

## Plug-in Signal Conditioners K-UNIT

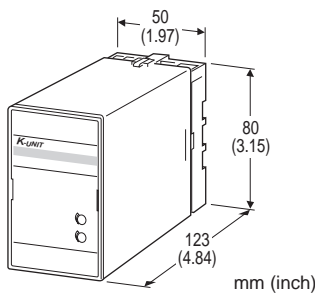
### LINEARIZER

#### Functions & Features

- Accepting non-linear input and providing a linearized output, proportional to the process variables
- Up to 100 calibration points
- Off-site (factory) calibration
- Isolation up to 2000 V AC
- Highdensity mounting

#### Typical Applications

- V-notch weir
- Gas analyzer
- Irregular-shaped tank level input for volume calculation



### MODEL: KX-[1][2]-[3][4]

#### ORDERING INFORMATION

- Code number: KX-[1][2]-[3][4]

Specify a code from below for each [1] through [4].

(e.g. KX-6A-B/Q)

- Linearization data
- Special input and output ranges (For codes Z & O)
- Specify the specification for option code /Q (e.g. /C01/S01)

Use Ordering Information Sheet (No. ESU-1621) to specify linearization data when the I/O signals are non-linear.

#### [1] INPUT

##### Current

- A: 4 - 20 mA DC (Input resistance 250  $\Omega$ )
- A1: 4 - 20 mA DC (Input resistance 50  $\Omega$ )
- B: 2 - 10 mA DC (Input resistance 500  $\Omega$ )
- C: 1 - 5 mA DC (Input resistance 1000  $\Omega$ )
- D: 0 - 20 mA DC (Input resistance 50  $\Omega$ )
- E: 0 - 16 mA DC (Input resistance 62.5  $\Omega$ )
- F: 0 - 10 mA DC (Input resistance 100  $\Omega$ )
- G: 0 - 1 mA DC (Input resistance 1000  $\Omega$ )
- H: 10 - 50 mA DC (Input resistance 100  $\Omega$ )

- J: 0 - 10  $\mu$ A DC (Input resistance 1000  $\Omega$ )
- K: 0 - 100  $\mu$ A DC (Input resistance 1000  $\Omega$ )
- GW: -1 - +1 mA DC (Input resistance 1000  $\Omega$ )
- FW: -10 - +10 mA DC (Input resistance 100  $\Omega$ )
- Z: Specify current (See INPUT SPECIFICATIONS)

##### Voltage

- 1: 0 - 10 mV DC (Input resistance 10 k $\Omega$  min.)
- 15: 0 - 50 mV DC (Input resistance 10 k $\Omega$  min.)
- 16: 0 - 60 mV DC (Input resistance 10 k $\Omega$  min.)
- 2: 0 - 100 mV DC (Input resistance 100 k $\Omega$  min.)
- 3: 0 - 1 V DC (Input resistance 1 M $\Omega$  min.)
- 4: 0 - 10 V DC (Input resistance 1 M $\Omega$  min.)
- 5: 0 - 5 V DC (Input resistance 1 M $\Omega$  min.)
- 6: 1 - 5 V DC (Input resistance 1 M $\Omega$  min.)
- 4W: -10 - +10 V DC (Input resistance 1 M $\Omega$  min.)
- 5W: -5 - +5 V DC (Input resistance 1 M $\Omega$  min.)
- 0: Specify voltage (See INPUT SPECIFICATIONS)

#### [2] OUTPUT

##### Current

- A: 4 - 20 mA DC (Load resistance 750  $\Omega$  max.)
- B: 2 - 10 mA DC (Load resistance 1500  $\Omega$  max.)
- C: 1 - 5 mA DC (Load resistance 3000  $\Omega$  max.)
- D: 0 - 20 mA DC (Load resistance 750  $\Omega$  max.)
- E: 0 - 16 mA DC (Load resistance 900  $\Omega$  max.)
- F: 0 - 10 mA DC (Load resistance 1500  $\Omega$  max.)
- G: 0 - 1 mA DC (Load resistance 15 k $\Omega$  max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

##### Voltage

- 1: 0 - 10 mV DC (Load resistance 10 k $\Omega$  min.)
- 2: 0 - 100 mV DC (Load resistance 100 k $\Omega$  min.)
- 3: 0 - 1 V DC (Load resistance 1000  $\Omega$  min.)
- 4: 0 - 10 V DC (Load resistance 10 k $\Omega$  min.)
- 5: 0 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 6: 1 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 4W: -10 - +10 V DC (Load resistance 10 k $\Omega$  min.)
- 5W: -5 - +5 V DC (Load resistance 5000  $\Omega$  min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

#### [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: -5 to +5 % (front)

Span adjustment: 95 to 105 % (front)

Linearization: 100 points max. within the range of

-15.00 to +115.00 % input or output;

Or the following equations are standard.

