

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

**POTENTIOMETER ALARM**

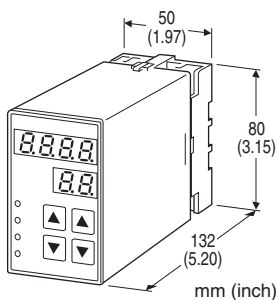
(dual or quad alarm trip; field-configurable)

**Functions & Features**

- Provides relay outputs at preset potentiometer resistance
- Quad or dual trip
- Setting and display in engineering unit values
- Setpoint adjustments with the front keypad
- Software lock
- Adjustable hysteresis (deadband)
- On-delay timer
- Hi/Lo trip and energized/de-energized coil independently selectable for each setpoint
- Enclosed relays
- Relays can be powered by 200 V AC and 100 V DC
- High-density mounting on DIN rail

**Typical Applications**

- Annunciator
- Various alarm applications



**MODEL: AS4M-[1]-[2][3]**

**ORDERING INFORMATION**

- Code number: AS4M-[1]-[2][3]
- Specify a code from below for each of [1] through [3]. (e.g. AS4M-2-R/UL/Q)
- Specify the specification for option code /Q (e.g. /C01/SET)

**INPUT POTENTIOMETER**

Total resistance 100 Ω - 10 kΩ

**[1] OUTPUT**

- 2:** 4 points; N.O. or make contact
- 3:** 4 points; N.C. or break contact
- 5:** 2 points; SPDT or transfer contact

**[2] POWER INPUT**

**AC Power**

**M2:** 100 - 240 V AC, 50 - 60 Hz

(Operational voltage range 85 - 264 V, 47 - 66 Hz)

**DC Power**

**R:** 24 V DC

(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

**P:** 110 V DC

(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

**[3] OPTIONS (multiple selections)**

**Standards & Approvals**

**blank:** CE marking

**/UL:** UL approval, CE marking

**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 (UL not available)

**TERMINAL SCREW MATERIAL**

**/S01:** Stainless steel (UL not available)

**EX-FACTORY SETTING**

**/SET:** Preset according to the Ordering Information Sheet (No. ESU-1605)

**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

**Sampling cycle:** 100 msec.

**User-configurable items:** Front keypad

- Alarm setpoint
- Display range scaling
- Power ON-delay time
- Alarm ON-delay time
- Moving average
- Hi/Lo trip operation
- Coil at alarm
- Hysteresis (deadband)
- 0 %, 100 % input setting
- Latching control
- Others

(Refer to the instruction manual)

■ **DISPLAY**

**LED:** 8 mm (.31") 7 segment, red  
**Number of display digits:** 4 digits for DATA display; 2 digits for ITEM display  
**Range:** -1999 to 9999  
 (decimal point position selectable)  
**PV indication:** Input signal in engineering unit  
**Overrange indication:** LEDs blinking  
**Power saving mode:** Displays turn off if the keys are untouched for a preset time period  
**LEDs:** Red LEDs turn on when coils are energized.  
 (L1 and L2 for 2-point alarm. L1, L2, L3 and L4 for 4-point alarm.)

## INPUT SPECIFICATIONS

**Minimum span:** 10 % of total resistance  
**Excitation:** 0.5 V DC

## OUTPUT SPECIFICATIONS

### ■ Quad Alarm

#### Relay rating:

120 V AC @ 1 A (cos  $\phi$  = 1)  
 240 V AC @ 0.5 A (cos  $\phi$  = 1)  
 30 V DC @ 1 A (resistive load)

**Maximum switching voltage(Note):** 380 V AC or 125 V DC

**Maximum switching power(Note):** 120 VA or 30 W

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

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

### ■ Dual Alarm

#### Relay rating:

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(Note):** 380 V AC or 125 V DC

**Maximum switching power(Note):** 600 VA or 150 W

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

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

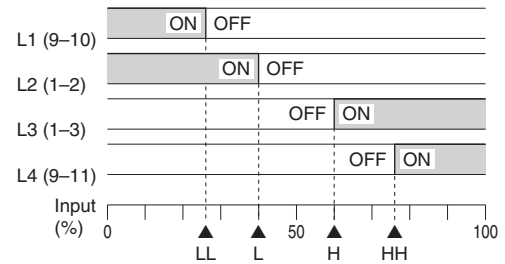
(Note): The value indicate capacity of output relay in equipment.

