

## Super-mini Signal Conditioners Mini-M Series

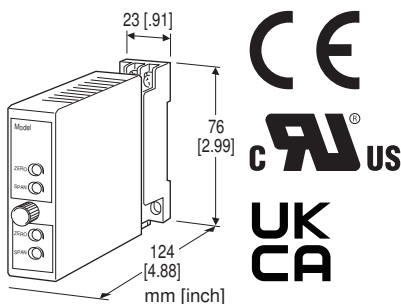
### INPUT LOOP POWERED ISOLATOR

#### Functions & Features

- Loop-powered design eliminates output loop power supply
- Two isolators housed in one enclosure
- 350 Ω output drive with 4 - 20 mA

#### Typical Applications

- Isolation between control room and field instrumentation, between telemetering system and input device
- Eliminates ground problems in existing systems thanks to easiness of application without requiring additional power wiring



### MODEL: M2SN-[1][2][3][4]

#### ORDERING INFORMATION

- Code number: M2SN-[1][2][3][4]
- Specify a code from below for each of [1] through [4].  
(e.g. M2SN-2A6/CE/Q)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] NO. OF CHANNELS

- 1: 1 channel
- 2: 2 channels

#### [2] INPUT

##### Current

- A: 4 - 20 mA DC
- H: 10 - 50 mA DC

#### [3] OUTPUT

##### Current

- A: 4 - 20 mA DC

##### Voltage

- 6: 1 - 5 V DC

#### [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

##### 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)

##### 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; between channels

**Zero adjustment (front)**

**Voltage output:** -4 to +4 %

**Current output:** -0.5 to +0.5 %

**Span adjustment (front)**

**Voltage output:** 95 to 105 %

**Current output:** 98.5 to 101.5 %

#### INPUT & OUTPUT

■ Input 4 - 20 mA DC / Output 1 - 5 V DC

**Equivalent input impedance:** Approx. 250 Ω with 20 mA input

**Operational range:** 3 - 22 mA DC

(Accuracy is assured within 4 - 22 mA)

**Load resistance:** ≥ 50 kΩ

■ Input 10 - 50 mA DC / Output 1 - 5 V DC

**Equivalent input impedance:** Approx. 100 Ω with 50 mA input

**Operational range:** 7 - 55 mA DC

(Accuracy is assured within 8 - 55 mA)

**Load resistance:** ≥ 50 kΩ

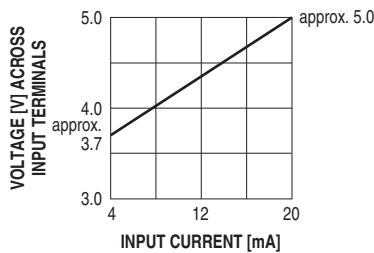
■ Input 4 - 20 mA DC / Output 4 - 20 mA DC

**Equivalent input impedance:** 230 Ω plus load resistance with 20 mA input

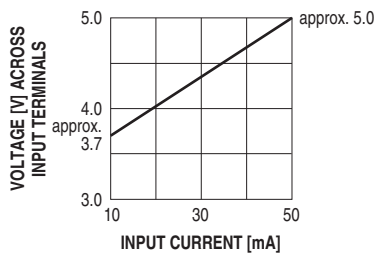
**Operational range:** 3 – 22 mA DC  
 (Accuracy is assured within 4 – 22 mA)  
**Load resistance:** 50 – 350 Ω (min. 50 Ω required for adequate operation)

■ **Input 10 – 50 mA DC / Output 4 – 20 mA DC**  
**Equivalent input impedance:**  $90\ \Omega + [\text{load resistance} \times 0.16]$   
 with 50 mA input  
**Operational range:** 7 – 55 mA DC  
 (Accuracy is assured within 8 – 55 mA)  
**Load resistance:** 50 – 600 Ω (min. 50 Ω required for adequate operation)

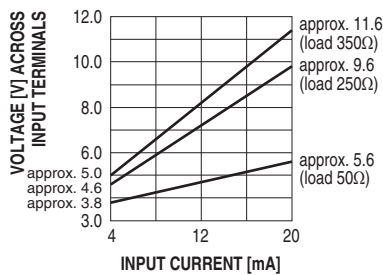
• **INPUT 4 - 20 mA DC / OUTPUT 1 - 5 V DC**



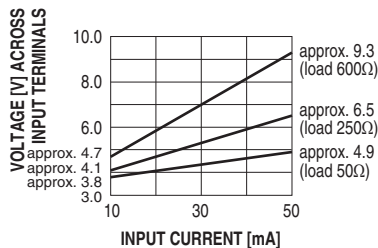
• **INPUT 10 - 50 mA DC / OUTPUT 1 - 5 V DC**



