

Plug-in Signal Conditioners M-UNIT

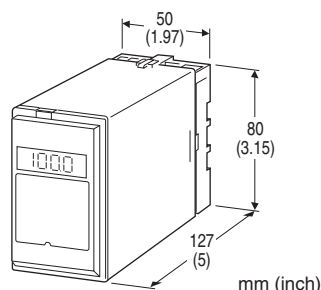
ANALOG MULTIPLIER

Functions & Features

- Providing a DC output proportional to the product of two input signals
- Isolation up to 2000 V AC
- LCD meter indicated multiplied values (engineering unit display selectable)
- Simple loop test output (0 % and 100 %)
- High-density mounting

Typical Applications

- DC watt meter (multiplying voltage and current)
- Remote gain setting (converting pots into 1 – 5 V for input signals to the MM)



MODEL: MM-6[1]-[2][3]

ORDERING INFORMATION

- Code number: MM-6[1]-[2][3]
- Specify a code from below for each of [1] through [3].
(e.g. MM-6A-B/E2/Q)
- Special output range (For codes Z & 0)
 - Specify the specification for option code /Q
(e.g. /C01/S01)

INPUT

Voltage

6: 1 – 5 V DC (Input resistance 1 M Ω min.)

[1] 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 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)

[2] 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.)

[3] OPTIONS (multiple selections)

Multiplication 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

Overrange output: 0 to 120 % at 1 – 5 V

Zero adjustment: -5 to +5 % (front)

Span adjustment: 95 to 105 % (front)

Equation: $Y_0 = X_1 \times X_2$

where Y_0 : output (0 – 100 %)

X_1, X_2 : input (0 – 100 %)

Note) Be aware that a input signal less than 0 % is calculated as a minus signal.

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

■ DISPLAY (Multiplied values 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: %, μ V, 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: %

PERFORMANCE in percentage of span

Accuracy: ± 0.2 %

Display accuracy: $\pm (0.2 \text{ % of FS} + 1 \text{ digit})$

Simple loop test output setting accuracy: ± 0.5 %

Temp. coefficient: $\pm 0.03 \text{ %/}^\circ\text{C}$ ($\pm 0.02 \text{ %/}^\circ\text{F}$)

Response time: ≤ 0.5 sec. (0 – 90 %)

Line voltage effect: ± 0.1 % over voltage range

Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

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

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 +55°C (23 to 131°F)

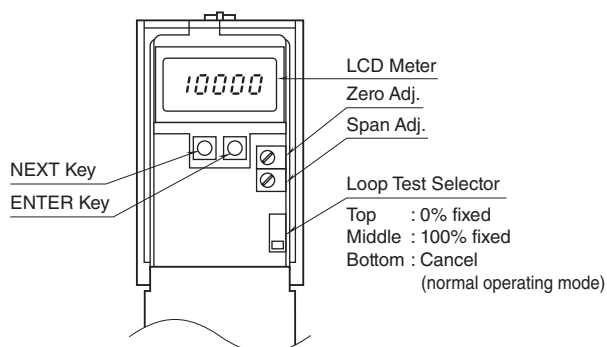
Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 350 g (0.77 lb)

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

■ OPTION /E2



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

