

## Super-mini Signal Conditioners Mini-M Series

(0 % input must be 0 V.)

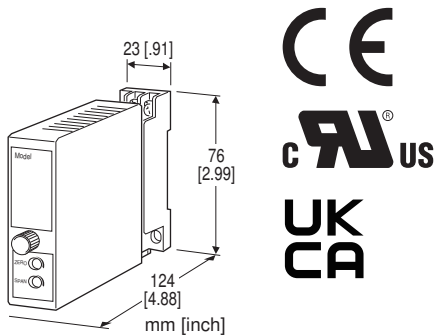
### AC TRANSMITTER

#### Functions & Features

- Converts an alternating current/voltage input into a standard process signal
- True RMS sensing

#### Typical Applications

- Converting high AC current in combination with a shunt resistor, or narrow span AC voltage



### MODEL: M2AC-[1][2]-[3][4]

#### ORDERING INFORMATION

- Code number: M2AC-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].  
(e.g. M2AC-A1A-M2/CE/Q)
- Special input and output ranges (For codes AZ, A8, Z & 0)
  - Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] INPUT

##### Current

- AA:** 0 - 10 mA AC (Input resistance 100 Ω)
  - AB:** 0 - 50 mA AC (Input resistance 20 Ω)
  - AC:** 0 - 100 mA AC (Input resistance 10 Ω)
  - AD:** 0 - 500 mA AC (Input resistance 1 Ω)
  - AZ:** Specify current (See INPUT SPECIFICATIONS)
- (0 % input must be 0 mA.)

##### Voltage

- A1:** 0 - 100 mV AC (Input resistance Approx. 100 kΩ min.)
- A2:** 0 - 500 mV AC (Input resistance Approx. 100 kΩ min.)
- A3:** 0 - 1 V AC (Input resistance Approx. 100 kΩ min.)
- A4:** 0 - 5 V AC (Input resistance Approx. 100 kΩ min.)
- A5:** 0 - 10 V AC (Input resistance Approx. 100 kΩ min.)
- A6:** 0 - 120 V AC (Input resistance Approx. 100 kΩ min.)
- A7:** 0 - 150 V AC (Input resistance Approx. 100 kΩ min.)
- A8:** 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 - 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.)  
(110 V ±10 % for UL)

#### [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 to power
- Input waveform**
  - RMS sensing:** Up to 15 % of 3rd harmonic content
  - Overrange output:** 0 to 120 % at 1 - 5 V
  - Zero adjustment:** -5 to +5 % (front)
  - Span adjustment:** 95 to 105 % (front)

## INPUT SPECIFICATIONS

- Frequency:** 40 Hz min., 1 kHz max.
- **AC Current:** 0 - 1 A AC; input resistor incorporated
- Minimum span:** 1 mA
- Input resistance**
  - Span 1 mA: 1 kΩ
  - Span ≤ 2 mA: 500 Ω
  - Span ≤ 5 mA: 200 Ω
  - Span ≤ 10 mA: 100 Ω
  - Span ≤ 20 mA: 50 Ω
  - Span ≤ 50 mA: 20 Ω
  - Span ≤ 100 mA: 10 Ω
  - Span ≤ 500 mA: 1 Ω
  - Span ≤ 1 A: 0.5 Ω
- **AC Voltage:** 0 - 250 V AC
- Minimum span:** 50 mV
- Input resistance:** Approx. 100 kΩ min.

## 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 - +12 V DC
- Minimum span:** 5 mV
- 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:** ±0.4 %
- Temp. coefficient:** ±0.05 %/°C (±0.03 %/°F)
- Response time:** ≤ 0.7 sec. (0 - 90 %)
- Ripple:** 0.5 %p-p max. (50/60 Hz)
- 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
  - Measurement Category II (input)
  - Installation Category II (power)
  - Pollution Degree 2
  - Input or output to power: Reinforced insulation (300 V)
  - Input to output: Basic insulation (300 V)

### RoHS Directive

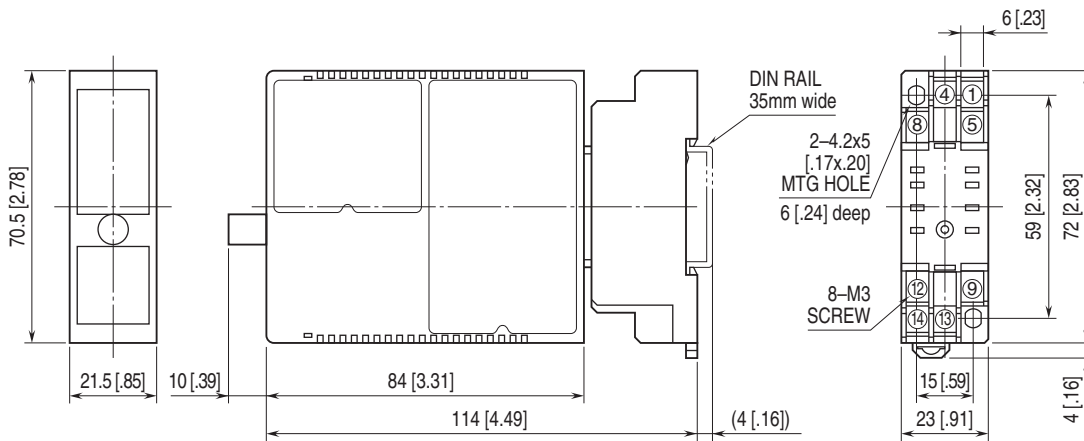
### UK conformity (UKCA):

- 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:

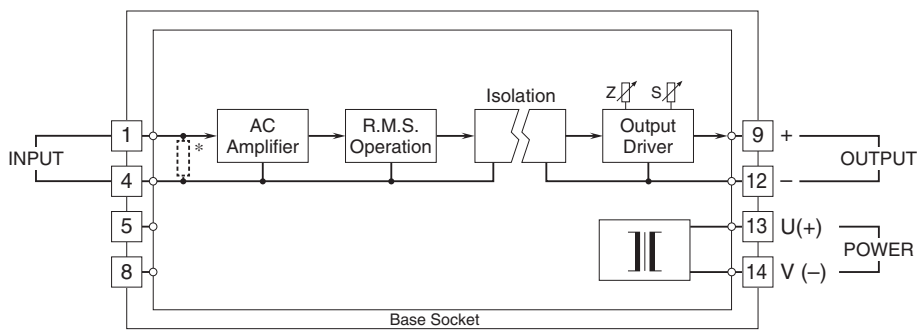
- UL/C-UL nonincendive Class I, Division 2, Groups A, B, C, and D (ANSI/ISA-12.12.01, CAN/CSA-C22.2 No.213)
- UL/C-UL general safety requirements (UL 61010-1, CAN/CSA-C22.2 No.61010-1)

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



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

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



\*Input shunt resistor incorporated for current input.



Specifications are subject to change without notice.