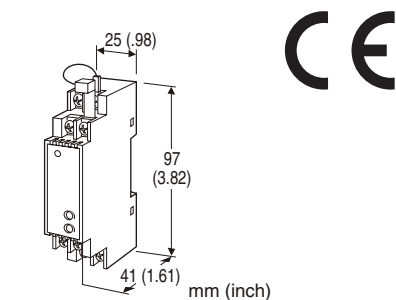


**Super-mini Two-wire Terminal Block  
Signal Conditioners B5-UNIT**

**THERMOCOUPLE TRANSMITTER**

**Functions & Features**

- Accepts direct input from a thermocouple and provides an isolated 4 - 20 mA DC signal
- Linearization and burnout
- Cold junction compensation
- Monitor terminals
- High-density mounting
- Power LED



**MODEL: B5TS-[1][2]**

**ORDERING INFORMATION**

- Code number: B5TS-[1][2]

Specify a code from below for each of [1] and [2].

- (e.g. B5TS-1/K/BL/Q)
- Temperature range (e.g. 0 - 800°C)
- Specify the specification for option code /Q (e.g. /C01)

**[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] OPTIONS (multiple selections)**

Response Time (0 - 90 %)

blank: Standard (≤ 0.5 sec.)

/K: Fast Response (Approx. 25 msec.)

Burnout

blank: Upscale burnout

/BL: Downscale burnout

/BN: No burnout

Other Options

blank: none

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

**SPECIFICATIONS OF OPTION: Q**

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

**GENERAL SPECIFICATIONS**

Construction: Terminal block

Connection: M3.5 screw terminals (torque 0.8 N·m)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (black)

Isolation: Input to output

Zero adjustment: -1 to +1 % (front)

Span adjustment: 98 to 102 % (front)

Burnout: Upscale standard; downscale or no burnout optional

Linearization: Standard

Cold junction compensation: CJC sensor attached to the input terminals (B thermocouple is without CJC as standard)

Power LED: Orange LED turns on when the power is supplied.

**INPUT SPECIFICATIONS**

Minimum span: 3 mV

Input resistance: 20 kΩ min.

Burnout sensing: 0.1 μA

**Lower temperature range & span (in °C)**

(PR): Lower range 0 to 880°C; min. span 370°C

K (CA): Lower range -270 to +1200°C; min. span 75°C

E (CRC): Lower range -270 to +750°C; min. span 50°C

J (IC): Lower range -210 to +800°C; min. span 60°C

T (CC): Lower range -270 to +325°C; min. span 75°C

B (RH): Lower range 0 to 750°C; min. span 780°C

R: Lower range -50 to +550°C; min. span 360°C

S: Lower range -50 to +550°C; min. span 380°C

N: Lower range -270 to +1100°C; min. span 110°C

**Lower temperature range & span (in °F)**

(PR): Lower range 32 to 1616°F; min. span 670°F

K (CA): Lower range -454 to +2192°F; min. span 140°F

E (CRC): Lower range -454 to +1382°F; min. span 90°F

J (IC): Lower range -346 to +1472°F; min. span 110°F

**T (CC):** Lower range -454 to +617°F; min. span 140°F

**B (RH):** Lower range 32 to 1382°F; min. span 1450°F

**R:** Lower range -58 to +1022°F; min. span 680°F

**S:** Lower range -58 to +1022°F; min. span 700°F

**N:** Lower range -454 to +2012°F; min. span 200°F

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

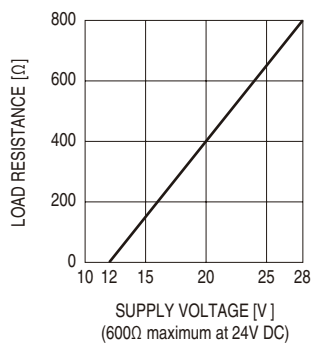
## OUTPUT SPECIFICATIONS

**Output:** 4 - 20 mA DC

**Load resistance vs. supply voltage:**

Load Resistance (Ω) = (Supply Voltage (V) - 12 (V)) ÷ 0.02

(A) (including leadwire resistance)



0.36°F @77°F+0.14°F/°F at -40 - +32°F)

**PR, R, S:** ±4°C max. at 0 - 80°C

0.2°C @25°C+0.25°C/°C at -40 - 0°C

(±7.2°F max. at 32 - 176°F

0.36°F @77°F+0.25°F/°F at -40 - +32°F)

**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F)

**Burnout response:** ≤ 10 sec.

**Insulation resistance:** ≥ 100 MΩ with 500 V DC

**Dielectric strength:** 2000 V AC @1 minute

(input to output to ground)

