Shimaden, Temperature and Humidity Control Specialists

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%RH

SHIMADEN

Series **SR60**

SHIMADEN DIGITAL CONTROLLER

BASIC FEATURES

- ☐ ***Initial settings are easily done on the display (PV and SV display) through the keyboard.***
- ☐ ***Accuracy ±(1/3% FS+1 digit)***
- ☐ ***Sampling cycle: 0.25 sec.***
- ☐ ***The PID control performance is greatly improved through a new processing method (expert PID) and the Auto Tuning point can be set as desired.***
- ☐ ***A setting limit, output limit, PV bias, PV filter, manual control, and output characteristic selection function are provided as standard functions.***
- ☐ ***A wide selection of additional functions (optional) is available to suit various needs.***
  - ◇ ***A maximum 3-point alarm by a combination of higher limit alarm, lower limit alarm, and event output is available.***
  - ◇ ***Desired scaling for analog output is possible within the measuring range.***
  - ◇ ***The heater break alarm can be set for 30A or 50A by means of the specified CT.***
  - ◇ ***The set point can be shifted with the set value bias function.***

SPECIFICATIONS

Display

Digital display:	7 segments / Measured value (PV) Red LED 4 digits, Set value (SV) Green LED 4 digits
Display accuracy:	±(1/3% FS+1 digit) at 23 ± 5 °C Refer to Table of Measuring Range Codes.
Display resolution:	Depends on measuring range (0.001, 0.01, 0.1, 1)
Sampling cycle:	0.25 sec.
Action display / colors:	7-type LED lamp indication: Control output (OUT) / Green, Higher limit alarm (AH) / Red, Lower limit alarm (AL) / Red, Event / Heater break alarm (EV / HB) / Red, Auto tuning (AT) / Green, Manual control (MAN) / Red, Set value bias (SB) / Green

Setting

Setting:	By 6 front key switches
Setting range:	Same as measuring range
Setting limit:	Higher / lower limits individual setting as desired within measuring range (lower limit value < higher limit value)

Input

Thermocouple:	B, R, S, K, E, J, T, N, PL II, WRe5-26, {U, L (DIN 43710)}
	(Multi-input, multi-range: Refer to Table of Measuring Range Codes.)
External resistance:	100Ω max.
Input impedance:	500kΩ min.
Burnout:	Standard feature (up scale)
Cold junction temperature compensation accuracy:	±2 °C (5~45 °C)
R.T.D. :	JIS Pt100 / JPt100 3-wire type (Multi range: Refer to Table of Measuring Range Codes.)
Amperage:	Approx. 0.25mA
Lead wire tolerable resistance:	5Ω max. / wire
Voltage:	–10~10, 0~10, 0~20, 0~50, 10~50, 0~100mV DC or –1~1, 0~1, 0~2, 0~5, 1~5, 0~10V DC
	(Multi input, programmable range: Refer to Table of Measuring Range Codes.)
Input impedance:	500kΩ min.
Current:	4~20, 0~20mA DC
	(Multi input, programmable range: Refer to Table of Measuring Range Codes.)
Receiving impedance:	250Ω
Sampling cycle:	0.25 sec.
PV bias:	–1999~1999 unit
PV filter:	0~100 sec.
Isolation:	Insulated between input and output (not insulated between input and system, SV bias and CT input)

Control

Control mode:	Auto-tuning PID
Proportional band (P):	Off, 0.1~999.9% FS (Off setting: On-Off action)
Integral time (I):	Off, 1~6000 sec. (Off setting: PD, P action)
Derivative time (D):	Off, 0~3600 sec. (Off setting: PI, P action)
Manual reset (MR):	–50.0~50.0% (valid when I=Off.)
On-Off hysteresis:	1~999 unit
Proportional cycle:	1~120 sec.
Control output characteristics:	RA / DA selectable (set to RA when shipped)
Higher and lower output limit:	0.0~100.0% (lower limit < higher limit)

