

Plug-in Signal Conditioners M-UNIT

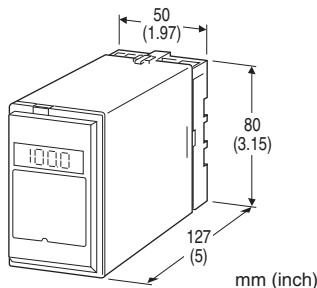
아날로그 감산기 : 단 입력1 > 입력2

Functions & Features

- 두 개의 DC 입력을 수용하고 두 신호의 차이에 비례하는 표준 프로세스 신호 제공
 - 최대 2000V AC 절연
 - LCD 미터는 빠른 값을 표시합니다(엔지니어링 단위 표시 선택 가능).
 - 단순 루프 테스트 출력(0% 및 100%)
 - 고밀도 실장
- 일반적인 애플리케이션

Typical Applications

- 두 가지 온도, 흐름 등의 차이 계산.
- 전력 설비용 DC 입력 트랜스미터(내전압 2000V AC, 110V DC 전원)



MODEL: SBS-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: SBS-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].
(e.g. SBS-6A-B/E2/Q)
- Special input and output ranges (For codes Z & 0)
- Parameters (e.g. $K_1 = 2.00$, $K_2 = 0.10$)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

Current

- A: 4 - 20 mA DC (Input resistance 250 Ω)
 A1: 4 - 20 mA DC (Input resistance 50 Ω)
 B: 2 - 10 mA DC (Input resistance 500 Ω)
 C: 1 - 5 mA DC (Input resistance 1000 Ω)
 D: 0 - 20 mA DC (Input resistance 50 Ω)
 E: 0 - 16 mA DC (Input resistance 62.5 Ω)
 F: 0 - 10 mA DC (Input resistance 100 Ω)
 G: 0 - 1 mA DC (Input resistance 1000 Ω)
 H: 10 - 50 mA DC (Input resistance 100 Ω)
 J: 0 - 10 μ A DC (Input resistance 1000 Ω)

- K: 0 - 100 μ A DC (Input resistance 1000 Ω)
 GW: -1 - +1 mA DC (Input resistance 1000 Ω)
 FW: -10 - +10 mA DC (Input resistance 100 Ω)
 Z: Specify current (See INPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Input resistance 10 k Ω min.)
 15: 0 - 50 mV DC (Input resistance 10 k Ω min.)
 16: 0 - 60 mV DC (Input resistance 10 k Ω min.)
 2: 0 - 100 mV DC (Input resistance 100 k Ω min.)
 3: 0 - 1 V DC (Input resistance 1 M Ω min.)
 4: 0 - 10 V DC (Input resistance 1 M Ω min.)
 5: 0 - 5 V DC (Input resistance 1 M Ω min.)
 6: 1 - 5 V DC (Input resistance 1 M Ω min.)
 4W: -10 - +10 V DC (Input resistance 1 M Ω min.)
 5W: -5 - +5 V DC (Input resistance 1 M Ω min.)
 0: 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 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)**Subtraction Indicator****blank:** Without

/E: With (0.0 - 100.0 % display) : 입력 차이 값을 %로 표시.
 입력간 차이값이 4mA = 0%, 20mA = 100%로 표시
 (스케일링 기능 없음)

/E2: With (in engineering unit with backlight and
 the simple loop test output)

제품을 셋팅하여 원하는 차이값을 실제 단위로 표시할 수
 있습니다. (스케일링 기능 있음)

주의: 단 입력1 > 입력2**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 1 or input 2 to output to power**Overrange output:** Approx. -10 to +120 % at 1 - 5 V**Zero adjustment:** -5 to +5 % (front)**Span adjustment:** 95 to 105 % (front)**Equation:** Output = $K_1 \times \text{Input 1} - K_2 \times \text{Input 2}$ $(K_1 \times \text{Input 1} > K_2 \times \text{Input 2})$ $K_1, K_2: 0.10 - 2.00$ (parameters)Output, Input 1 $\times K_1$, Input 2 $\times K_2: 0 - 100\%$ K_1, K_2 are ex-factory specified.

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

■ DISPLAY (Subtracted 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: %, 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****■ DC Current:**

Shunt resistor attached to the input terminals (0.5 W)
 Specify input resistance value for code Z.

