

SA series

SPEC. SHEET

Ratio Transmitter (with I/O bias, isolated)

Model: **SAAR**

(with indication function)

Model

SAAR -

Power supply
0: 100 to 240V AC
1: 24V AC/DC

How to order

Specify a model.
(e.g.) SAAR-0

Default value

| | |
|--------|--------------|
| Input | 4 to 20mA DC |
| Output | 4 to 20mA DC |

Accessories (sold separately)

| Name | Model | Specification |
|----------------|-------------|---------------|
| Shunt resistor | RES-S02-050 | 50Ω ±0.1% |
| | RES-S02-100 | 100Ω ±0.1% |
| | RES-S02-200 | 200Ω ±0.1% |
| | RES-S02-01K | 1kΩ ±0.1% |

Input specifications

DC current

| Input range | Shunt resistor |
|--------------|----------------|
| 4 to 20mA DC | 50Ω |
| 0 to 20mA DC | |
| 0 to 16mA DC | |
| 2 to 10mA DC | 100Ω |
| 0 to 10mA DC | |
| 1 to 5mA DC | 200Ω |
| 0 to 1mA DC | 1kΩ |

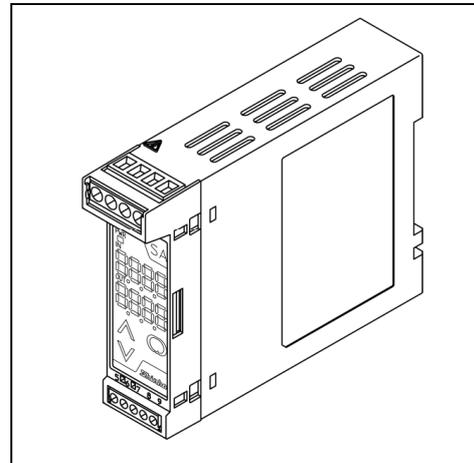
Connect a shunt resistor (sold separately) between input terminals.

Output specifications

When the output range lower limit is zero, even if a negative value is indicated on the Output display, the output value will not be negative.

DC current

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



DC voltage

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

Performance

Accuracy:

- Input: Within ±0.1% (When Ratio=1.00, bias=0%)
- Output: Within ±0.1% (When Ratio=1.00, bias=0%)

Display accuracy: Within input accuracy ±1 digit

Response time: 0.5 sec. (typical) (0 → 90%)

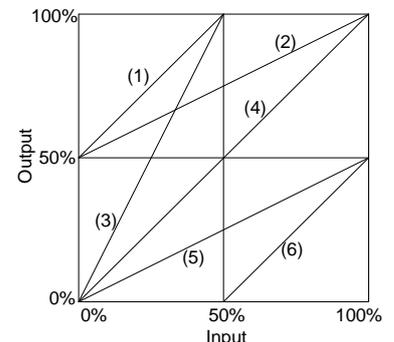
Ratio setting: 0.10 to 4.00 times

Bias setting: -100 to 100%

Equation: $O=R I+B$

where O =Output (%), R =Ratio, I =Input (%)
 B =Bias

- (1) $R=1.0$ $B=50$
- (2) $R=0.5$ $B=50$
- (3) $R=2.0$ $B=0$
- (4) $R=1.0$ $B=0$
- (5) $R=0.5$ $B=0$
- (6) $R=1.0$ $B=-50$



Temperature coefficient: ±0.015%/°C

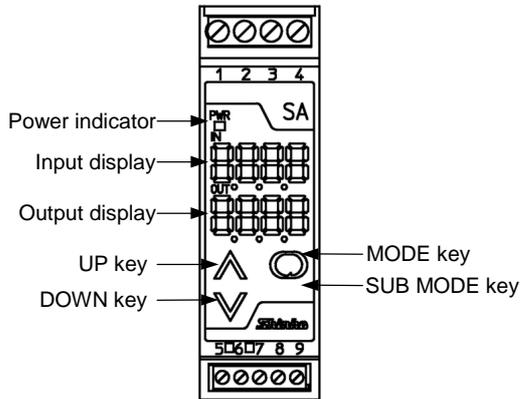
Insulation resistance : 10MΩ or more, at 500V DC
(Input - Output - Power)

Dielectric strength : 2.0kV AC for 1 minute
(Input - Output - Power)

Isolation: 3-port isolation (between Input - Output - Power)

