

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

**DC ALARM**

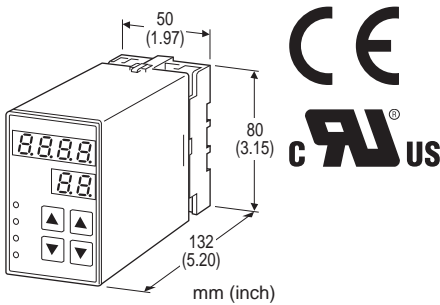
(dual or quad alarm trip; field-configurable)

**Functions & Features**

- Provides relay outputs at preset DC input levels
- 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: AS4V-[1][2]-[3][4]**

**ORDERING INFORMATION**

- Code number: AS4V-[1][2]-[3][4]
- Specify a code from below for each [1] through [4]. (e.g. AS4V-S22-R/Q)
- Specify the specification for option code /Q (e.g. /C01/S01/SET)

**[1] INPUT**

**Current**

Z1: Range 0 - 50 mA DC (Input resistance 100 Ω)

**Voltage**

S1: Range -1 - +1 V DC (Input resistance 1 MΩ min.)

S2: Range -10 - +10 V DC (Input resistance 1 MΩ min.)

**[2] OUTPUT**

2: 4 points; N.O. or make contact

3: 4 points; N.C. or break contact

5: 2 points; SPDT or transfer contact

2A: 4 points; N.O. or make contact (small load current) (CE not available. Option /UL Not selectable.)

3A: 4 points; N.C. or break contact (small load current) (CE not available. Option /UL Not selectable.)

5A: 2 points; SPDT or transfer contact (small load current) (CE not available. Option /UL Not selectable.)

**[3] POWER INPUT**

**AC Power**

M2: 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz) (90 - 264 V for UL)

**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.) (110 V ±10 % for UL)

**[4] OPTIONS**

**Standards & Approvals**

blank: CE marking  
 /UL: UL approval, CE marking

**Other Options**

blank: none  
 /Q: Option other than the above (specify the specification) (UL not available)

**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

**EX-FACTORY SETTING**

/SET: Preset according to the Ordering Information Sheet (No. ESU-1609)

**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 key pad

- 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 lights turn on when coils are energized.

(L1 and L2 for 2-point alarm. L1, L2, L3 and L4 for 4-point alarm.)

## INPUT SPECIFICATIONS

■ **DC Current:** 0 - 50 mA DC; shunt resistor attached to input terminals (0.5 W)

**Operational range:** 0 - 70 mA DC (with 100 Ω / 0.5 W)

**Minimum increment:** 0.1 mA

**Default setting:** 4 - 20 mA DC

■ **DC Voltage:** -1 - +1 V DC for S1;

-10 - +10 V DC for S2

**Operational range:** -1.15 - +1.15 V DC for S1;

-11.5 - +11.5 V DC for S2

**Minimum increment:** 10 mV for S1; 100 mV for S2

**Default setting:** -1 - +1 V DC for S1;

-10 - +10 V DC for S2

## OUTPUT SPECIFICATIONS

■ **Quad Alarm**

**Relay rating:**

120 V AC @ 1 A (cos φ = 1)

240 V AC @ 0.5 A (cos φ = 1)

30 V DC @ 1 A (resistive load)

**Maximum switching voltage:** 380 V AC or 125 V DC

**Maximum switching power:** 120 VA or 30 W

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

**Mechanical life:** 5 × 10<sup>7</sup> cycles

• **Dual Alarm**

**Relay rating:**

120 V AC @ 5 A (cos φ = 1)

240 V AC @ 2.5 A (cos φ = 1)

30 V DC @ 5 A (resistive load)

**Maximum switching voltage:** 380 V AC or 125 V DC

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

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

**Mechanical life:** 5 × 10<sup>7</sup> cycles

• **Small load current type**

**Relay rating:** 30 V DC @ 1 A (resistive load)

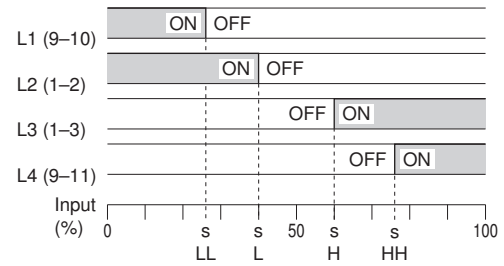
**Maximum switching voltage:** 220 V DC

**Maximum switching power:** 30 W (resistive load)

**Minimum load:** 1 V DC @ 1 mA

**Mechanical life:** 5 × 10<sup>7</sup> cycles

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

## INSTALLATION

**Power Consumption**

• **AC:** Approx. 6 VA

• **DC:** Approx. 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 lbs)

