

## Super-mini Signal Conditioners Mini-M Series

### SIGNAL TRANSMITTER

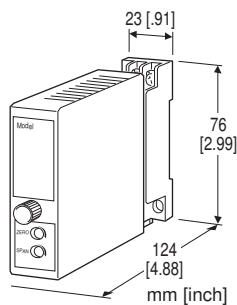
(high speed response)

#### Functions & Features

- Converts DC input from a sensor into a standard process signal
- Isolation between input and output
- 180-microsecond response

#### Typical Applications

- Isolation for a vibration analyzing system



## MODEL: M2VF-[1][2]-[3][4]

### ORDERING INFORMATION

- Code number: M2VF-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].  
(e.g. M2VF-6A-M2/CE/Q)
- Special input and output ranges (For codes Z & 0)
- Specify the specification for option code /Q  
(e.g. /C01/V01)

### [1] INPUT

#### Current

- A:** 4 - 20 mA DC (Input resistance 250 Ω)
- B:** 2 - 10 mA DC (Input resistance 500 Ω)
- C:** 1 - 5 mA DC (Input resistance 1000 Ω)
- D:** 0 - 20 mA DC (Input resistance 50 Ω)
- E:** 0 - 16 mA DC (Input resistance 62.5 Ω)
- F:** 0 - 10 mA DC (Input resistance 100 Ω)
- G:** 0 - 1 mA DC (Input resistance 1000 Ω)
- H:** 10 - 50 mA DC (Input resistance 100 Ω)
- GW:** -1 - +1 mA DC (Input resistance 1000 Ω)
- FW:** -10 - +10 mA DC (Input resistance 100 Ω)
- Z:** Specify current (See INPUT SPECIFICATIONS)

#### Voltage

- 3:** 0 - 1 V DC (Input resistance 1 MΩ min.)
- 4:** 0 - 10 V DC (Input resistance 1 MΩ min.)

- 5:** 0 - 5 V DC (Input resistance 1 MΩ min.)
- 6:** 1 - 5 V DC (Input resistance 1 MΩ min.)
- 4W:** -10 - +10 V DC (Input resistance 1 MΩ min.)
- 5W:** -5 - +5 V DC (Input resistance 1 MΩ min.)
- 0:** Specify voltage (See INPUT SPECIFICATIONS)  
(Select '/N' for 'Standards & Approvals' code.)
- 01:** Specify voltage (See INPUT SPECIFICATIONS)  
(Select '/CE', '/UK' or '/UL' for 'Standards & Approvals' code.)

### [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.)
- FW:** -10 - +10 mA DC (Load resistance 700 Ω max.)
- GW:** -1 - +1 mA DC (Load resistance 7000 Ω 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 1000 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.)
- 4W:** -10 - +10 V DC (Load resistance 10 kΩ min.)
- 5W:** -5 - +5 V DC (Load resistance 5000 Ω min.)
- 0:** Specify voltage (See OUTPUT SPECIFICATIONS)

### [3] POWER INPUT

#### AC Power

- M:** 85 - 264 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)  
(Select '/N' for 'Standards & Approvals' code.)
- M2:** 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)  
(90 - 264 V for UL)

#### DC Power

- R:** 24 V DC  
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)
- R2:** 11 - 27 V DC  
(Operational voltage range 11 - 27 V, ripple 10 %p-p max.)  
(Select '/N' for 'Standards & Approvals' code.)
- P:** 110 V DC  
(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)  
(Select '/N' for 'Standards & Approvals' code.)

