

Limit Alarms (with DC output) AE-UNIT

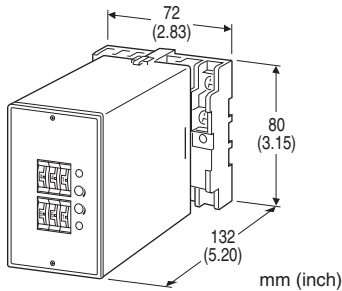
0: Specify

Note: Consult M-System for 2-wire RTD

RTD ALARM

Functions & Features

- Providing SPDT relay outputs at preset input levels
- Direct input from an RTD
- Dual (Hi/Lo) trip
- Additional isolated DC output proportional to the temperature
- Linearization
- Burnout protection
- "Active bridge" circuit containing two constant current sources allows large leadwire resistances up to 200 Ω
- Energized or de-energized coil at a tripped condition selectable
- Thumbwheel switch adjustments
- Relays can be powered 110 V DC



MODEL: AER-[1][2][3][4][5][6]-[7][8]

ORDERING INFORMATION

- Code number: AER-[1][2][3][4][5][6]-[7][8]
- Specify a code from below for each [1] through [8].
(e.g. AER-4A2101-D/BL/Q)
- Temperature range (e.g. 0 - 200°C)
- Special DC output range (For codes Z & 0)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT RTD (2- or 3-wire)

1: JPt 100 (JIS'89)

(Usable range: -200 to +500°C, -328 to +932°F; min.span: 50°C, 90°F)

3: Pt 100 (JIS'89)

(Usable range: -200 to +650°C, -328 to +1202°F; min.span: 50°C, 90°F)

4: Pt 100 (JIS'97, IEC)

(Usable range: -200 to +650°C, -328 to +1202°F; min.span: 50°C, 90°F)

5: Pt 50 Ω (JIS'81)

(Usable range: -200 to +500°C, -328 to +932°F; min.span: 100°C, 180°F)

6: Ni 508.4 Ω

(Usable range: -50 to +200°C, -58 to +392°F; min.span: 30°C, 54°F)

[2] DC OUTPUT

N: None

Current

A: 4 - 20 mA DC (Load resistance 350 Ω max.)

B: 2 - 10 mA DC (Load resistance 700 Ω max.)

C: 1 - 5 mA DC (Load resistance 1400 Ω max.)

D: 0 - 20 mA DC (Load resistance 350 Ω max.)

E: 0 - 16 mA DC (Load resistance 430 Ω max.)

F: 0 - 10 mA DC (Load resistance 700 Ω max.)

G: 0 - 1 mA DC (Load resistance 7000 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 1000 Ω min.)

4: 0 - 10 V DC (Load resistance 10 k Ω min.)

5: 0 - 5 V DC (Load resistance 5000 Ω min.)

6: 1 - 5 V DC (Load resistance 5000 Ω min.)

4W: -10 - +10 V DC (Load resistance 10 k Ω min.)

5W: -5 - +5 V DC (Load resistance 5000 Ω min.)

0: Specify voltage (See OUTPUT SPECIFICATIONS)

[3] SETPOINT 1 OUTPUT

1: Hi (coil energized at alarm)

2: Hi (coil de-energized at alarm)

3: Lo (coil energized at alarm)

4: Lo (coil de-energized at alarm)

[4] SETPOINT 2 OUTPUT

1: Hi (coil energized at alarm)

2: Hi (coil de-energized at alarm)

3: Lo (coil energized at alarm)

4: Lo (coil de-energized at alarm)

[5] ON DELAY TIME

0: 0.5 seconds

1: 1 second

2: 2 seconds

3: 3 seconds

4: 4 seconds

[6] POWER ON DELAY TIME

1: 1 second

2: 2 seconds

3: 3 seconds

4: 4 seconds

5: 5 seconds

[7] 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

[8] OPTIONS (multiple selections)

Burnout

blank: Upscale burnout
 /BL: Downscale burnout

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 to DC output to alarm output 1 to alarm output 2 to power
Overrange output: Approx. -10 to +120 % at 1 - 5 V
Zero adjustment: -5 to +5 % (front)
Span adjustment: 95 to 105 % (front)
Setpoint adjustments: Thumbwheel switches (front); 0 - 99 % independently; 1 % increments
Hysteresis (deadband) adjustments: Thumbwheel switches (front); 0.5, 1 - 9 % independently; 1 % increments (SW position 0 = 0.5); [Lo SP + Hysteresis] ≤ 102
Burnout protection: Upscale standard; downscale optional; Both DC and relay outputs respond respectively for upscale input.
Linearization: Standard

Front LEDs: Red lights turn on when the coils are energized.

