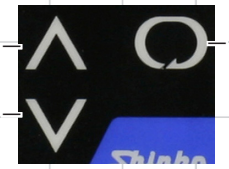
Shinko

KEMA CERTIFICATE ISO 9001:2000 DUTCH COUNCIL FOR ACCREDITATION C 013
KEMA CERTIFICATE ISO 14001:2004 DUTCH COUNCIL FOR ACCREDITATION C 390
(HQ only)

Programmable Signal Conditioner

SA Series
with Dual display

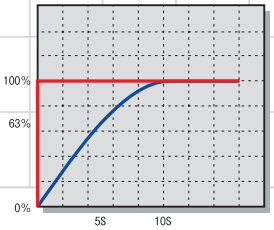
I/O programmable
Quick settings by 3 front keys



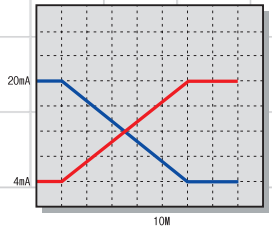
Dual output

4-digits Dual display
(input and output)

Various functions incorporated



Filter time constant
(Ramp buffer)



Reverse output

Signal Conditioner

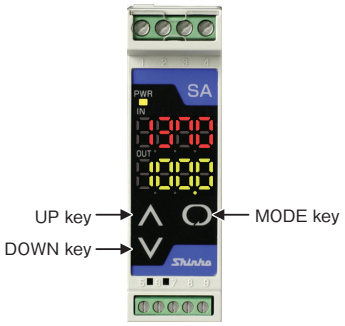
A Complete Set of Functions and Features, The SA series.

Feature 1 I/O Freely Changeable

●Reduce stock
A wide range of I/O minimizes your need for stock.

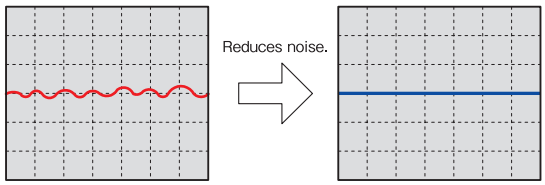
●Simple operation
I/O can be changed with 3 keys.

●Easy checking
Oversee your I/O on the dual front displays.

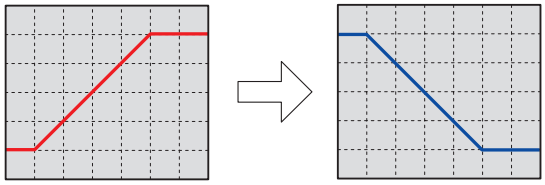


Feature 2 Convenient functions incorporated as standard

●In the case of input signals with noise
Filter time constant



●When Reverse action is needed
Normal/Reverse function



■ Ordering example

＊The following ordering example differs depending on models. Please consult us.

SA □ □ − □ □

Model	(e.g.) SAU-□□, SAWU-□□
Power supply	0: 100 to 240V AC, 1: 24V AC/DC
Output 2	0: 4 to 20mA (Fixed), 1: 0 to 20mA (Fixed)

■ Model

1 input, 1 output	1 input, 2 outputs	2 inputs, 1 output
SAU : Universal	SADR : Current loop supply (ratio)	SAAP : Linearizer (Current)
SAE : Thermocouple	SAAS : High/Low Selector (2 inputs,1 output)	SAVP : Linearizer (Voltage)
SAR : RTD	SAAR : Ratio Transmitter (Current)	SAFD : Pulse Scaler
SAA : DC current	SAVR : Ratio Transmitter (Voltage)	SAFI : Pulse Isolator
SAV : DC voltage	SAWAX : Split-range Transmitter (Current) (2 outputs)	SAFU-1 : Ultra low frequency Transmitter
SAP : Potentiometer	SAWVX : Split-range Transmitter (Voltage) (2 outputs)	SAFU-2 : Low frequency Transmitter
SAD : Current loop supply	SAAL : Limiter (Current)	SAFU-3 : Low frequency Transmitter
SAD-F : Current loop supply	SAVL : Limiter (Voltage)	SAFU-4 : Frequency Transmitter

1 input, 2 outputs	
SAWU : Universal (2 outputs)	SAWV : DC voltage (2 outputs)
SAWE : Thermocouple (2 outputs)	SAWD : Current loop supply (2 outputs)
SAWR : RTD (2 outputs)	SAWD-F: Current loop supply (2 outputs)
SAWA : DC current (2 outputs)	

1 input, 2 alarm outputs
SAEA : Alarm Detector (Thermocouple)
SARA : Alarm Detector (RTD)
SAAA : Alarm Detector (Current)
SAVA : Alarm Detector (Voltage)

