

## Plug-in Signal Conditioners K-UNIT

### DC ALARM

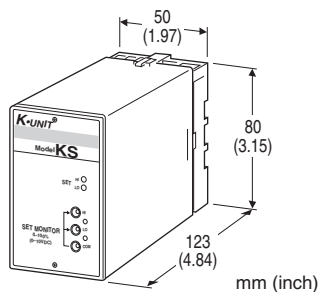
(CE)

#### Functions & Features

- Providing relay contact closures at preset DC input levels
- Dual (Hi/Lo) trip
- Multi-turn screwdriver setpoint adjustments
- Monitor jacks provided for setpoint adjustments
- Enclosed relays
- Relays can be powered 110 V DC
- High-density mounting

#### Typical Applications

- Annunciator
- Various alarm applications



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

#### ORDERING INFORMATION

- Code number: KS-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].  
(e.g. KS-62-H/CE/Q)
- Special input range (For codes Z & 0)
- 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)
- K: 0 - 100 μA DC (Input resistance 1000 Ω)
- GW: -1 - +1 mA DC (Input resistance 1000 Ω)
- FW: -10 - +10 mA DC (Input resistance 100 Ω)

Z: Specify current (See INPUT SPECIFICATIONS)  
Voltage

- 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.)
- 5W: -5 - +5 V DC (Input resistance 1 MΩ min.)
- 0: Specify voltage (See INPUT SPECIFICATIONS)

#### [2] OUTPUT

- 1: Open collector
- 2: Relay; N.O. or make contact
- 3: Relay; N.C. or break contact
- 4: SSR

#### [3] POWER INPUT

AC Power

- G: 200 V AC
  - H: 220 V AC
  - J: 240 V AC
- DC Power
- S: 12 V DC
  - R: 24 V DC

#### [4] OPTIONS (multiple selections)

Standards & Approvals (must be specified)

/CE: CE marking

Other Options

blank: none

/Q: Option other than the above (specify the specification)

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our 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

**Setpoint adjustments:** Multi-turn screwdriver adjustments (front); 0 - 100% independently

**Monitor jacks:** Output 0 - 10 V for 0 - 100 % setpoints

**Monitor jack diameter:** 2 mm (.08")

**Hysteresis (deadband):** 0.5 - 1.0 %

**Front LEDs:** Red LED turns on in tripped conditions.

**Power ON timer:** The output devices will not be driven for approx. 2 sec. after the power is turned on.

## INPUT SPECIFICATIONS

### ■ DC Current:

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

### ■ DC Voltage: -30 - +30 V DC

**Span:** Min. 50 mV, Max. 30 V

**Offset:** Max. 1.5 times span

### Input resistance

Span 50 - 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

### ■ Open Collector: 50 V DC @100 mA

**Voltage drop:**  $\leq 2 \text{ V}$

### ■ Relay Contact: 120 V AC @0.5 A ( $\cos \phi = 1$ )

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

30 V DC @0.5 A (resistive load)

**Maximum switching voltage:** 380 V AC or 125 V DC

**Maximum switching power:** 120 VA or 30 W ( $\leq 0.5 \text{ A}$ )

**Minimum load:** 5 V DC @10 mA

**Mechanical life:**  $5 \times 10^7$  cycles

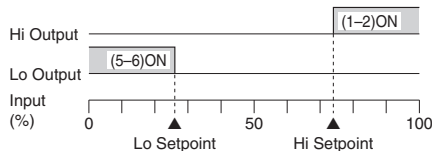
For maximum relay life with inductive loads, external protection is recommended.

### ■ SSR: 60 - 280 V AC @0.1 - 1 A

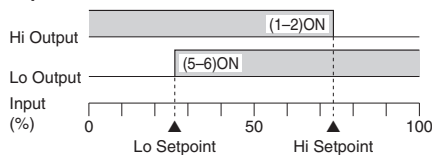
**Leakage current at OFF:** Approx. 10 mA (240 V AC)

### Alarm Trip Operation Terminal No. in parentheses

#### • Output Code 1, 2, 4



#### • Output Code 3



#### Trip Operation in Power Failure

- Output Code 1, 2, 4: both relays turn OFF
- Output Code 3: both relays turn ON

## INSTALLATION

### Power input

• **AC:** Operational voltage range: rating  $\pm 10 \%$ , 50/60  $\pm 2 \text{ Hz}$ , 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:** 400 g (0.88 lb)

## PERFORMANCE in percentage of span

**Setpoint monitor accuracy:**  $\pm 0.5 \%$

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

**Response time:**  $\leq 0.5 \text{ sec.}$  (0 - 100 % at 90 % setpoint)

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

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

**Dielectric strength:** 2300 V AC @1 minute (input to output to power to ground)

## STANDARDS & APPROVALS

### EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Measurement Category II (output)

Installation Category II (power)

