

# General Specifications

Model SIND (Style S)  
Integrator

YEW **SERIES 80**

GS 01B04M01-02E

## ■ GENERAL

The SIND Integrator is a voltage-to-pulse converter that converts 1 to 5 V DC inputs to corresponding pulse frequency output. It can be used with a YS80 series SICD counter to totalize flow quantity.

Two integrating modes are available: proportional integration that directly totalizes the input, and square root integration that totalizes square-root values.

A PC (VJ77) or the JHT200 Handy Terminal\* is used for setting the Integrator parameters. On the SIND model with display setter (SIND-□04), input indication can be displayed and integrating ratio and low input cut off can be displayed / set on the front panel.

With the VJ77 Parameter Setting Tool you can do the following:

- Read/write all parameters at once
- Save read parameters to a file
- Copy parameters to other devices of the same model and suffix code (only with style code R or S).

\*: The BT200 BRAIN Terminal of YOKOGAWA Electric Corporation can also be connected. The adapter for modular jack (E9786WH) is required for connecting a PC (VJ77) or the JHT200 Handy Terminal to the Integrator.



Indication Setting Function (SIND-□04):

Digital indicator      5-digit 7-segment LED (1 row)

Indication range:      -19999 to +32000 (decimal point selectable)

At input value indication      LED indicator is out.  
LED indicators (PPH, LCT: green)

At integrating ratio (PPH) indication:      Lit

At low cutoff level indication (LCT):      Lit

Setter      Setting (→, ↑, SET, △) switches      4

Setting enable switch      1

Integrating ratio and low input cutoff can be set.

## ■ STANDARD SPECIFICATIONS

### Input Signals

Input:      1 to 5 V DC

Number of inputs:      1

Input resistance:      1 MΩ

### Output signal

Output:      Transistor contact or SICD counter drive pulse (24 V DC)

Number of outputs:      2

Load current:

Transistor contact      30 V DC, 150 mA or less

SICD counter drive pulse      24 V DC, 150 mA or less

Integration mode:      Proportional or square root

Integrating ratio range:      1 to 10000 pph

Pulse ON Time:      30 ms and 60 ms\*2

\*2:      Number of outputs becomes 1 as two outputs are shared.

Low input cutoff:

In proportional integration mode: Input cutoff level set to 0 to 10% of input signal.

In square-root integration mode: Input cutoff level set to 0.3 to 10% of input signal.

BRAIN Communication Function:

Parameters are set and functions specified by a PC (VJ77) or the JHT200 Handy Terminal\*.

## ■ MOUNTING AND APPEARANCE

Mounting:      Rack mounting

Wiring

Signal Wiring:      ISO M4 size (4 mm) screws on terminal block

Power and Ground Wiring

100 V version:      JIS C 8303 two-pin plug with earthing contact

Cable length: 300 mm

Power supply terminal type (option code /TB)

200 V version:      CEE 7 VII (CENELEC standard) plug (option code /A2ER)

Cable length: 300 mm

Power supply terminal type (option code /A2TB)

External Dimensions (depth behind panel):

180 (H) x 48 (W) x 300 (D) (mm)

Weight:      1.7 kg (including rack-mounting case)

## ■ STANDARD PERFORMANCE

Accuracy:  $\pm 0.5\%$  of span  
Maximum Power Consumption

Integrating ratio	Power Supply		
	24 V DC	100 V AC	220 V AC
1000 pph	100 mA	7.3 VA	10.2 VA
10000 pph	190 mA	10.8 VA	13.7 VA

## ■ OPTIONS

/NHR: Without rack case (internal unit only)  
/FBP: Power supply fuse bypass  
/LOCK: Power supply plug with lock  
/WSW: With spring washer  
/REK: Mount to same line with EK series rack  
/TB: With power supply terminal  
/A2TB: 220V version with power supply terminal  
/A2ER: 220V version with power supply plug

## ■ POWER SUPPLY AND ISOLATION

Power Supply Rated Voltage:

100 V version:

24-110 VDC  $\pm 10\%$ , 250 mA  
100-120 VAC  $\sim \pm 10\%$ , 50/60 Hz, 14.0 VA

