

Plug-in Signal Conditioners M-UNIT

DC/FREQUENCY CONVERTER

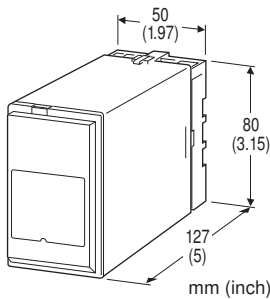
(field-programmable)

Functions & Features

- Providing a pulse rate output in proportion to DC input signal
- Parameters are field-programmable via hand-held programmer PU-2x
- Isolation up to 2000 V AC
- High-density mounting

Typical Applications

- Monitoring & control of power supply system
- Quick countermeasure applicable even in failure or in sudden voltage change



MODEL: JAPD2-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: JAPD2-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4]. (e.g. JAPD2-6A-S/Q)
- Special input range (For codes Z & 0)
- Use Ordering Information Sheet (No. ESU-1571).
- Default setting (table below) will be used if not otherwise specified.
- Specify the specification for option code /Q (e.g. /C01/S01)

ITEM	DEFAULT
Output zero frequency	0 kHz
Output span frequency	1 kHz (10 Hz for output code R)
Alarm setpoint	100.00%
Alarm hysteresis	1.00%
Alarm mode	No alarm
Power ON-delay time	3.0 sec.

[1] INPUT

Current

- A: 4 - 20 mA DC (Input resistance 250 Ω)
- A1: 4 - 20 mA DC (Input resistance 50 Ω)
- B: 2 - 10 mA DC (Input resistance 500 Ω)
- C: 1 - 5 mA DC (Input resistance 1000 Ω)
- D: 0 - 20 mA DC (Input resistance 50 Ω)
- E: 0 - 16 mA DC (Input resistance 62.5 Ω)
- F: 0 - 10 mA DC (Input resistance 100 Ω)
- G: 0 - 1 mA DC (Input resistance 1000 Ω)
- H: 10 - 50 mA DC (Input resistance 100 Ω)
- Z: Specify current (See INPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Input resistance 10 kΩ min.)
- 2: 0 - 100 mV DC (Input resistance 100 kΩ min.)
- 3: 0 - 1 V DC (Input resistance 1 MΩ min.)
- 4: 0 - 10 V DC (Input resistance 1 MΩ min.)
- 5: 0 - 5 V DC (Input resistance 1 MΩ min.)
- 6: 1 - 5 V DC (Input resistance 1 MΩ min.)
- 4W: -10 - +10 V DC (Input resistance 1 MΩ min.)
- 0: Specify voltage (See INPUT SPECIFICATIONS)

[2] OUTPUT

- A: Open collector
- M: 5 V pulse
- N: 12 V pulse
- P: 24 V pulse
- J: RS-422 line driver pulse
- R: AC/DC switch

[3] POWER INPUT

AC Power

- M2: 100 - 240 V AC

DC Power

- S: 12 V DC
- R: 24 V DC
- P: 110 V DC

[4] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to M-System's web site.)

- /C01: Silicone coating
- /C02: Polyurethane coating
- /C03: Rubber coating

TERMINAL SCREW MATERIAL

- /S01: Stainless steel

RELATED PRODUCTS

- Programming Unit (model: PU-2x)
- PC configurator software (model: JXCON)

Downloadable at M-System's web site.

A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.

GENERAL SPECIFICATIONS

Construction: Plug-in

Connection: M3.5 screw terminals

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input to alarm output to output to power

Zero adjustment: -5 to +5 % (front)

Span adjustment: 95 to 105 % (front)

Alarm output: Turns on when the input goes above (high) or below (low) setpoint

Alarm setpoint: -5 - +105 %

Alarm deadband (hysteresis): 0 - 20 %

Output monitor LED: Red LED turns on when the output is ON or high.

Power ON delay time: 2.0 to 1000.0 sec.

Software programming: Programming Unit (model: PU-2x); (Refer to the users manual of JXCON for the adjustments configurable with JXCON)

- Output frequency (zero and span)
- Alarm
- Power ON delay time
- Others

INPUT SPECIFICATIONS

■ DC Current:

Shunt resistor attached to the input terminals (0.5 W)
Specify input resistance value for code Z.