Control output type / rating

Contact output (Y1):	240V AC 2.5A / resistive load
Current output (I1):	4~20mA DC / load resistance: 600Ω max.
SSR drive voltage output (P1):	15±3V DC / load current: 20mA max.
Voltage output (V1):	0~10V DC / load current: 2mA max.
Isolation:	Insulated between control output and system and input (not insulated between control output I, P, V and analog output)

Manual control

Output setting range:	0.0~100.0% (setting resolution: 0.1%)
	Within range of higher / lower output limits
Output resolution:	0.5%
Auto / Manual switching:	Balanceless and bumpless (within proportional band range)

Additional Functions (Optional)

Alarm output

Alarm method:	Individual setting and individual output, higher and lower limit alarms
Alarm type:	Deviation value alarm or absolute value alarm is selectable.
Alarm setting range:	Deviation value: Higher limit: 0~5000 unit Lower limit: –1999~0 unit When alarm is set beyond higher or lower limit of measuring range, alarm is activated at a point 10% beyond higher or lower limit. Absolute value: Higher and lower limits: Within measuring range
Alarm action:	On-Off action
Action hysteresis:	1~999 unit (both higher and lower limits)
Inhibit mode:	Selectable (both higher and lower limits)
Alarm output / rating:	Contact 1a (common) / 240V AC 1.5A (resistive load)

Event output (Cannot be selected when heater break alarm is selected.)

Number of event outputs:	1 point
Event type:	Selectable from following 8 types

1. Higher limit deviation value alarm without inhibit mode	5. Higher limit deviation value alarm with inhibit mode
2. Lower limit deviation value alarm without inhibit mode	6. Lower limit deviation value alarm with inhibit mode
3. Higher limit absolute value alarm without inhibit mode	7. Higher limit absolute value alarm with inhibit mode
4. Lower limit absolute value alarm without inhibit mode	8. Lower limit absolute value alarm with inhibit mode

Setting range:	Deviation value: Higher limit: 0~5000 unit Lower limit: –1999~0 unit When alarm is set beyond higher or lower limit of measuring range, alarm is activated at a point 10% beyond higher or lower limit. Absolute value: Within measuring range of higher and lower limits
Event action:	On-Off action
Event action hysteresis:	1~999 unit
Event output / rating:	Contact 1a / 240V AC 1.5A (resistive load)

Heater break alarm (Cannot be selected when event output is selected.)

Alarm action:	Heater amperage detected by externally attached CT (CT provided) Alarm output On upon detection of heater break while output is On. Alarm output On upon detection of heater loop alarm while output is Off.
Current setting range:	Off, 0.1~50.0 A (Alarm action stops when Off is set.)
Setting resolution:	0.1 A
Amperage display:	0.0~55.0 A
Display accuracy:	3% FS (when sine wave is 50Hz)
Minimum time for action confirmation:	On time: 250 msec. minimum
Alarm output / rating:	Contact 1a / 240V AC 1.5A (resistive load)
Alarm holding:	Selectable
Sampling cycle:	0.5 sec.
Isolation:	Insulated between CT input and output (not insulated between CT input and system and other inputs)

Analog output

Number of analog outputs:	1 point
Analog output type:	Selectable between process value (PV) and set value (SV)
Analog output:	0~10mV DC, Output resistance: 10Ω 0~10V DC, Load current: 2mA max. 4~20mA DC, Load resistance: 300Ω max.
Output accuracy:	±0.3% (of displayed value)
Output resolution:	Approx. 0.0125% (1 / 8000)
Output updating cycle:	0.25 sec.
Output scaling:	Within measuring range
Isolation:	Insulated between analog output and system and input (not insulated between analog output and control output I, P, V)

Set value bias

Setting range:	–1999~5000 unit
Setting resolution:	Same as display resolution
Action input:	Non-voltage contact (bias in action when input is closed)
Isolation:	Insulated between set value bias input and output (not insulated between set value bias input and system and other inputs)