· Square root extraction (orifice, venturi)

·  $X^2$  (Palmer-Bowlus flume, Parshall flume)·  $X^{5/2}$  (triangular or v-notch weir)·  $X^{3/2}$  (rectangular weir)**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: 3 mV

Offset: Max. 1.5 times span

**Input resistance**Span 3 - 10 mV :  $\geq 10 \text{ k}\Omega$ 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****■ DC Current: 0 - 20 mA DC**

Minimum span: 1 mA

Offset: Max. 1.5 times span

Load resistance: Output drive 15 V max.

**■ DC Voltage: -10 - +20 V DC**

Span: Min. 5 mV, max. 20 V

Offset: Max. 1.5 times span

Load resistance: Output drive 1 mA max.; at  $\geq 0.5 \text{ V}$ **INSTALLATION****Power input**•AC: Operational voltage range: rating  $\pm 10 \%$ ,  
50/60  $\pm 2 \text{ Hz}$ , approx. 3 VA•DC: Operational voltage range: rating  $\pm 10 \%$ ,  
ripple 10 %p-p max., approx. 2 W (90 mA at 24 V)

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

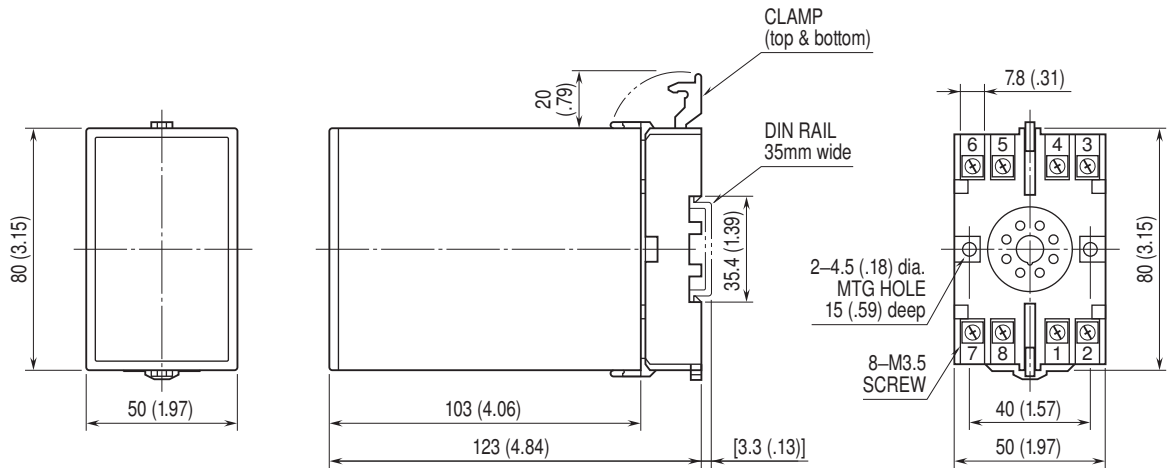
Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 350 g (0.77 lb)

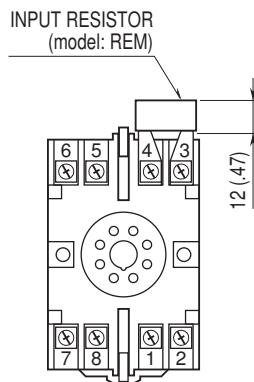
**PERFORMANCE in percentage of span**Accuracy:  $\pm 0.1 \%$  with segment gain  $\leq 3$ [ $\pm 0.1 \%$   $\times$  gain] with segment gain  $\geq 3$ Temp. coefficient:  $\pm 0.02 \%$ /°C ( $\pm 0.01 \%$ /°F)Response time:  $\leq 0.5 \text{ sec.}$  (0 - 90 %)Line voltage effect:  $\pm 0.1 \%$  over voltage rangeInsulation resistance:  $\geq 100 \text{ M}\Omega$  with 500 V DCDielectric strength: 2000 V AC @1 minute (input to output  
to power to ground)

## DIMENSIONS unit: mm (inch)



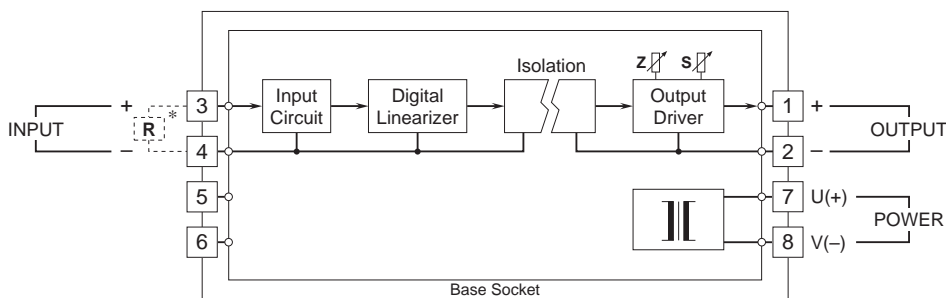
• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached for current input.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



\*Input shunt resistor attached for current input.



Specifications are subject to change without notice.