FREQUENCY-TO-DC CONVERTER (VARIABLE MAXIMUM MEASUREMENT FREQUENCY TYPE) WVP-FLR

50 (W) x 96 (H) x 125.5 (D) mm Approx. 400 g

This plug-in converter outputs a DC signal that is proportional to the frequency of the ultra-low-speed input pulse signal, and is characterized by the ability to vary the maximum measurement frequency arbitrarily. It detects the period of the input pulse, computes the frequency (using a reciprocal calculation) with a built-in microprocessor unit, and converts the result into a DC signal. Therefore, the converter is quick to respond to very low frequencies and delivers ripple-free signals. Moreover, its input section, MPU unit, and output section are isolated from one another by photocouplers, thereby ensuring immunity to external noise and high reliability.

Features

- The maximum measurement frequency can be changed with just a screwdriver.
- Quickly responds to very low frequencies with ripple-free signals.
- Provided with a frequency demultiplication function to facilitate handling of unequal-interval pulse signals.
- Capable of suppressing output variations against transient input frequency fluctuations.
- Smoothly reduces the output by predictive calculation in case the input signal is interrupted.
- Its input, output, and power supply are isolated, with a dielectric strength of 2,000 VAC.

Major Applications

- Conversion of flow meter pulse output signals into analog signals.
- Analog indication and recording of revolution or speed detection rotary encoder outputs.

Model WVP-□□□-□□ □ - □

FLR	Frequency-to-DC converter (variable maximum measurement frequency)

	Power Supply
1	AC 100 V ± 10%, 50/60 Hz
2	AC 200 V ± 10%, 50/60 Hz
3	DC 24 V ± 10%
4	AC 110 V ± 10%, 50/60 Hz
5	AC 220 V ± 10%, 50/60 Hz

	Input Signal	
11	Compatible with open collector (input frequency: max. 99.9 Hz)	5 V at OFF, 1 mA at ON Both ON/OFF for 4 msec or more
15	No-voltage contacts (input frequency: max. 10 Hz, duty 50%)	5 V at OFF, 1 mA at ON Both ON/OFF for 40 msec or more
13	Voltage pulse	[1] +3.5 V–+30 V [0] -30 V–+1.5 V Both [1] and [0] for 4 msec or more
22	Current pulse 4/10 mA Input resistance 330 Ω	
99	Other than the above (Please consult with us.)	

	Output Signal	Allowable Load Resistance
A	DC 4–20 mA	750 Ω or less
B	DC 1–5 mA	2 KΩ or less
C	DC 2–10 mA	1 KΩ or less
D	DC 0–1 mA	10 KΩ or less
E	DC 0–10 mA	1 KΩ or less
F	DC 0–16 mA	625 Ω or less
G	DC 0–20 mA	500 Ω or less
H	DC 1–5 V	2.5 KΩ or more
J	DC 0–10 mV	10 KΩ or more
K	DC 0–100 mV	100 KΩ or more
L	DC 0–1 V	500 Ω or more
N	DC 0–5 V	2.5 KΩ or more
P	DC 0–10 V	5 KΩ or more
S	Other than the above (Please consult with us.): Voltage output 10 V or less Current output 20 mA or less	

watanabe WATANABE ELECTRIC INDUSTRY Co., Ltd.
6-16-19 Jinguumae Shibuya-Ku, Tokyo, Japan 150-0001 Tel 03-3400-6141 Fax 03-3409-3156

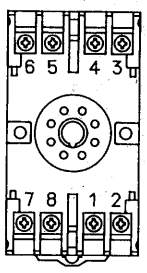
Specification

Output signal:	DC voltage, DC current
Measurement frequency:	0.0100 Hz·fs to 99.9 Hz·fs (in case of 1/1 frequency demultiplication)
Effective input range:	0.1–100%·fs
Input impedance:	20 KΩ or more (for voltage pulse input)
Frequency demultiplication setting:	1/1 to 1/16
Accuracy:	±0.2%·fs (at 23°C)
Damper function:	Primary delay processing to analog output. Variable up to max. 5 seconds. (0–63%·fs response)
Predictive calculation function:	Gradual output reduction by predictive calculation, in case the input signal is interrupted
Response time:	Input pulse interval + 0.5 sec or less Input pulse interval x 2 + 1 sec or less, for an instant after reset (Response time is the time it takes for the output to reach 90%·fs when the input varies from 0 to 100%.)
Allowable load resistance:	In case of voltage output, a resistance value that provides a load current of 2 mA or less (1 μA or less for an output below 1 V·fs) In case of current output, a resistance value that provides a voltage drop of 15 V or less between output terminals
Operating temperature and humidity:	-5 to +55°C, 90% RH or less (without condensation or icing)
Influence of ambient temperature:	±0.15%·fs/10°C
Insulation resistance:	100 MΩ or more with a 500 VDC megger between the input and output terminals, and between the input/output terminal and power supply terminal
Dielectric strength:	2,000 VAC for 1 minute between the input and output terminals, and between the input/output terminal and power supply terminal
Power consumption:	Approx. 5 VA (AC), approx. 160 mA (24 VDC)
Sensor power supply:	12 VDC ±5%, max. 40 mA
Zero & span adjustment:	±5%·fs each (one-turn trimmer)
Influence of supply voltage:	±0.1%·fs/± 10% of rated supply voltage

Explanation of Functions

Frequency demultiplication setting:	When using a revolution detection mechanism that generates two pulses or more per revolution, equal-interval pulse signals may not be output in the presence of equal speed revolutions due to mechanical error. In such cases, the frequency demultiplication function can be used to suppress fluctuation of the signals.
Damper function:	This function adds a primary delay function to the analog output so that fluctuations in the input will not directly translate into fluctuations in the output, thereby suppressing flickering in the indicators. Variable up to maximum 5 sec. (0–63%·fs response)
Predictive calculation function:	In cases where the input signal is interrupted, the converter performs predictive calculations and reduces the output gradually to avoid an abrupt drop off.

Explanation of Terminals



No.	Symbol		Description
1	OUTPUT	+	Output signal
2		-	
3	INPUT	+	Input signal
4		-	
5	SENSOR	-	Sensor power supply
6		+	
7	POWER	U (+)	Power supply
8		V (-)	

watanabe WATANABE ELECTRIC INDUSTRY Co., Ltd.
6-16-19 Jinguumae Shibuya-Ku, Tokyo, Japan 150-0001 Tel 03-3400-6141 Fax 03-3409-3156