

Programmable Signal Conditioner

SA Series

with Dual display

I/O programmable

Quick calibration by 3 front keys

UP key

DOWN key

MODE key

Dual output

Input

Output 1

Output 2

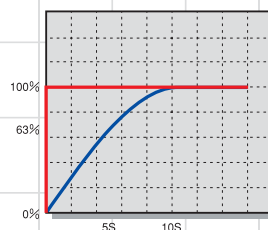
4-digits Dual display

(input and output)

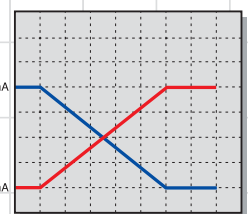
Input display
(real value)

Output display
(percentage)

Various functions
incorporated



Filter time constant
(Ramp buffer)



Reverse output

Make your work "convy"nient with CONVY

Configurable I/O minimizes your stock.

Oversee your I/O with dual front displays.

No need to purchase extra configuration software or units, front key configurable

Various functions incorporated as standard besides signal conversion

Yes, the answer is CONVY.

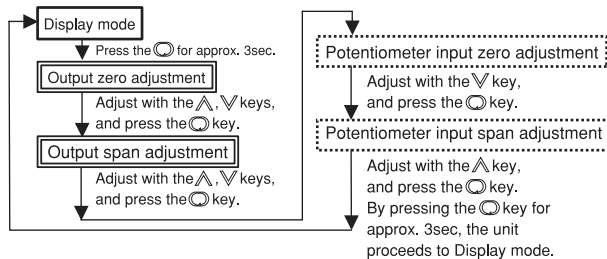
Safety standard: UL/C-UL, CE marking pending

Feature 1 I/O configurable

I/O configuration with 3 front keys (UP, DOWN, and MODE key). Besides I/O configuration, other items such as ramp time, reverse output are configurable with these keys.



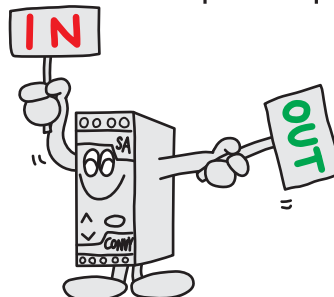
3-step output adjustment (5-step potentiometer input)



Feature 2 Dual display

4 digits Dual display for input (real value) and output (percentage) is incorporated. The indication time is adjustable within 0:00 — 60:00 (Min:Sec) for saving energy.

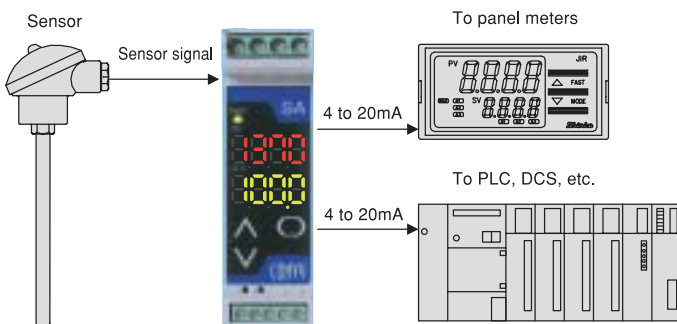
Input display
Output display



(Actual size)

Feature 3 Dual output models

Signal splitter is available with models: SAWU (Universal I/O) and SAWD (Current loop supply).

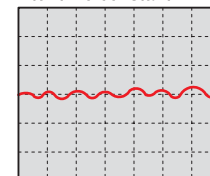


Please note that Input, Output1, Output2 and Power are insulated from one another.

Feature 4 Various functions

Filter time constant (Ramp buffer) and Reverse output function incorporated as standard. The adjustable range for the Filter time constant is within 0.0 to 10.0sec.