220 V version:

135-300 VDC  $\pm 10\%$ , 30 mA  
200-240 VAC  $\sim \pm 10\%$ , 50/60 Hz, 15.0 VA

Power Supply Input Voltage: AC/DC both usage

100 V version: DC drive 20 to 130 V, no polarity  
AC drive 80 to 138 V, 47 to 63 Hz  
220 V version: DC drive 120 to 340 V, no polarity  
AC drive 138 to 264 V, 47 to 63 Hz

Insulation Resistance

Between I/O terminals and Ground: 100 M $\Omega$ /500 V DC

Between Power and Ground: 100 M $\Omega$ /500 V DC

Dielectric Strength

Between I/O terminals and Ground:  
500 V AC for 1 minute

Between Power and Ground:  
1000 V AC for 1 minute (100 V version)  
1500 V AC for 1 minute (220 V version)

## ■ NORMAL OPERATING CONDITIONS

Ambient Temperature: 0 to 50°C

Ambient Humidity: 5 to 90%RH (non-condensing)

Operating environment: Area free of hydrogen sulfide gas and other corrosive gases and dust and where the device is not exposed to sea breeze or direct sunlight.

Continuous vibration: (at 5 to 9 Hz) Half amplitude of 1.5 mm or less  
(at 9 to 150 Hz) 4.9m/s<sup>2</sup> or less, 1 oct/min for 90 minutes each in the three axis directions

Impact: 49 m/s<sup>2</sup> or less, 11 ms, 3 axes, 6 directions, 3 times each

Installation altitude: 2,000 m or less above sea level

Warm-up time: 15 minutes or more after the power is turned on

## ■ TRANSPORT AND STORAGE CONDITIONS

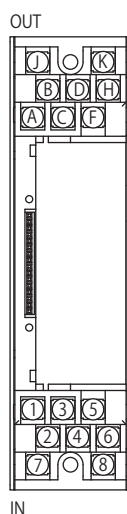
Temperature: -25 to 70°C

Temperature change rate: 20°C per hour or less

Humidity: 5 to 95%RH (no condensation)

## ■ TERMINAL CONNECTIONS

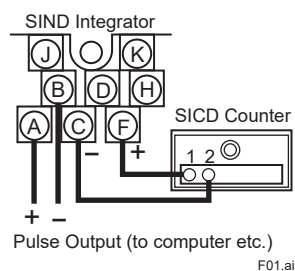
Terminal arrangement



Terminal Designation	Description	
	SICD Counter Drive Pulse	Transistor Contact
A	- SICD drive pulse-1 (*1, 3, 4)	+ Transistor contact-1 (*2, 3, 4)
B		
C		
D	- SICD drive pulse-2 (*1, 3, 4)	COM Transistor contact-2 (*2, 3, 4)
F		
H		
J		
K		

Do not connect to the output terminal when the terminal is not in use.

[WIRING EXAMPLE]