■ General specifications

External dimensions	22.5 x 75 x 100mm (W x H x D)
Weight	Approx. 120g
Mounting	DIN rail mounting
Case material, Color	Case material: Flame-resistant resin Color: Light gray
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 ±0.1% of each input span [SAEA, SAAA, SAVA: Within ±0.2% of each input span]
Cold junction compensation accuracy	Within ±1℃ , at −5 to 55℃ [SAU/SAWU (for only thermocouple input), SAE, SAWE SAEA]
Response time	0.5sec (typical) (0→90%) SAW series: Output 1; 0.5sec (typical) (0→90%) Output 2; 1.0sec (typical) (0→90%), SAxA series: 1 sec or less, SAFI: 15μS or less, SAFU-1/SAFU-2: Pulse cycle+200ms, SAFU-3/SAFU-4: Frequency sampling period+700ms or less
Temperature coefficient	±0.015%/℃
Insulation resistance	Between Input − Output − Power: 10MΩ or more, at 500V DC
Dielectric strength	Between Input − Output − Power: 2000V AC for 1 minute SAW series: Between Input − Output 2: 1350V AC for 1 minute SAxA series: Between Alarm 1 output − Alarm 2 output − Power: 1500V AC for 1 minute
Power supply	100 to 240V AC (85 to 264V AC) 50/60Hz, 24V AC/DC (20 to 28V AC/DC) 50/60Hz
Environment	Ambient temperature: −5 to 55℃ Ambient humidity: 35 to 85%RH (non-condensing)
Safety Standard	UL: Power input rating 100 to 240V, 24V AC/DC File No. E303913 Approved model: SAU, SAE, SAR, SAA, SAV, SAP, SAD, SAWU, SAWE, SAWR, SAWA, SAWV, SAWP, SAWD

・**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	50Ω ±0.1%
2 to 10mA DC, 0 to 10mA DC	RES-S02-100	100Ω ±0.1%
1 to 5mA DC	RES-S02-200	200Ω ±0.1%
0 to 1mA DC	RES-S02-01K	1kΩ ±0.1%

・**Communication cable (Non-insulated) (sold separately) for the SAAP, SAVP** Model: CMS-001 Specification: Console software CD included

■ Input specifications

・Thermocouple
(SAU, SAWU, SAE, SAWE, SAEA)
Input resistance: 1MΩ or more, External resistance: 100Ω or less, however, B, 40Ω or less

Thermocouple	Input range	
K	−200 to 1370℃	−328 to 2498℉
K*	−199.9 to 400.0℃	−199.9 to 752.0℉
J	−200 to 1000℃	−328 to 1832℉
R	−50 to 1760℃	−58 to 3200℉
S	−50 to 1760℃	−58 to 3200℉
B	0 to 1820℃	32 to 3308℉
E	−200 to 800℃	−328 to 1472℉
T	−200 to 400℃	−328 to 752.0℉
T*	−199.9 to 400.0℃	−199.9 to 752.0℉
N	−200 to 1300℃	−328 to 2372℉
PL-Ⅱ	0 to 1390℃	32 to 2534℉
W5Re/W26Re	0 to 2315℃	32 to 4199℉
W3Re/W25Re	0 to 2315℃	32 to 4199℉

* Applicable to SAEA

・RTD, 3-wire system (SAU, SAWU, SAR, SAWR, SARA)
Input detection current: Approx. 0.2mA, Allowable lead wire resistance: 10Ω or less per wire

RTD	Input range	
Pt100*	−50.0 to 100.0℃	−58.0 to 212.0℉
Pt100*	−50.0 to 300.0℃	−58.0 to 572.0℉
Pt100	−200 to 850℃	−328 to 1562℉
JPt100*	−50.0 to 100.0℃	−58.0 to 212.0℉
JPt100*	−50.0 to 300.0℃	−58.0 to 572.0℉
JPt100	−200 to 500℃	−328 to 932℉

* Applicable to SARA

・Potentiometer (SAU, SAP)

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

・Current loop supply (SAD, SAWD)

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

・Line driver (SAFx series)

AM26LS31 or equivalent, Receiver: AM26LS32 or equivalent

■ Output specifications Output configurable

・DC current (SAW series: Output 1)

