

SystempaK (Digital/Single Case) Frequency Conversion Module Model J-SFP 90

Introduction

The Frequency Conversion Module (J-SFP90) is a signal conversion module housed in a single case and accepts a pulse signal from the pulse transmitters such as PD meter, turbine meter, or rotary encoder and converts it into 1 to 5V DC or 4 to 20 mA DC signal.

Function setting changes on the Frequency Conversion Module are easily done with the dedicated Loader Software, which operates on a general-purpose PC.

Specification

- Input signal: Input signal is set by open/short between terminal Nos. 1 and 3.
Voltage pulse (A proximity or a photoelectric switch is used.)
Pulse frequency; Input range 0.01 HzFS to 100 kHzFS
Pulse voltage; High level [1]: 5 to 30V, Low level [0]: -30 to 1.5V
Input impedance: 20 kΩ or more
Dry contact pulse (A dry contact or open collector is used.)
Pulse frequency; 0.01 HzFS to 100 kHzFS (Limited by frequencies used at the pulse generation source.)
Contact rating; 5V or more during OFF, 1 mA during ON
- Input frequency division setting:
1/1 to 1/64 (When the rated frequency after input frequency division is 100 Hz or less)
- Input filtering: With/without
Provided by default when 100 Hz or less of pulse frequency for chattering prevention during a low frequency input is set.
When with filtering Minimum pulse width: 3 msec or more
- Low-level cut: 0.1% to 100.0% or none
Setting of a frequency so that an input is considered as 0.
- Output signal: 1 to 5V DC or 4 to 20 mA DC
- Output impedance:
Voltage output; 250 Ω or less, Current output; 250 kΩ or more
- Allowable load resistance: 0 to 600 Ω (current output)
- Linearizer function: 101 linearization points
- First-order lag filtering: 0.0 to 5.0 seconds (0 to 90%)
- Predictive arithmetic function:
When an input signal stops, outputs are reduced consecutively to prevent a sudden reduction.
- Response time:

Measurement frequency	Response time (0 to 90%)	Low-level cut default value
0.01 HzFS to 50 HzFS	Input pulse interval + 100 ms	1% of rating
51 Hz to 100 HzFS	Input pulse interval + 100 ms	2.5 Hz
101 HzFS to 200 HzFS	Input pulse interval + 100 ms	5 Hz
201 Hz to 500 HzFS	100 ms	10 Hz
501 HzFS to 100 kHzFS	100 ms	25 Hz

- Output update interval: 5 msec
(Output hardware filtering, 0 to 90% response, 50 msec)
- Accuracy:
When a 0% input frequency is 0 Hz or the span width is 50% or more of the full scale

Full-scale input frequency	Input accuracy % of input span
0.01 HzFS to 100 kHzFS	±0.2%



When a 0% input frequency is greater than 0 Hz and the span width is 50% or less

Full-scale input frequency	Input accuracy % of input span
0.01 HzFS to 100 kHzFS	$\pm 0.2\% \times (\text{"Full-scale input frequency"}/2) / (\text{"Full-scale input frequency"} - \text{"0% input frequency"})$

- Insulation resistance: 500V DC, 100 MΩmin.
(Mutual between input - output - GND - power terminal)
- Withstand voltage: 1000V AC, 1 minute
(Mutual between input - output - GND - power terminal)
- Power supply: 24V DC $^{+10}_{-15}\%$
- Current consumption: 200 mA or less (at 24V)
- Ambient temperature:
Normal operating condition; 5 to 45°C
Operation limit; 0 to 50°C
- Ambient humidity: 0 to 90%RH (No condensation allowed)
- Mounting: Panel, wall, DIN rail attachment
- Color of front mask: Black
- Weight: 400 g
- Operating influence:
Supply voltage effect; $\pm 0.1\%FS/24V DC$ $^{+10}_{-15}\%$
Temperature effect; $\pm 0.15\%FS/10^\circ C$
- Loader settings:
Module ID; 16 one-byte characters, 8 two-byte kanji characters
Input scaling setting; Frequency zero span setting within the input range (Setting of an input such as 0, 100% at each input)
Set it at 0 and a value within the range 0.01 Hz to 100 kHz.
Linearization table; 101 points
Input filtering; Unavailable/available (Moving averaging)
Output low level cut; Without/with (Low-level cut frequency is variable: 0.001 Hz to 100%)
Setting of input frequency division; Settable to 1/1 to 1/64 when the frequency after input frequency division is 100 Hz or less
Output zero span adjustment; Settable to any value within the output range (-20 to +120%FS) (The span width is inversely proportional to the accuracy.)
First-order lag filtering; Settable within the range 0.0 to 5.0 sec (63% response) or none (Set to "0.1 sec" by default)

