

**Plug-in Signal Conditioners M-UNIT**

**DC ALARM**

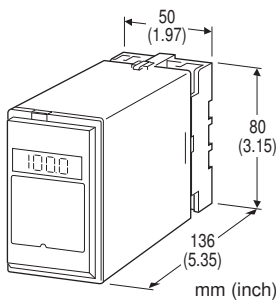
(front control button adjustment)

**Functions & Features**

- Providing SPDT relay outputs at preset DC input levels
- Dual trip
- Latching or non-latching output
- Deadband, ON-delay, Hi/Lo trip, failsafe action can be programmed with front UP/DOWN control buttons
- Enclosed relays
- High-density mounting

**Typical Applications**

- Annunciator
- Various alarm applications



**MODEL: MSEF-[1]5-[2][3]**

**ORDERING INFORMATION**

- Code number: MSEF-[1]5-[2][3]
- Specify a code from below for each of [1] through [3]. (e.g. MSEF-65-F/Q)
- Specify the specification for option code /Q (e.g. /C01)

**[1] 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)

**Voltage**

- 4: 0 - 10 V DC (Input resistance 1 MΩ min.)
- 5: 0 - 5 V DC (Input resistance 1 MΩ min.)
- 6: 1 - 5 V DC (Input resistance 1 MΩ min.)

**OUTPUT**

- 5: Dual trip; SPDT or transfer contact

**[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

**[3] OPTIONS**

blank: none

/Q: Options 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

**Latching output:** Alternatively selectable to deadband option; reset with the power turned OFF.

**Front LEDs:** Red/green dual-color LED

**Run mode:** Red turns ON in tripped condition.

L1 for Output 1, L2 for Output 2

**Check mode:** Green turns ON.

**Set mode:** Red/green turns ON.

**Display:** LED, 4-digit digital meter

**Display range:** -14.0 to +113.5 %

**Programming:** Front key pad

- Trip point
- Hysteresis (deadband)
- Latching
- Trip operation (Hi/Lo, coil energized/de-energized)
- ON-delay time
- Power ON-delay time

(Refer to the instruction manual)

## INPUT SPECIFICATIONS

### ■ DC Current:

Shunt resistor attached to the input terminals (0.5 W)

## OUTPUT SPECIFICATIONS

### ■ Relay Contact: 100 V AC @ 5 A ( $\cos \phi = 1$ )

120 V AC @ 5 A ( $\cos \phi = 1$ )

240 V AC @ 2.5 A ( $\cos \phi = 1$ )

30 V DC @ 5 A (resistive load)

**Maximum switching voltage:** 300 V AC or 125 V DC

**Maximum switching power:** 600 VA or 150 W

**Minimum load:** 5 V DC @ 10 mA

**Mechanical life:**  $5 \times 10^7$  cycles

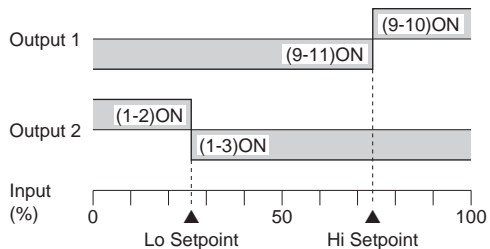
### Alarm Trip Operation

Terminal No. in parentheses

[Example]

Output 1: High trip, coil energized at alarm

Output 2: Low trip, coil energized at alarm



**Trip Operation in Power Failure:** Terminals 1 – 3, 9 – 11 turn on.

## INSTALLATION

### Power input

•**AC:** Operational voltage range: rating  $\pm 10\%$ ,  
50/60  $\pm 2$  Hz, approx. 3 VA

•**DC:** Operational voltage range: rating  $\pm 10\%$ ,  
ripple 10 %p-p max., approx. 3 W (120 mA at 24 V)

**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

**Setpoint accuracy:**  $\pm 0.5\%$

**Display accuracy:**  $\pm 0.1\%$

**Deadband setpoint accuracy:**  $\pm 0.3\%$

**Trip point repeatability:**  $\pm 0.1\%$

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

**Response time:**  $\leq 0.5$  sec. (0 - 100 % at 90 % setpoint)

**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)

## STANDARDS & APPROVALS

### EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Measurement Category II (output)

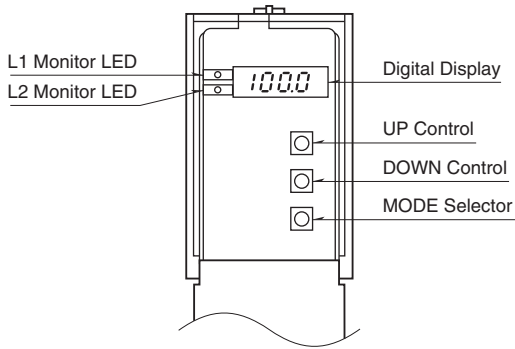
Installation Category II (power)