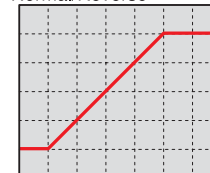
Filter time constant



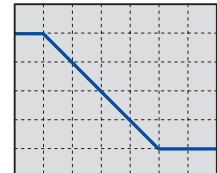
Reducing noise



Normal/Reverse



Reverse action



Model

1 input, 1 output		1 input, 2 outputs	
SAE	Thermocouple	SAWU	Universal (2 outputs)
SAR	RTD	SAWD	Current loop supply (2 outputs)
SAA	DC current	Ordering example: <div>SA□□—□□ Power supply ———— Output 2 0: 100 to 240V AC 0: 4 to 20mA (Fixed) 1: 24V AC/DC 1: 0 to 20mA (Fixed)</div>	
SAV	DC voltage		
SAP	Potentiometer		
SAU	Universal		
SAD	Current loop supply		

General specifications

External dimensions	22.5 x 75 x 100mm (W x H x D)			
Mounting	DIN rail mounting			
Case	Flame resistant resin Color, Light gray			
Panel	Membrane sheet			
Display	Input : 7-segment Red LED display 4 digits, Character size, 7.4 x 4mm (H x W) Output : 7-segment Green LED display 4 digits, Character size, 7.4 x 4mm (H x W)			
Basic accuracy	Within $\pm 0.1\%$ of each input span (SAE, SAR, SAU, SAWU), Within $\pm 0.1\%$ (SAA, SAV, SAP, SAD, SAWD)			
Cold junction compensation accuracy	Within $\pm 1^{\circ}\text{C}$, at -5 to 55°C [SAE, SAU/SAWU (for only thermocouple input)]			
Response time	0.5sec (typical) (0 \rightarrow 90%)	SAW series: Output 1; 0.5sec (typical) (0 \rightarrow 90%) Output 2; 1.0sec (typical) (0 \rightarrow 90%)		
Temperature coefficient	$\pm 0.015\%/^{\circ}\text{C}$			
Insulation resistance	Between Input — Output — Power: 10M Ω or more, at 500V DC			
Dielectric strength	Between Input — Output — Power: 2000V AC for 1 minute, Input 1 — Output 2: 1350V AC for 1 minute			
Power supply	100 to 240V AC (85 to 264V AC) 50/60Hz, 24V AC/DC (20 to 28V AC/DC)			
Ambient temperature	-5 to $+55^{\circ}\text{C}$			
Ambient humidity	35 to 85%RH (non-condensing)			
Weight	Approx. 120g			

Shunt resistor (Required for DC current input type, sold separately) Specify the model according to the input range.

Input	Model	Specifications	
4 to 20mA DC, 0 to 20mA DC, 0 to 16mA DC	RES-S02-050	50 Ω	$\pm 0.1\%$
2 to 10mA DC, 0 to 10mA DC	RES-S02-100	100 Ω	$\pm 0.1\%$
1 to 5mA DC	RES-S02-200	200 Ω	$\pm 0.1\%$
0 to 1mA DC	RES-S02-01K	1k Ω	$\pm 0.1\%$

Input specifications

SAE, SAU/SAWU (Thermocouple) Input resistance: 1M Ω or more

External resistance: 100 Ω or less, however, B, 40 Ω or less

Thermocouple	Input range	
K	-200 to 1370°C	-328 to 2498°F
J	-200 to 1000°C	-328 to 1832°F
R	-50 to 1760°C	-58 to 3200°F
S	-50 to 1760°C	-58 to 3200°F
B	0 to 1820°C	32 to 3308°F
E	-200 to 800°C	-328 to 1472°F
T	-200 to 400°C	-328 to 752°F
N	-200 to 1300°C	-328 to 2372°F
PL-II	0 to 1390°C	32 to 2534°F
W5Re/W26Re	0 to 2315°C	32 to 4199°F
W3Re/W25Re	0 to 2315°C	32 to 4199°F

SAR, SAU/SAWU (RTD, 3-wire system)

