Super-mini Signal Conditioners Mini-M Series

SIGNAL TRANSMITTER

(ultra-high speed response 30 µsec.)

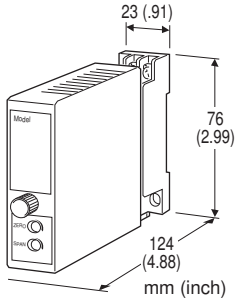
Functions & Features

• Converts DC input from a sensor into a standard process signal

• 30-microsecond response

Typical Applications

• Isolation for a vibration analyzing system



MODEL: M2VF2–[1][2]–[3][4]

ORDERING INFORMATION

• Code number: M2VF2-[1][2]-[3][4]

Specify a code from below for each [1] through [4].
(e.g. M2VF2-4W4W-R/CE/Q)

• Special input range (For codes Z, 0 & 01)

• Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

Current

A1: 4 – 20 mA DC (Input resistance 50 Ω)
(Select only '/N' for 'Standards & Approvals' code.)
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' or '/UL' for 'Standards & Approvals' code.)

[2] OUTPUT

Current

A: 4 – 20 mA DC (Load resistance 600 Ω max.)
D: 0 – 20 mA DC (Load resistance 600 Ω max.)
E: 0 – 16 mA DC (Load resistance 750 Ω max.)

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 200 Ω min.)
4: 0 – 10 V DC (Load resistance 2000 Ω min.)
5: 0 – 5 V DC (Load resistance 1000 Ω min.)
6: 1 – 5 V DC (Load resistance 1000 Ω min.)
4W: -10 – +10 V DC (Load resistance 2000 Ω min.)
5W: -5 – +5 V DC (Load resistance 1000 Ω min.)

[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.)
(110 V ±10 % for UL)

[4] OPTIONS (multiple selections)

Standards & Approvals (must be specified)

/N: Without CE or UL
/CE: CE 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: Input (CE 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)

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)
(±2 % with the output suffix codes 4W and 5W selected)
Span adjustment: 95 to 105 % (front)
(98 to 102 % with the output suffix codes 4W and 5W selected.)

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: ≥ 1 MΩ

OUTPUT SPECIFICATIONS

■ DC Current
Parallel load capacitance: Max. 2000 pF

INSTALLATION

Power Consumption
•AC:
Approx. 4 VA at 100 V
Approx. 5 VA at 200 V
Approx. 6 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)

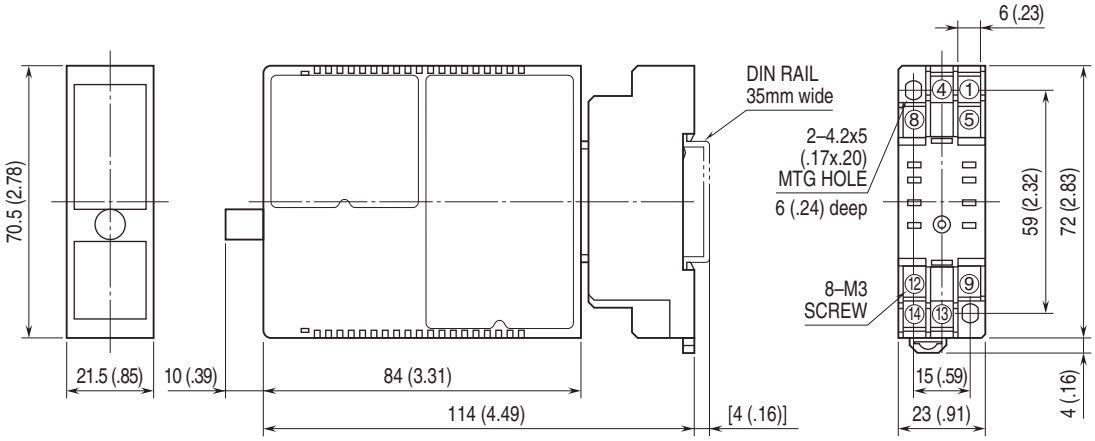
PERFORMANCE in percentage of span

Accuracy: ±0.1 %
Temp. coefficient: ±0.02 %/°C (±0.01 %/°F)
Frequency characteristics: 15 kHz, -3 dB
Response time: ≤ 30 µsec. (0 – 90 %)
(except the user specified ranges)
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)

STANDARDS & APPROVALS

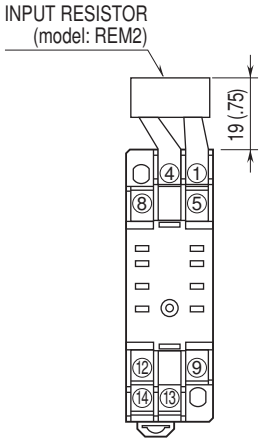
EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
Low Voltage Directive
EN 61010-1
Installation Category II
Pollution Degree 2
Input or output to power: Reinforced insulation (300 V)
Input to output: Basic insulation (300 V)
RoHS Directive
EN 50581
Approval:
UL/C-UL nonincendive Class I, 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)



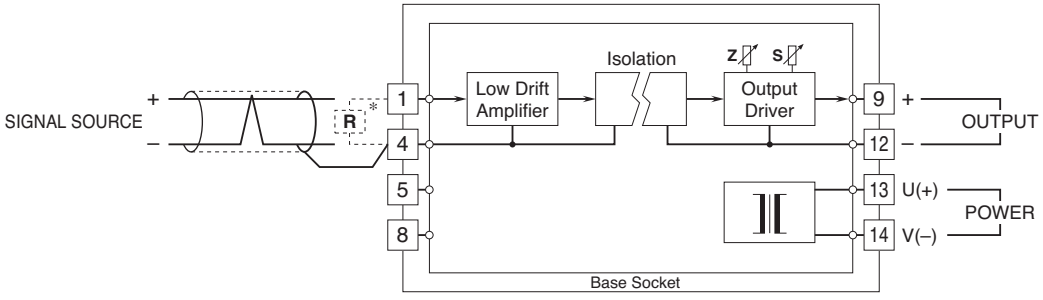
• When mounting, no extra space is needed between units.

TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached
for current input.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



*Input shunt resistor attached for current input.

The M2VF2, by its fast-response feature, is not designed to eliminate noise present in the input signal. Use a shielded twisted-pair cable to prevent noise from entering through the input wiring.
The described response time may not be assured with the current output when the cable's line capacitance is greater than 2000 pF.

⚠ 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

Input: 0 - 100 mV DC

CUSTOM SPECIFICATION : OPTION /X1

Major specification changes
Input: 0 - 100 mV DC

MODEL: M2VF2–0[2]–[3]/N/X1[4]

Same as standard specification (without customization) except followings.
Refer to standard specification pages.

ORDERING INFORMATION

• Code number: M2VF2-0[2]-[3]/N/X1[4]
For [2] and [4] same code as standard specification is available.
(e.g. M2VF2-04W-M2/N/X1/Q)
Refer to standard specification pages.

SPECIFICATION CHANGES

■ Input specifications
• Input 0 - 100 mV DC
■ PERFORMANCE
Accuracy: ±0.2 %
Temp. coefficient: ±0.04 %/°C (±0.02 %/°F)
Response time: ≤ 60 µsec. (0 – 90 %)