INPUT SPECIFICATIONS

Maximum leadwire resistance: 200 Ω per wire (3-wire)
Sensing current: 2 mA

OUTPUT SPECIFICATIONS

■ DC Output

•DC Current: 0 - 20 mA DC
Minimum span: 1 mA
Offset: Max. 1.5 times span
Load resistance: Output drive 7 V maximum
 •DC Voltage: -10 - +12 V DC
Minimum span: 5 mV

Offset: Max. 1.5 times span

Load resistance: Output drive 1 mA maximum; at ≥ 0.5 V

■ Alarm Output: Relay contact

100 V AC @ 1 A (cos φ = 1)
 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

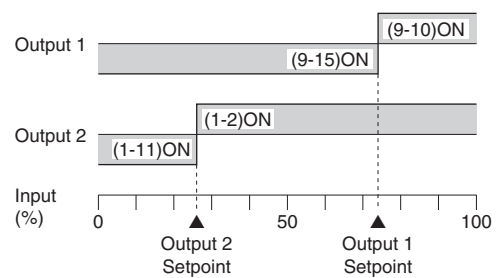
Maximum switching power: 120 VA or 30 W

Minimum load: 5 V DC @ 10 mA

Mechanical life: 5 x 10⁷ cycles

For maximum relay life with inductive loads, external protection is recommended.

Alarm Trip Operation Terminal No. in parentheses



Trip Operation in Power Failure

- Output Code: 1 & 4: Terminals 1 - 11, 9 - 15 turn ON
- Output Code: 2 & 3: Terminals 1 - 2, 9 - 10 turn ON

INSTALLATION

Power input

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

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

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

Mounting: Surface or DIN rail

Weight: 450 g (0.99 lb)

PERFORMANCE in percentage of span

•DC output

Accuracy: $\pm 0.2\%$

Response time: ≤ 0.5 sec. (0 - 90 %)

•Alarm output

Setpoint accuracy: $\pm 0.7\%$

Hysteresis (Deadband) setpoint accuracy: $\pm 0.3\%$

ON delay time accuracy: Rating $\pm 20\%$ or 0.3 sec., whichever is greater.

Power ON delay time accuracy: Rating $\pm 30\%$

Trip point repeatability: $\pm 0.05\%$

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

Burnout response: ≤ 10 sec.

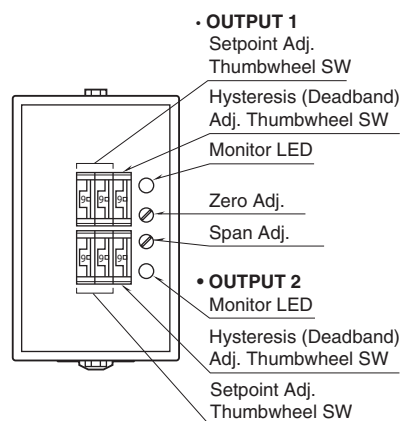
Line voltage effect: $\pm 0.1\%$ over voltage range

