

■ General

This converter measures pulse signals proportional to flow rate into analogue & digital signals suitable to various kinds of measuring instrument.

It can be used for integration of flow rate, indication of flow rate, recording of flow rate or in fixed value control, proportional control systems, etc. controlling flow rate.

■ Features

- Conversion accuracy of $\pm 0.5\%$ (full scale).
- Possibility of selection of various kinds of analogue signal.
- Easy setting of frequency dividing value.
- Easy change of signal width in pulse output.
- Possibility of mounting on DIN rail (35mm wide).

■ Specifications

Pulse input	Type of signal:	No-contact input
	Frequency:	20 ~ 300Hz (full scale)
• Voltage input	Signal level:	H: 6 ~ 30V L: 0 ~ 2V
	Input resistance:	Approx. 15k Ω
	• Open collector input	
	Voltage & current:	Approx. 10V, Approx. 3.6mA
• 2-wire input	Signal level:	H: 14V L: 7V
	Dividing	
Dividing 1:	1/1 ~ 1/10000	
Dividing 2:	1/1 ~ 1/100 of Dividing 1	
• Dividing 1	Setting device:	Compact rotary switch — 1-digit (numeral) Dip switch — 5-bit (position)
	Setting range:	1/(1 ~ 9, 1 step) 1/(10 ~ 90, 10 steps) 1/(100 ~ 900, 100 steps) 1/(1000 ~ 9000, 1000 steps) 1/10000
• Dividing 2	Setting device:	Short switch
	Setting range:	Dividing 1 \times 1/1, 1/10, 1/100
Conversion accuracy	$\pm 0.5\%$ (full scale)	
Warm-up time	Approx. 5 min.	
Time constant	Approx. 5 sec.	
Analogue output	Select 2 kinds out of the following signals (same kind of signal is also acceptable):	
	1. 4 ~ 20mA DC	Allowable load resistance 500 Ω or under
	2. 0 ~ 20mA DC	Allowable load resistance 500 Ω or under
	3. 0 ~ 100 μ A DC	Allowable load resistance 1k Ω or under
	4. 1 ~ 5V DC	Allowable load current 1mA or under
	5. 0 ~ 10V DC	Allowable load current 1mA or under
	6. 0 ~ 5V DC	Allowable load current 1mA or under
	7. 0 ~ 10mV DC	Allowable load current 1mA or under
Pulse output	(No insulation between respective circuits)	
	The following signals can be output on both pulse output 1 and pulse output 2 (same kind of signal is also acceptable):	
	1. Voltage output	
	2. Open collector output	
	3. Contact output	



The pulse output is made with a setting of Dividing 1 for pulse output 1 and with a setting of Dividing 2 for pulse output 2.

Signal width: Common to voltage output, open collector output and contact output
Setting range: Approx. 0.5ms ~ 20ms or approx. 20ms ~ 1000ms (switchable with a selecting switch)
Standard setting: Approx. 0.5, 5, 50, 500, 1000ms (variable depending on pulse input frequency and dividing)

• Voltage output
Type of signal: 12V no-contact signal
Signal level: H: 12V (at no load)
L: 0.5V or under (at no load)
Output resistance: Approx. 1.1k Ω (Protective resistance against short-circuiting: Approx. 100 Ω)
Signal logic: Positive logic: One-shot signal of H
Negative logic: One-shot signal of L

• Open collector output
Voltage & current: DC 27V, 30mA
Voltage at ON time: 0.5V or under
Signal logic: Positive logic: One-shot signal of H (Transistor: OFF)
Negative logic: One-shot signal of L (Transistor: ON)

• Contact output
Type of signal: No-voltage contact signal
Lead relay output:
Contact capacity: AC 100V, 0.02A
DC 24V, 0.1A
($\cos\phi = 1$)
Minimum applicable load:
DC 1V, 100 μ A
Opening/closing frequency:
5 times/sec. or under
Mini relay output:
Contact capacity: AC 220V, 0.2A
DC 24V, 0.5A
($\cos\phi = 1$)
Opening/closing frequency:
1 time/sec. or under

