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SHIMADEN

Series SRS1/3/4/5

## SHIMADEN DIGITAL CONTROLLER



CE approved





### PRODUCT FEATURE

- Multi-input and multi-range performance*
- Small instrument depths (62 mm–65 mm) save space, thus securing a larger installation area.*
- Large 13.8 mm bright display (SRS1 & SRS4), 21.8 mm (SRS3) & 22mm (SRS5)*
- 1 Pattern, 10 step program function available (option)*

## ■ Display

Digital display:	Measured value (PV):	7-segment red LED, 4 digits	
	Target set value (SV):	7-segment green LED, 4 digits	
	SRS1 PV height of character:	Approx. 13.8mm/ SV height of character: Approx. 10.65mm	
	SRS3 PV height of character:	Approx. 21.8mm/ SV height of character: Approx. 14.6mm	
	SRS4 PV height of character:	Approx. 13.8mm/ SV height of character: Approx. 10.65mm	
	SRS5 PV height of character:	Approx. 22.0mm/ SV height of character: Approx. 10.6mm	
	Action display:	LED lamp display:	Color
	Auto tuning (AT):	Lights during standby (flashes during execution):	Green
	Action display (RUN):	Lights during fixed value control operation (FIX):	Green
		Flashes during program RUN program control operation (RUN):	Green
	Control output (OUT):	Lights during contact or SSR drive voltage output:	Green
		For voltage/current output, lights when output is 100%	
		In other cases, flashes at intervals of 0.5 sec. (multiples of 0.5 sec.).	
	Manual control output (MAN):	Flashes during manual output is ON:	Green
	Event (EV1, EV2):	Lights during event output:	Orange
Display resolution:	Differs according to input range (0.001, 0.01, 0.1, 1)		
Display accuracy:	TC: $\pm(0.3\%FS + 1 \text{ digit} + 2 \text{ }^\circ\text{C})$ Pt: $\pm(0.3\%FS + 1 \text{ digit} + 0.1 \text{ }^\circ\text{C})$ mV: $\pm(0.3\%FS + 1 \text{ digit})$ V: $\pm(0.3\%FS + 1 \text{ digit})$		
Display accuracy maintaining range:	23 $^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$		
Measured value display range:	-10~110% of measuring range (not below -273.15 $^\circ\text{C}$ : T/C input) -10~110% of measuring range (not below -240 $^\circ\text{C}$ : RTD input)		
Display cycle:	500 ms (0.5 seconds)		

## ■ Setting

Setting method:	By operating 4 front panel keys (     )
Target value setting range:	Same as measuring range (within setting limiter)
Setting limiter:	Individual setting for higher & lower limits are possible Within measuring range (lower limit value < higher limit value)
Setting lock:	OFF, 3-stage setting (1-3)

## ■ Input

- Input common specification
  - input type: Multi range input (T/C, RTD, mV, V)
  - Input scaling: Settable within measurement range, span 10 digits or more
  - Display scaling: Settable at voltage input (mV, V)  
Scaling range-1999~9999 digit  
Span 10~9999 digit
- Thermocouple input (TC)
  - Input type: B, R, S, K, E, J, T, N, PL II, C (WRe 5-26), L (DIN 43710), U (DIN 43710), AuFe-Cr
  - Display range: Within PV limiter (provided that minimum temperature does not fall below -273.15  $^\circ\text{C}$ )  
With or without a decimal point is selectable.
  - Input resistance: 500k $\Omega$
  - External resistance tolerable range: 100 $\Omega$  or below
  - Cold junction compensation: Internal
  - Internal cold junction compensation accuracy:  $\pm 2^\circ\text{C}$  (5~45 $^\circ\text{C}$ )  
When closely-mounted in a row, cold junction compensation accuracy will be  $\pm 3^\circ\text{C}$ .
  - Burnout function: Only upscale
- Resistance temperature detector input (RTD):
  - Display range: Pt100 Three-wire type  
Within input range setting (provided that minimum temperature does not fall below -240 $^\circ\text{C}$ )  
With or without a decimal point is selectable.
- Lead wire tolerable resistance range: Below 10 $\Omega$ /1 wire (All wires should have the same resistance.)
- Amperage: Approx. 0.25 mA (All wires should have the same resistance.)
- Voltage input (mV)
  - Input type: -10~50 mV DC

Display:	Programming scaling (Within PV limiter, rounded off to the lowest displayed place from the next lower place.)
Input resistance:	Approx. 500kΩ or above
Scaling:	Valid when voltage input
Scaling range:	-1999–9999 digit
Span:	10–9999 digit
Decimal point position:	Without, settable from 0.1, 0.01, or 0.001
Sampling cycle:	0.5 seconds
PV bias:	-1999–2000 digits
PV ramp:	0.500–1.500 times input value
PV filter:	OFF, 1–100 sec.
Scaleover display:	LLLL, HHHH
Isolation:	Uninsulated from system and DI, but insulated from other input

## ■ Control mode

Expert PID control with auto-tuning function

### ● Control output

Contact (Y):	Contact (1a), 240V AC, 2.5 A: Resistive load/1 A: Inductive load
SSR drive voltage (P):	12 V ± 1.5 V DC (max. load current 20 mA)
Current (I):	4–20 mA, max. load resistance 600Ω
Voltage (V):	0–10 V, max. current 2 mA
Output resolution:	0.01% (1/10000)
No. of SV:	2
No. of PID:	2 classes
Proportional band:	OFF, 0.1–999.9% (ON-OFF action when OFF)
Integral time:	OFF, 1–6000 sec. (P or PD action when OFF)
Derivative time:	OFF, 1–3600 sec. (P or PI action when OFF)
Target value function:	OFF, 0.01–1.00
Output limiter:	Lower limit 0.0%–99.9%, higher limit 0.1–100.0% (lower limit value < Higher limit value)
Manual reset:	-50.0–50.0% (Valid when I = OFF)
ON-OFF hysteresis:	1–999 digits (Valid when P = OFF)
Proportional cycle:	1–120 sec., 1 sec. step
Control output characteristics:	Reverse/direct selectable

### ● Manual control

Output setting range:	0.0–100.0 %, 0.1% step
Output update cycle:	500 ms (0.5 sec.)
Manual n auto tuning:	Balanceless/bumpless action (switch through front panel key switch or external control input [DI])

## ■ Event output (EV)

No. of output:	Standard 2 points (EV1-EV2)																																				
Constant rating:	Contact (1a), 240 V AC, 1 A: Resistive load (common)																																				
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