■ DC Voltage: -300 - +300 V DC

Minimum span: 10 mV

Offset: Max. 1.5 times span

Input resistance

Span 10 - 100 mV : $\geq 10 \text{ k}\Omega$

Span 0.1 - 1 V : $\geq 100 \text{ k}\Omega$

Span $\geq 1 \text{ V}$: $\geq 1 \text{ M}\Omega$

OUTPUT SPECIFICATIONS

Frequency range: 100 mHz to 10 kHz (RNG1 to RNG6)

[Range name : Available frequency]

RNG1 10 kHz: 0 - 20 kHz

RNG2 1 kHz: 0 - 2 kHz

RNG3 100 Hz: 0 - 200 Hz

RNG4 10 Hz: 0 - 20 Hz

RNG5 1 Hz: 0 - 2 Hz

RNG6 100 mHz: 0 - 200 mHz

Min. span: 10 % of available frequency range

Duty ratio: 50 %

■ Open Collector: 50 V DC @50 mA (resistive load)

Saturation voltage: 0.6 V DC

■ Voltage Pulse

H level: Rating 5, 12 or 24 V $\pm 10 \%$

L level: $\leq 0.5 \text{ V}$

Load resistance: $\geq 1 \text{ k}\Omega$ (5 V), $\geq 2.4 \text{ k}\Omega$ (12 V), $\geq 4.8 \text{ k}\Omega$ (24 V)

■ Noncontact AC/DC Switch: 120 V AC or 120 V DC @200 mA (resistive load)

ON resistance: 3 Ω max.

Rise time: 5 msec.

Sink time: 3 msec.

■ RS-422 Line Driver Pulse

Transmitter: Conforms to RS-422

■ Relay Contact:

100 V AC @ 1 A ($\cos \theta = 1$)

120 V AC @ 1 A ($\cos \theta = 1$)

240 V AC @ 0.5 A ($\cos \theta = 1$)

30 V DC @ 1 A (resistive load)

Maximum switching voltage: 380 V AC or 125 V DC

Maximum switching power: 120 VA or 30 W

Minimum load: 5 V DC @ 10 mA

Mechanical life: 5×10^7 cycles (300 cycle/minute)

INSTALLATION

Power input

•**AC:** Operational voltage range 85 - 264 V, 47 - 66 Hz;

Approx. 3.2 VA at 100 V

Approx. 5.1 VA at 200 V

Approx. 6.9 VA at 264 V

•**DC:** Operational voltage range: rating $\pm 10 \%$, or 85 - 150 V for 110 V rating (ripple 10 % p-p max.)

Approx. 2.5 W (100 mA at 24 V)

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 280 g (0.62 lb)

PERFORMANCE in percentage of span

Accuracy

Output 10 kHz range: $\pm 0.3\%$

Output ≤ 1 kHz range: $\pm 0.1\%$

Alarm setpoint accuracy: $\pm 0.1\%$

Temp. coefficient: $\pm 0.015\%/^{\circ}\text{C}$ ($\pm 0.008\%/^{\circ}\text{F}$)

Response time: 0.3 sec. + (one cycle at 100 % output)

Time required from a step input (0 - 100 %) to the first pulse output.

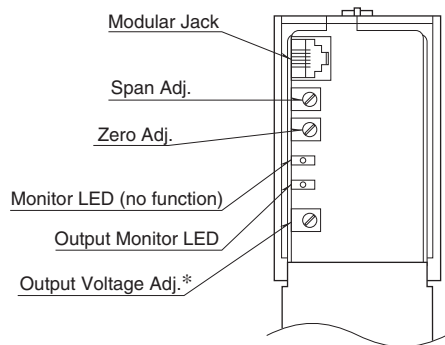
Line voltage effect: $\pm 0.1\%$ over voltage range

Insulation resistance: $\geq 100\text{ M}\Omega$ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute (input to alarm output to output to power to ground)

