

## Plug-in Signal Conditioners M-UNIT

### THERMOCOUPLE TRANSMITTER

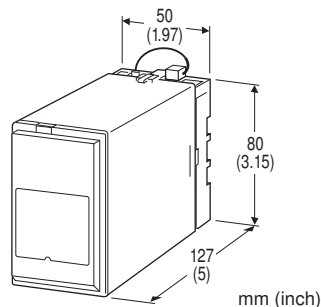
(field-programmable)

#### 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 of [1] through [4].  
(e.g. JT-3A-B/BL/Q)
- Temperature range (e.g. 0 – 800°C)
- K thermocouple setting will be used if the input code is not specified.
- Special output ranges (For codes Z & 0)
  - 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

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 our web site.)

**/C01:** Silicone coating**/C02:** Polyurethane coating**/C03:** Rubber coating

TERMINAL SCREW MATERIAL

**/S01:** Stainless steel**RELATED PRODUCTS**

- Programming Unit (model: PU-2x)
- PC configurator software (model: JXCON)

Downloadable at our web site.

A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.

**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**WRe 5-26:** 200°C, 360°F**N:** 110°C, 200°F

Note: 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**WRe 5-26:** 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

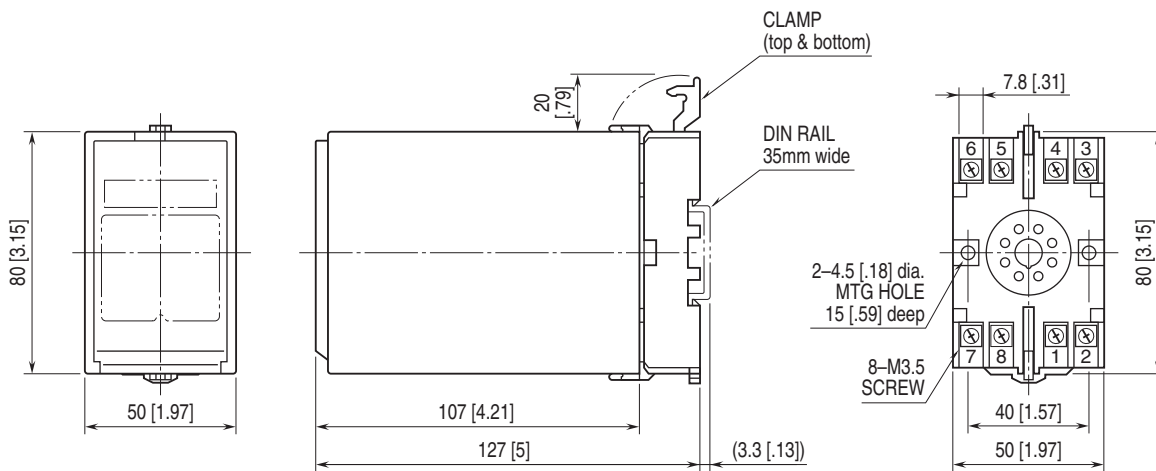
- **DC:** Operational voltage range: rating ±10 %, ripple 10 %p-p max., approx. 2 W (90 mA at 24 V)

**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

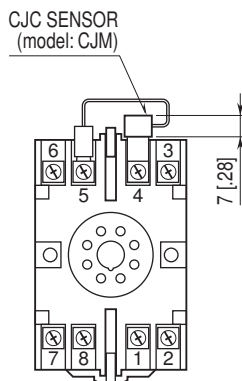
- Accuracy:  $\pm 0.1\%$
- Linearization accuracy:  $\pm 0.05\%$
- Cold junction compensation error:  $\pm 0.5^{\circ}\text{C}$  or  $\pm 0.9^{\circ}\text{F}$   
(at  $20^{\circ}\text{C} \pm 10^{\circ}\text{C}$  or  $68^{\circ}\text{F} \pm 18^{\circ}\text{F}$ )
- Temp. coefficient:  $\pm 0.015\%/^{\circ}\text{C}$  ( $\pm 0.008\%/^{\circ}\text{F}$ )
- Response time:  $\leq 0.8$  sec. (0 - 90 %)
- Burnout response:  $\leq 10$  sec.
- Line voltage effect:  $\pm 0.1\%$  over voltage range
- Insulation resistance:  $\geq 100\ \text{M}\Omega$  with 500 V DC
- Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

## EXTERNAL DIMENSIONS unit: mm [inch]

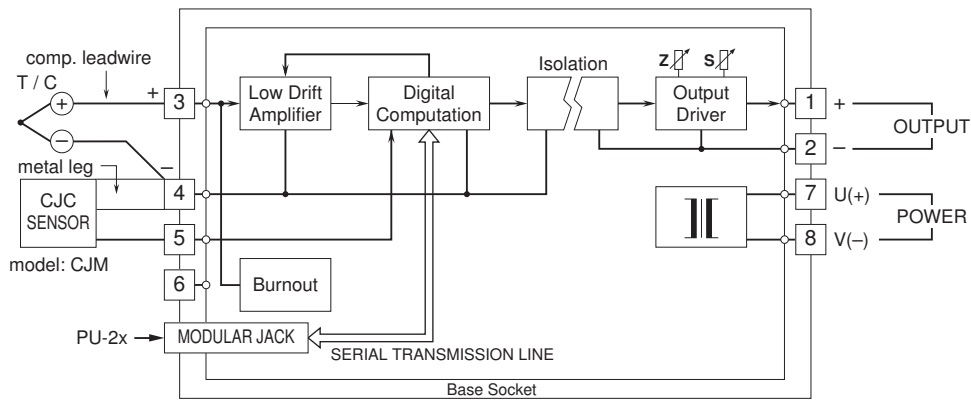


• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm [inch]



**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



Specifications are subject to change without notice.