• **INPUT 4 - 20mA DC / OUTPUT 4 - 20 mA DC**



• **INPUT 10 - 50 mA DC / OUTPUT 4 - 20 mA DC**



## INSTALLATION

**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)

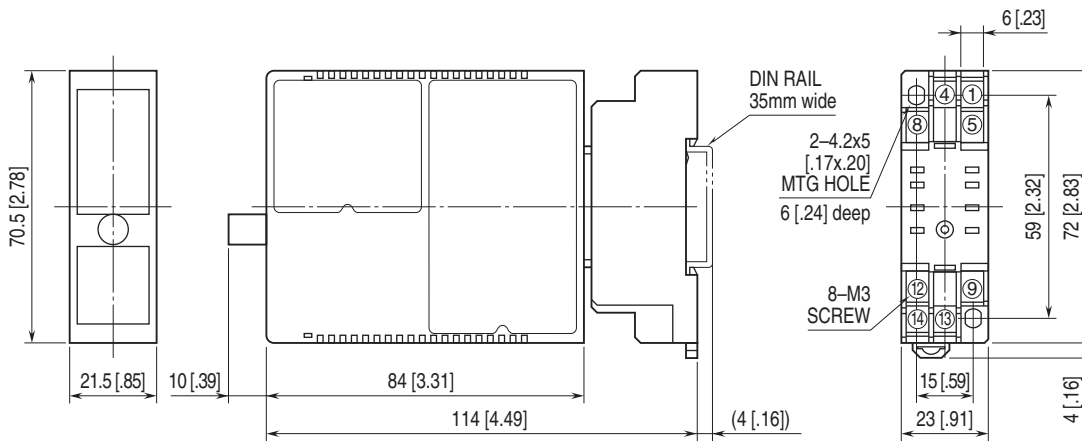
## PERFORMANCE in percentage of span

**Accuracy:** ±0.1 %  
**Temp. coefficient**  
**Voltage output:** ±0.015 %/°C (±0.008 %/°F)  
**Current output:** ±0.02 %/°C (±0.01 %/°F)  
**Response time**  
**Voltage output:** ≤ 0.5 sec. (0 – 90 %)  
**Current output**  
**4 - 20 mA DC input:** Approx. 15 msec. (0 – 90 %, 50 Ω load)  
**10 - 50 mA DC input:** Approx. 8 msec. (0 – 90 %, 50 Ω load)  
**Load effect (current output)**  
**4 - 20 mA input:** 0.015 %/Ω (50 – 150 Ω)  
 0.003 %/Ω (150 – 350 Ω)  
**10 - 50 mA input:** 0.015 %/Ω (50 – 100 Ω)  
 0.003 %/Ω (100 – 600 Ω)  
 (The unit is calibrated with 250 Ω load at the factory.)  
**Insulation resistance:** ≥ 100 MΩ with 500 V DC  
**Dielectric strength:**  
 500 V AC @1 minute (input to output)  
 2000 V AC @1 minute (between channels)  
 2000 V AC @1 minute (input or output to ground)

## STANDARDS & APPROVALS

**EU conformity:**  
 EMC Directive  
 EMI EN 61000-6-4  
 EMS EN 61000-6-2  
 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)

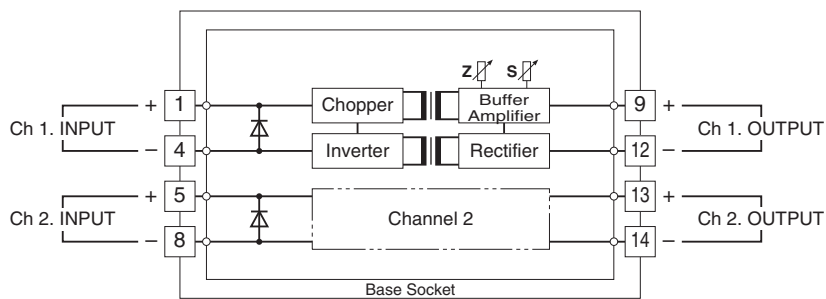
## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



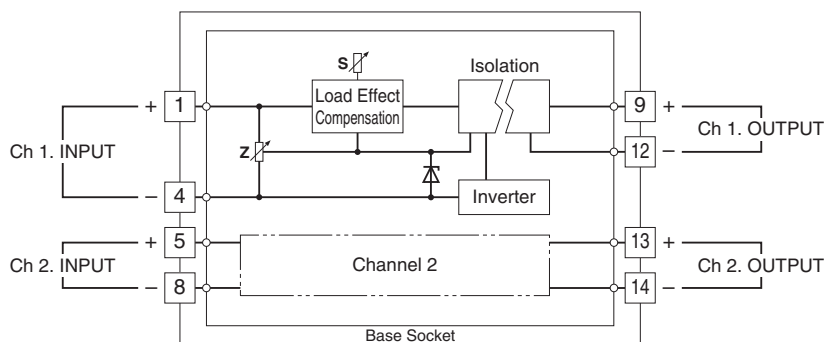
• When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

### ■ VOLTAGE OUTPUT



### ■ CURRENT OUTPUT



Specifications are subject to change without notice.