

## Super-mini Signal Conditioners Mini-M Series

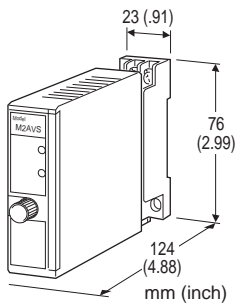
### DC ALARM

#### Functions & Features

- Provides N.O. relay outputs at preset DC input levels
- Dual trip
- Multi-turn potentiometer adj.
- Monitor jacks help setpoint adj.
- Power ON timer
- Relays can be powered 110 V DC
- CE marking for 24 V DC power

#### Typical Applications

- Annunciator
- Various alarm applications



## MODEL: M2AVS-[1][2][3][4]-[5][6]

### ORDERING INFORMATION

- Code number: M2AVS-[1][2][3][4]-[5][6]  
Specify a code from below for each [1] through [6].  
(e.g. M2AVS-6112-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

- 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 INPUT 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)  
(Select '/N' for 'Standards & Approvals' code.)
- 01:** Specify voltage (See INPUT SPECIFICATIONS)  
(Select '/CE' for 'Standards & Approvals' code.)

### [2] SETPOINT 1 OUTPUT

- 1:** Hi (coil energized at alarm)
- 3:** Lo (coil energized at alarm)

### [3] SETPOINT 2 OUTPUT

- 1:** Hi (coil energized at alarm)
- 3:** Lo (coil energized at alarm)

### [4] OUTPUT

- 2:** Relay; N.O. or make contact
- 6:** Photo MOSFET relay; N.O.

### [5] POWER INPUT

#### AC Power

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

#### 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.)

### [6] OPTIONS (multiple selections)

#### STANDARDS & APPROVALS (must be specified)

/N: Without CE

/CE: 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

**TERMINAL SCREW MATERIAL**

/S01: Stainless steel

## GENERAL SPECIFICATIONS

**Construction:** Plug-in

**Connection:** M3 screw terminals (torque 0.8 N·m)

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

**Isolation:** Input to output to power

**Setpoint adjustments:** Multi-turn screwdriver adjustments (front); 0 - 100% independently

**Monitor jacks:** Output 0 - 1 V for 0 - 100 % setpoints

**Hysteresis (deadband):**  $\leq 0.5 \%$

**Front LEDs**

**Output 1:** Red light turns on when the coil is energized.

**Output 2:** Green light turns on when the coil is energized.

**Power ON timer:** Relays de-energized for approx. 2 seconds after power is turned on.

## 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 30 V max.)

**Minimum span:** 3 mV

**Offset:** Max. 1.5 times span

**Input resistance**

Span 3 - 10 mV :  $\geq 10 \text{ k}\Omega$

Span 10 - 100 mV :  $\geq 10 \text{ k}\Omega$

Span 0.1 - 1 V :  $\geq 100 \text{ k}\Omega$

Span  $\geq 1 \text{ V}$  :  $\geq 1 \text{ M}\Omega$

## OUTPUT SPECIFICATIONS

• **Relay Contact:**

120 V AC @0.5 A ( $\cos \phi = 1$ )

240 V AC @0.5 A ( $\cos \phi = 1$ )

30 V DC @0.5 A (resistive load)

**Maximum switching voltage:** 250 V AC or 120 V DC

**Maximum switching power:** 120 VA or 15 W ( $\leq 0.5 \text{ A}$ )

**Minimum load:** 5 V DC @10 mA

**Mechanical life:**  $5 \times 10^7$  cycles

For maximum relay life with inductive loads, external

protection is recommended.

• **Photo MOSFET Relay**

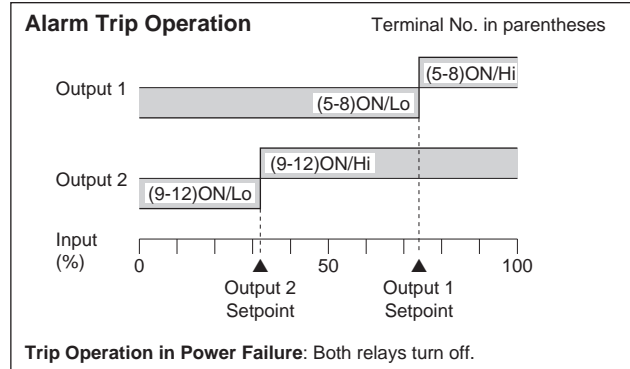
**Maximum switching voltage:** 30 V AC or 50 V DC

**Maximum switching current:** 0.5 A

**ON resistance:**  $\leq 2 \text{ k}\Omega$

**Leakage current at OFF:**  $\leq 10 \mu\text{A}$

For maximum relay life with inductive loads, external protection is recommended.