Use within relay rating for EU and UL.

### Alarm Trip Operation

Terminal No. in parentheses

Example with quad N.O. contacts (LL, L, H, HH)



### Trip Operation in Power Failure

- Output code 2: All relays turn off.
- Output code 3: All relays turn on.
- Output code 5: Terminals 1 - 3, 9 - 11 turn on.

## INSTALLATION

### Power consumption

- AC:  $\leq 6$  VA
- DC:  $\leq 3.5$  W

**Operating temperature:** -5 to +55°C (23 to 131°F)

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

**Mounting:** Surface or DIN rail

**Weight:** 500 g (1.1 lb)

## PERFORMANCE in percentage of FS input

**Setpoint accuracy (trip point accuracy):**  $\pm(0.1 \%$  of FS + 1 digit)

**Display accuracy:**  $\pm(0.1 \%$  of FS + 1 digit)

**Temp. coefficient:**  $\pm 0.015 \%$ /°C ( $\pm 0.008 \%$ /°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)

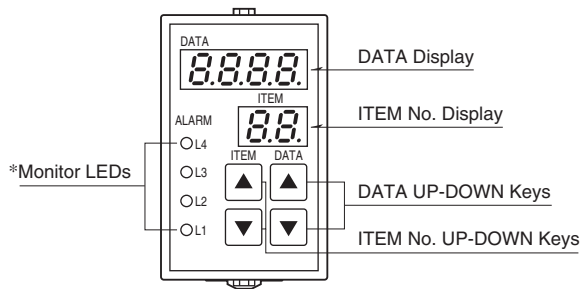
RoHS Directive

### Approval:

UL/C-UL general safety requirements

(UL 61010-1, CAN/CSA-C22.2 No.61010-1)

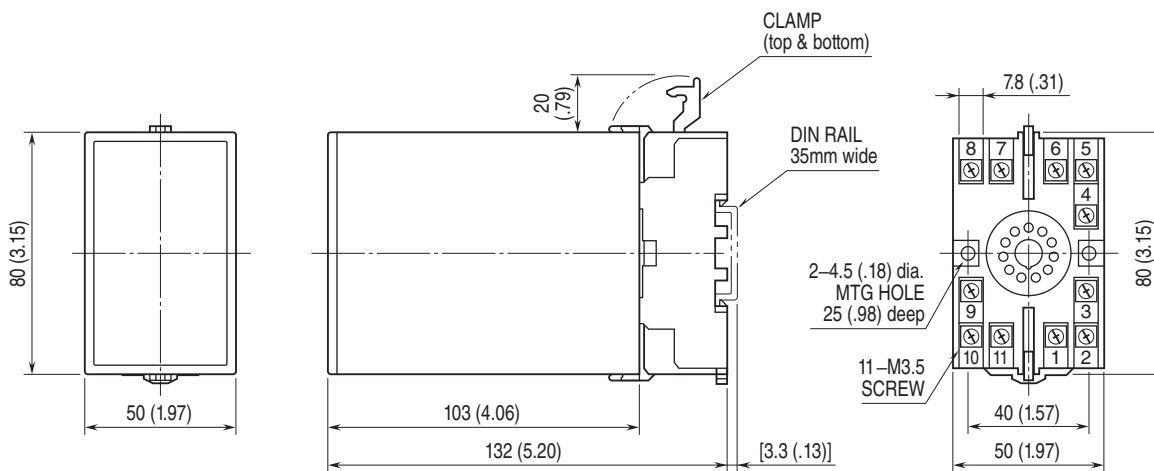
## EXTERNAL VIEW



\*L3 or L4 does not turn on for dual output type.