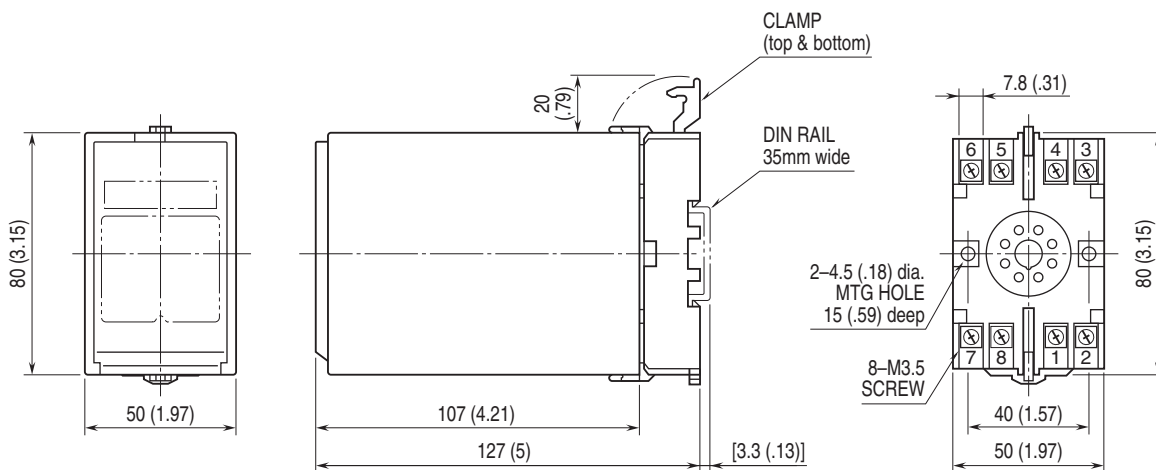
EXTERNAL VIEW

DO NOT change the Output Voltage Adjuster.



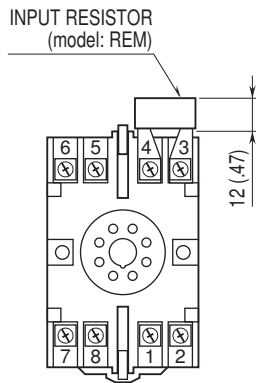
*only for voltage pulse output

EXTERNAL DIMENSIONS unit: mm (inch)



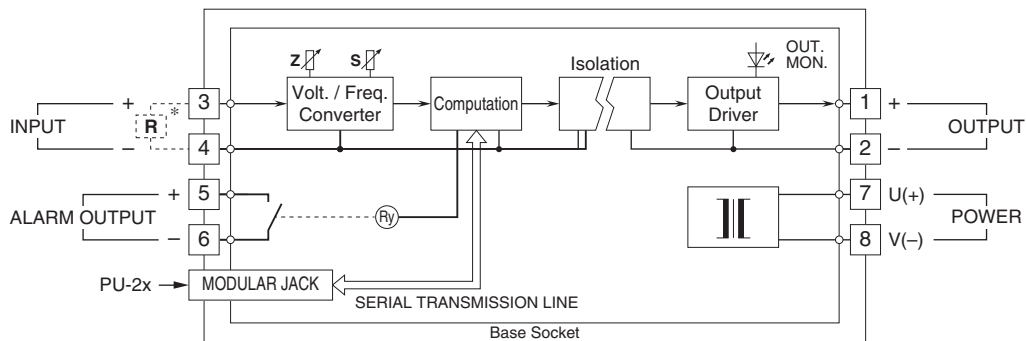
• When mounting, no extra space is needed between units.

TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached for current input.

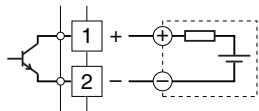
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



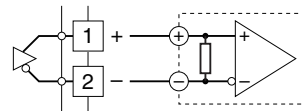
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Output Connection Examples

■ Open Collector

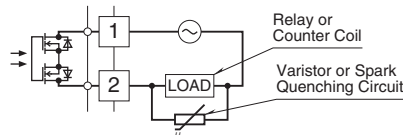


■ RS-422 Line Driver Pulse

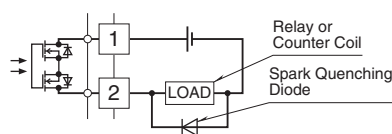


■ AC/DC Switch

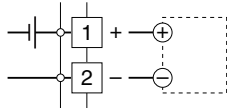
• AC Powered



• DC Powered



■ Voltage Pulse



Specifications are subject to change without notice.