

Plug-in Signal Conditioners M-UNIT

HIGH/LOW SELECTOR

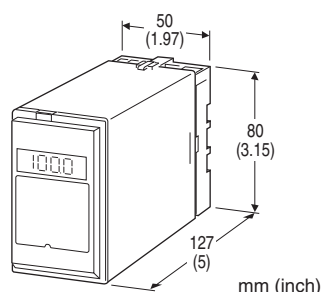
(isolated)

Functions & Features

- Monitoring two DC input signals and transmitting an output signal proportional to the higher or lower input
- LCD meter indicates the selected input signals (engineering unit display selectable)
- Simple loop test output (0 % and 100 %)
- Isolation up to 2000 V AC
- High-density mounting

Typical Applications

- Selecting greater flow, pressure, etc. for control
- Heating control by multiple T/C's on a furnace



MODEL: SES-[1][2][3]-[4][5]

ORDERING INFORMATION

- Code number: SES-[1][2][3]-[4][5]
- Specify a code from below for each [1] through [5].
(e.g. SES-1AA-B/E2Q)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] SELECTING FUNCTION

- 1: Low input
2: High input

[2] INPUT

Current

- A: 4 - 20 mA DC (Input resistance 250 Ω)
B: 2 - 10 mA DC (Input resistance 500 Ω)
C: 1 - 5 mA DC (Input resistance 1000 Ω)
H: 10 - 50 mA DC (Input resistance 100 Ω)

Voltage

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

[3] 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)

[4] 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.)

[5] OPTIONS (multiple selections)

LCD Meter (after selection)

- 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: Approx. -10 to +120 % at 1 - 5 V

Selecting operation: Automatic

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

■ DISPLAY (LCD meter)

• **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: %

INPUT SPECIFICATIONS

■ DC Current:

Shunt resistor attached to the input terminals (0.5 W)

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. 2.5 W (110 mA at 24 V; approx. 3.5 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: ± 0.2 %

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

Simple loop test output setting accuracy: ± 0.5 %

Selecting sensitivity: 0.5%

Temp. coefficient: $\pm 0.015 \text{ \%}/^{\circ}\text{C}$ ($\pm 0.008 \text{ \%}/^{\circ}\text{F}$)

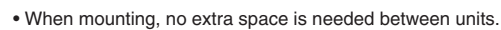
Response time: ≤ 0.5 sec. (0 - 90 %)

Line voltage effect: ± 0.1 % over voltage range

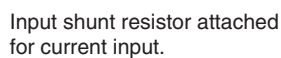
Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

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

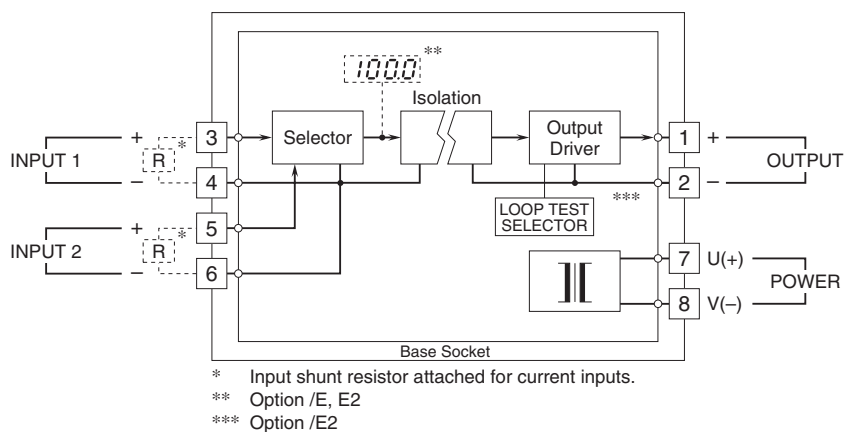
■ OPTION /E2



INPUT RESISTOR
(model: REM)



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.