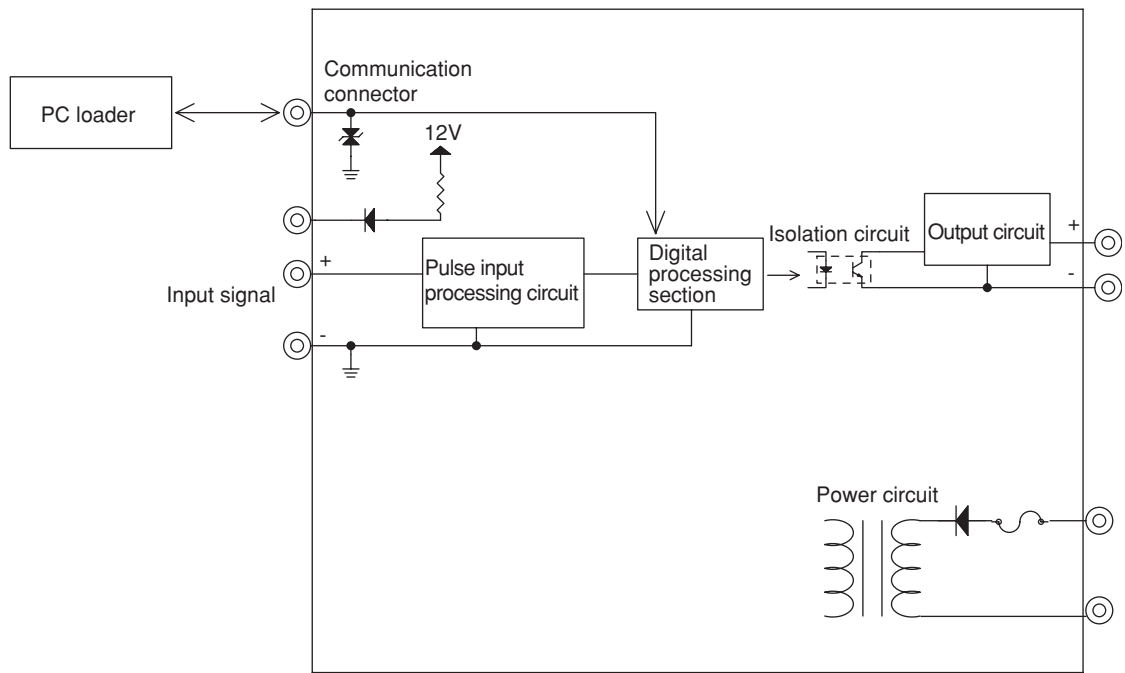
