

## Plug-in Signal Conditioners M-UNIT

### RTD ALARM

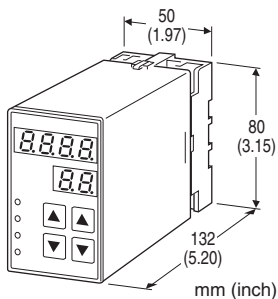
(dual or quad alarm trip; field-configurable)

#### Functions & Features

- Provides relay outputs at preset temperature 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: AS4R-[1]-[2][3]

### ORDERING INFORMATION

- Code number: AS4R-[1]-[2][3]

Specify a code from below for each of [1] through [3].

- (e.g. AS4R-2-R/UL/Q)
- Specify the specification for option code /Q (e.g. /C01/SET)

### [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

#### Temperature Range

blank: -5 to +55°C

/T: Wide operating temperature range -25 to +55°C

(Option /T is Not selectable with UL approval.)

#### 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-1606)

### 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

Burnout: Upscale standard; downscale optional by programming

Sampling cycle: 100 msec.

User-configurable items: Front key pad

- Alarm setpoint
  - Power ON-delay time
  - Alarm ON-delay time
  - Moving average
  - Hi/Lo trip operation
  - Coil at alarm
  - Hysteresis (deadband)
  - Temperature limit
  - Temperature unit
  - RTD type
  - 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  
**PV indication:** Temperature 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

**Maximum leadwire resistance:** 200 Ω per wire (3-wire)  
**Sensing current:** ≤ 1.0 mA  
**Default setting:** Pt 100 (JIS '97, IEC) -100.0 - +500.0°C  
**Minimum step:**  
 -199.9 to 999.9: 0.1  
 Not greater than -200, not lower than 1000: 1

### Temperature range

RTD	USABLE RANGE	
	°C	°F
JPt 100 (JIS '89)	-235 to +560	-391 to +1040
Pt 100 (JIS '89)	-240 to +900	-400 to +1652
Pt 100 (JIS '97, IEC)	-240 to +900	-400 to +1652
Pt 50Ω (JIS '81)	-235 to +700	-391 to +1292
Ni 508.4Ω	-100 to +330	-148 to +572
Pt 1000	-240 to +900	-400 to +1652
Ni 100	-100 to +250	-148 to +482
Cu 10 @ 25 °C	-210 to +310	-346 to +590

## 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(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 × 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(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 × 10<sup>7</sup> cycles

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

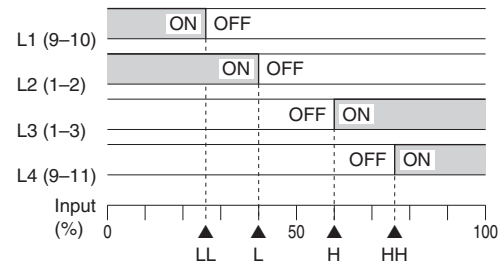
equipment.

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: ≤ 6 VA
- DC: ≤ 3.5 W

**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):

±(0.1% of FS + 1 digit)

±(0.2% of FS + 1 digit) for Cu 10

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

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

**Response time:** ≤ 1.5 sec. (0 - 100 % at 90 % setpoint)

**Burnout response:** ≤ 5 sec.

**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)

## 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

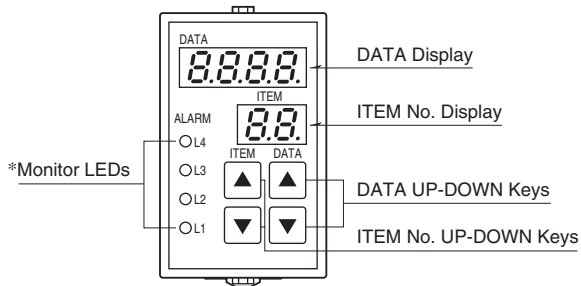
Input to output to power: Basic insulation (300 V)

RoHS Directive

**Approval:**

UL/C-UL general safety requirements  
(UL 61010-1, CAN/CSA-C22.2 No.61010-1)

