Space-saving Two-wire Signal Conditioners B-UNIT

THERMOCOUPLE TRANSMITTER

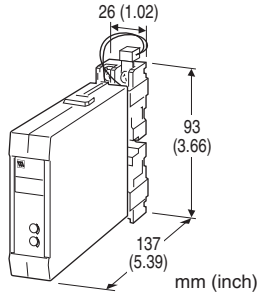
(isolated)

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 µA 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 kΩ minimum
Burnout sensing: 0.1 µA

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

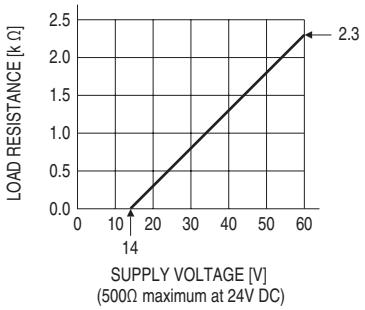
Minimum span (in °F)
(PR): 670°F
K (CA): 140°F
E (CRC): 90°F
J (IC): 110°F
T (CC): 140°F

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)



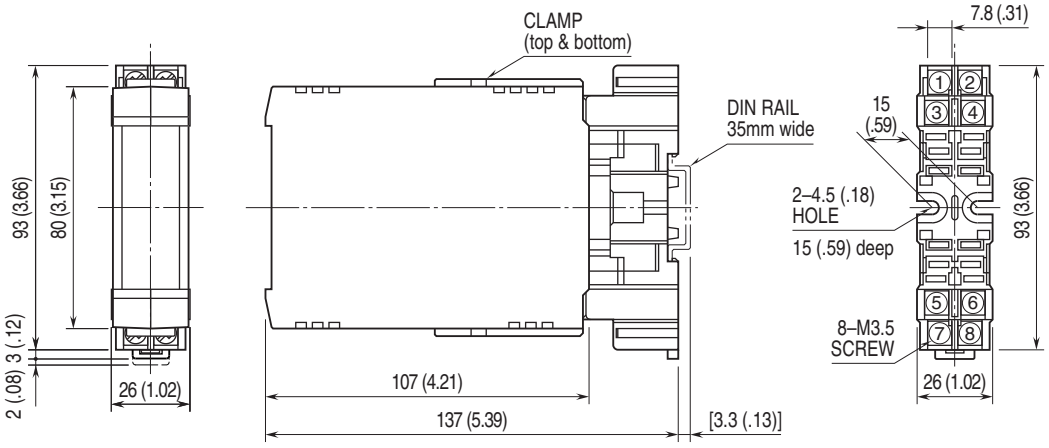
INSTALLATION

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

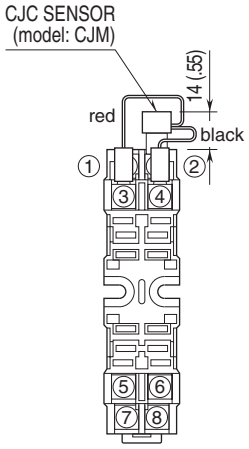
Accuracy: ±0.4 % (at over 400°C or 750°F for R, S and PR; over 770°C or 1420°F for B)
Cold junction compensation error
(at 25°C ±10°C or 77°F ±18°F)
K, E, J & T: ±0.5°C or ±0.9°F
S, R & PR: ±1°C or ±1.8°F
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)
(at over 400°C or 750°F for R, S and PR; over 770°C 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)

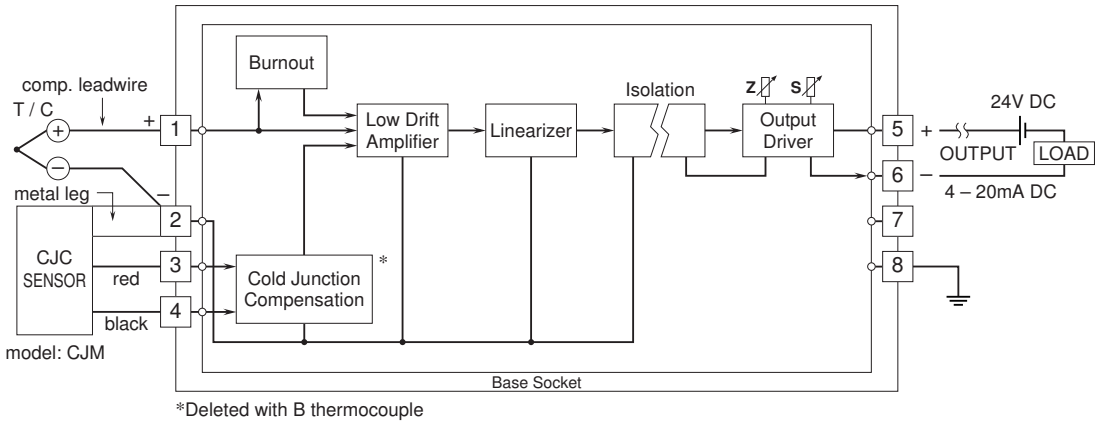


•When mounting, no extra space is needed between units.

TERMINAL ASSIGNMENTS unit: mm (inch)



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



*Deleted with B thermocouple

⚠ Specifications are subject to change without notice.