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

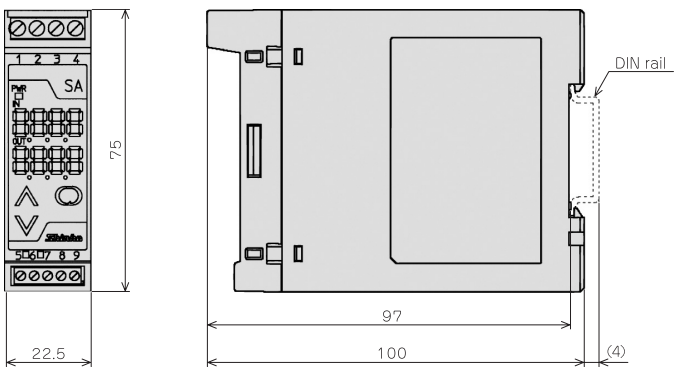
・Output 2 (Customer specified) (Fixed range for only SAW series)

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

・Alarm output (SAxA series)
Action: ON/OFF action, Hysteresis: 0.1 to 100.0℃ (℉) or 0.1 to 100.0%FS
Alarm type: No alarm, High limit, Low limit, High limit with standby,
Low limit with standby

	Control output
Alarm 1 output	Relay contact 1a, 3A 250V (Resistive load), 1A 250V (Inductive load cosØ=0.4)
Alarm 2 output	Open collector, 0.1A 24V DC

■ External dimensions (Scale: mm)



・DC current
(SAU, SAWU, SAA, SAWA, SAWAX, SAAR, SAAL, SAAP, SAAS*, SAAA)
Connect a shunt resistor (sold separately) between input terminals. *SAAS: 4 to 20mA DC input only

Input	Shunt resistance
4 to 20mA DC, 0 to 20mA DC, 0 to 16mA DC	50Ω
2 to 10mA DC, 0 to 10mA DC	100Ω
1 to 5mA DC	200Ω
0 to 1mA DC	1kΩ

・DC voltage
SAU, SAV, SAVR, SAVL, SAVP

Input	Input resistance
0 to 10mV DC	1MΩ
−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	

SAWU, SAWV, SAWVX

Input	Input resistance
0 to 10mV DC	1MΩ
−10 to 10mV DC	
0 to 50mV DC	
0 to 60mV DC	
0 to 100mV DC	
0 to 1V DC	

SAVA

Input	Input resistance
0 to 100mV DC	1MΩ
0 to 1V DC	
0 to 5V DC	100kΩ
1 to 5V DC	
0 to 10V DC	

・Open corrector/Voltage pulse (SAFx series)

Frequency range		Minimum pulse width
0.001Hz to 15kHz		5μs or more
0.001Hz to 0.01Hz	0.001Hz to 9.999Hz	4μs or more
0.001Hz to 1Hz	0.001Hz to 100Hz	
0.001Hz to 50Hz	0.001Hz to 9999Hz	
0.001Hz to 1kHz	0.001Hz to 100kHz	

・Contact switch (SAFI, SAFU-1)

Frequency range	Minimum pulse width
0.001Hz to 10Hz	10ms or more
0.001Hz to 5Hz	10ms or more

・DC voltage (SAW series: Output 1)

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

・Open collector (SAFD, SAFI)

Output rating	Max. frequency
12V DC/30mA	15kHz

・Voltage pulse (SAFD, SAFI)

Output rating	Allowable load resistance	Max. frequency
5V, 12V DC±10%	500Ω or more	15kHz

■ 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	AI 0.25-8 YE	0.2 to 0.25mm²	0.5 to 0.6N・m	CRIMPFOX ZA 3 CRIMPFOX UD 6
		AI 0.34-8 TQ	0.25 to 0.34mm²		
		AI 0.5-8 WH	0.34 to 0.5mm²		
		AI 0.75-8 GY	0.5 to 0.75mm²		
		AI 1.0-8 RD	0.75 to 1.0mm²		
		AI 1.5-8 BK	1.0 to 1.5mm²		
⑤ to ⑨	M2.0	AI 0.25-8 YE	0.2 to 0.25mm²	0.22 to 0.25N・m	
		AI 0.34-8 TQ	0.25 to 0.34mm²		
		AI 0.5-8 WH	0.34 to 0.5mm²		

Please use ferrules made by Phoenix Contact GMBH &CO.

■ Recommended fastening plates (for DIN rail)

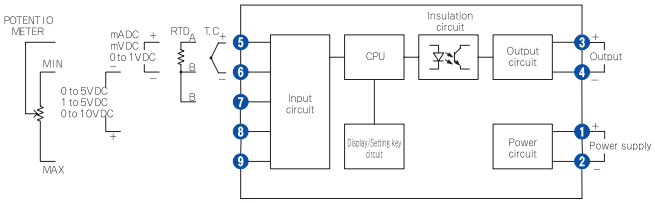
Manufacturer	Model
Omron Corporation	End plate PFP-M
IDEC Corporation	Fastening plate BNL6
Panasonic Electric Works Co., Ltd.	Fastening plate ATA4806

■ Mounting to DIN rail

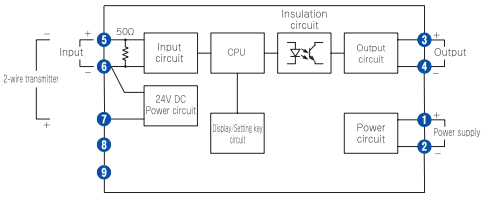
Hook the unit into the upper part of the DIN rail for mounting.
Note: Mount the unit vertically.

