

## Plug-in Signal Conditioners M-UNIT

### RTD TRANSMITTER

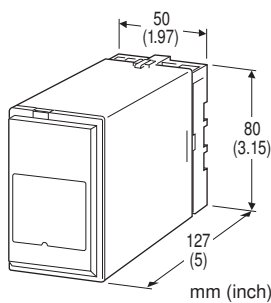
(CE, I/O non-isolated)

#### Functions & Features

- Accepting direct input from an RTD and providing a standard process signal
- Linearization
- Burnout protection
- "Active bridge" circuit containing two constant current sources allows large leadwire resistances up to 200 Ω
- High density mounting

#### Typical Applications

- Long distance transmission between the RTD and the transmitter
- Combination with intrinsic safety barriers



## MODEL: RB-[1][2]-[3][4]

### ORDERING INFORMATION

- Code number: RB-[1][2]-[3][4]  
Specify a code from below for each [1] through [4].  
(e.g. RB-1A-B/BL/CE/Q)
- Temperature range (e.g. 0 - 500°C)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] INPUT RTD (2- or 3-wire)

**1:** JPt 100 (JIS'89)

(Usable range: -200 to +500°C, -328 to +932°F; min.span: 50°C, 90°F)

**3:** Pt 100 (JIS'89)

(Usable range: -200 to +650°C, -328 to +1202°F; min.span: 50°C, 90°F)

**4:** Pt 100 (JIS'97, IEC)

(Usable range: -200 to +650°C, -328 to +1202°F; min.span: 50°C, 90°F)

**5:** Pt 50 Ω (JIS'81)

(Usable range: -200 to +500°C, -328 to +932°F; min.span: 100°C, 180°F)

**6:** Ni 508.4 Ω

(Usable range: -50 to +200°C, -58 to +392°F; min.span: 30°C, 54°F)

**0:** Specify

Note: Consult M-System for 2-wire RTD

#### [2] OUTPUT

##### Current

**A:** 4 - 20 mA DC (Load resistance 750 Ω max.)

**B:** 2 - 10 mA DC (Load resistance 1500 Ω max.)

**C:** 1 - 5 mA DC (Load resistance 3000 Ω max.)

**D:** 0 - 20 mA DC (Load resistance 750 Ω max.)

**E:** 0 - 16 mA DC (Load resistance 900 Ω max.)

**F:** 0 - 10 mA DC (Load resistance 1500 Ω max.)

**G:** 0 - 1 mA DC (Load resistance 15 kΩ max.)

**Z:** Specify current (See OUTPUT SPECIFICATIONS)

##### Voltage

**1:** 0 - 10 mV DC (Load resistance 10 kΩ min.)

**2:** 0 - 100 mV DC (Load resistance 100 kΩ min.)

**3:** 0 - 1 V DC (Load resistance 3000 Ω min.)

**4:** 0 - 10 V DC (Load resistance 10 kΩ min.)

**5:** 0 - 5 V DC (Load resistance 5000 Ω min.)

**6:** 1 - 5 V DC (Load resistance 5000 Ω 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

##### Standards & Approvals (must be specified)

**/CE:** CE marking

##### 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

**Screw terminal:** Chromated steel (standard) or stainless steel

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

**Isolation:** Input or 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

## INPUT SPECIFICATIONS

**Maximum leadwire resistance:** 200  $\Omega$  per wire (3-wire)

**Sensing current:** 2 mA

## 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 - +12 V DC

**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 1 mA max. at  $\geq 3$  V

## INSTALLATION

### Power input

•**AC:** Operational voltage range: rating  $\pm 10$  %, 50/60  $\pm 2$  Hz, approx. 2 VA

•**DC:** Operational voltage range: rating  $\pm 10$  %, ripple 10 %p-p max., approx. 2 W (80 mA at 24 V)

**Operating temperature:** -5 to +60°C (23 to 140°F)

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

**Mounting:** Surface or DIN rail

**Weight:** 350 g (0.77 lbs)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.2$  %

**Temp. coefficient:**  $\pm 0.015$  %/°C ( $\pm 0.008$  %/°F)

**Response time:**  $\leq 0.5$  sec. (0 - 90 %)

**Burnout response:**  $\leq 10$  sec.

**Line voltage effect:**  $\pm 0.1$  % over voltage range

**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

**Dielectric strength:** 2300 V AC @1 minute

(input or output to power to ground)

## STANDARDS & APPROVALS

### CE conformity:

EMC Directive (2004/108/EC)

EMI EN 61000-6-4: 2007

EMS EN 61000-6-2: 2005

Low Voltage Directive (2006/95/EC)

EN 61010-1: 2001

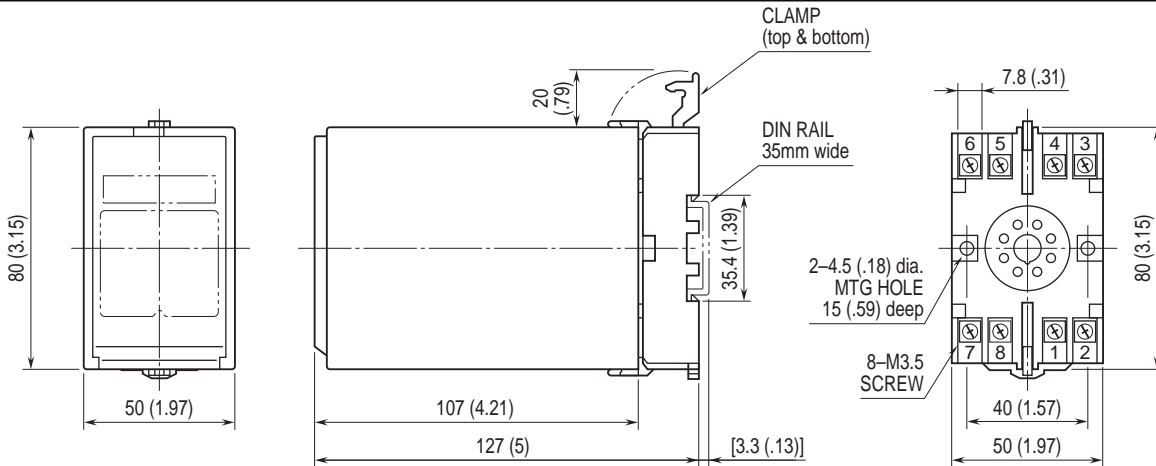
Installation Category II

Pollution Degree 2

Input or output to power: Reinforced insulation (300 V)

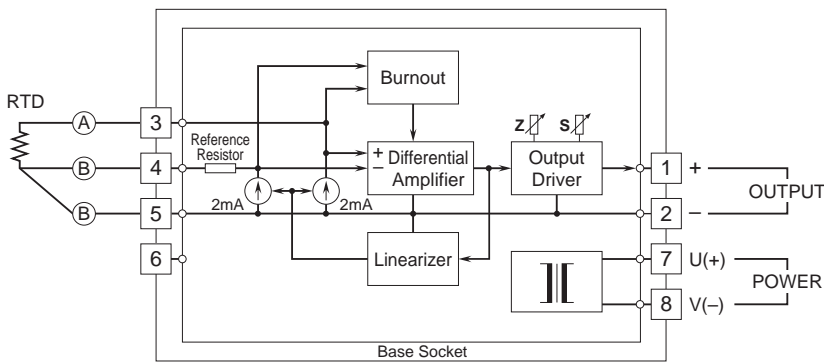


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.