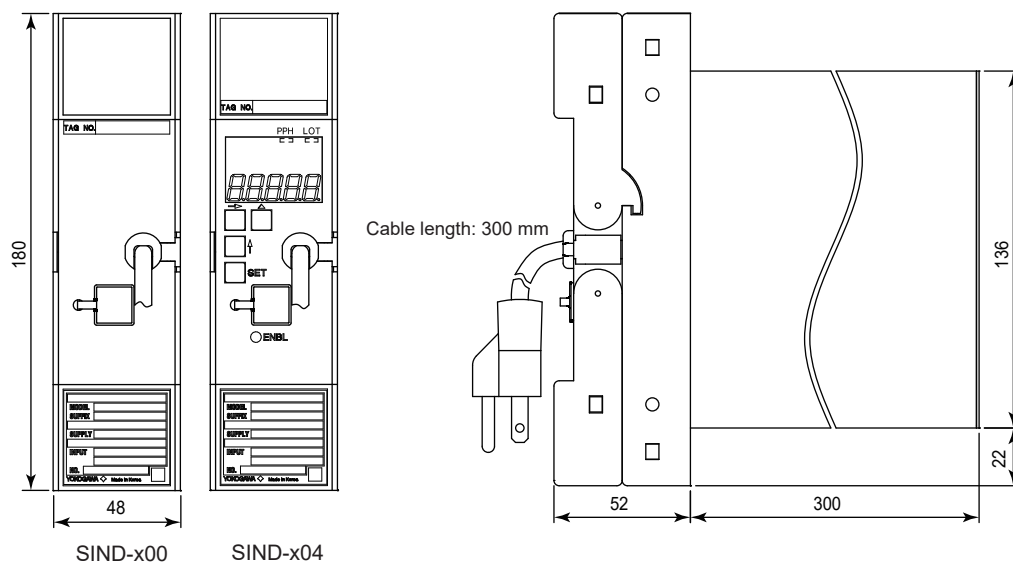


- \*1: Pulse signals can also be used to drive an electromagnetic counter of rating 24 V DC, 150 mA or less.
- \*2: Transistor contact output can be used to provide a pulse output signal to a computer or used to drive another counter when combined with an external power supply.
- \*3: When terminals A and C are shorted, a pulse signal with ON time of 60 ms is generated across between terminals A-C and F, and terminals A-C and B.
- \*4: When a counter other than SICD is used, connect a surge voltage protective diode in parallel with the counter coil.

Terminal Designation	Description
1	+ > Input (1 to 5 V DC)
2	
3	
4	
5	
6	
7	
8	

## ■ EXTERNAL DIMENSIONS

### Power supply plug type

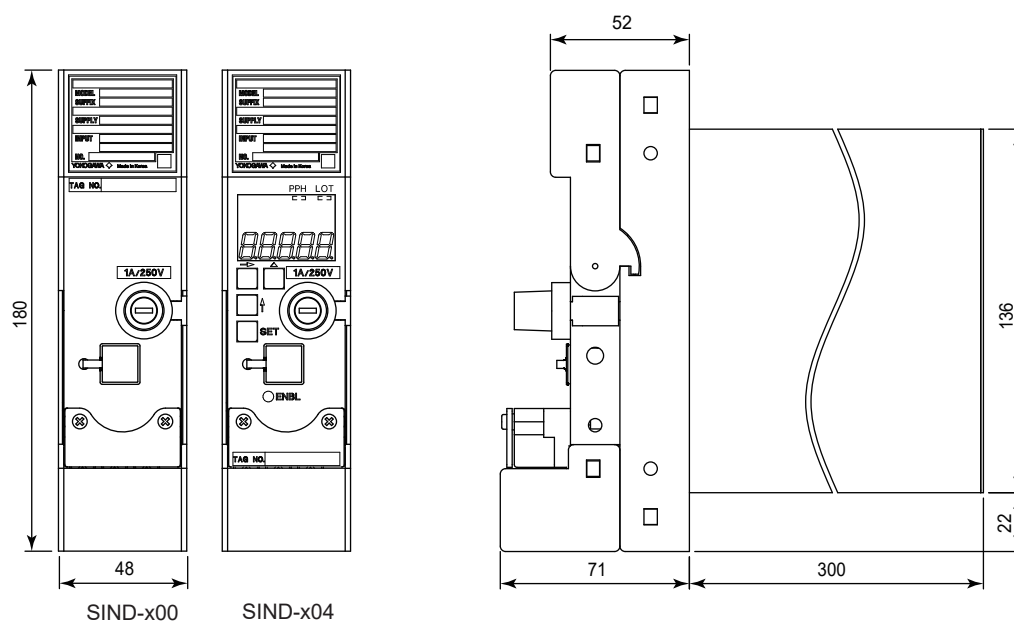


Trigonometry  
Unit: mm

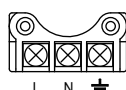
General tolerance =  $\pm(\text{value of tolerance class IT18 based on JIS B 0401-2016}) / 2$

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### Power supply terminal type(option /TB or /A2TB)



Power supply  
terminal block



Power and Ground Terminal connection  
(Connection screw: M4)

