## Shinho

## SF SERIES

## Model

Input
01: 4 to 20 mA DC
02: 0 to 20 mA DC
03: 0 to 16 mA DC
04: 2 to 10 mA DC
05: 0 to 10mA DC
06: 1 to 5 mA DC
07: 0 to 1mA DC
Input sampling period
01: 25 ms
02: 125 ms
03: 250 ms
Output
01: 4 to 20 mA DC $06: 0$ to 1 V DC 02: 0 to 20mA DC 07: 0 to 5 V DC
03: 0 to 12 mA DC 08: 1 to 5 V DC
04: 0 to 10mA DC 09: 0 to 10 V DC
05: 1 to 5mA DC
Socket
1: Screw fall prevention, finger-safe (For Y terminal)
2: For Ring terminal
Power supply
0: 100 to 240 V AC
1: 24 V AC/DC

## $\square$ How to Order

Specify a model and input range.
(e.g.) SF1A-010101-1-0

Default value

| Input | 4 to 20 mA DC |
| :--- | :--- |
| Output | 4 to 20 mA DC |
| Input sampling period | 25 ms |

Accessories (Sold Separately)

| Name |  | Model | Spec. |
| :---: | :---: | :---: | :---: |
| Shunt | Ring <br> Resistor | RES-S01-050 | $50 \Omega \pm 0.1 \%$ |
|  |  | RES-S01-100 | $100 \Omega \pm 0.1 \%$ |
|  |  | RES-S01-200 | $200 \Omega \pm 0.1 \%$ |
|  | RES-S01-01K | $1 \mathrm{k} \Omega \pm 0.1 \%$ |  |
|  | YES-S06-050 |  |  |
|  | terminal | RES-S06-100 | $100 \Omega \pm 0.1 \%$ |
|  |  | RES-S06-200 | $200 \Omega \pm 0.1 \%$ |
|  | RES-S06-01K | $1 \mathrm{k} \Omega \pm 0.1 \%$ |  |

## Input Specifications

DC current [Connect a shunt resistor (sold separately) between input terminals.]

| Input range | Shunt resistor |
| :---: | :---: |
| 4 to 20mA DC | 50, |
| 0 to 20mA DC |  |
| 0 to 16mA DC |  |
| 2 to 10mA DC | 100 |
| 0 to 10mA DC |  |
| 1 to 5mA DC | 200, |
| 0 to 1mA DC | $1 \mathrm{k} \Omega$ |



## $\square$ Output Specifications

DC Current

| Output <br> range | Allowable <br> load <br> resistance | Zero <br> adjustment <br> range | Span <br> adjustment <br> range |
| :---: | :---: | :---: | :---: |
| 4 to 20 mA DC | $700 \Omega$ or less | -5 to $5 \%$ | 95 to $105 \%$ |
| 0 to 20 mA DC | $700 \Omega$ or less | 0 to $5 \%$ | 95 to $105 \%$ |
| 0 to 12 mA DC | $1.2 \mathrm{k} \Omega$ or less | 0 to $5 \%$ | 95 to $105 \%$ |
| 0 to 10 mA DC | $1.2 \mathrm{k} \Omega$ or less | 0 to $5 \%$ | 95 to $105 \%$ |
| 1 to 5 mA DC | $2.4 \mathrm{k} \Omega$ or less | -5 to $5 \%$ | 95 to $105 \%$ |

DC Voltage

| Output <br> range | Allowable <br> load <br> resistance | Zero <br> adjustment <br> range | Span <br> adjustment <br> range |
| :---: | :---: | :---: | :---: |
| 0 to 1 V DC | $100 \Omega$ or more | 0 to $5 \%$ | 95 to $105 \%$ |
| 0 to 5 V DC | $500 \Omega$ or more | 0 to $5 \%$ | 95 to $105 \%$ |
| 1 to 5 V DC | $500 \Omega$ or more | -5 to $5 \%$ | 95 to $105 \%$ |
| 0 to 10 V DC | $1 \mathrm{k} \Omega$ or more | 0 to $5 \%$ | 95 to $105 \%$ |

## Performance

Accuracy: Within $\pm 0.2 \%$ of input span (at $23^{\circ} \mathrm{C}$ of ambient temperature)
Input sampling period: $25 \mathrm{~ms}, 125 \mathrm{~ms}$, 250 ms
(Must be specified.)
Response time:
65 ms (typ.)( $0 \rightarrow 90 \%$ )(Input sampling period: 25 ms )
225 ms (typ.)( $0 \rightarrow 90 \%$ )(Input sampling period: 125ms)
425ms (typ.)( $0 \rightarrow 90 \%$ )(Input sampling period: 250ms)
Temperature coefficient: $\pm 0.015 \% /{ }^{\circ} \mathrm{C}$ or less
Insulation resistance: $10 \mathrm{M} \Omega$ or more, at 500 V DC
(Input - Output - Power)
Dielectric strength: 2.0 kV AC for 1 minute (Input - Output - Power)

## ■ General Structure

Case: Flame-resistant resin Color: Light gray Front panel: Membrane sheet
Adjustment: Using the front keypad
(1) Press the MODE Key. The ZERO indicator becomes lit. The unit moves to the Output ZERO adjustment mode.
(2) Press the MODE Key in the Output ZERO adjustment mode. The SPAN indicator becomes lit. The unit moves to the Output SPAN adjustment mode.
(3) Pressing the MODE Key returns to Step (1). If the MODE Key is pressed for approx 3 sec , or if no operation occurs for approx. 30 sec , the unit will revert to the RUN mode.

## Indication:

PWR indicator (Green):
Lit when power is turned ON.
Flashes in 0.5 second cycles if non-volatile memory errors occur.
Flashes in 0.25 second cycles if input errors occur. ZERO indicator (Yellow):

Lit in the Output ZERO adjustment mode.
SPAN indicator (Yellow):
Lit in the Output SPAN adjustment mode.


## Installation Specifications

Power supply: 100 to 240 V AC $50 / 60 \mathrm{~Hz}$

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24 \mathrm{~V} \mathrm{AC/DC} 50 / 60 \mathrm{~Hz}
$$

Allowable voltage range: 85 to 264 V AC
20 to 28 V AC/DC
Power consumption: Approx. 6VA
Ambient temperature: -5 to $55^{\circ} \mathrm{C}$
Ambient humidity: 35 to $85 \%$ RH (non-condensing)
Weight: Approx. 190g (including socket)
Mounting: DIN rail
Dimensions: W30 $\times$ H88 x D108mm (including socket)

## - 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 an abnormal status is found on the CPU, the unit is switched to warm-up status turning all outputs OFF.

## ■ Environmental Specifications

RoHS directive compliance

- Settings

Function keys
(1) UP Key: Increases a numerical value.
(2) DOWN Key: Decreases a numerical value.
(3) MODE Key: Switches from RUN mode to the Adjustment mode, and registers the adjustment value.

## Solderless Terminals Y Terminal



Ring Terminal


Circuit Configuration, Terminal Arrangement


■ External Dimensions (Scale: mm)