Input detection current: Approx. 0.2mA, Allowable lead wire resistance: 10 Ω or less per wire

RTD	Input range	
Pt100	-200 to 850°C	-328 to 1562°F
JPt100	-200 to 500°C	-328 to 932°F

SAA, SAU/SAWU (DC current)

Input	Shunt resistor
4 to 20mA DC	50 Ω
0 to 20mA DC	
0 to 16mA DC	
2 to 10mA DC	100 Ω
0 to 10mA DC	
1 to 5mA DC	200 Ω
0 to 1mA DC	1k Ω

Connect a shunt resistor (sold separately) between input terminals.

Output specifications

Output configurable

DC current (SAW series: Output 1)

Output	Allowable load resistance	Zero adjustment range	Span adjustment range
4 to 20mA DC	700 Ω or less	-5 to 5%	95 to 105%
0 to 20mA DC	700 Ω or less	0 to 5%	95 to 105%
0 to 12mA DC	1.2k Ω or less	0 to 5%	95 to 105%
0 to 10mA DC	1.2k Ω or less	0 to 5%	95 to 105%
1 to 5mA DC	2.4k Ω or less	-5 to 5%	95 to 105%

Output 2 (Customer specified) (Fixed range for only SAW series)

Output	Allowable load resistance	Zero adjustment range	Span adjustment range
4 to 20mA DC	300 Ω or less	-5 to 5%	95 to 105%
0 to 20mA DC	300 Ω or less	0 to 5%	95 to 105%

SAV, SAU (DC voltage)

Input	Input resistance
0 to 10mV DC	1M Ω
-10 to 10mV DC	
0 to 50mV DC	
0 to 60mV DC	
0 to 100mV DC	
0 to 1V DC	
0 to 5V DC	
1 to 5V DC	
0 to 10V DC	

SAP, SAU (Potentiometer)

All resistance: 100 Ω to 10k Ω , Reference voltage: 1.0V DC

SAD, SAWD (Current loop supply)

Input	Shunt resistor
4 to 20mA DC	50 Ω built-in

SAWU (DC voltage)

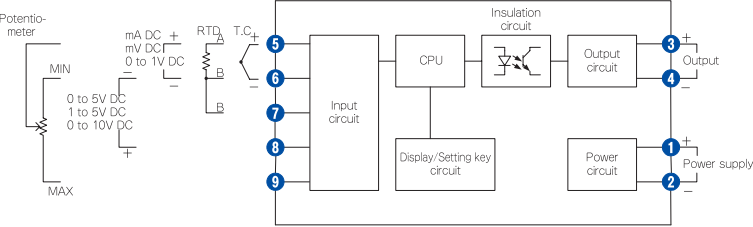
Input	Input resistance
0 to 10mV DC	1M Ω
-10 to 10mV DC	
0 to 50mV DC	
0 to 60mV DC	
0 to 100mV DC	
0 to 1V DC	

DC voltage (SAW series: Output 1)

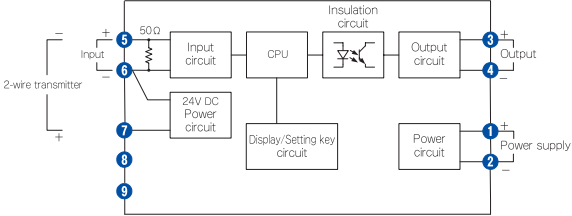
Output	Allowable load resistance	Zero adjustment range	Span adjustment range
0 to 1V DC	100 Ω or more	0 to 5%	95 to 105%
0 to 5V DC	500 Ω or more	0 to 5%	95 to 105%
1 to 5V DC	500 Ω or more	-5 to 5%	95 to 105%
0 to 10V DC	1k Ω or more	0 to 5%	95 to 105%

