

## Plug-in Signal Conditioners M-UNIT

### THERMOCOUPLE TRANSMITTER

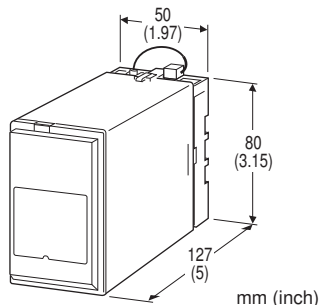
(field-programmable)

#### Functions & Features

- Accepting direct input from a thermocouple and providing standard process signal
- Micro-processor based
- Field-programmable T/C type and temperature range
- Linearization
- Burnout protection
- High accuracy cold junction compensation
- Isolation up to 2000 V AC
- Loop testing via handheld programmer PU-2x
- High-density mounting

#### Typical Applications

- Ideal for quick spare part
- 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)
- No burnout type can connect to a single T/C in parallel with a recorder



**MODEL: JT-[1][2]-[3][4]**

### ORDERING INFORMATION

- Code number: JT-[1][2]-[3][4]
- Specify a code from below for each [1] through [4].  
(e.g. JT-3A-B/BL/Q)
- Temperature range (e.g. 0 - 800°C)
  - Special output range (For codes Z & 0)
  - If the input code is not specified, K thermocouple setting will be used (2:K 0 - 1000°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)
- 9: WRe 5-26 (Usable range 0 to 2320°C, 32 to 4200°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  $\Omega$  max.)
- B: 2 - 10 mA DC (Load resistance 1500  $\Omega$  max.)
- C: 1 - 5 mA DC (Load resistance 3000  $\Omega$  max.)
- D: 0 - 20 mA DC (Load resistance 750  $\Omega$  max.)
- E: 0 - 16 mA DC (Load resistance 900  $\Omega$  max.)
- F: 0 - 10 mA DC (Load resistance 1500  $\Omega$  max.)
- G: 0 - 1 mA DC (Load resistance 15 k $\Omega$  max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

#### Voltage

- 1: 0 - 10 mV DC (Load resistance 10 k $\Omega$  min.)
- 2: 0 - 100 mV DC (Load resistance 100 k $\Omega$  min.)
- 3: 0 - 1 V DC (Load resistance 1000  $\Omega$  min.)
- 4: 0 - 10 V DC (Load resistance 10 k $\Omega$  min.)
- 5: 0 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 6: 1 - 5 V DC (Load resistance 5000  $\Omega$  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
- V: 48 V DC

### [4] OPTIONS (multiple selections)

#### Burnout

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



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**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

**RELATED PRODUCTS**

- JX configurator connection kit (model: JXCON)
- Programming Unit (model: PU-2x)

**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)**Linearization:** Standard**Cold junction compensation:** CJC sensor attached to the input terminals**Adjustments:** Programming Unit (model: PU-2x); (Refer to the users manual of JXCON for the adjustments configurable with JXCON.)

- T/C type
- temp. range
- zero and span
- simulating output
- Others

**INPUT SPECIFICATIONS****Minimum span:** 3 mV**Offset:** Max. 3 times span**Input resistance:** 20 kΩ min.**Burnout sensing:** 0.1 μA**Minimum span in °C and °F****(PR):** 370°C, 670°F**K (CA):** 75°C, 140°F**E (CRC):** 50°C, 90°F**J (IC):** 60°C, 110°F**T (CC):** 75°C, 140°F**B (RH):** 780°C, 1410°F**R:** 360°C, 650°F**S:** 380°C, 690°F**WRe5-26:** 200°C, 360°F**N:** 110°C, 200°F