Insulation resistance: $\geq 100\text{ M}\Omega$ with 500 V DC

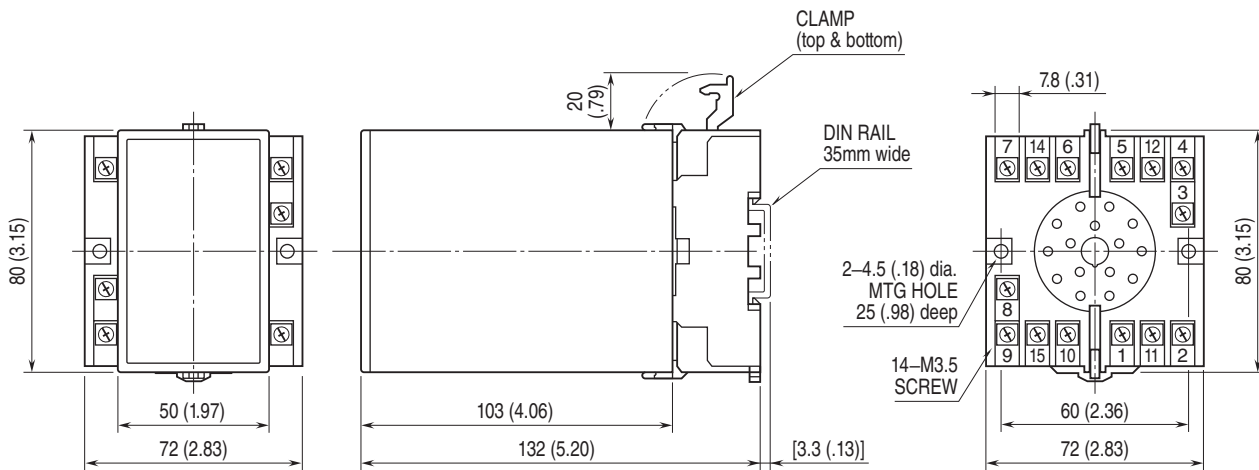
Dielectric strength: 2000 V AC @ 1 minute

(input to DC output to alarm output 1 to alarm output 2 to power to ground)

EXTERNAL VIEW

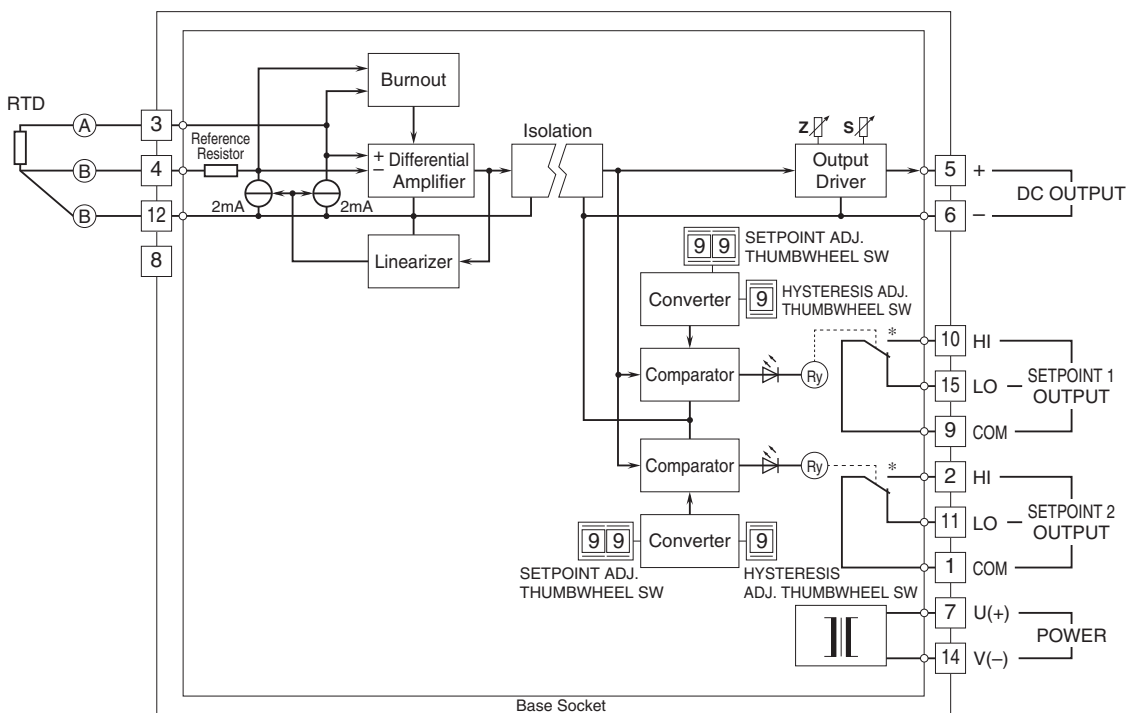


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

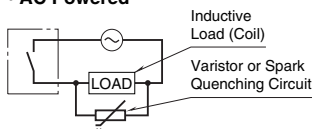
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



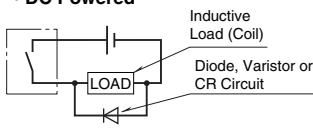
*Relay status for output codes "1" & "4", at power OFF.

■ Relay Protection

• AC Powered



• DC Powered



Specifications are subject to change without notice.