

## Space-saving Two-wire Signal Conditioners B-UNIT

### THERMOCOUPLE TRANSMITTER

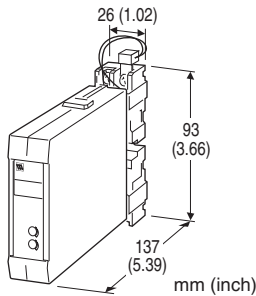
(isolated)

#### Functions & Features

- Accepting direct input from a thermocouple and providing a standard 4 - 20 mA DC signal
- Linearization
- Burnout protection
- High-accuracy cold junction compensation
- Monitor terminals
- High-density mounting

#### Typical Applications

- High-accuracy cold junction compensation benefits narrow span measurements
- 0.1  $\mu$ A burnout sensing enables long distance transmission with minimum offset drifts
- Electric furnace (isolation)



## MODEL: BTS-[1][2]

### ORDERING INFORMATION

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

Specify a code from below for each of [1] and [2].  
(e.g. BTS-2/BL/Q)

- Temperature range (e.g. 0 - 800°C)
- 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)
- 0: Specify

### [2] OPTIONS (multiple selections)

#### Burnout

**blank:** Upscale burnout  
/BL: Downscale burnout

#### 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 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 (torque 0.8 N·m)

**Screw terminal:** Nickel-plated steel (standard) or stainless steel

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output

**Zero adjustment:** -1.5 to +10 % (front)

**Span adjustment:** 95 to 105 % (front)

**Linearization:** Standard

**Cold junction compensation:** CJC sensor attached to the input terminals

### INPUT SPECIFICATIONS

**Minimum span:** 3 mV

**Offset:** Max. 1.5 times span

**Input resistance:** 20 k $\Omega$  minimum

**Burnout sensing:** 0.1  $\mu$ A

#### Minimum span (in °C)

(PR): 370°C

K (CA): 75°C

E (CRC): 50°C

J (IC): 60°C

T (CC): 75°C

B (RH): 780°C

R: 360°C

S: 380°C

#### Minimum span (in °F)

(PR): 670°F

K (CA): 140°F

E (CRC): 90°F

J (IC): 110°F

T (CC): 140°F

**B (RH):** 1410°F

**R:** 650°F

**S:** 690°F

Note: For the temperatures that range below 0°C, the transmitter may partially not satisfy the described accuracy. Consult factory.

## OUTPUT SPECIFICATIONS

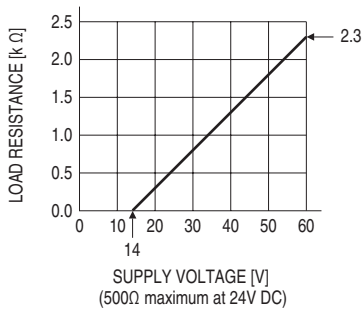
**Output:** 4 - 20 mA DC

**Load resistance vs. supply voltage:**

Load Resistance (Ω) = (Supply Voltage (V) - 14 (V)) ÷ 0.02

(A)

(including leadwire resistance)



## INSTALLATION

**Supply voltage:** 14 - 60 V DC

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

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

**Mounting:** Surface or DIN rail; Standard Rack Mounting

Frame BX-16H available

**Weight:** 150 g (0.33 lb)

## PERFORMANCE in percentage of span

**Accuracy:** ±0.4 % (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 25°C ±10°C or 77°F ±18°F)

**K, E, J & T:** ±0.5°C or ±0.9°F

**S, R & PR:** ±1°C or ±1.8°F

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

(at over 400°C or 750°F for R, S and PR; over 770°C or 1420°F for B)

**Response time:** ≤ 0.5 sec. (0 - 90 %)

**Burnout response:** ≤ 10 sec.

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

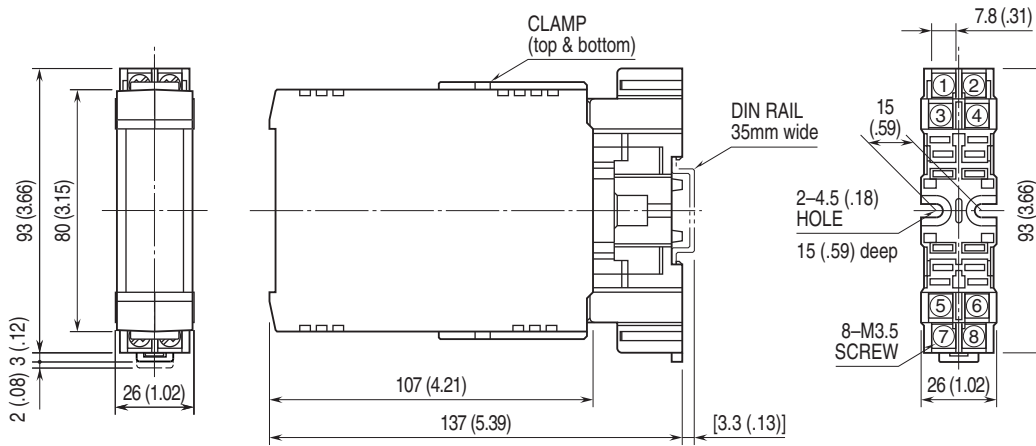
**Dielectric strength:** 500 V AC @ 1 minute

(input to output)

1500 V AC @ 1 minute

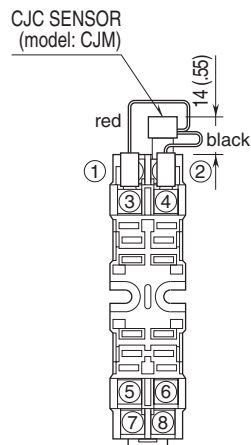
(input or output to ground)

## EXTERNAL DIMENSIONS unit: mm (inch)

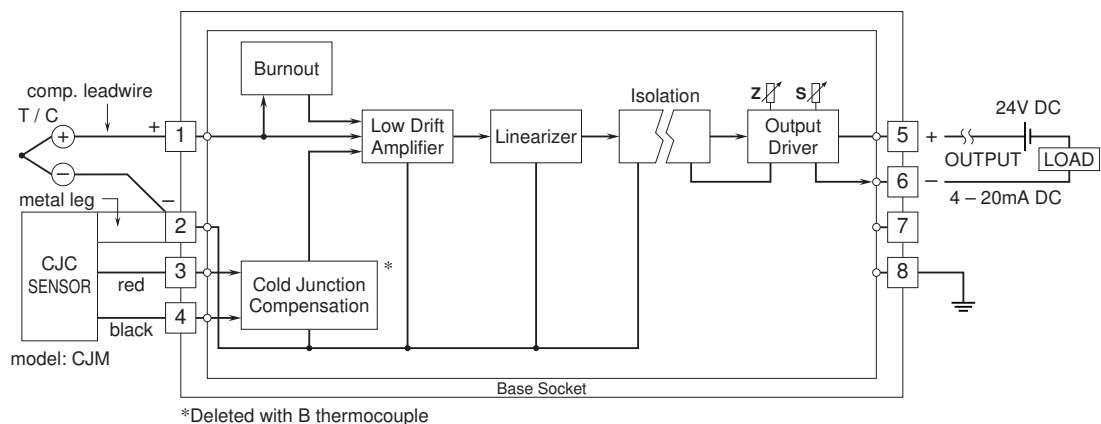


•When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm (inch)



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.