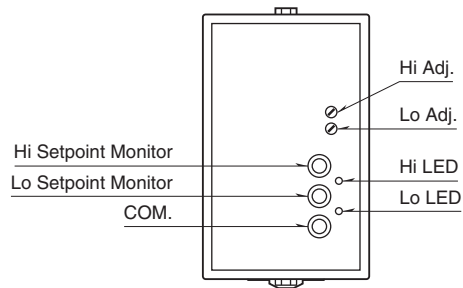
Pollution Degree 2

Input or output to power: Reinforced insulation (300 V)

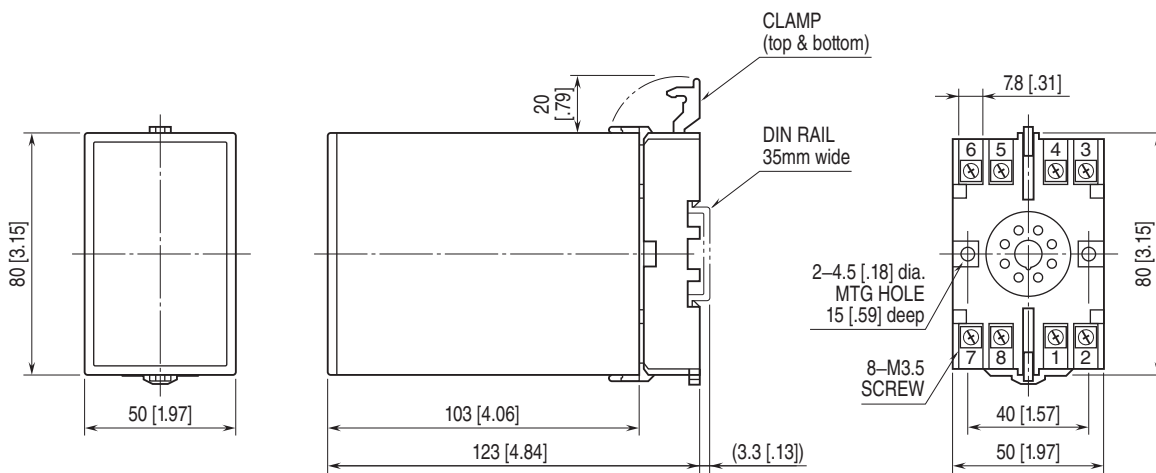
Input to output: Basic insulation (300 V)

RoHS Directive

## EXTERNAL VIEW

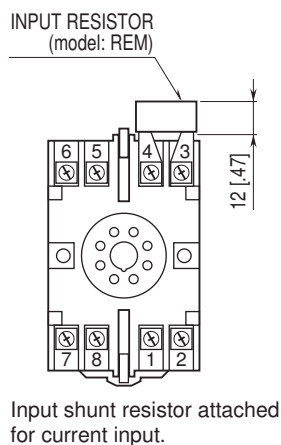


## EXTERNAL DIMENSIONS unit: mm [inch]

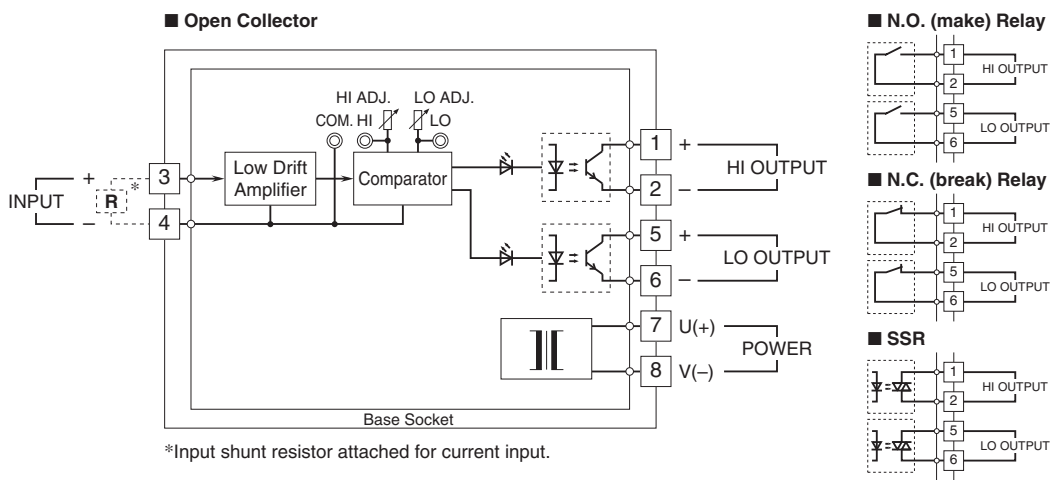


• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm [inch]



**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



Specifications are subject to change without notice.