**[4] OPTIONS (multiple selections)****Standards & Approvals (must be specified)**

/N: Without CE, UKCA or UL

/CE: CE marking

/UK: CE, UKCA marking

/UL: UL approval, CE marking

**Custom specification**

(Refer to the custom specification list for difference of specification and combination of code numbers.)

blank: none

/X1: Response time (CE, UK or UL not available)

/X2: Input (CE, UK or UL not available)

**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 (UL not available)

/C04: Polyolefin coating (UL not available)

**ADJUSTMENT**

/V01: Multi-turn fine adjustment (UL not available)

**TERMINAL SCREW MATERIAL**

/S01: Stainless steel (UL not available)

**GENERAL SPECIFICATIONS****Construction:** Plug-in**Connection:** M3 screw terminals (torque 0.8 N·m)**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)**INPUT SPECIFICATIONS****■ DC Current:**

Shunt resistor attached to the input terminals (0.5 W)

Specify input resistance value for code Z.

**■ DC Voltage:** -300 - +300 V DC

(-30 - +30 V for the input code 01. Span 60 V max.)

**Minimum span:** 1 V**Offset:** Max. 1.5 times span**Input resistance:**  $\geq 1 \text{ M}\Omega$ **OUTPUT SPECIFICATIONS****■ DC Current:** -10 - +20 mA DC**Minimum span:** 1 mA**Offset:** Max. 1.5 times span**Load resistance:** Output drive 15 V max.;

7 V for bidirectional outputs

**■ DC Voltage:** -10 - +12 V DC**Minimum span:** 5 mV**Offset:** Max. 1.5 times span**Load resistance:** Output drive 1 mA max.; at  $\geq 0.5 \text{ V}$ **INSTALLATION****Power Consumption****•AC:**

Approx. 3 VA at 100 V

Approx. 4 VA at 200 V

Approx. 5 VA at 264 V

**•DC:** Approx. 3 W**Operating temperature:** -5 to +55°C (23 to 131°F)**Operating humidity:** 30 to 90 %RH (non-condensing)**Mounting:** Surface or DIN rail**Weight:** 150 g (0.33 lb)**PERFORMANCE in percentage of span****Accuracy:**  $\pm 0.1 \%$ **Temp. coefficient:**  $\pm 0.015 \%/^{\circ}\text{C}$  ( $\pm 0.008 \%/^{\circ}\text{F}$ )**Response time:**  $\leq 180 \mu\text{sec}$ . (0 - 90 %)**Line voltage effect:**  $\pm 0.1 \%$  over voltage range**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC**Dielectric strength:**

1000 V AC @1 minute (input to output)

2000 V AC @1 minute (input or output to power to ground)

**STANDARDS & APPROVALS****EU conformity:**

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Installation Category II

Pollution Degree 2

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

Input to output: Functional insulation (300 V)

RoHS Directive

**UK conformity (UKCA):**

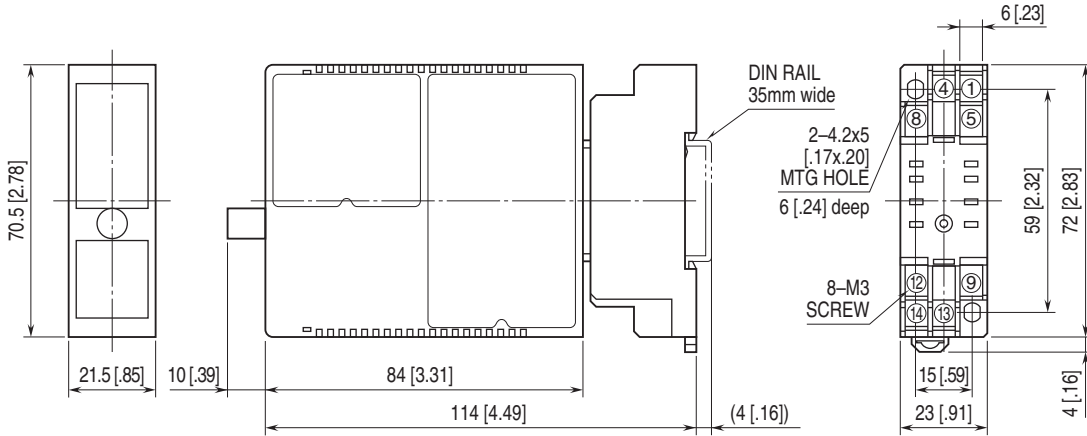
The UK legislations and designated standards are equivalent to the applicable EU directives.

