

Super-mini Signal Conditioners Mini-M Series

SIGNAL TRANSMITTER

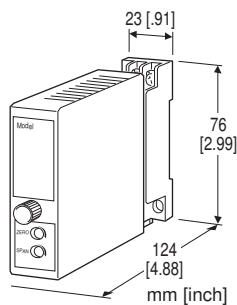
(high speed response)

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 our 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):

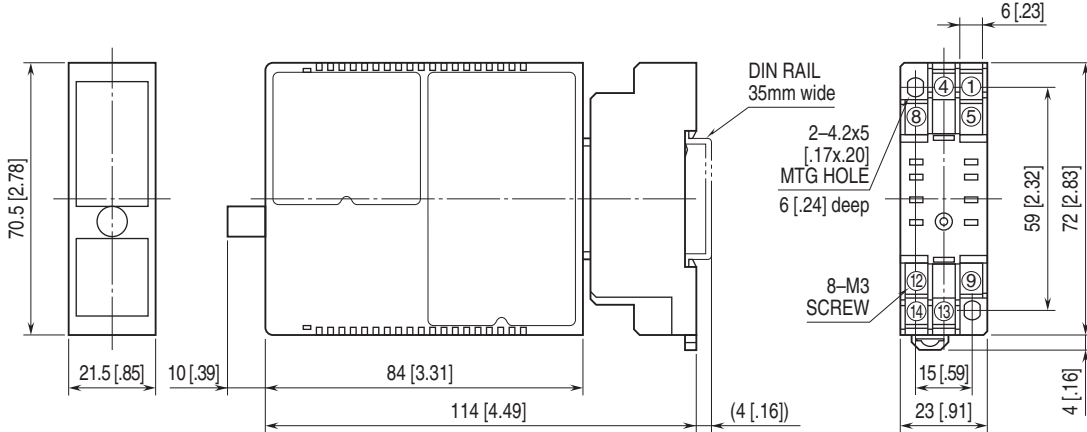
The UK legislations and designated standards are equivalent to the applicable EU directives.

(Refer to our website for more information about the legislations and designated standards.)

Approval:

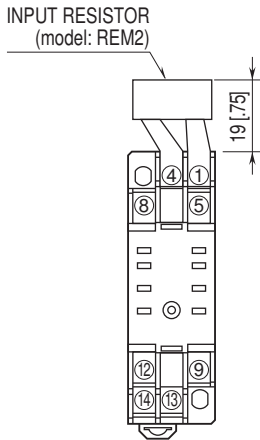
UL/C-UL nonincendive Class I, Division 2,
 Groups A, B, C, and D
 (ANSI/ISA-12.12.01, CAN/CSA-C22.2 No.213)
 UL/C-UL general safety requirements
 (UL 61010-1, CAN/CSA-C22.2 No.61010-1)

EXTERNAL DIMENSIONS unit: mm [inch]



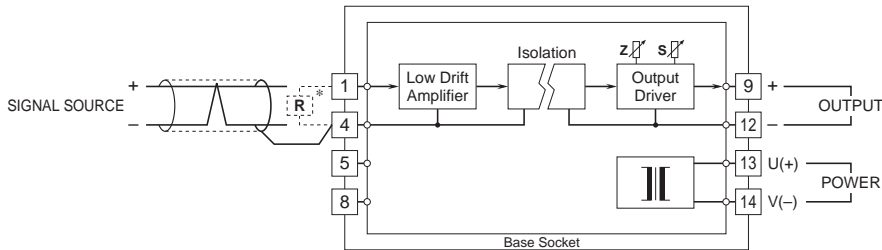
• When mounting, no extra space is needed between units.

TERMINAL ASSIGNMENTS unit: mm [inch]



Input shunt resistor attached for current input.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



*Input shunt resistor attached for current input.

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.

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 Ω 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.