## PERFORMANCE in percentage of FS input

**Setpoint accuracy (trip point accuracy):** ±(0.1 % of FS + 1 digit)

**Display accuracy:** ±(0.1 % of FS + 1 digit)

**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F)

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

**Line voltage effect:** ±0.1 % over voltage range

**Insulation resistance:** ≥ 100 MΩ with 500 V DC

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



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## STANDARDS & APPROVALS

### CE conformity:

EMC Directive (2004/108/EC)

EMI EN 61000-6-4: 2007

EMS EN 61000-6-2: 2005

Low Voltage Directive (2006/95/EC)

EN 61010-1: 2001

Measurement Category II (output)

Installation Category II (power)

Pollution Degree 2

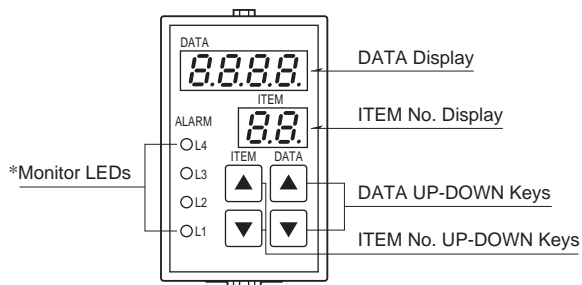
Input to output to power - Basic insulation (300 V)

### Approval:

UL/C-UL general safety requirements

(UL 3111-1:1994, CAN/CSA-C22.2 No.1010-1:1992)

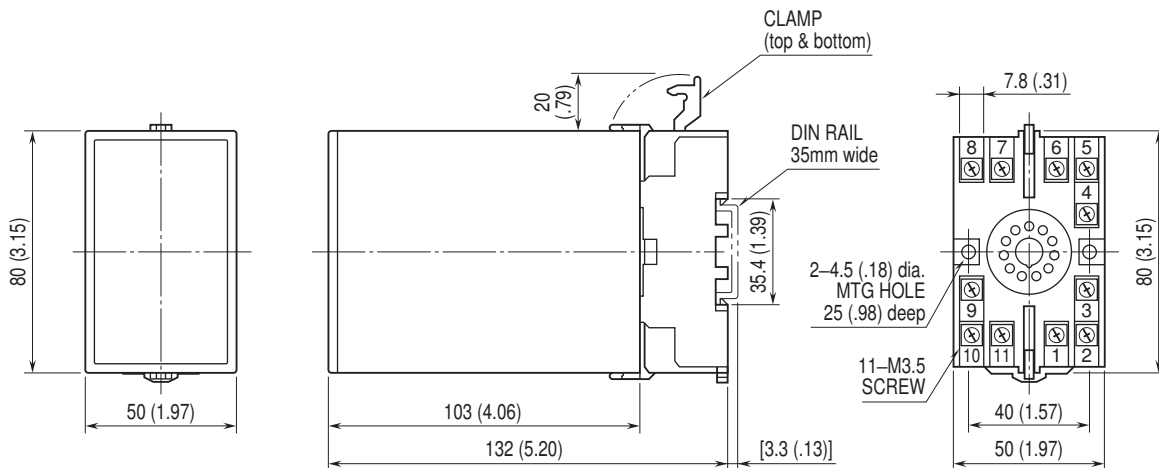
## EXTERNAL VIEW



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

Refer to the instruction manual for detailed procedures.

