

Plug-in Signal Conditioners K-UNIT

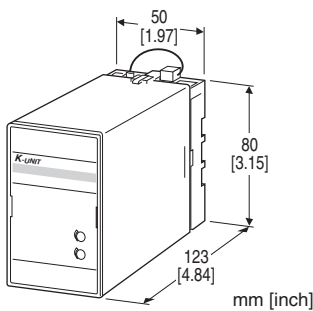
THERMOCOUPLE TRANSMITTER

Functions & Features

- Accepting direct input from a thermocouple and providing a standard process signal
- 7-segment linearization
- Burnout protection
- High-accuracy cold junction compensation
- Isolation up to 2000 V AC
- Fast response type available
- High-density mounting

Typical Applications

- High-accuracy cold junction compensation benefits narrow span measurements
- 0.1 μ A burnout sensing enables long distance transmission with minimum offset drifts
- Electric furnace (isolation)
- No burnout type can connect to a single T/C in parallel with a recorder



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

ORDERING INFORMATION

- Code number: KTS-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4]. (e.g. KTS-2A-B/BL/Q)
- Temperature range (e.g. 0 - 800°C)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q (e.g. /C01/S01)

[1] INPUT THERMOCOUPLE

- 1: (PR) (Usable Range 0 to 1760°C, 32 to 3200°F)
- 2: K (CA) (Usable range -270 to +1370°C, -454 to +2498°F)
- 3: E (CRC) (Usable range -270 to +1000°C, -454 to +1832°F)
- 4: J (IC) (Usable range -210 to +1200°C, -346 to +2192°F)
- 5: T (CC) (Usable range -270 to +400°C, -454 to +752°F)
- 6: B (RH) (Usable range 0 to 1820°C, 32 to 3308°F)

- 7: R (Usable range -50 to +1760°C, -58 to +3200°F)
- 8: S (Usable range -50 to +1760°C, -58 to +3200°F)
- N: N (Usable range -270 to +1300°C, -454 to +2372°F)
- 0: Specify

[2] OUTPUT

Current

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

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 k Ω min.)
- 2: 0 - 100 mV DC (Load resistance 100 k Ω min.)
- 3: 0 - 1 V DC (Load resistance 100 Ω min.)
- 4: 0 - 10 V DC (Load resistance 1000 Ω min.)
- 5: 0 - 5 V DC (Load resistance 500 Ω min.)
- 6: 1 - 5 V DC (Load resistance 500 Ω 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 (multiple selections)

Response Time (0 - 90 %)

- blank:** Standard (\leq 0.5 sec.)
- /K: Fast Response (Approx. 25 msec.)

Burnout

- blank:** Upscale burnout
- /BL: Downscale burnout
- /BN: No burnout

CJC Sensor

- blank:** With Cold Junction Compensation Sensor
- /N: Without Cold Junction Compensation Sensor

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

Overrange output: Approx. -10 to +120 % at 1 - 5 V

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

Span adjustment: 95 to 105 % (front)

At burnout: Downscale \leq -10 %, Upscale \geq 110 %

(When the offset is negative, downscale \leq -8 %, upscale \geq 108 %.)

Linearization: Standard

Cold junction compensation (CJC): CJC sensor attached to the input terminals as standard; No CJC optional (B thermocouple is without CJC as standard.)

INPUT SPECIFICATIONS

Minimum span: 3 mV

Offset: Max. 1.5 times span

Input resistance: 30 k Ω min.

Burnout sensing: 0.1 μ A

Minimum span (in °C)

(PR): min. span 370°C

K (CA): min. span 75°C

E (CRC): min. span 50°C

J (IC): min. span 60°C

T (CC): min. span 75°C

B (RH): min. span 780°C

R: min. span 360°C

S: min. span 380°C

N: min. span 110°C

Minimum span (in °F)

(PR): min. span 670°F

K (CA): min. span 140°F

E (CRC): min. span 90°F

J (IC): min. span 110°F

T (CC): min. span 140°F

B (RH): min. span 1410°F

R: min. span 650°F

S: min. span 690°F

N: min. span 200°F

Note: The described accuracy may be partially not satisfied when the temperature ranges below 0°C. Consult factory.

