

## Plug-in Signal Conditioners M-UNIT

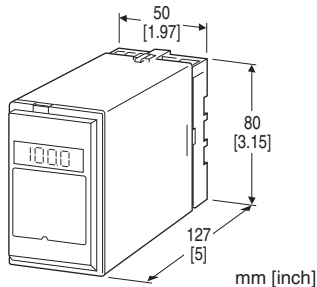
### AC TRANSMITTER

#### 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 our 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:** %,  $\mu$ V, mV, V, mA, A, °C, °F,  $\Omega$ , 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 k $\Omega$

Span  $\leq$  2 mA: 500  $\Omega$

Span  $\leq$  5 mA: 200  $\Omega$

Span  $\leq$  10 mA: 100  $\Omega$

Span  $\leq$  20 mA: 50  $\Omega$

Span  $\leq$  50 mA: 20  $\Omega$

Span  $\leq$  100 mA: 10  $\Omega$

Span  $\leq$  500 mA: 1  $\Omega$

Span  $\leq$  1 A: 0.5  $\Omega$

■ **AC Voltage:** 0 - 250 V AC

**Minimum span:** 50 mV

**Input resistance:** 100 k $\Omega$  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  $\geq$  0.5 V

**INSTALLATION**

**Power input**

• **AC:** Operational voltage range: rating  $\pm$ 10 %, 50/60  $\pm$ 2 Hz, approx. 2 VA

(approx. 3 VA with Option /E2)

• **DC:** Operational voltage range: rating  $\pm$ 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:**  $\pm$ 0.4 %

**Display accuracy:**  $\pm$ (0.4 % of FS + 1 digit)

**Simple loop test output setting accuracy:**  $\pm$ 0.5 %

**Temp. coefficient:**  $\pm$ 0.05 %/°C ( $\pm$ 0.03 %/°F)

**Response time:**  $\leq$  0.7 sec. (0 - 90 %)

**Ripple:** 0.5 %p-p max.

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

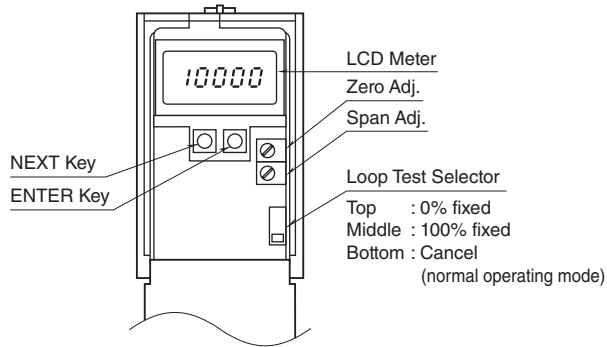
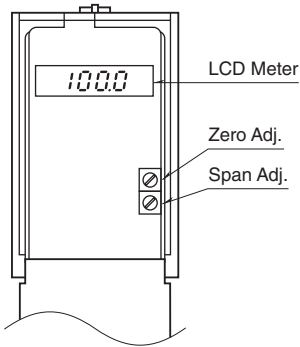
**Insulation resistance:**  $\geq$  100 M $\Omega$  with 500 V DC

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

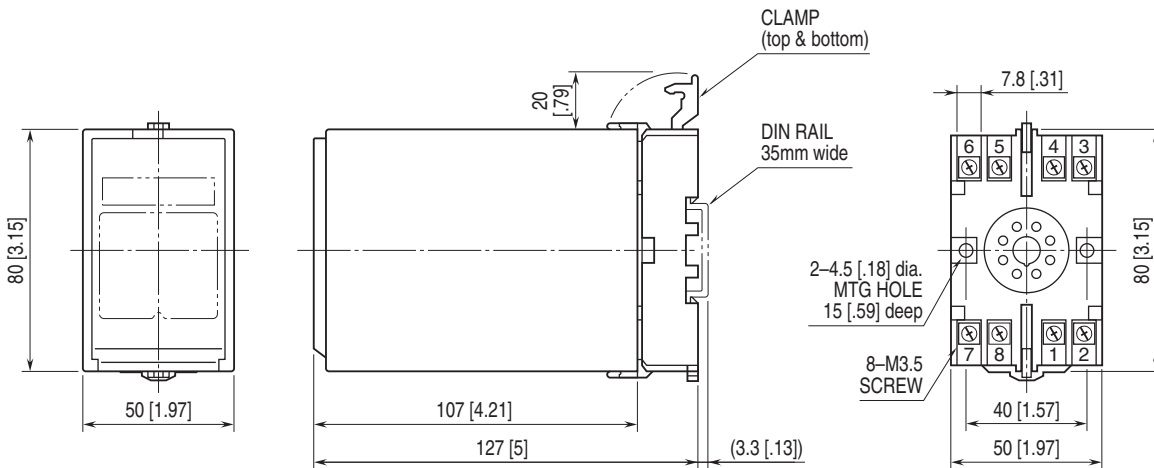
## EXTERNAL VIEW

■ OPTION /E

■ OPTION /E2

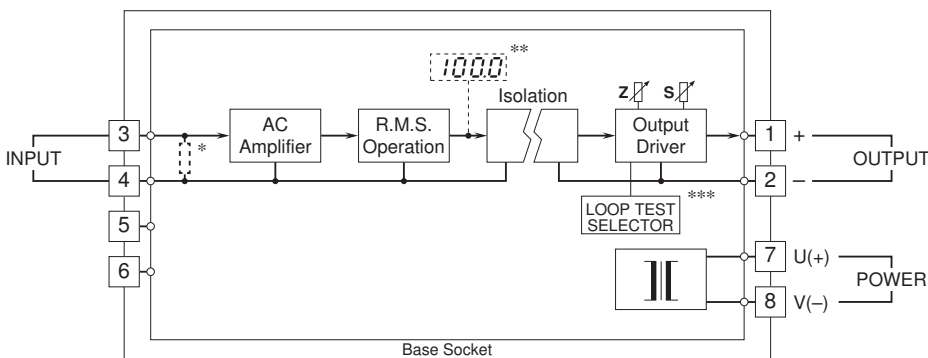


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



• 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.