Plug-in Signal Conditioners M-UNIT

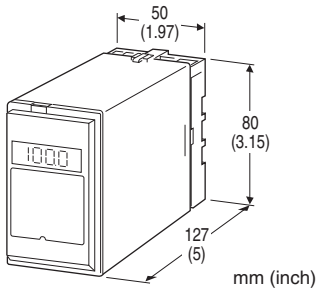
AC TRANSMITTER

Functions & Features

• Converting an alternating current/voltage into a standard process signal
• True RMS sensing
• Isolation up to 2000 V AC
• LCD meter (engineering unit display selectable)
• Simple loop test output (0 % and 100 %)
• High-density mounting

Typical Applications

• Converting a large AC current in combination with a shunt resistor, or a narrow span AC voltage



MODEL: AC–[1][2]-[3][4]

ORDERING INFORMATION

• Code number: AC-[1][2]-[3][4]
Specify a code from below for each of [1] through [4].
(e.g. AC-A1A-B/E2/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 100 kΩ min.)
A2: 0 – 500 mV AC (Input resistance 100 kΩ min.)
A3: 0 – 1 V AC (Input resistance 100 kΩ min.)
A4: 0 – 5 V AC (Input resistance 100 kΩ min.)
A5: 0 – 10 V AC (Input resistance 100 kΩ min.)
A6: 0 – 120 V AC (Input resistance 100 kΩ min.)
A7: 0 – 150 V AC (Input resistance 100 kΩ min.)
A8: Specify voltage (See INPUT SPECIFICATIONS)
(0 % input must be 0 V.)

[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 100 Ω min.)
4: 0 – 10 V DC (Load resistance 1000 Ω min.)
5: 0 – 5 V DC (Load resistance 500 Ω min.)
6: 1 – 5 V DC (Load resistance 500 Ω min.)
4W: -10 – +10 V DC (Load resistance 2000 Ω min.)
5W: -5 – +5 V DC (Load resistance 1000 Ω min.)
0: Specify voltage (See OUTPUT SPECIFICATIONS)

[3] POWER INPUT

AC Power

B: 100 V AC
C: 110 V AC
D: 115 V AC
F: 120 V AC
G: 200 V AC
H: 220 V AC
J: 240 V AC

DC Power

S: 12 V DC
R: 24 V DC
V: 48 V DC
P: 110 V DC (Not selectable with Option /E2)

[4] OPTIONS (multiple selections)

Input Signal Indicator

blank: Without
/E: With (0.0 - 100.0 % display)
/E2: With (in engineering unit with backlight and the simple loop test output)

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: M3.5 screw terminals

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)

Simple loop test output: 0 % and 100 % signal simulated by selecting the front switch positions. (Only for option code /E2)

■ **DISPLAY (Input indicator)**

• **Option code: /E**

LCD digital display: 0.0 - 100.0 % (min. digit 0.1 %) (No scaling)

• **Option code: /E2**

LCD digital display: Engineering unit

Display scaling: -10000 – +10000

Decimal position: 10^{-1} - 10^{-4} or no decimal point

Engineering unit: %, µV, mV, V, mA, A, °C, °F, Ω, DEG K, mHz, Hz, kHz, VAC, AAC, mg, g, kg, t, rpm or rps selectable

Back light: Green at normal, red at loop test output enable

Factory setting: scaling 0.00 - 100.00, unit: %

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: 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 10 mA max.; 5 mA for negative voltage output; at ≥ 0.5 V

INSTALLATION

Power input

•**AC**: Operational voltage range: rating ±10 %, 50/60 ±2 Hz, approx. 2 VA
(approx. 3 VA with Option /E2)

•**DC**: Operational voltage range: rating ±10 %, or 85 – 150 V for 110 V rating (ripple 10 % p-p max.) approx. 2 W (80 mA at 24 V; approx. 3 W with Option /E2)

Operating temperature: -5 to +60°C (23 to 140°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 400 g (0.88 lb)

PERFORMANCE in percentage of span

Accuracy: ±0.4 %

Display accuracy: ±(0.4 % of FS + 1 digit)

Simple loop test output setting accuracy: ±0.5 %

Temp. coefficient: ±0.05 %/°C (±0.03 %/°F)

Response time: ≤ 0.7 sec. (0 – 90 %)

Ripple: 0.5 %p-p max.