■ DC Voltage: -300 - +300 V DC**Minimum span:** 3 mV**Offset:** Max. 1.5 times span**Input resistance**Span 3 - 10 mV : $\geq 10 \text{ k}\Omega$ Span 10 - 100 mV : $\geq 10 \text{ k}\Omega$ Span 0.1 - 1 V : $\geq 100 \text{ k}\Omega$ Span $\geq 1 \text{ V}$: $\geq 1 \text{ M}\Omega$ **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 $\geq 0.5 \text{ V}$

INSTALLATION**Power input**

• **AC:** Operational voltage range: rating $\pm 10 \%$, 50/60 $\pm 2 \text{ Hz}$,
 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:** $\pm 0.2 \%$ ($\pm 0.4 \%$ at K_1 and/or $K_2 > 1.00$)

Display accuracy: $\pm (0.2 \%$ of FS + 1 digit)
 $\pm (0.4 \%$ of FS + 1 digit) at K_1 and/or $K_2 > 1.00$

Simple loop test output setting accuracy: $\pm 0.5 \%$ **Temp. coefficient:** $\pm 0.015 \%/^{\circ}\text{C}$ ($\pm 0.008 \%/^{\circ}\text{F}$)**Response time:** $\leq 0.5 \text{ sec.}$ (0 - 90 %)**Line voltage effect:** $\pm 0.1 \%$ over voltage range**Insulation resistance:** $\geq 100 \text{ M}\Omega$ with 500 V DC

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

TERMINAL ASSIGNMENTS unit: mm (inch)

■ OPTION /E2

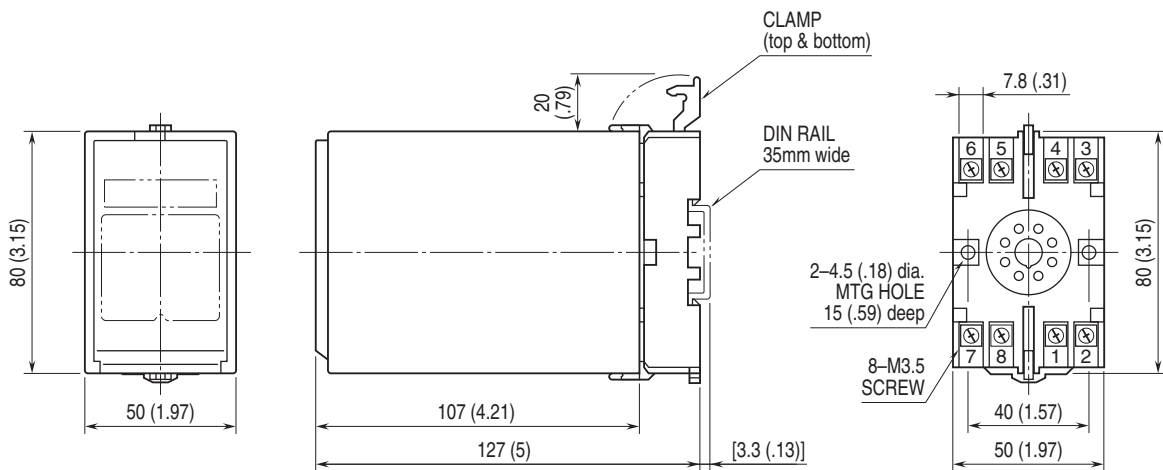
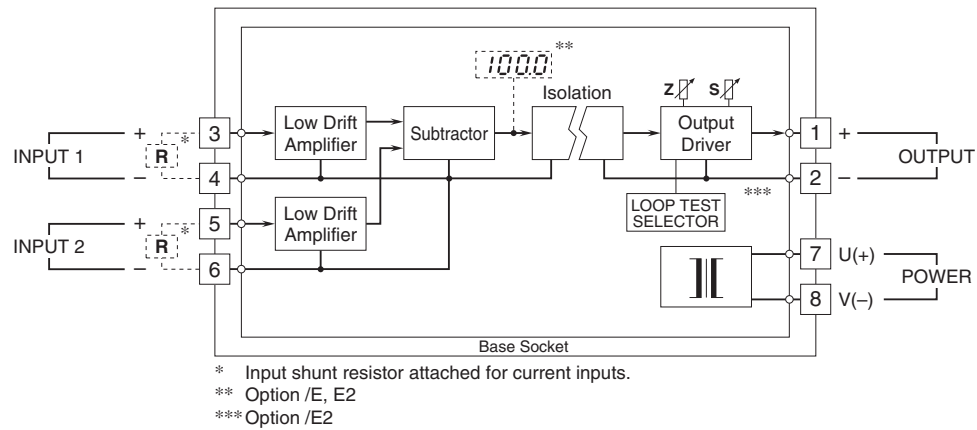


Diagram of the input resistor assembly (model: REM). The assembly features a central circular component with eight small circular contacts. Surrounding this central component are eight rectangular terminals, numbered 1 through 8. Terminals 1, 2, 3, and 4 are on the right side, while terminals 5, 6, 7, and 8 are on the left side. Each terminal contains a circular symbol with a cross inside. A dimension line on the right indicates a height of 12 (.47). The text "INPUT RESISTOR (model: REM)" is at the top, with arrows pointing to the top terminals. Below the diagram, the text "Input shunt resistor attached for current input." is present.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.