

Super-mini Signal Conditioners Mini-M Series

(0 % input must be 0 V.)

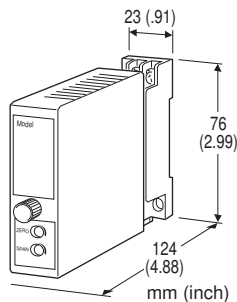
AC TRANSMITTER

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 k Ω min.)
A2: 0 – 500 mV AC (Input resistance Approx. 100 k Ω min.)
A3: 0 – 1 V AC (Input resistance Approx. 100 k Ω min.)
A4: 0 – 5 V AC (Input resistance Approx. 100 k Ω min.)
A5: 0 – 10 V AC (Input resistance Approx. 100 k Ω min.)
A6: 0 – 120 V AC (Input resistance Approx. 100 k Ω min.)
A7: 0 – 150 V AC (Input resistance Approx. 100 k Ω 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 k Ω max.)
Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1:** 0 – 10 mV DC (Load resistance 10 k Ω min.)
2: 0 – 100 mV DC (Load resistance 100 k Ω min.)
3: 0 – 1 V DC (Load resistance 1000 Ω min.)
4: 0 – 10 V DC (Load resistance 10 k Ω 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 k Ω 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 $\pm$ 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 $\pm$ 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

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

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

EN 50581

Approval:

UL/C-UL nonincendive Class I, Division 2,

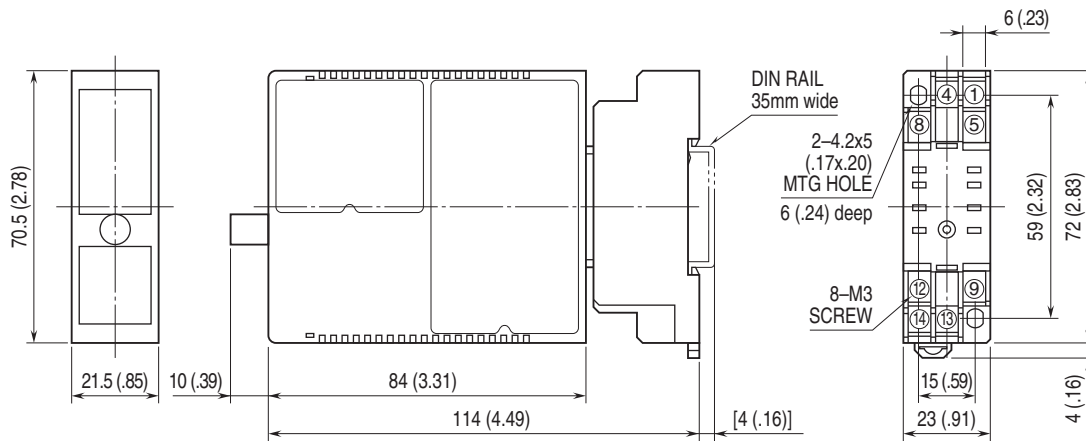
Groups A, B, C, and D

(ANSI/ISA-12.12.01, CAN/CSA-C22.2 No.213)

UL/C-UL general safety requirements

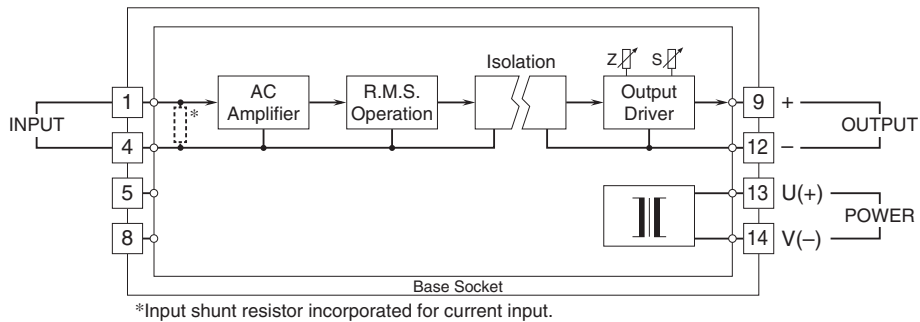
(UL 61010-1, CAN/CSA-C22.2 No.61010-1)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.