Others

Data storage:	By non-volatile memory (EEPROM)
Operating ambient temperature / humidity range:	–10~50 °C / 90% RH maximum (no dew condensation)

Supply voltage:	100~240V AC±10% (50 / 60Hz), 24V AC±10% (50 / 60Hz) or 24V DC±10% is selectable.
Power consumption:	SR62, SR63, SR64: Max. 8VA (AC), 8W (DC)
Applicable standard:	Safety: IEC1010-1
	EMC EMI (emission): EN50081-1
	EMS (immunity): EN50082-2
Insulation resistance:	Between input / output terminal and power supply terminal: 500V DC 20MΩ minimum
	Between input / output terminal and ground terminal: 500V DC 20MΩ minimum
Dielectric strength:	1min. at 1000V AC between input / output terminal and power supply terminals
	1min. at 1500V AC between power supply terminal and ground terminal
Protective structure:	Only front panel has simple dust-proof and drip-proof structure.
Material:	PPO resin molding (equivalent to UL94V-1)
External dimensions:	SR62: H72 × W72 × D110 (panel depth: 100) mm
	SR63: H96 × W96 × D70 (panel depth: 60) mm
	SR64: H96 × W48 × D110 (panel depth: 100) mm
Mounting:	Push-in panel (one-touch mount)
Panel thickness:	1~3.5mm
Panel cutout:	SR62: 68 × 68mm SR63: 92 × 92mm SR64: 92 × 45mm
Weight:	SR62: Approx. 290g SR63: Approx. 310g SR64: Approx. 280g

ORDERING INFORMATION

ITEM	CODE	SPECIFICATIONS	
SERIES	SR62–	72 x 72 DIN size digital controller	
	SR63–	96 x 96 DIN size digital controller	
	SR64–	96 x 48 DIN size digital controller	
INPUT	1	Thermocouple B, R, S, K, E, J, T, N, PL ll, WRe5-26, {U, L (DIN 43710)}	Multi-input Multi-range
	2	R.T.D. Pt100 / JPt100	Multi-range
	3	Voltage (mV) –10~10, 0~10, 0~20, 0~50, 10~50, 0~100mV DC	Multi-input Programmable range
	4	Current (mA) 4~20, 0~20mA DC	
	6	Voltage (V) –1~1, 0~1, 0~2, 0~5, 1~5, 0~10V DC	
CONTROL OUTPUT	Y1–	Contact: Proportional cycle 1~120 sec. Contact capacity: 240V AC 2.5A / resistive load	RA when shipped from factory
	I 1–	Current: 4~20mA DC, Load resistance: 600Ω max.	
	P1–	SSR drive voltage: Proportional cycle 1~120 sec. Output rating: 15±3V DC / 20mA max.	
	V1–	Voltage: 0~10V DC Load current: 2mA max.	
POWER SUPPLY	90–	100~240V AC±10%, 50 / 60Hz	
	10–	24V AC±10%, 50 / 60Hz	
	02–	24V DC±10%	
ALARM, EVENT, HEATER BREAK ALARM Note: Heater break alarm can be selected when control output Y1 and / or P1 is selected.	00	None	When shipped from factory, set as follows. Higher & lower limit alarms: Deviation alarm without inhibit Event output: Higher limit deviation without inhibit
	03	Higher & lower limit alarms	
	12	Higher & lower limit alarms + event output	
	13	Higher & lower limit alarms + heater break alarm (30A)	
	14	Heater break alarm (30A)	
	15	Higher & lower limit alarms + heater break alarm (50A)	
	16	Heater break alarm (50A)	
ANALOG OUTPUT	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.	
SET VALUE BIAS	0	Without	
	1	With	
REMARKS	C	Without (CE & CSA / NRTL Marking)	
	9	With (other than CE & CSA / NRTL Marking)	

SPECIAL CONTROL OUTPUTS AVAILABLE

In addition to the above listed Control Outputs,

0~5V DC and 0~20mA DC are available.