Distribution pulse output

Type of signal: 12V no-contact signal
 Signal level: H: 12V (at no load)
 L: 0.5V or under (at no load)
 Output resistance: Approx. 1.1kΩ (Protective resistance against short-circuiting; Approx. 100Ω)

Power source for oscillator

DC 12V ± 10%, 50mA

Insulation resistance

DC 500V, 20MΩ or over between exposed metallic part, power supply terminal and contact output terminal

Withstand voltage

AC 1500V, 1 minute
 Test point — Same as that of insulation resistance

Noise resistance

Square wave noise 1000V by noise simulator (Noise width 1μs; Polarity ±; Synchronized power application; Phase 0 ~ 360°)

Power supply

AC 90 ~ 250V, 50/60Hz

Power consumption

Max. 15VA

Ambient temperature

0 ~ 40°C

Mass

Approx. 0.5kg

Casing

ABS resin

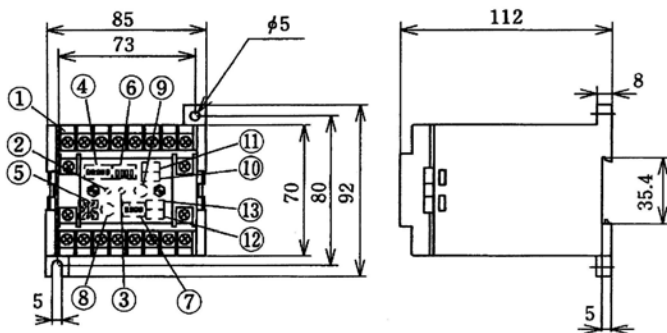
- The signal width of pulse output is set on both the pulse width selecting switch and the regulator.
- The standard signal width set at the time of delivery is about as shown on the table below.

Frequency dividing value	Standard signal width of pulse output ms	
	Maximum frequency of pulse input 100Hz or over	Under 100Hz
1/1 ~ 1/9	0.5	5
1/10 ~ 1/90	5	50
1/100 ~ 1/900	50	500
1/1000 ~ 1/9000	500	1000
1/0000 or over	1000	1000

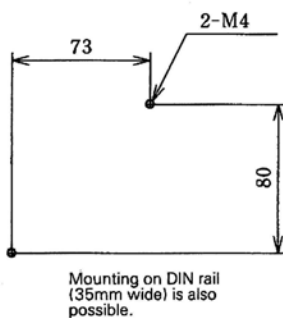
Terminal arrangement

No.	Signal name	No.	Signal name
1	AC 90 ~ 250V	11	
2		12	
3		13	SIG pulse input
4		14	+12V
5 +	Pulse output 1	15	0V
6 -		16 +	Analogue output 1
7 +	Pulse output 2	17 -	COMM
8 -		18 +	Analogue output 2
9		19	Distribution pulse output
10		20	0V

Outline and mounting dimensions

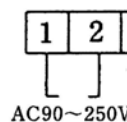


No.	Designation
1	Terminal block (M3.5)
2	Power indicator
3	Pulse input indicator
4	Dividing setting device (position)
5	Dividing setting device (numeral)
6	Pulse output signal width, logic selecting switch
7	Pulse output signal type selecting switch
8	Pulse output 1 signal width adjuster
9	Pulse output 2 signal width adjuster
10	Analogue output 2, zero adjuster
11	Analogue output 2, span adjuster
12	Analogue output 1, zero adjuster
13	Analogue output 1, span adjuster



Connections

Connection of power source



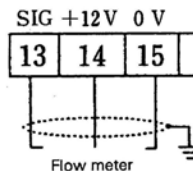
Connection of pulse input signal

- Use shielded cable.
- Voltage input

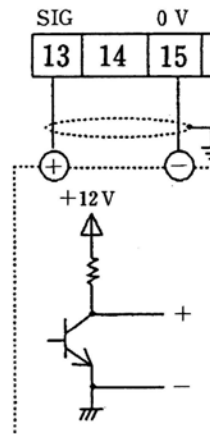
	1	2	3
Pulse input selecting switch	—	—	ON
Signal level selecting switch	—	—	ON

— indicates OFF

Case of 12V no-contact signal transmitting flow meter



Case of 12V no-contact signal



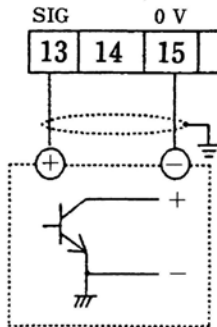
Operations

- Frequency-voltage conversion consists in converting pulse input into voltage signal by means of a monostable circuit and a low-pass filter circuit.
- Current output is made by voltage-current conversion of voltage signal while voltage output is made by conversion into prescribed voltage.
- There are 2 kinds of setting of dividing, and output in different pulse units can be made for the respective pulse output.
- Pulse signal synchronized with pulse input is output of the distribution pulse output.