## STANDARDS & APPROVALS

**EU conformity:**

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

## INSTALLATION

**Supply voltage:** 12 - 28 V DC

**Operating temperature:** -40 to +80°C (-40 to +176°F)

**Operating humidity:** 0 to 90 %RH (non-condensing)

**Mounting:** DIN rail

**Weight:** 60 g (2.1 oz)

## PERFORMANCE in percentage of span

**Accuracy** (whichever is greater)

**K, E, J:** ±0.1 % of FS or ±0.2°C (±0.36°F)

**T, N:** ±0.2 % of FS or ±0.2°C (±0.36°F)

**PR, R, S:** ±0.3 % of FS (over 400°C or 750°F)

**B:** ±0.3 % of FS (over 770°C or 1420°F)

**Cold junction compensation error**

**K:** ±1°C max. at 0 - 80°C

0.2°C @25°C+0.035°C/°C at -40 - 0°C

(±1.8°F max. at 32 - 176°F

0.36°F @77°F+0.035°F/°F at -40 - +32°F)

**J:** ±2°C max. at 0 - 80°C

0.2°C @25°C+0.06°C/°C at -40 - 0°C

(±3.6°F max. at 32 - 176°F

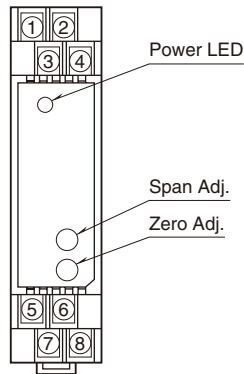
0.36°F @77°F+0.06°F/°F at -40 - +32°F)

**E, T, N:** ±3°C max. at 0 - 80°C

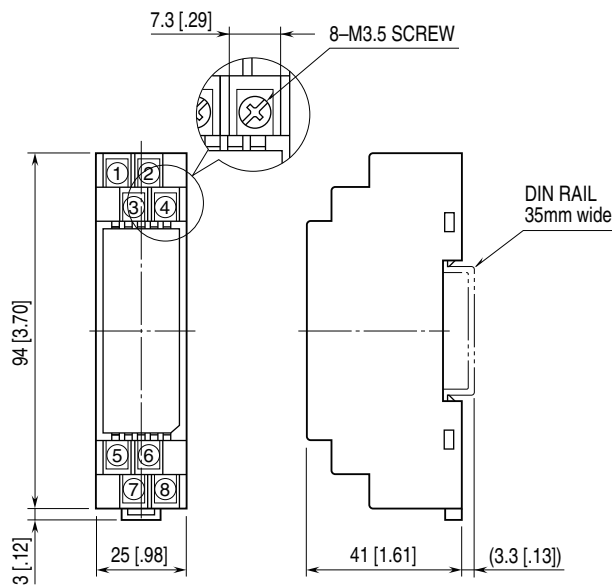
0.2°C @25°C+0.14°C/°C at -40 - 0°C

(±5.4°F max. at 32 - 176°F

**EXTERNAL VIEW**

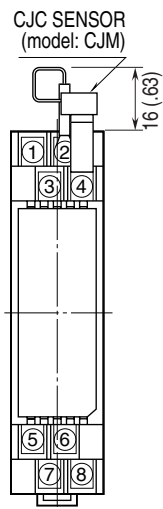


**EXTERNAL DIMENSIONS unit: mm [inch]**

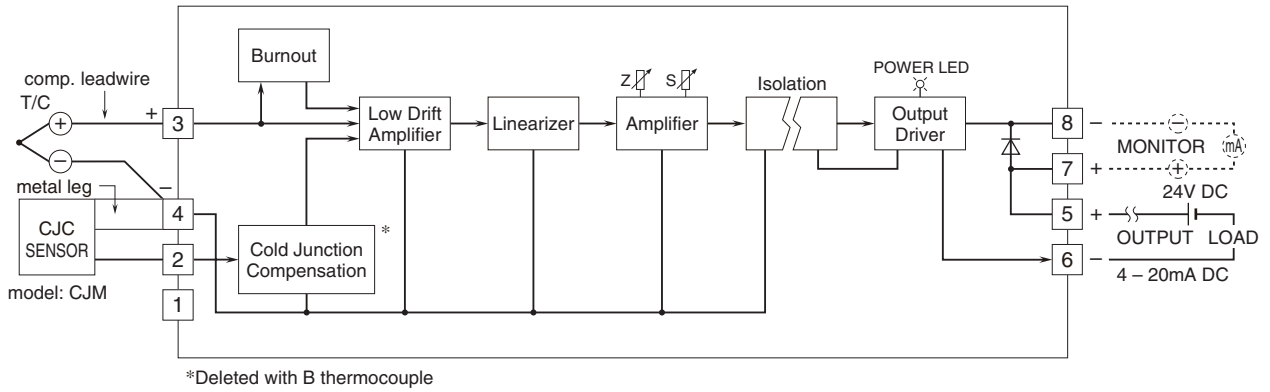


• When mounting, no extra space is needed between units.

**TERMINAL ASSIGNMENTS unit: mm [inch]**



**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



Specifications are subject to change without notice.