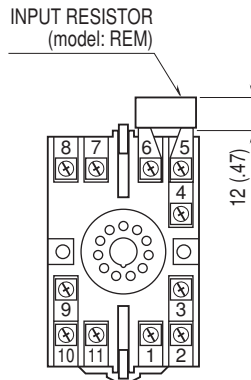
## DIMENSIONS unit: mm (inch)



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



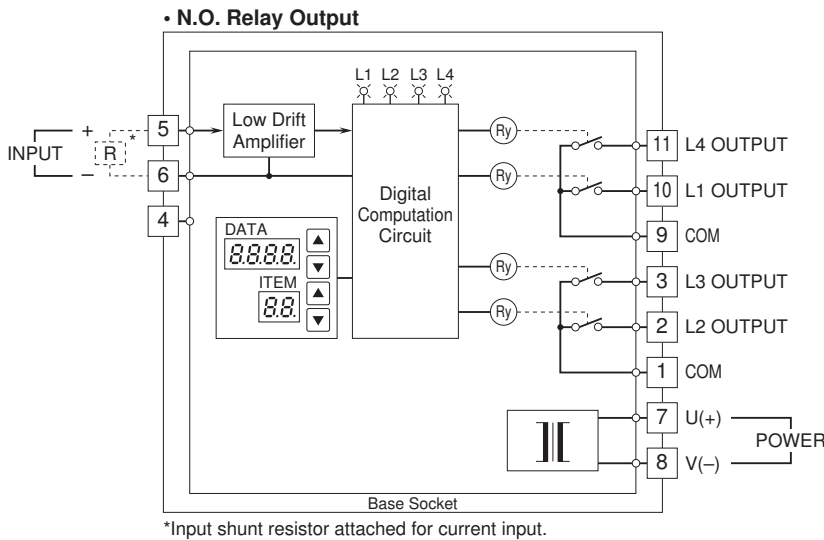
## TERMINAL ASSIGNMENTS unit: mm (inch)



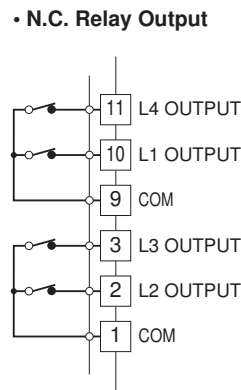
Input shunt resistor attached for current input.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

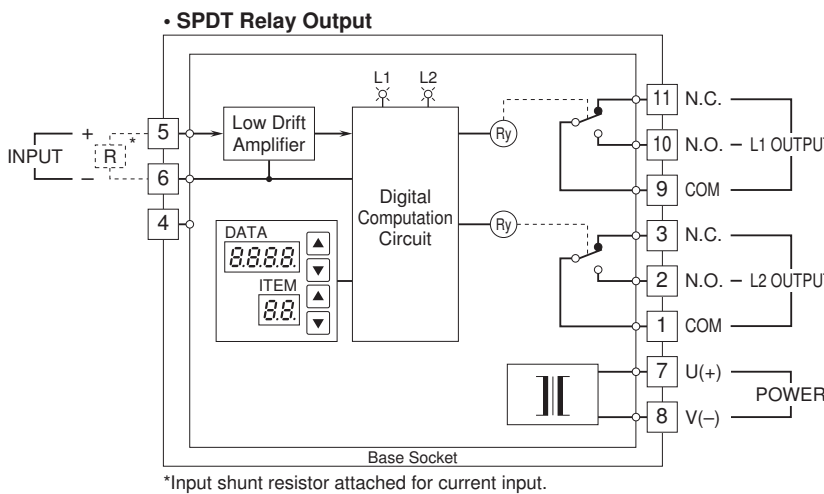
■ OUTPUT SUFFIX CODE: 2, 2A



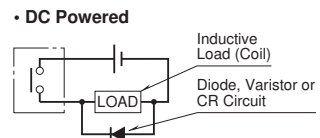
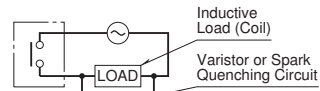
■ OUTPUT SUFFIX CODE: 3, 3A



■ OUTPUT SUFFIX CODE: 5, 5A



■ Relay Protection





Specifications are subject to change without notice.