Pollution Degree 2

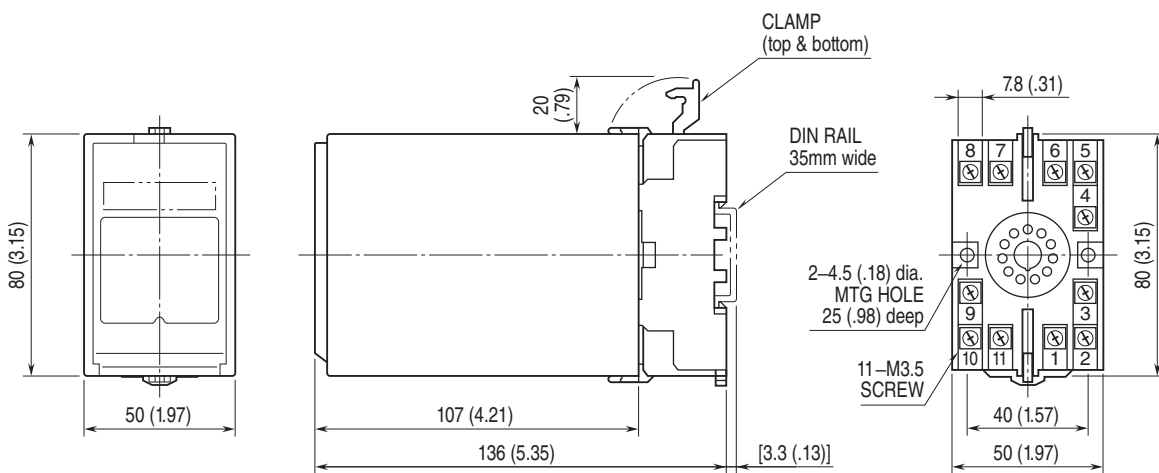
Input to output to power: Basic insulation (300 V)

RoHS Directive

## EXTERNAL VIEW

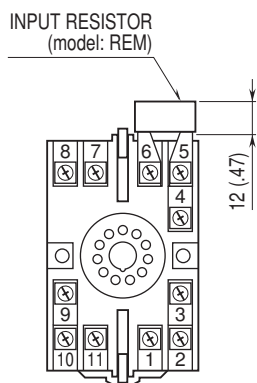


## EXTERNAL DIMENSIONS unit: mm (inch)



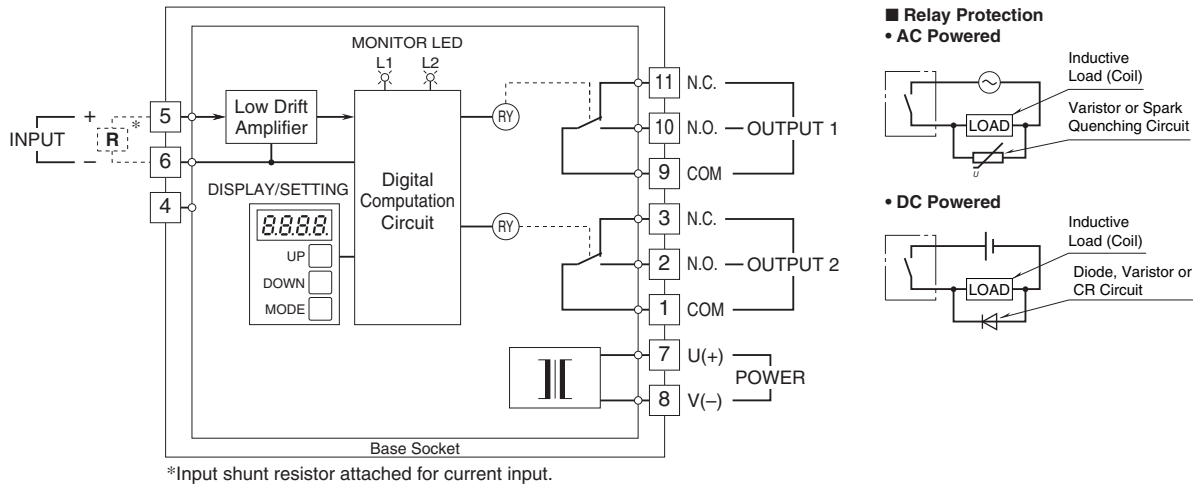
• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached for current input.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.