Please use code no. "3" instead of "1".

Coding Example: SR62-1I3-90-0000C or SR64-2V3-90-0000C

(0~20mA DC Output) (0~5V DC Output)

• If no code is specified, the following factory setup is applied.

INPUT	Standard / Rating	RANGE
1.Thermocouple	JIS K	0 ~ 800 °C
2. R. T. D.	JIS Pt100	0.0 ~ 200.0 °C
3. Voltage	0~10mV DC	0.0 ~ 100.0 No-legend
4. Current	4~20mV DC	0.0 ~ 100.0 No-legend
5. Voltage	1~5V DC	0.0 ~ 100.0 No-legend

MEASURING RANGE CODES

	① Input type		② Measuring range		
	Type	Code	°C	Code	°F
Thermocouple	✱1 B	01	0 ~ 1800	15	0 ~ 3300
	R	02	0 ~ 1700	16	0 ~ 3100
	S	03	0 ~ 1700	17	0 ~ 3100
	K	04	–100.0 ~ 400.0	18	–150 ~ 750
		05	0 ~ 800	19	0 ~ 1500
		06	0 ~ 1200	20	0 ~ 2200
	E	07	0 ~ 700	21	0 ~ 1300
	J	08	0 ~ 600	22	0 ~ 1100
	T	09	–199.9 ~ 200.0	23	–300 ~ 400
	✱2 N	10	0 ~ 1300	24	0 ~ 2300
	✱3 PL II	11	0 ~ 1300	25	0 ~ 2300
	✱4 WRe5-26	12	0 ~ 2300	26	0 ~ 4200
	✱5 U	13	–199.9 ~ 200.0	27	–300 ~ 400
	✱5 L	14	0 ~ 600	28	0 ~ 1100
R.T.D.	Pt 100	31	–200 ~ 600	47	–300 ~ 1100
	Pt 100	32	–100.0 ~ 100.0	48	–150.0 ~ 200.0
	Pt 100	33	–100.0 ~ 300.0	49	–150 ~ 600
	Pt 100	34	–50.0 ~ 50.0	50	–50.0 ~ 120.0
	Pt 100	35	✱6 0.0 ~ 50.0	51	0.0 ~ 120.0
	Pt 100	36	0.0 ~ 100.0	52	0.0 ~ 200.0
	Pt 100	37	0.0 ~ 200.0	53	0.0 ~ 400.0
	Pt 100	38	0.0 ~ 500.0	54	0 ~ 1000
	JPt 100	39	–200 ~ 600	55	–300 ~ 1100
	JPt 100	40	–100.0 ~ 100.0	56	–150.0 ~ 200.0
	JPt 100	41	–100.0 ~ 300.0	57	–150 ~ 600
	JPt 100	42	–50.0 ~ 50.0	58	–50.0 ~ 120.0
	JPt 100	43	✱6 0.0 ~ 50.0	59	0.0 ~ 120.0
	JPt 100	44	0.0 ~ 100.0	60	0.0 ~ 200.0
	JPt 100	45	0.0 ~ 200.0	61	0.0 ~ 400.0
	JPt 100	46	0.0 ~ 500.0	62	0 ~ 1000
mV	–10 ~ 10mV	71			
	0 ~ 10mV	72			
	0 ~ 20mV	73			
	0 ~ 50mV	74			
	10 ~ 50mV	75			
	0 ~ 100mV	76			
V	–1 ~ 1V	81			
	0 ~ 1V	82			
	0 ~ 2V	83			
	0 ~ 5V	84			
	1 ~ 5V	85			
	0 ~ 10V	86			
mA	0 ~ 20mA	94			
	4 ~ 20mA	95			

The scaling function allows the measuring range to be set as desired within the following limits.