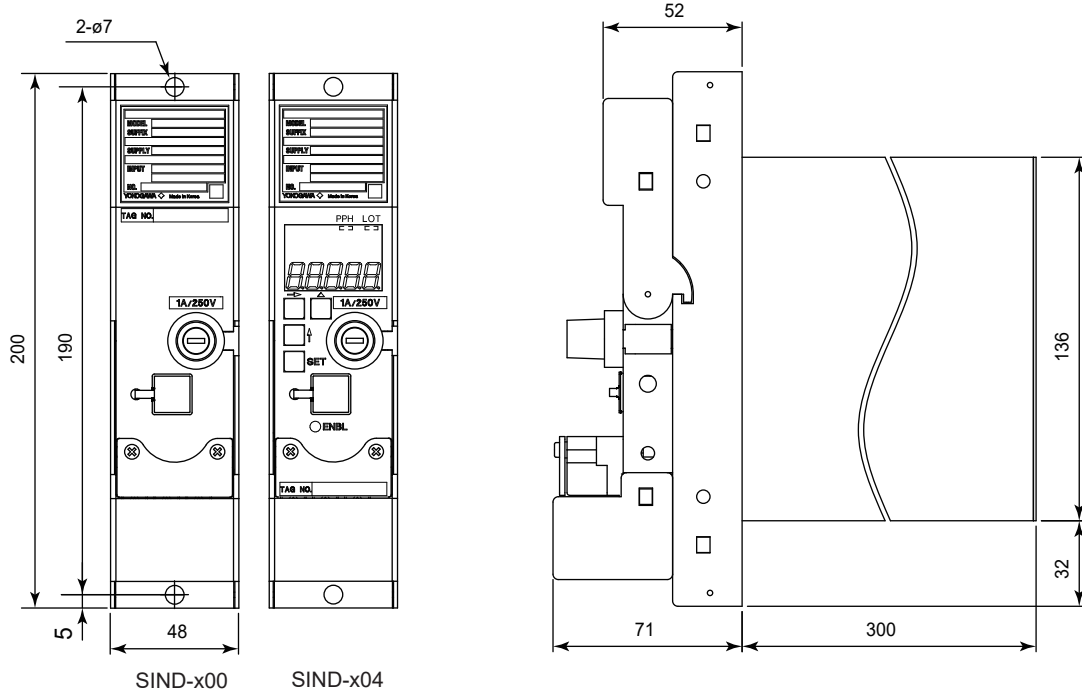
Symbol	Description
L	+ > Power supply
N	
$\perp$	Ground

Trigonometry  
Unit: mm

General tolerance =  $\pm(\text{value of tolerance class IT18 based on JIS B 0401-2016}) / 2$

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# Power supply terminal type(option /REK)



Power supply  
terminal block



Power and Ground Terminal connection  
(Connection screw: M4)

Symbol	Description
L	+ > Power supply
N	
⏏	
⏏	Ground

Trigonometry

Unit: mm

General tolerance =  $\pm$ (value of tolerance class IT18 based on JIS B 0401-2016) / 2

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## ■ MODEL & SUFFIX CODES

Model	Suffix Codes	Option Codes	Descriptions
SIND			Integrator
Output	-1 -2		Proportional output Square-root output <sup>(*)1</sup>
Indication setter	00 04		Not provided Provided
Style Code		*S	Style S
Option Codes <sup>(*)2</sup> <sup>(*)3</sup>		/NHR /FBP /LOCK /WSW /REK /TB /A2TB /A2ER	Without rack case Power supply fuse bypass Power supply plug with lock With spring washer Mount to same line with EK series rack With power supply terminal 220V version with power supply terminal 220V version with power supply plug

\*1: When square-root output is specified, SIND is shipped as a square-root integrating mode. This mode is changeable to proportional output type by a PC (VJ77) or the JHT200 Handy Terminal.

\*2: /LOCK, /REK, /TB, /A2TB, and /A2ER cannot be specified together.

\*3: /FBP, /A2TB, and /A2ER cannot be specified together.

## ■ ACCESSORIES

Integrating ratio label: 1 sheet

## ■ ORDERING INSTRUCTIONS

1. Model and suffix codes and option codes, if necessary

## ■ BASIC CONDITIONS AND INDIVIDUAL CONTRACTS AT THE TIME OF PURCHASE

The warranty for this product is defined in the basic conditions and individual contracts at the time of purchase. The individual conditions are as follows.

- **Warranty period of firmware**

The warranty conditions for the firmware installed in this products are same as that of the hardware.