

**Plug-in Signal Conditioners K-UNIT**

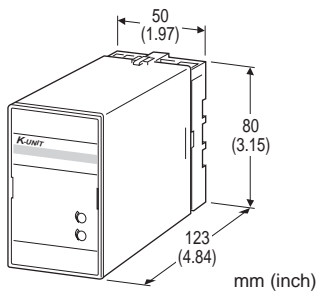
**DC/FREQUENCY CONVERTER**

**Functions & Features**

- Providing a pulse rate output in proportion to DC input signal
- Isolation up to 2000 V AC
- Highdensity mounting

**Typical Applications**

- Totalizing applications in combination with a counter



**MODEL: KAP-[1][2]-[3][4]**

**ORDERING INFORMATION**

- Code number: KAP-[1][2]-[3][4]
- Specify a code from below for each [1] through [4].  
(e.g. KAP-61-B/Q)
- Special input range (For codes Z & 0)
- Output frequency range (e.g. 0 - 500 Hz)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

**[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.)
- 15: 0 - 50 mV DC (Input resistance 10 kΩ min.)
- 16: 0 - 60 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**

- 1: Open collector (1 kHz)
- 3: AC/DC switch (1 kHz)
- ( ) = Max. frequency

**[3] POWER INPUT**

**AC Power**

- B: 100 V AC
- C: 110 V AC
- D: 115 V AC
- F: 120 V AC
- G: 200 V AC
- H: 220 V AC
- J: 240 V AC

**DC Power**

- S: 12 V DC
- R: 24 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

**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 output to power
- Zero adjustment:** 0 - 5 % (front)
- Span adjustment:** 95 to 105 % (front)

**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:** 0 - 0.01 Hz through 1 kHz

**ON pulse width:** Approx. 50 % of the duty of the maximum output frequency (500  $\mu\text{sec.}$  - 0.8 sec.)

Pulse width is forcibly limited to approx. 0.8 sec. if the value [approx. 50 % of the duty of the maximum output frequency] is not smaller than 0.8 sec.

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

**Saturation voltage:** 0.6 V DC

■ **AC/DC Switch:** 100 V AC @200 mA ( $\cos\theta=1$ )

150 V DC @200 mA (resistive load)

**Voltage drop:** 6 V or less

## INSTALLATION

**Power input**

•**AC:** Operational voltage range: rating  $\pm 10 \%$ ,  
50/60  $\pm 2$  Hz, approx. 2 VA

•**DC:** Operational voltage range: rating  $\pm 10 \%$ ,  
ripple 10 %p-p max., approx. 2 W (80 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:** 450 g (0.99 lb)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.1 \%$

**Temp. coefficient:**  $\pm 0.02 \%/^{\circ}\text{C}$  ( $\pm 0.01 \%/^{\circ}\text{F}$ )

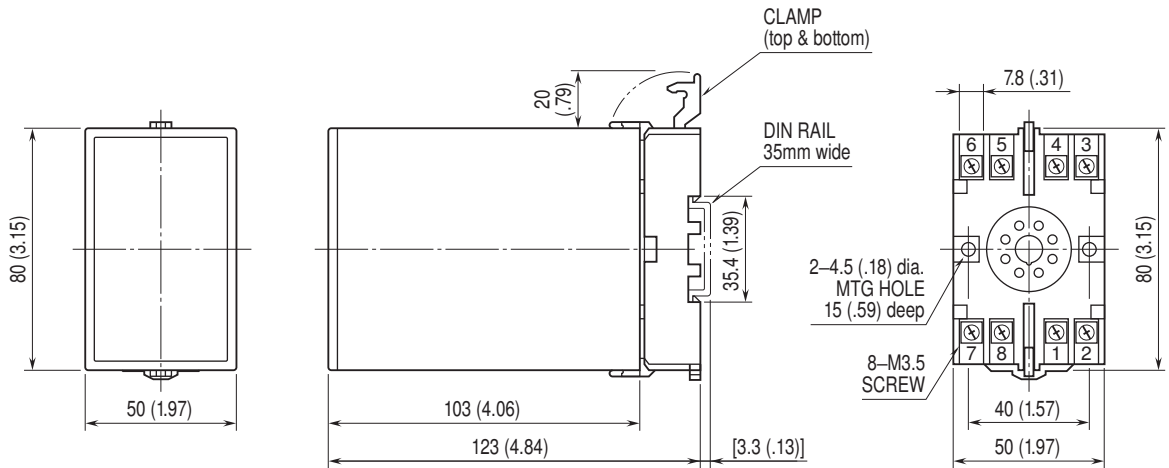
**Line voltage effect:**  $\pm 0.1 \%$  over voltage range

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

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

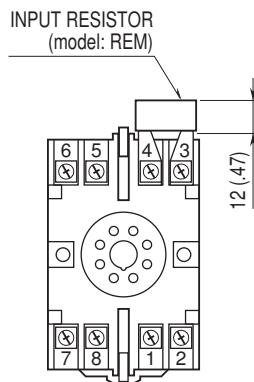


## DIMENSIONS unit: mm (inch)



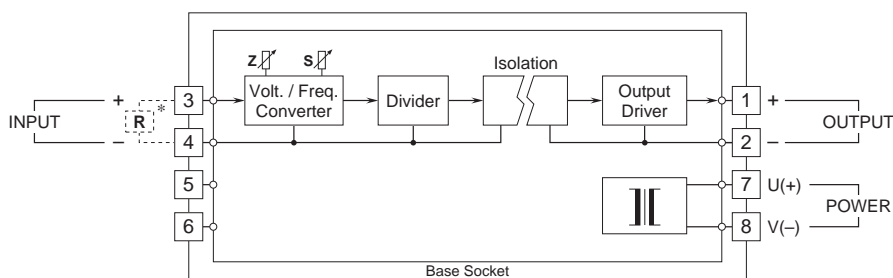
• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached for current input.

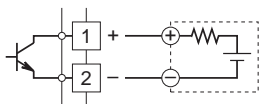
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



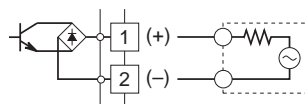
\*Input shunt resistor attached for current input.

### Output Connection Examples

■ Open Collector



■ AC/DC Switch





Specifications are subject to change without notice.