General structure

Case : Flame-resistant resin Color: Light gray
 Front panel: Membrane sheet
 Setting : By the front keypad
 Indication : Input display:
 7-segment, Red LED display 4-digit
 Character size, 7.4 x 4.0mm (H x W)
 Output display:
 7-segment, Green LED display 4-digit
 Character size, 7.4 x 4.0mm (H x W)
 Power indicator: Green LED



Installation specifications

Power supply : 100 to 240V AC 50/60Hz
 24V AC/DC 50/60Hz
 Allowable voltage range: 85 to 264V AC
 20 to 28V AC/DC
 Power consumption : Approx. 6VA
 Ambient temperature : -5 to 55°C
 Ambient humidity : 35 to 85%RH (non-condensing)
 Weight : Approx. 120g
 Mounting method : DIN rail mounting
 External dimensions : 22.5 (W) x 75 (H) x 100 (D)mm

Attached functions

Power failure countermeasure:
 The data is backed up in non-volatile IC memory.
 Self diagnosis:
 The CPU is monitored by a watchdog timer, and when any abnormal status is found on the CPU, the unit is switched to warm-up status with turning all outputs off.

Environmental specification

RoHS directive compliance

Settings

Function keys
 (1) UP key : Increases the numeric value.
 (2) DOWN key : Decreases the numeric value.
 (3) MODE key : Selects the setting mode.
 (4) SUB MODE key: Press with the MODE key to select the setting mode.

Setting items

Setting by pressing the MODE key for 3 seconds

- (1) Output zero adjustment
- (2) Output span adjustment

Setting by the MODE key and SUB MODE key

- (1) Set value lock
- (2) Input type
- (3) Decimal point place
- (3) Output 0% value
- (4) Output 100% value
- (5) Filter time constant
- (6) Sensor correction
- (7) Output type
- (8) Output Normal/Reverse
- (9) Display selection
- (10) Indication time (11) Ratio (12) Bias

Displays and indicators

Input display : Indicates the input value.
 Indication of -2000 or less:
 The minus (-) sign and input value light alternately.
 Indication of 10000 or more:
 The lower 4 digits flash.
 Under range: " - - - - " flashes on the Input display.
 Over range : " - - - - " flashes on the Input display.
 Warm-up indication: For approx. 3 seconds after the power to the instrument is turned on, the input type is indicated on the Input display, and the output type is indicated on the Output display.
 Output display : Indicates the output volume in percentage (%) form.
 Power indicator : The green LED lights when the power to the instrument is turned on.

Ferrules

Terminals from 1 to 4

Insulation sleeve attached (Phoenix Contact GMBH & CO.)

| | |
|------------|----------------------------|
| A10.25-8YE | 0.2 – 0.25mm ² |
| A10.34-8TQ | 0.25 – 0.34mm ² |
| A10.5-8WH | 0.34 – 0.5mm ² |
| A10.75-8GY | 0.5 – 0.75mm ² |
| A11.0-8RD | 0.75 – 1.0mm ² |
| A11.5-8BK | 1.0 – 1.5mm ² |

Crimping pliers (Phoenix Contact GMBH & CO.)

CRIMPFOX ZA3
 CRIMPFOX UD6

Terminals from 5 to 9

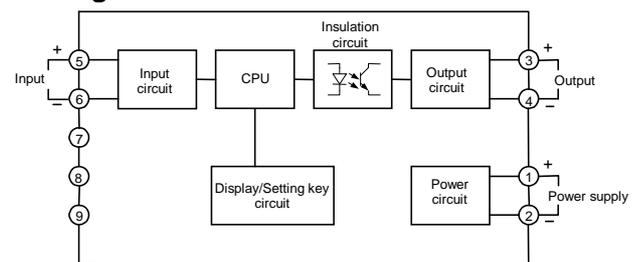
Insulation sleeve attached (Phoenix Contact GMBH & CO.)

| | |
|------------|----------------------------|
| A10.25-8YE | 0.2 – 0.25mm ² |
| A10.34-8TQ | 0.25 – 0.34mm ² |
| A10.5-8WH | 0.34 – 0.5mm ² |

Crimping pliers (Phoenix Contact GMBH & CO.)

CRIMPFOX ZA3
 CRIMPFOX UD6

Circuit configuration and terminal arrangement



External dimensions (Scale: mm)