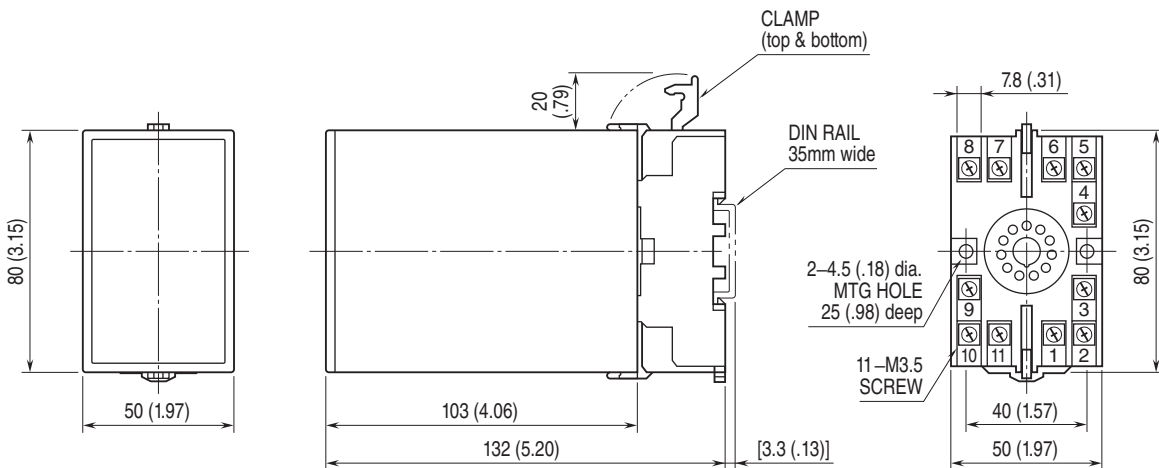
## EXTERNAL VIEW



\*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)

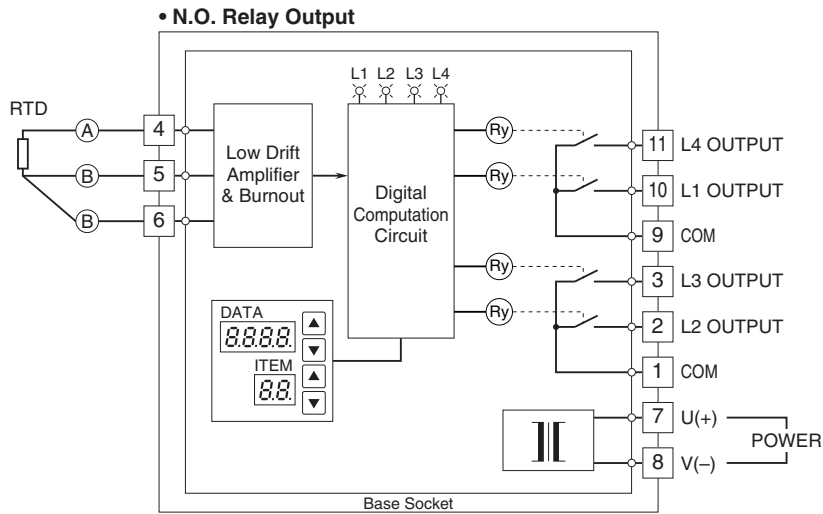


• When mounting, no extra space is needed between units.

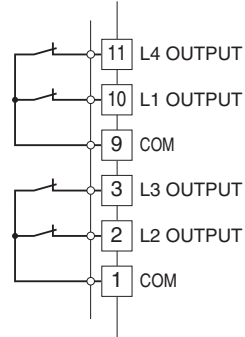
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

### ■ OUTPUT CODE: 2

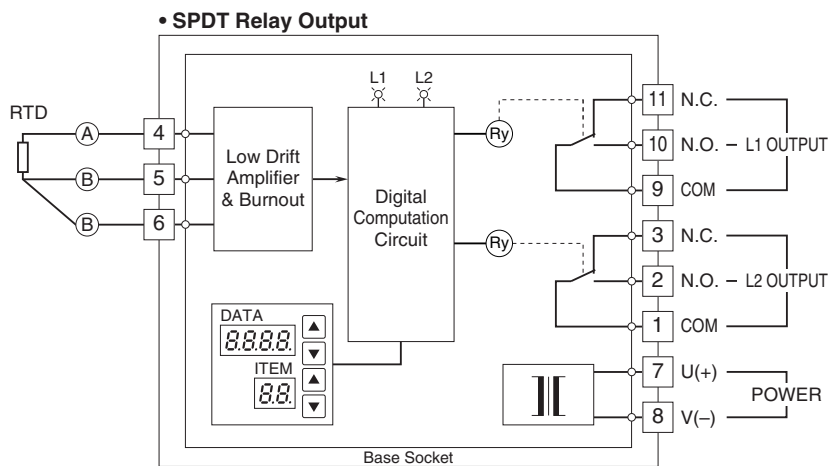
### ■ OUTPUT CODE: 3



### • N.C. Relay Output

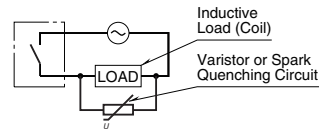


### ■ OUTPUT CODE: 5

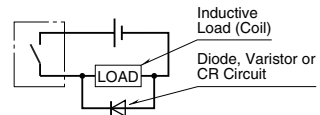


### ■ Relay Protection

#### • AC Powered



#### • DC Powered



Specifications are subject to change without notice.