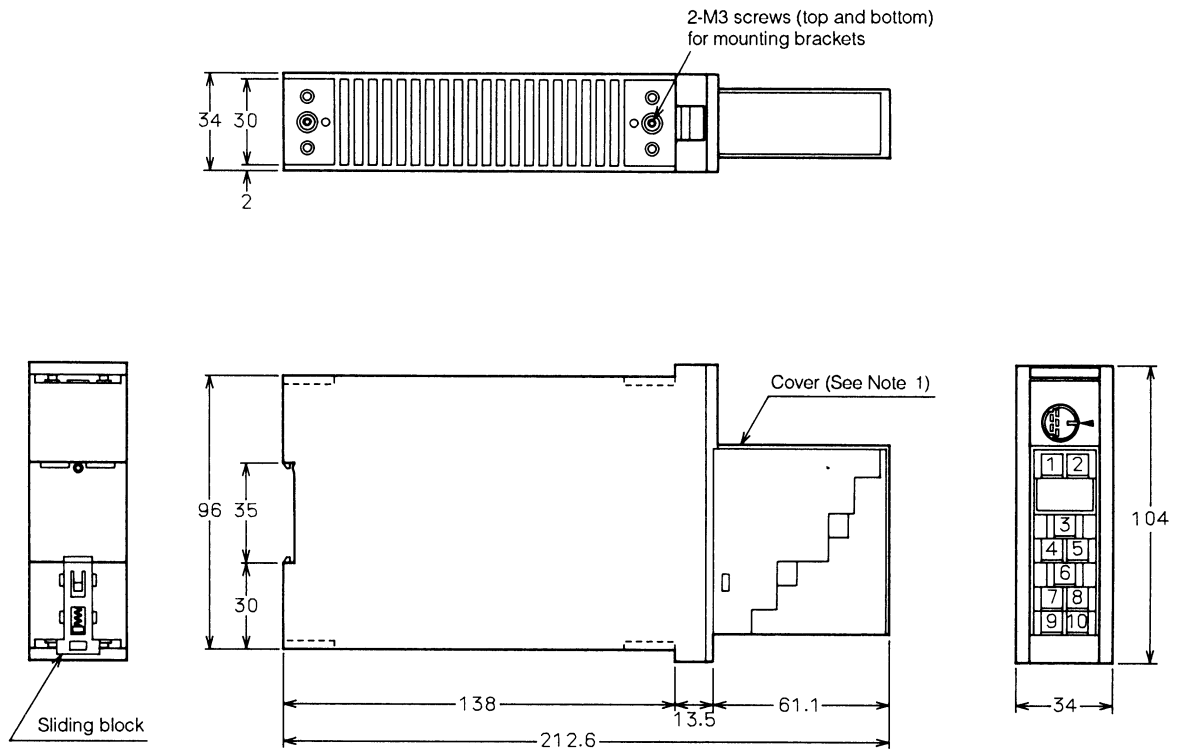