■Terminal arrangement, Circuit configuration

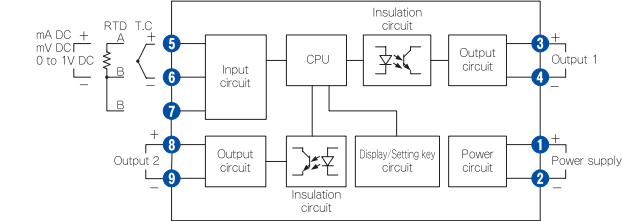
SA series (Universal)
(Thermocouple, RTD, DC current, DC voltage, Potentiometer)



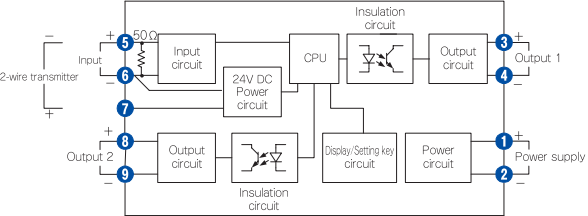
SAD (Current loop supply)



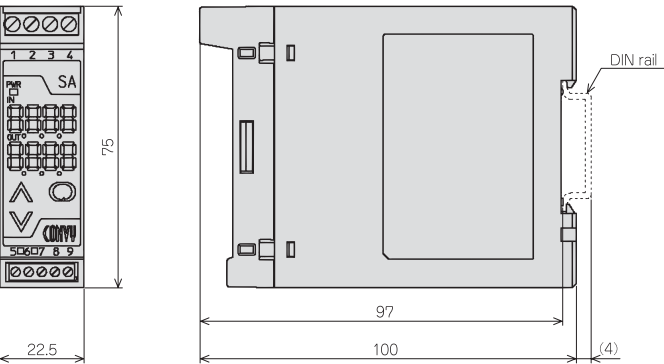
SAWU series (Universal with 2 outputs)



SAWD (Current loop supply with 2 outputs)



■External dimensions (Unit: mm)

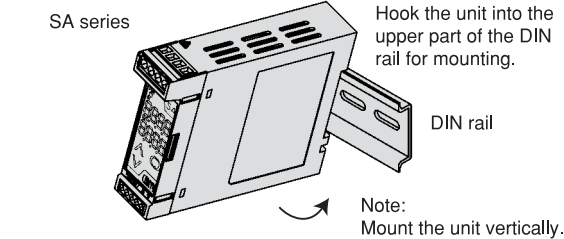


■Recommended ferrules (for mounting terminals)

Terminal number	Terminal screw	Ferrules with insulation sleeve	Conductor cross sections	Tightening torque	Crimping pliers
① to ④	M2.6	Al 0.25-8 YE	0.2 to 0.25mm ²	0.5 to 0.6N·m	CRIMPFOX ZA 3 CRIMPFOX UD 6
		Al 0.34-8 TQ	0.25 to 0.34mm ²		
		Al 0.5-8 WH	0.34 to 0.5mm ²		
		Al 0.75-8 GY	0.5 to 0.75mm ²		
		Al 1.0-8 RD	0.75 to 1.0mm ²		
⑤ to ⑨	M2.0	Al 1.5-8 BK	1.0 to 1.5mm ²	0.22 to 0.25N·m	
		Al 0.25-8 YE	0.2 to 0.25mm ²		
		Al 0.34-8 TQ	0.25 to 0.34mm ²		
		Al 0.5-8 WH	0.34 to 0.5mm ²		


Please use ferrules made by Phoenix Contact GMBH & CO.

■Mounting to DIN rail



■Recommended fastening plates (for DIN rail)

Omron Corporation	End plate	PFP-M
IDEAC Corporation	Fastening plate	BNL6P, BNL8P
Matsushita Electric Works, LTD.	Fastening plate	ATA4806



SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after consulting purpose of use with our agency or main office.
(Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in the manual.

Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.



· This catalog is as of Sep. 2005. Specifications and external appearance are subject to change without prior notice.
· If you have any inquiries, please consult our agency or with us directly.

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