• Open collector input

	1	2	3
Pulse input selecting switch	—	ON	—
Signal level selecting switch	—	—	ON

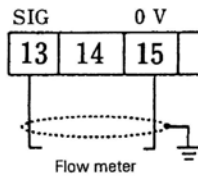
— indicates OFF



• 2-wire input

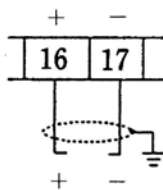
	1	2	3
Pulse input selecting switch	ON	—	—
Signal level selecting switch	—	ON	—

— indicates OFF

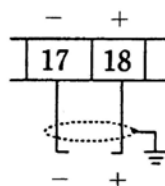


■ Connection of analogue output signal

- Use shielded cable.
- Analogue output 1



• Analogue output 2



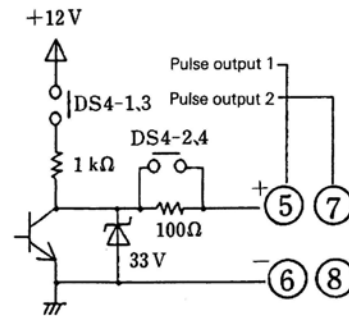
■ Output circuit

■ Pulse output

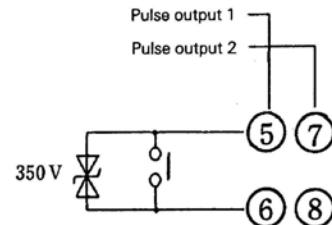
• No-contact output

Type of output signal	Pulse output 1		Pulse output 2	
	DS4-1	DS4-2	DS4-3	DS4-4
Voltage output	ON	—	ON	—
Open collector output	—	ON	—	ON

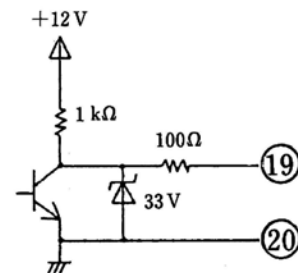
— indicates OFF



• Contact output



• Distribution pulse output



■ Type

EZ2-□□□□□P□□□P□-□

● Pulse input

1	Voltage input
2	Open collector input
3	2-wire input

● Analogue output 1

0	Without output
1	4~20mA DC
2	0~20mA DC
3	0~100μA DC
4	1~5V DC
5	0~10V DC
6	0~5V DC
7	0~10mV DC

● Analogue output 2

0	Without output
1	4~20mA DC
2	0~20mA DC
3	0~100μA DC
4	1~5V DC
5	0~10V DC
6	0~5V DC
7	0~10mV DC

● Signal type of pulse output 1

0	Without output
1	Voltage output
2	Open collector output
3	Lead relay output
4	Mini relay output

● Signal logic of pulse output 1

0	Without output
1	Positive logic
2	Negative logic

● Signal output unit of pulse signal 1

0	Without output
1	1mL/p
2	0.01L/p
3	0.1L/p
4	1L/p
5	0.01m ³ /p
6	0.1m ³ /p
7	1m ³ /p

● Signal type of pulse output 2

0	Without output
1	Voltage output
2	Open collector output
3	Lead relay output
4	Mini relay output

● Signal logic of pulse output 2

0	Without output
1	Positive logic
2	Negative logic

● Signal output unit of pulse signal 2

0	Without output
1	1mL/p
2	0.01L/p
3	0.1L/p
4	1L/p
5	0.01m ³ /p
6	0.1m ³ /p
7	1m ³ /p

● Auxiliary symbols

▼ The contents given here are subject to change without notice.

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