

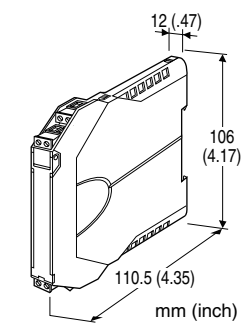
## Super-space-saving Signal Conditioners M3S-UNIT Series

### RTD TRANSMITTER

(PC programmable)

#### Functions & Features

- Accepts direct input from an RTD and provides an isolated, linearized DC signal
- Linearization and burnout protection
- PC programmable
- Universal AC/DC power input
- High-density mounting
- Power and status indicator LED
- CE marking



### MODEL: M3SXR-[1][2]-[3]

#### ORDERING INFORMATION

- Code number: M3SXR-[1][2]-[3]
- Specify a code from below for each [1] through [3].  
(e.g. M3SXR-4Z1-R)
- Temperature range (e.g. 0 - 100°C)
  - Output range (e.g. 4 - 20 mA DC)

#### [1] INPUT RTD

- 1:** JPt 100 (JIS'89)  
(Usable range: -200 to +500°C, -328 to +932°F; min.span: 20°C, 36°F)
- 3:** Pt 100 (JIS'89)  
(Usable range: -200 to +650°C, -328 to +1202°F; min.span: 20°C, 36°F)
- 4:** Pt 100 (JIS'97, IEC)  
(Usable range: -200 to +850°C, -328 to +1562°F; min.span: 20°C, 36°F)
- 5:** Pt 50 Ω (JIS'81)  
(Usable range: -200 to +649°C, -328 to +1200°F; min.span: 20°C, 36°F)
- 7:** Pt 1000  
(Usable range: -200 to +850°C, -328 to +1562°F; min.span: 20°C, 36°F)
- 9:** Cu 10 @25°C  
(Usable range: -50 to +250°C, -58 to +482°F; min.span: 20°C, 36°F)
- 0:** Specify (Please provide a resistance table.)  
(Configurator software is used to change the input type and range. Input code 7: Pt 1000 cannot be switched to/from

other input types while its temperature range can be changed.)

#### [2] OUTPUT

##### Current

**Z1:** Range 0 - 20 mA DC

##### Voltage

**V2:** Range -10 - +10 V DC

**V3:** Range -5 - +5 V DC

(Configurator software is used to change output over the described range of the selected suffix code.

For changing between suffix codes, set the Output Range Selector on the side of unit before software adjustment.)

#### [3] POWER INPUT

##### AC Power

**M2:** 100 - 240 V AC (Operational voltage range 90 - 264 V, 47 - 66 Hz)

##### DC Power

**R:** 24 V DC

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

##### Universal

**AD:** 100 - 240 V AC / 24 - 240 V DC (universal)

(Operational voltage range 90 - 264 V AC, 47 - 66 Hz / 21.6 - 264 V DC, ripple 10 %p-p max.)

#### RELATED PRODUCTS

- PC configurator software (model: M3SCFG)

Downloadable at M-System's 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:** Small-sized front terminal structure

**Connection:** Removable terminal block

**Applicable wire size:** 0.2 to 2.5 mm<sup>2</sup>

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

**Isolation:** Input to output to power

**Overrange output:** -2 - +102 %

(Negative current output is not available.)

**Zero adjustment:** -2 to +2 % (PC programming)

**Span adjustment:** 98 to 102 % (PC programming)

**Burnout:** Upscale standard; downscale or no burnout optional by programming

**Linearization:** Standard

**Power LED:** Green light turns on when the power is supplied.

**Status indicator LED:** Orange LED; Flashing patterns indicate different operating status of the transmitter.



## Programming: Downloaded from PC

Programmable features include:

- Input type, number of wires and range
- Output type and range
- Zero and span adjustments
- Burnout action
- User's RTD table setting  
(max. 300 points, input resistance specified within 0 - 500 Ω, or 0 - 5 kΩ for Pt 1000)

Refer to the instruction manual for details.

**Configurator connection:** 2.5 dia. miniature jack;  
RS-232-C level

## INPUT SPECIFICATIONS

### ■ RTD

**Number of wires:** 2, 3 or 4 wires

**Maximum leadwire resistance:** 10 Ω per wire

**Sensing current:** ≤ 1.5 mA (≤ 0.1 5mA for Pt 1000)

Note: Factory setting is 0 - 100°C if not otherwise specified

## OUTPUT SPECIFICATIONS

### • DC Current

**Output range:** 0 - 20 mA DC

**Conformance range:** 0 - 20.4 mA DC

**Minimum span:** 1 mA

**Offset:** Lower range can be any specific value within the output range provided that the minimum span is maintained.

**Load resistance:** Output drive 11 V max.  
(e.g. 4 - 20 mA: 550 Ω [11 V/20 mA])

If not specified, the output range is 4 - 20 mA DC.

### • DC VOLTAGE

**Code V2 (wide spans)**

**Output range:** -10 - +10 V DC

**Conformance range:** -10.4 - +10.4 V DC

**Minimum span:** 1 V

**Code V3 (narrow spans)**

**Output range:** -5 - +5 V DC

**Conformance range:** -5.2 - +5.2 V DC

**Minimum span:** 0.5 V

**Offset:** Lower range can be any specific value within the output range provided that the minimum span is maintained.

**Load resistance:** Output drive 1 mA max.  
(e.g. 1 - 5 V: 5000 Ω [5 V/1 mA])

If not specified, the output range is shown below.