Scaling range: –1999 ~ 9999 count
Span: 100 ~ 5000 count

The factory setup can be adjusted to each user's desired measuring range before shipment. When ordering, specify the input type, measuring range and legend.

Example: 72 | 0.0 ~ 20.0 | 26

① Input type: 0 ~ 10mV
② Measuring range: user specification
③ Legend: kg/cm²

LEGEND CODES

③ Legend	Code	③ Legend	Code
Plain (Non)	00	l / min	30
°C	01	l / h	31
°F	02	m^3 / min	32
% RH	03	m^3 / h	33
%	04	Nm^3 / min	34
K	05	Nm^3 / h	35
mV	06	mm / s	36
V	07	m / s	37
mA	08	m / min	38
A	09	m / h	39
W	10	m / s^2	40
µS / cm	11	rpm	41
mbar	12	mm	42
bar	13	cm	43
psi	14	m	44
psig	15	mm^3	45
Pa	16	cm^3	46
kPa	17	m^3	47
mmH_2O	18	in	48
mH_2O	19	lb	49
inH_2O	20	g	50
mmHg	21	kg	51
cmHg	22	t	52
inHg	23	l	53
l / s	24	ppm	54
kg / h	25	pH	55
kg / cm^2	26	cal	56
kgf / cm^2	27	kcal	57
Torr	28	Plain	58
mmAq	29		

*Codes 58 and 59 are to be filled in by the user.

Notes :

✱1.Thermocouple B: 400 °C / 750 °F or below is out of the accuracy guarantee range.

✱2.Thermocouple N: Nicrosil-Nisil IEC

✱3.Thermocouple PL II: Platinel

✱4.Thermocouple WRe5-26: (Hoskins Mfg. Co.)

✱5.Thermocouple U, L: DIN 43710
- Thermocouple B, R, S, K, E, J, T: JIS / ANSI / IEC

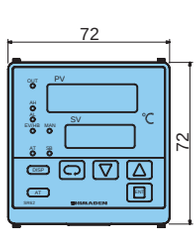
✱6.R.T.D.: Accuracy ±0.3 °C (±0.8 °F)
- R.T.D.: JPt100: (Old) JIS

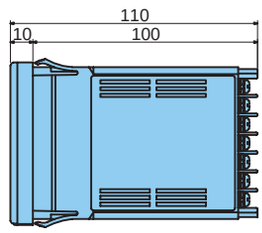
- The series is designed for multi-input, multi-range and programmable range operation. If you specify your desired code from the Table of Measuring Range Codes, we will set the product as requested before shipment.
  Example: If K 0 ~ 1200 °C is your operation condition, specify the code "06". (For voltage and current selection, refer to the Table of Measuring Range Codes.)

⚠ Warning
- The SR60 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.)

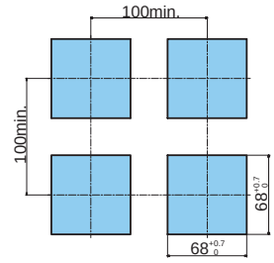
⚠ Caution
- If the possibility of loss or damage to your system or property as a result of failure of any part of the process exists, proper safety measures must be taken before the instrument is put into use so as to prevent the occurrence of trouble.

SR62 EXTERNAL DIMENSIONS, PANEL CUTOUT & TERMINAL ARRANGEMENT





˚ Panel cutout



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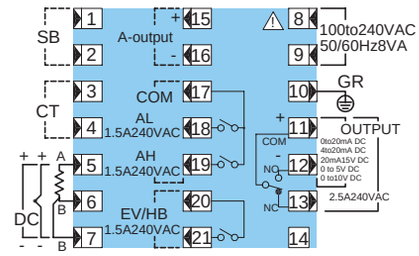
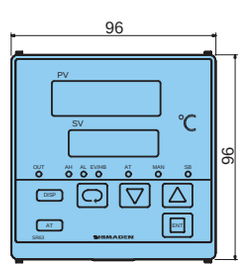
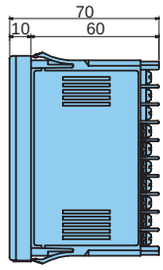