■ Terminal arrangement, Circuit configuration

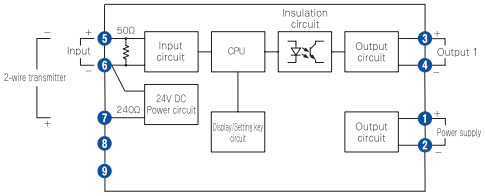
SAU, SAE, SAR, SAP



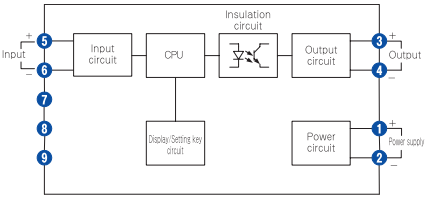
SAD, SADR



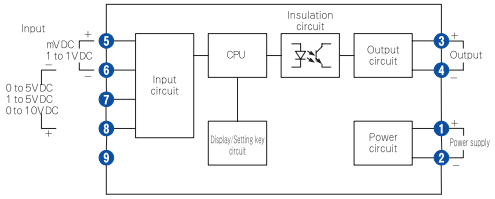
SAD-F



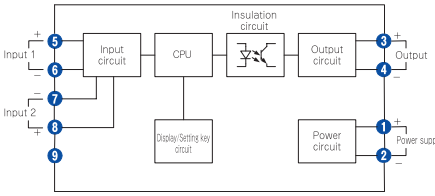
SAA, SAAR, SAAL, SAAP



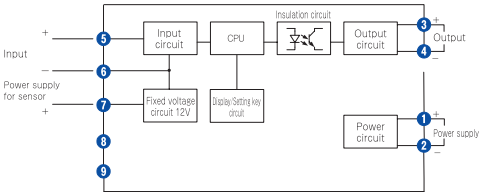
SAV, SAVR, SAVL, SAVP



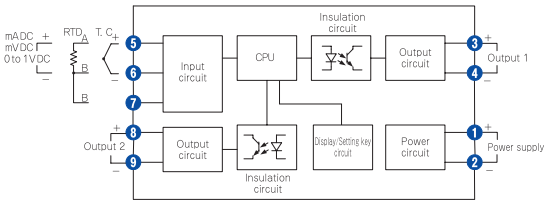
SAAS



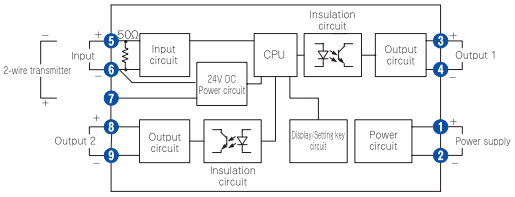
SAFD, SAFI, SAFU-1 to 4



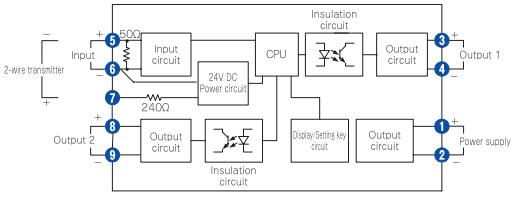
SAWU, SAWE, SAWR, SAWA, SAWV, SAWAX, SAWVX



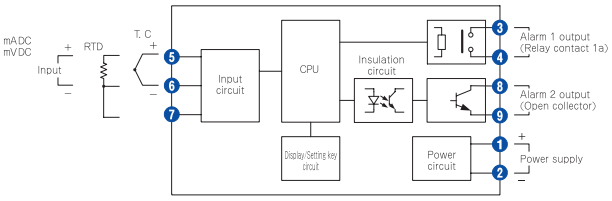
SAWD



SAWD-F



SAEA, SARA, SAAA, SAVA



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 July, 2009 and its contents are subject to change without notice.
· If you have any inquiries, please consult us or our agency.

SHINKO TECHNOS CO., LTD.
OVERSEAS DIVISION

Reg. Office : 2-5-1, Senbahigashi, Minoo, Osaka, 562-0035, Japan
Tel : 81 - 72 - 727 - 6100
Fax : 81 - 72 - 727 - 7006
URL : http://www. shinko-technos. co. jp
E-mail : overseas @ shinko-technos. co. jp