	Plus screw, B tight, M2.3 × 6 - 2 pcs.
	QCR005 (Tight-lock coupling)	Plus screw, B tight, M2.3 × 6 - 4 pcs.

Material/Appearance: PVC/transparent Thickness: 1 mm

Mounting: 2+B tight pan-head screws
M2.3 × 6mm

⚠ **Warning**

• The SR90 series is designed for the control of temperature, humidity and other physical values of general industrial equipment. (It is not to be used for any purpose which regulates the prevention of serious effects on human life or safety.)

⚠ **Caution**

• If the possibility of loss or damage to your system or property as a result of failure of any part of the process exists, proper safety measures must be made before the instrument is put into use so as to prevent the occurrence of trouble.

ISO 9001

(The contents of this brochure are subject to change without notice.)