SR63 EXTERNAL DIMENSIONS, PANEL CUTOUT & TERMINAL ARRANGEMENT





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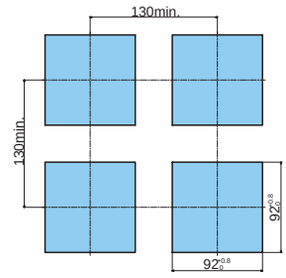

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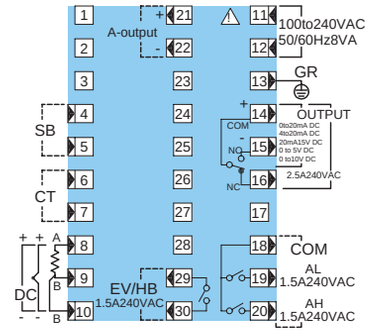
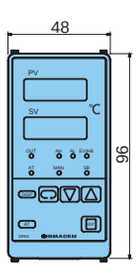
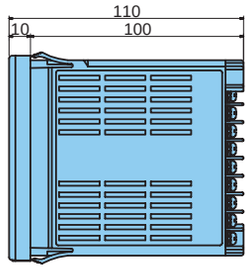


SR64 EXTERNAL DIMENSIONS, PANEL CUTOUT & TERMINAL ARRANGEMENT





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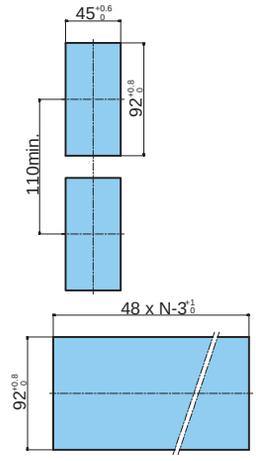
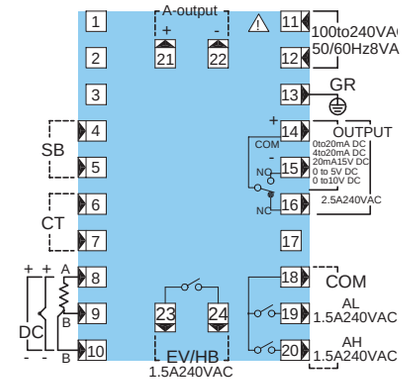
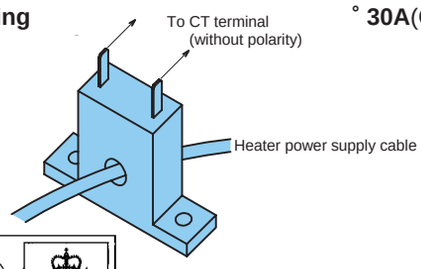




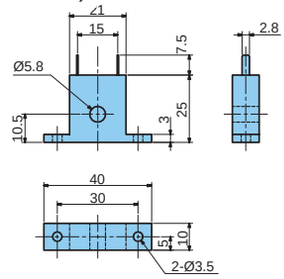
(Unit:mm)

ACCESSORY (CT) FOR CONTROLLER SPEC WITH HEATER BREAK ALARM (COMMONLY APPLIED TO SR62, SR63 & SR64)

˚ CT wiring



˚ 30A(CTL-6-S)



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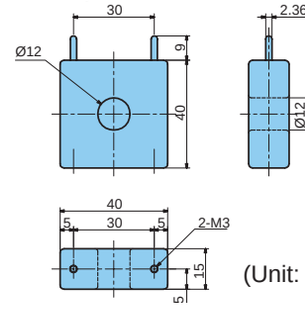

(Unit: mm)

ISO 9001

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

Temperature and Humidity Control Specialists

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