Figure 1. Functional block diagram of frequency conversion module

Model Number Table

Basic model number	Selections		Additions	Description
	I	II	I	
J-SFP90				Frequency Conversion Module
	X			No varnish coated
	C			Varnish coated
	-0			Input: Voltage pulse or dry contact pulse
		1		Output: 1 to 5V DC
		2		Output: 4 to 20 mA DC
			-0	Without test report
			-1	With test report

Example: J- SFP90X-02-0



No.	Description
1 (Note 1)	Pull-up (Note 4)
2 (Note 1)	Input (-)
3	Input (+)
4	Output 1
5	Output 1
6	—
7	—
8	24V (PS +)
9	GND
10	0V (PS -)

- Notes
- 1) Operate the Module with a cover.
 - 2) Terminal screws: M3.5
 - 3) Use the pressured terminals with insulation sheath.
 - 4) An open between terminal Nos. 1 and 3 can set the voltage pulse, and a short can set the dry contact pulse input.

Figure 2. Dimensions and wiring diagram

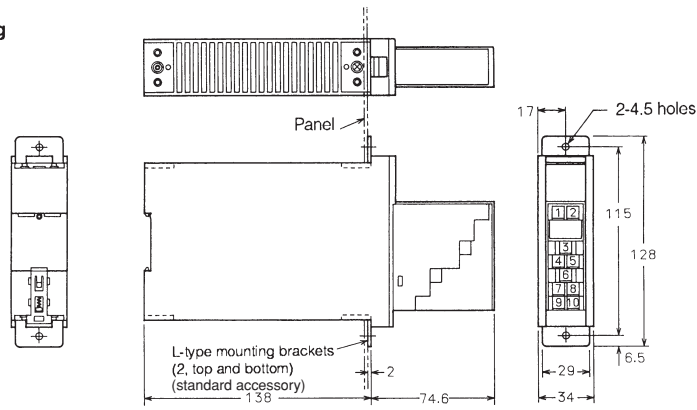
When ordering, please specify:

- 1) Tag number
- 2) Input frequency* [Set to 0 to 1 kHz by default]

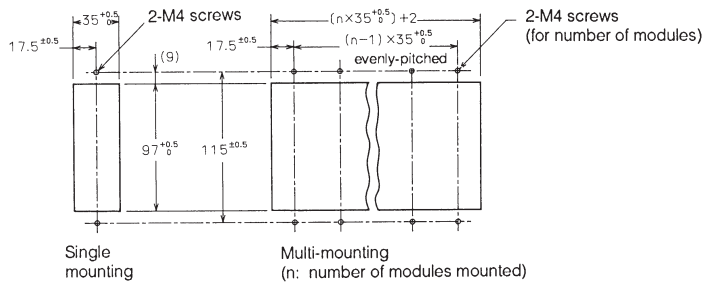
* Use the quick list below when specifying the range. Ranges other than those below are also accepted.

Code No.	Input range
01	0 to 10 Hz
02	0 to 20 Hz
03	0 to 50 Hz
04	0 to 100 Hz
05	0 to 200 Hz
06	0 to 500 Hz
07	0 to 1 kHz
08	0 to 5 kHz
09	0 to 10 kHz

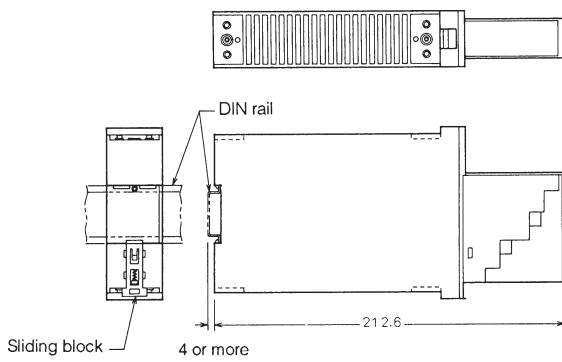
Panel-mounting



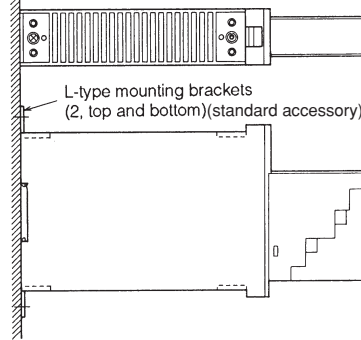
Panel-cutout



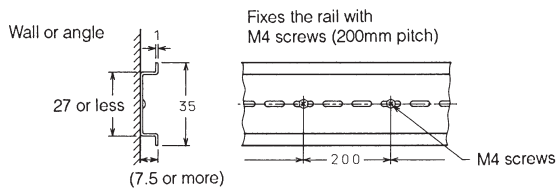
DIN rail mounting



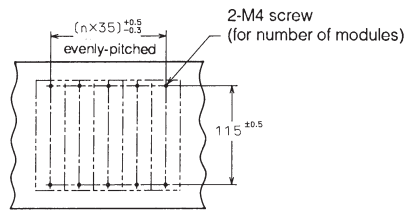
Wall-mounting



DIN rail mounting



Wall-mounting (n: number of modules mounted)



Recommended DIN rail and end fittings Rail : DAS-4 [Toko Giken made]
End fittings : ATO-29 [Toyo Giken made]

Figure 3. Mounting method

Please read the "Terms and Conditions" from the following URL before ordering or use:

<http://www.azbil.com/products/bi/order.html>

Specifications are subject to change without notice.



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