## INSTALLATION

**Power Consumption**

• **AC Power input:**

Approx. 3 VA at 100 V

Approx. 4 VA at 200 V

Approx. 5 VA at 264 V

• **DC Power input:** 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 lbs)

## PERFORMANCE in percentage of span

**Setpoint monitor accuracy:**  $\pm 0.5 \%$

**Temp. coefficient:**  $\pm 0.05 \%/^{\circ}\text{C}$  ( $\pm 0.03 \%/^{\circ}\text{F}$ )

**Response time:**  $\leq 0.5 \text{ sec.}$  (0 - 100 % at 90 % setpoint)

**Line voltage effect:**  $\pm 0.1 \%$  over voltage range

**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC

**Dielectric strength:** 2000 V AC @1 minute (input to output 1 to output 2 to power to ground)

## STANDARDS & APPROVALS

**CE conformity:**

EMC Directive (2004/108/EC)

EN 61000-6-4 (EMI)

EN 61000-6-2 (EMS)

Low Voltage Directive (2006/95/EC)

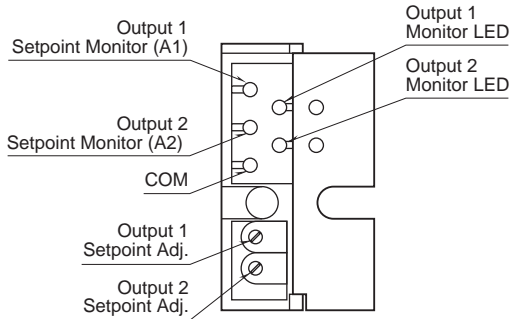
EN 61010-1

Installation Category II

Pollution Degree 2

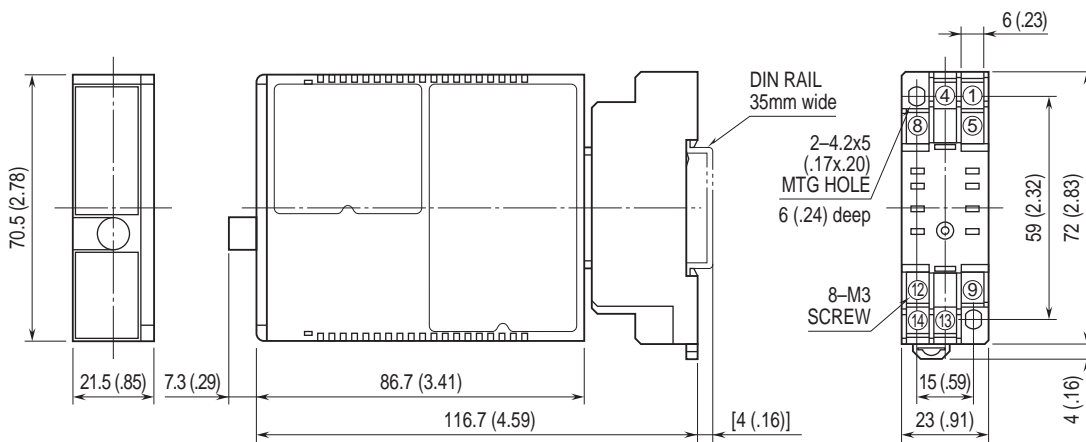
Max. operating voltage 300V  
 Input or power to output: Basic insulation  
 Between outputs: Basic insulation  
 Input to power: Functional insulation

## FRONT VIEW



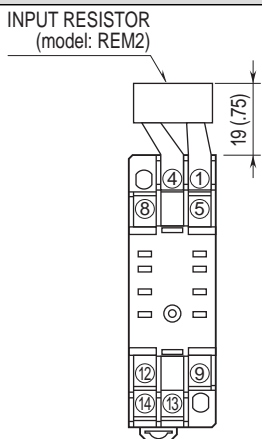
Refer to the instruction manual for detailed procedures.

## DIMENSIONS unit: mm (inch)



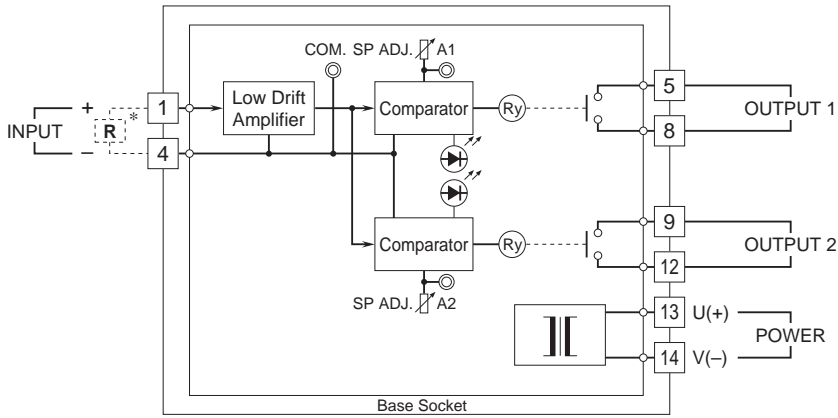
• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached for current input.

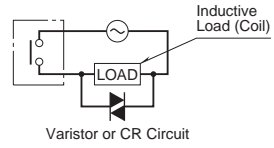
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



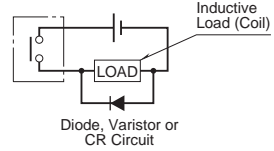
\*Input shunt resistor attached for current input.

### ■ Relay Protection

#### • AC Powered



#### • DC Powered



Specifications are subject to change without notice.