## Super-mini Signal Conditioners M80 Series

## THERMOCOUPLE TRANSMITTER

Functions & Features

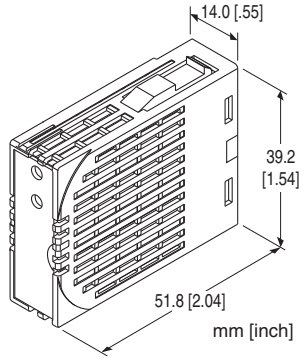
• The DC input from the thermocouple sensor is amplified, compensated the cold junction, linearized and provided as an isolated DC

• Mutual isolation (input to output)

• Cold junction compensation, Linearization, and upscale/downscale burnout

• Space-saving, easyto-maintain, multi-channel installation base

• Isolates between analog output channels of a PLC




## MODEL: M80TS-[1]6-R[2]

## ORDERING INFORMATION

• Code number: M80TS-[1]6-R[2]

Specify codes from below for each of [1] and [2].
(e.g. M80TS-26-R/BL)

• Temperature range (e.g. 0 – 1000°C)

## [1] INPUT THERMOCOUPLE

**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)

## OUTPUT

**Voltage**

**6**: 1 – 5 V DC (Load resistance 10 kΩ min.)

## POWER INPUT

**DC Power**

**R**: 24 V DC
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

## [2] OPTIONS

**Burnout**

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

## RELATED PRODUCTS

• Installation Base (model: M80BSx)
This unit must be mounted on a dedicated base.

## GENERAL SPECIFICATIONS

**Construction**: Plug-in
**Housing material**: Flame-resistant resin (gray)
**Power supply**: Via the Installation Base terminals (model: M80BSx)
**Isolation**: Input to output to power
**Zero adjustment**: -5 to +5 % (front)
**Span adjustment**: 95 to 105 % (front)
**At burnout**: Downscale ≤ -10 %, Upscale ≥ 110 %
**Linearization**: Standard
**Cold junction compensation**: CJC sensor attached to the input terminals (B thermocouple is without CJC as standard)

## INPUT SPECIFICATIONS

**Minimum span:** 3 mV
**Offset**: Max. 1.5 times span
**Input resistance:** 1 MΩ min. (10 kΩ min. in power failure)
**Burnout sensing:** 0.1 µA

**Minimum span (in °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)**
**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



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**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 us.

## INSTALLATION

**Current consumption**: ≤ 9 mA
**Operating temperature**: -5 to +55°C (23 to 131°F)
**Operating humidity**: 5 to 95 %RH (non-condensing)
**Mounting**: Multi-channnel Installation Base (model: M80BSx)
**Weight**: 20 g (0.71 oz)

## PERFORMANCE in percentage of span

**Accuracy** (whichever is greater)
**K, E, J, T, N**: ±0.2 % or ±0.2°C (±0.36°F), whichever is greater.
**B, R, S**: ±0.3 %
(at over 400°C or 752°F for R and S;
over 770°C or 1418°F for B)
**Cold junction compensation error**
(at 25°C ±5°C or 77°F ±41°F)
**K, E, J, T, N**: ±0.5°C or ±32.9°F
**B, R, S**: ±1°C or ±33.8°F
(at over 400°C or 752°F for R and S;
over 770°C or 1418°F for B)
**Temp. coefficient**: ±0.015 %/°C (±0.008 %/°F)
**Response time**: ≤ 100 msec. (0 – 90 %)
**Burnout response**: ≤ 10 sec.
**Line voltage effect**: ±0.1 % over voltage range
**Insulation resistance**: ≥ 100 MΩ with 500 V DC
**Dielectric strength**: 1000 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
RoHS Directive



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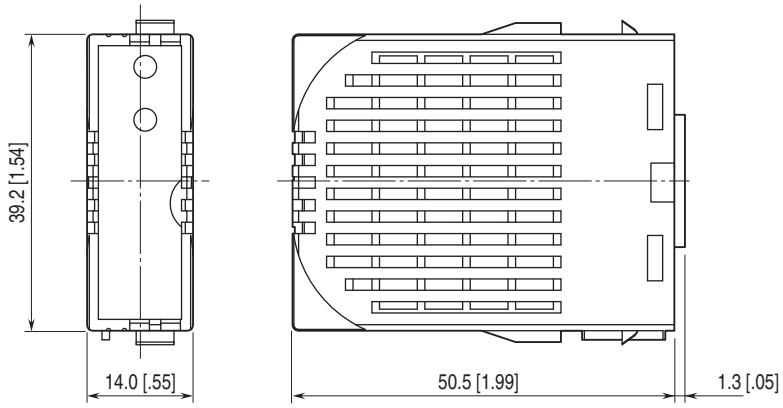
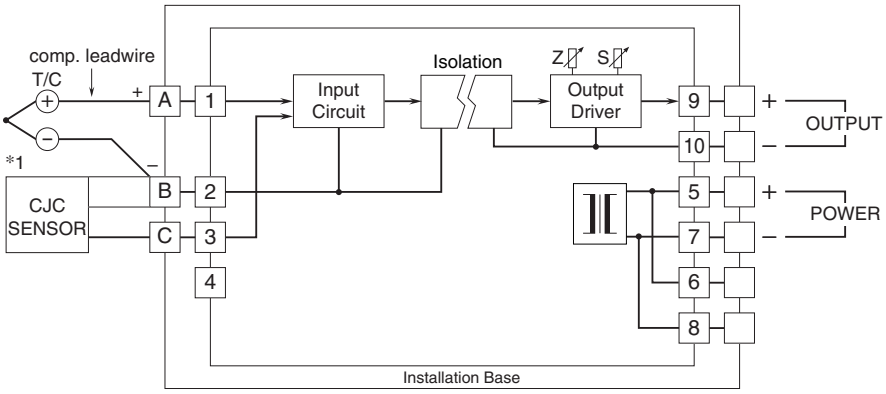
## EXTERNAL DIMENSIONS unit: mm [inch]




## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM




*1. Deleted with B thermocouple.
Note: Use shielded cables for I/O wiring.

⚠ Specifications are subject to change without notice.



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