Super-mini Signal Conditioners Mini-M Series

SIGNAL TRANSMITTER

Functions & Features
- Converts DC input from a sensor into a standard process signal
- Fast response type available

Typical Applications
- Isolation between control room and field instrumentation

MODEL: M2VS–[1][2][3][4]

ORDERING INFORMATION
- Code number: M2VS-[1][2][3][4]
  Specify a code from below for each [1] through [4].
  (e.g. M2VS-6A-M2/K/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)
A1: 4 – 20 mA DC (Input resistance 50 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)
J: 0 – 10 μA DC (Input resistance 1000 Ω)
K: 0 – 100 μA DC (Input resistance 1000 Ω)
GW: -1 – +1 mA DC (Input resistance 1000 Ω)
FW: -10 – +10 mA DC (Input resistance 100 Ω)
Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage
1: 0 – 10 mV DC (Input resistance 10 kΩ min.)
15: 0 – 50 mV DC (Input resistance 10 kΩ min.)
16: 0 – 60 mV DC (Input resistance 10 kΩ min.)
2: 0 – 100 mV DC (Input resistance 100 kΩ min.)
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)

[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 – 5 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.)
(110 V ±10 % for UL)
OPTIONS (multiple selections)

Response Time (0 - 90 %)
- blank: Standard (≤ 0.5 sec.)
- /K: Fast Response (Approx. 25 msec.)

Standards & Approvals (must be specified)
- /N: Without CE or UL
- /CE: CE marking
- /UL: UL approval, 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 (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)
- DC Voltage: -300 – +300 V DC
- Minimum span: 3 mV
- Offset: Max. 1.5 times span
Input resistance
- Span 3 – 10 mV : ≥ 10 kΩ
- Span 10 – 100 mV : ≥ 10 kΩ
- Span 0.1 – 1 V : ≥ 100 kΩ
- Span ≥ 1 V : ≥ 1 MΩ

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 – +15 V DC
- Minimum span: 5 mV
- Maximum span: 22 V
- Offset: Max. 1.5 times span
Load resistance: Output drive 1 mA max.; at ≥ 0.5 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: ±0.1 %
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)
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)

- DIN RAIL: 35mm wide
- 2-4 2x5 (.17x.20) MTG HOLE: 6 (.24) deep
- 8-M3 SCREW
- 6 (.24) deep
- 114 (4.49)

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

TERMINAL ASSIGNMENTS unit: mm (inch)

- INPUT RESISTOR (model: REM2)
  - Low Drift Amplifier
  - Output Driver

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

*Input shunt resistor attached for current input.

⚠ Specifications are subject to change without notice.