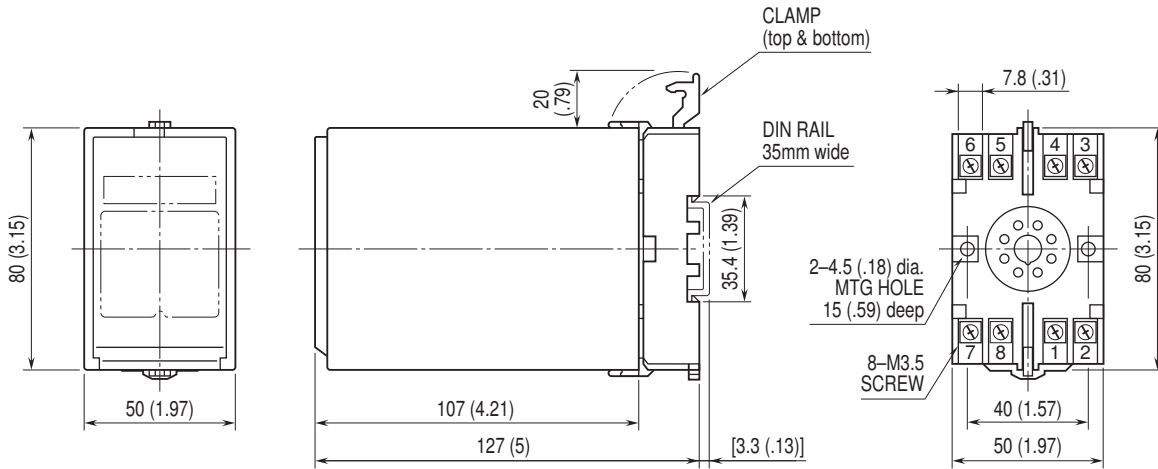
Remark: The described accuracy may be partially not satisfied when the temperature ranges below 0°C. Consult factory.

If not specified, the input range is shown below.

**(PR):** 0 to 1600°C**K (CA):** 0 to 1000°C**E (CRC):** 0 to 500°C**J (IC):** 0 to 500°C**T (CC):** 0 to 300°C**B (RH):** 0 to 1800°C**R:** 0 to 1600°C**S:** 0 to 1600°C**WRe5-26:** 0 to 2000°C**N:** 0 to 1000°C**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 - +20 V DC**Span:** Min. 5 mV, max. 20 V**Offset:** Max. 1.5 times span**Load resistance:** Output drive 1 mA max.; at ≥ 0.5 V**INSTALLATION****Power input**• **AC:** Operational voltage range: rating ±10 %, 50/60 ±2 Hz, approx. 3 VA• **DC:** Operational voltage range: rating ±10 %, ripple 10 %p-p max., approx. 2 W (90 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:** ±0.1 %**Linearization accuracy:** ±0.05 %**Cold junction compensation error:** ±0.5°C or ±0.9°F (at 20°C ±10°C or 68°F ±18°F)**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F)**Response time:** ≤ 0.8 sec. (0 - 90 %)**Burnout response:** ≤ 10 sec.**Line voltage effect:** ±0.1 % over voltage range**Insulation resistance:** ≥ 100 MΩ with 500 V DC

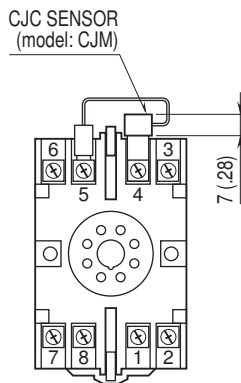
Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

## DIMENSIONS unit: mm (inch)

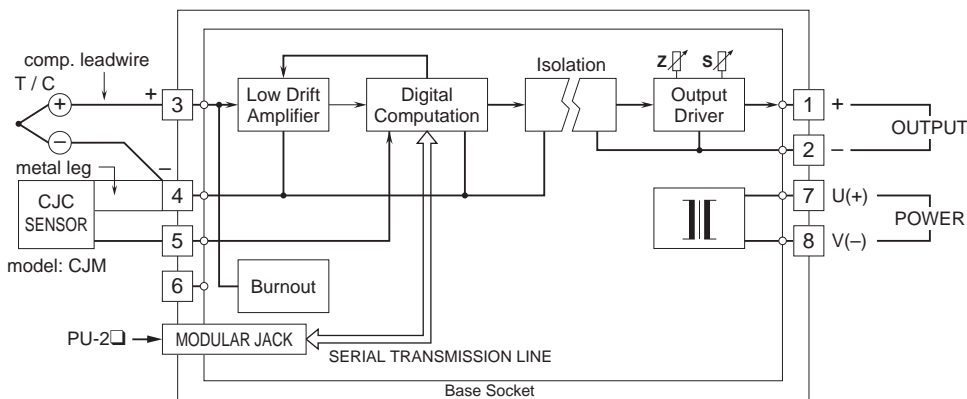


• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm (inch)



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM





Specifications are subject to change without notice.