(Refer to M-System's website for more information about the legislations and designated standards.)

**Approval:**

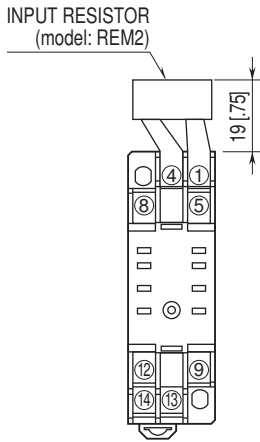
UL/C-UL nonincendive Class I, Division 2,  
 Groups A, B, C, and D  
 (ANSI/ISA-12.12.01, CAN/CSA-C22.2 No.213)  
 UL/C-UL general safety requirements  
 (UL 61010-1, CAN/CSA-C22.2 No.61010-1)

**EXTERNAL DIMENSIONS unit: mm [inch]**



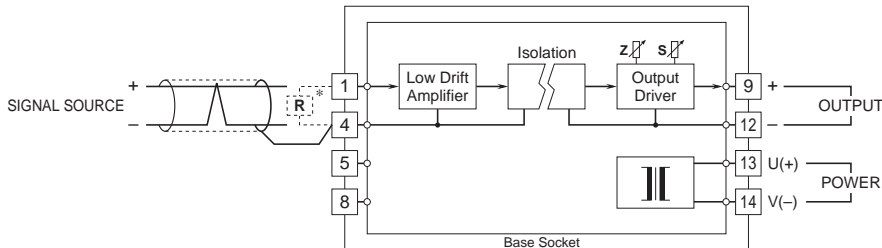
• When mounting, no extra space is needed between units.

**TERMINAL ASSIGNMENTS unit: mm [inch]**



Input shunt resistor attached for current input.

**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



The M2VF, by its fast-response feature, is not designed to eliminate noise present in the input signal. Use a shielded twisted-pair cable for preventing noise entering through the input wiring.



Specifications are subject to change without notice.

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**CUSTOM SPECIFICATION LIST**

Refer to the following pages for each detailed custom specification.

**Custom specification:** Option /X1

■ Major specification changes

Response time: 5.3 ms  $\pm$ 30 % (0 - 90 %)

**Custom specification:** Option /X2

■ Major specification changes

Input: 0 - 0.5 V DC (Input resistance 200 k $\Omega$  min.)

## CUSTOM SPECIFICATION : OPTION /X1

### Major specification changes

Response time: 5.3 msec.  $\pm 30\%$

## MODEL: M2VF-4W4W-[3]/N/X1[4]

Same as standard specification (without customization) except followings.

Refer to standard specification pages.

## ORDERING INFORMATION

- Code number: M2VF-4W4W-[3]/N/X1[4]

For [3] and [4] same code as standard specification is available.

(e.g. M2VF-4W4W-M2/N/X1/Q)

Refer to standard specification pages.

## SPECIFICATION CHANGES

- Performance in percentage of span

Response time: 5.3 msec.  $\pm 30\%$  (0 - 90 %)

## CUSTOM SPECIFICATION : OPTION /X2

### Major specification changes

Input: 0 - 0.5 V DC (input resistance 200 kΩ)

## MODEL: M2VF-0[2]-[3]/N/X2[4]

Same as standard specification (without customization) except followings.

Refer to standard specification pages.

## ORDERING INFORMATION

- Code number: M2VF-0[2]-[3]/N/X2[4]

For each of [2] through [4] same code as standard specification is available.

(e.g. M2VF-04W-M2/N/X2/Q)

Refer to standard specification pages.

## SPECIFICATION CHANGES

### ■ Input specifications

- Input 0 - 0.5 V DC
- Input resistance: 200 kΩ min.