Refer to the instruction manual for detailed procedures.

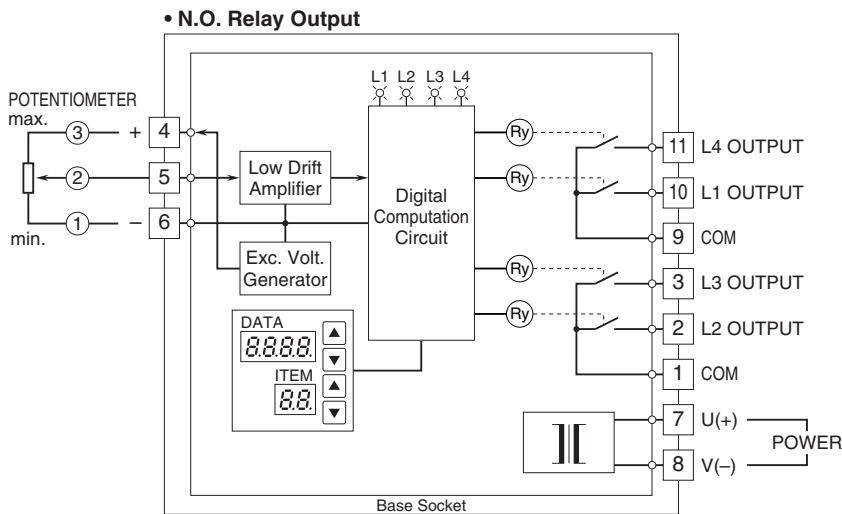
## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

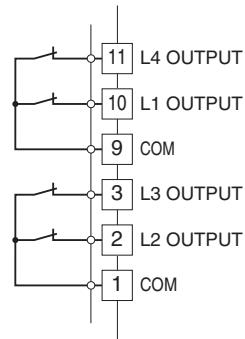
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

### ■ OUTPUT CODE: 2

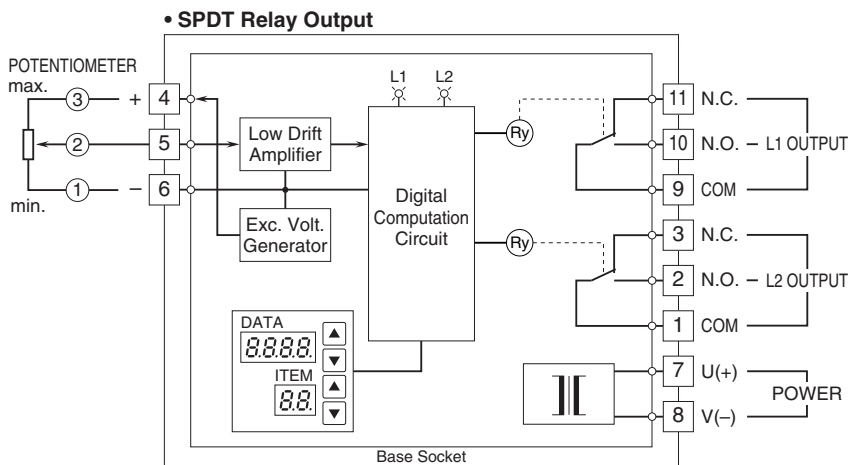


### ■ OUTPUT CODE: 3

#### • N.C. Relay Output

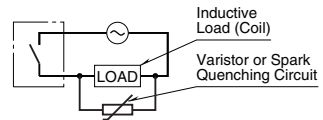


### ■ OUTPUT CODE: 5

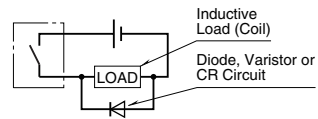


### ■ Relay Protection

#### • AC Powered



#### • DC Powered



Specifications are subject to change without notice.