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 - +12 V DC

Minimum span: 5 mV

Offset: Max. 1.5 times span

Load resistance: Output drive 10 mA max.; 5 mA for negative voltage output; at \geq 0.5 V

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. 2.6 W (110 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 0.3 % (at over 400°C or 750°F for R, S and PR; over 770°C or 1420°F for B)

Cold junction compensation error

(at 20°C \pm 10°C or 68°F \pm 18°F; with CJC sensor)

K, E, J, T, N: \pm 0.5°C or \pm 0.9°F

S, R, PR: \pm 1°C or \pm 1.8°F

Temp. coefficient: \pm 0.02 %/°C (\pm 0.01 %/°F)

(at over 400°C or 750°F for R, S and PR;

over 770°C or 1420°F for B)

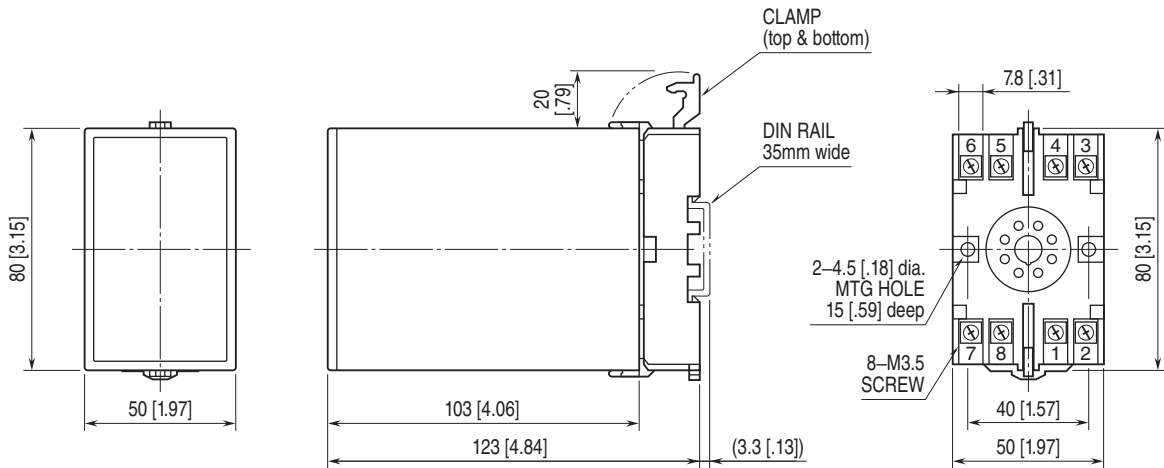
Burnout response: \leq 10 sec.

Line voltage effect: \pm 0.1 % over voltage range

Insulation resistance: \geq 100 M Ω with 500 V DC

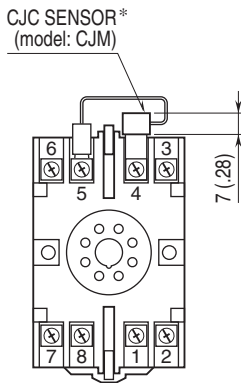
Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

EXTERNAL DIMENSIONS unit: mm [inch]



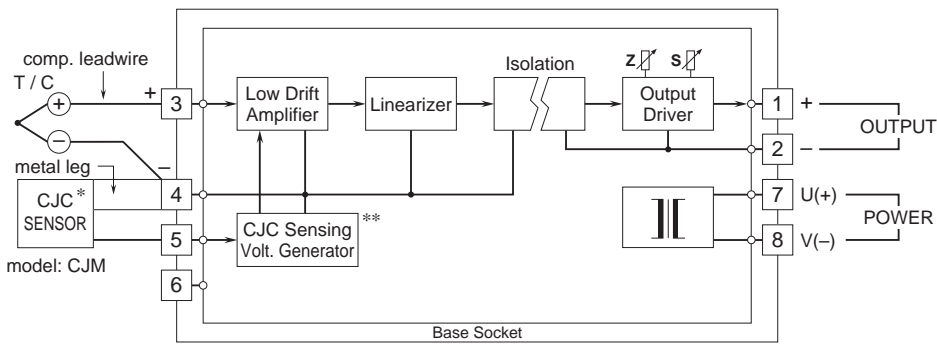
• When mounting, no extra space is needed between units.

TERMINAL ASSIGNMENTS unit: mm [inch]



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SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



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 ** Deleted with Option /N or B thermocouple.



Specifications are subject to change without notice.