V2: 0 - 10 V DC

V3: 1 - 5 V DC

## INSTALLATION

### Power Consumption

#### •AC:

Approx. 2 VA at 100 V

Approx. 3 VA at 200 V

Approx. 4 VA at 264 V

#### •DC:

R: Approx. 0.5 W

AD: Approx. 1 W

**Operating temperature:** -10 to +55°C (14 to 131°F)

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

**Mounting:** DIN rail

**Weight:** 85 g (3.0 oz)

## PERFORMANCE in percentage of span

**Overall accuracy:** Input accuracy + output accuracy

Inversely proportional to the span.

See CALCULATION EXAMPLES OF OVERALL ACURACY.

• **Input accuracy:** (whichever is greater)

±0.1 % of FS or ±0.15°C (Pt and JPt)

±0.1 % of FS or ±1°C (Cu 10)

• **Output accuracy:** ±0.04 % of max. output range

**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F) of max. span

**Response time:** ≤ 1 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)

## CALCULATION EXAMPLES OF OVERALL ACCURACY

[Example] Pt 100, 0 - 100°C, Output Type -5 - +5 V, Output Range 1 - 5 V

Input Accuracy\*<sup>1</sup> (0.15°C\*<sup>2</sup>) / Span (100°C) × 100 % +

Max. Output Range (10 V) / Span (4 V) × 0.04 % = 0.25 %

\*1. Calculate the accuracy in °C.

\*2. 100°C × 0.1 % = 0.1°C ≤ 0.15°C. 0.15°C is used as input accuracy value.

## 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

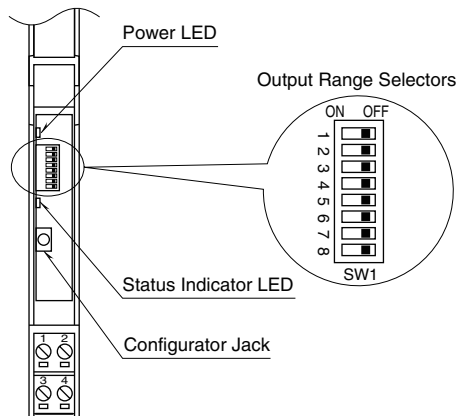
Pollution Degree 2

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

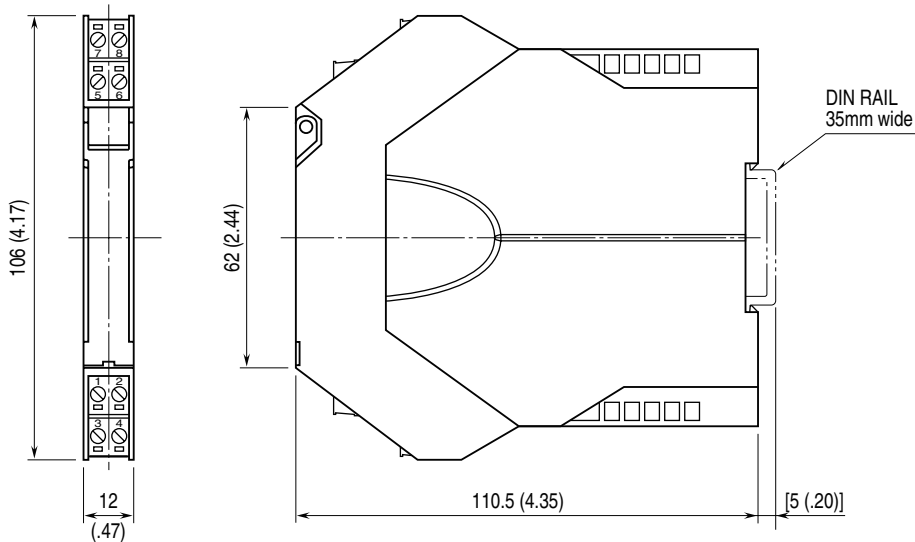
Input to output: Basic insulation (300 V)



## EXTERNAL VIEW

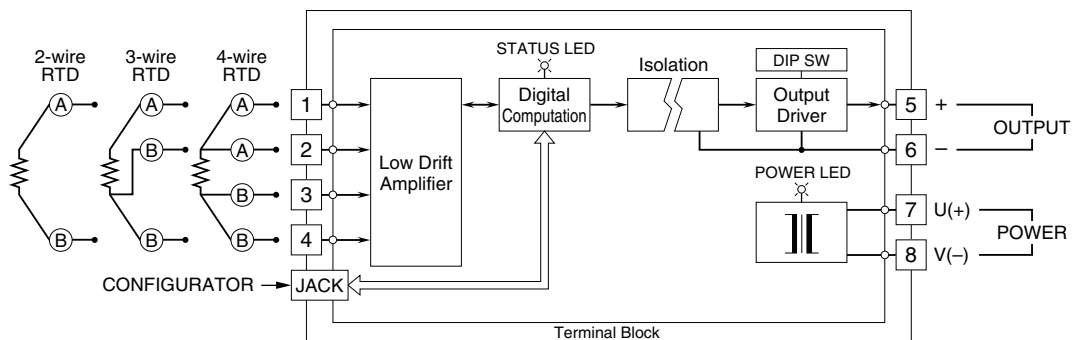


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.