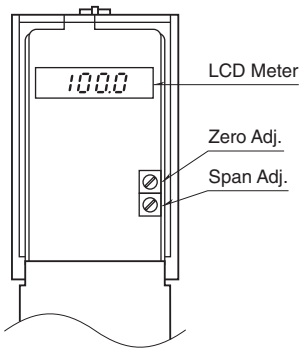
Line voltage effect: ±0.1 % over voltage range

Insulation resistance: ≥ 100 MΩ with 500 V DC

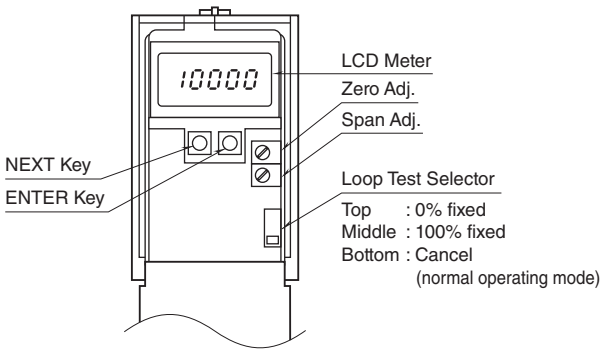
Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

EXTERNAL VIEW

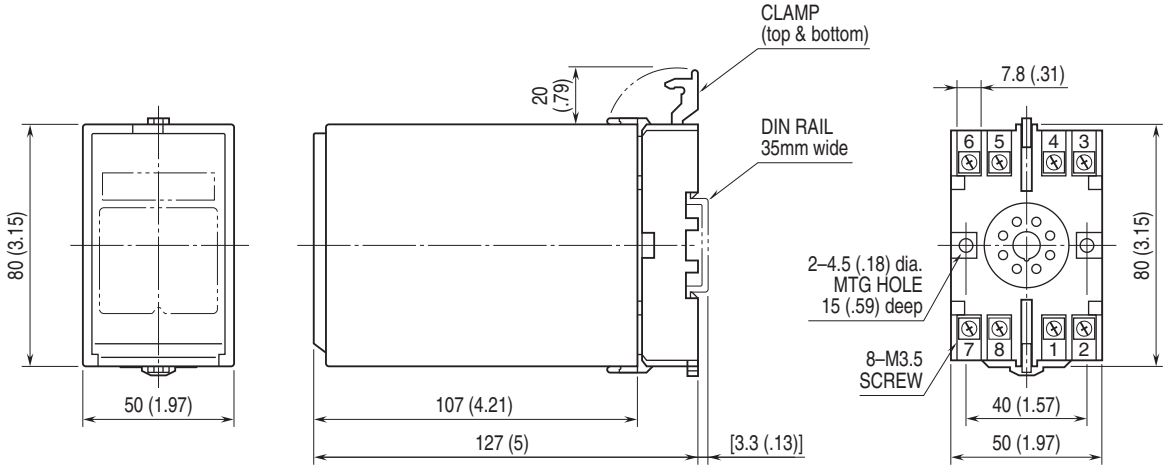
■ **OPTION /E**



■ **OPTION /E2**

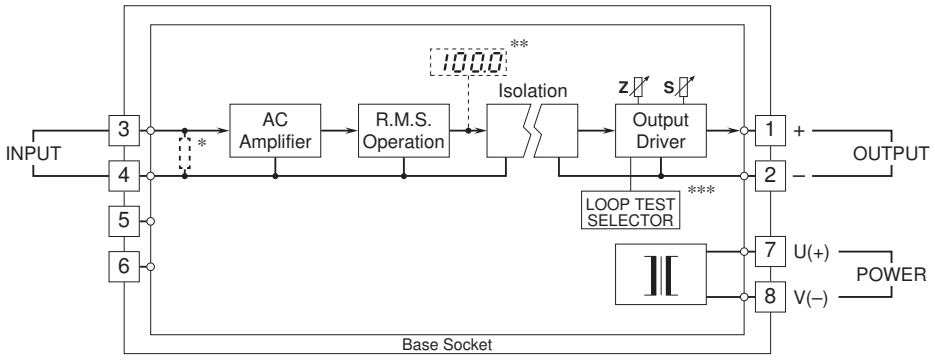


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



* Input shunt resistor incorporated for current input.
** Option /E, E2
*** Option /E2

⚠ Specifications are subject to change without notice.