

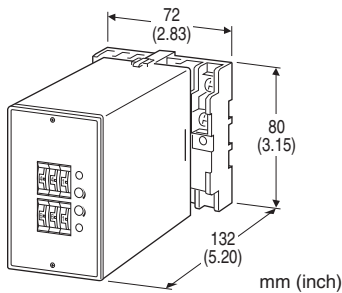
**Limit Alarms (with DC output) AE-UNIT**

**TWO-WIRE TRANSMITTER ALARM**

(with square root extractor)

**Functions & Features**

- Powering a 4 – 20 mA DC current loop
- Providing SPDT relay outputs at preset current levels
- Dual (Hi/Lo) trip
- Shortcircuit protection
- Additional isolated DC output proportional to the input
- Energized or de-energized coil at a tripped condition selectable
- Thumbwheel switch adjustments
- Relays can be powered 110 V DC



**MODEL: AEDN-[1][2][3][4][5]-[6][7]**

**ORDERING INFORMATION**

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

**INPUT**

**Current**

4 – 20 mA DC (Input resistance 250 Ω)

**[1] 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 kΩ min.)
- 2: 0 – 100 mV DC (Load resistance 100 kΩ min.)
- 3: 0 – 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 – 10 V DC (Load resistance 10 kΩ 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 kΩ min.)
- 5W: -5 – +5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

**[2] 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)

**[3] 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)

**[4] ON DELAY TIME**

- 0: 0.5 seconds
- 1: 1 second
- 2: 2 seconds
- 3: 3 seconds
- 4: 4 seconds

**[5] POWER ON DELAY TIME**

- 1: 1 second
- 2: 2 seconds
- 3: 3 seconds
- 4: 4 seconds
- 5: 5 seconds

## [6] 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

## [7] OPTIONS

blank: none

/Q: With options (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:** 0 - 105 % 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

Remark: Setpoint is applied to the result of square root extraction. A setpoint below 10 % output equals 0 % due to the low-end cutout function.

**Hysteresis (deadband) adjustments:** Thumbwheel switches (front); 0.5, 1 - 9 % independently; 1 % increments (SW position 0 = 0.5); [Lo SP + Hysteresis] ≤ 102

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

**Low-end cutout:** Approx. 1 % (input)

## SUPPLY OUTPUT

**Output voltage:** 24 - 28 V DC with no load

**Current rating:** ≤ 22 mA DC

• **Shortcircuit Protection**

**Current limited:** 35 mA max.

**Protected time duration:** No limit

## INPUT SPECIFICATIONS

■ **DC Current:** Input resistor incorporated

## 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

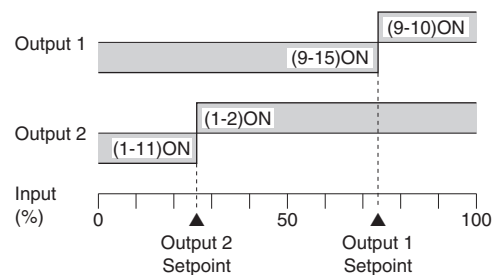
**Maximum switching power:** 120 VA or 30 W

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

**Mechanical life:** 5 x 10<sup>7</sup> 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  $\pm 2$  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:**  $\pm 0.2\%$  (refer to the input when 30 % or less)

**Response time:**  $\leq 0.7$  sec. (0 - 90 %)

### •Alarm output

**Setpoint accuracy:**  $\pm 0.7\%$  (input 1 - 100 %)

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

**ON delay time accuracy:** Rating  $\pm 20\%$  or 0.7 sec., whichever is greater.

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

**Trip point repeatability:**  $\pm 0.05\%$

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

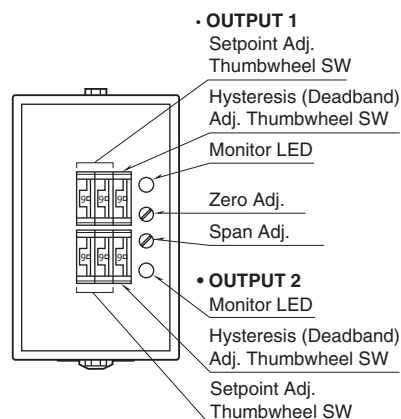
**Line voltage effect:**  $\pm 0.1\%$  over voltage range

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

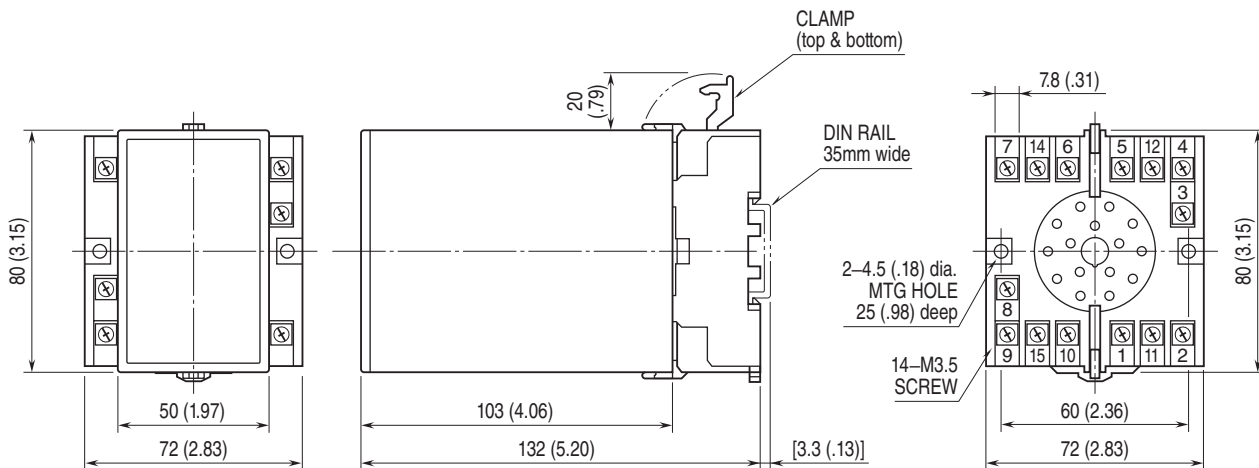
**Dielectric strength:** 2000 V AC @ 1 minute

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

## EXTERNAL VIEW

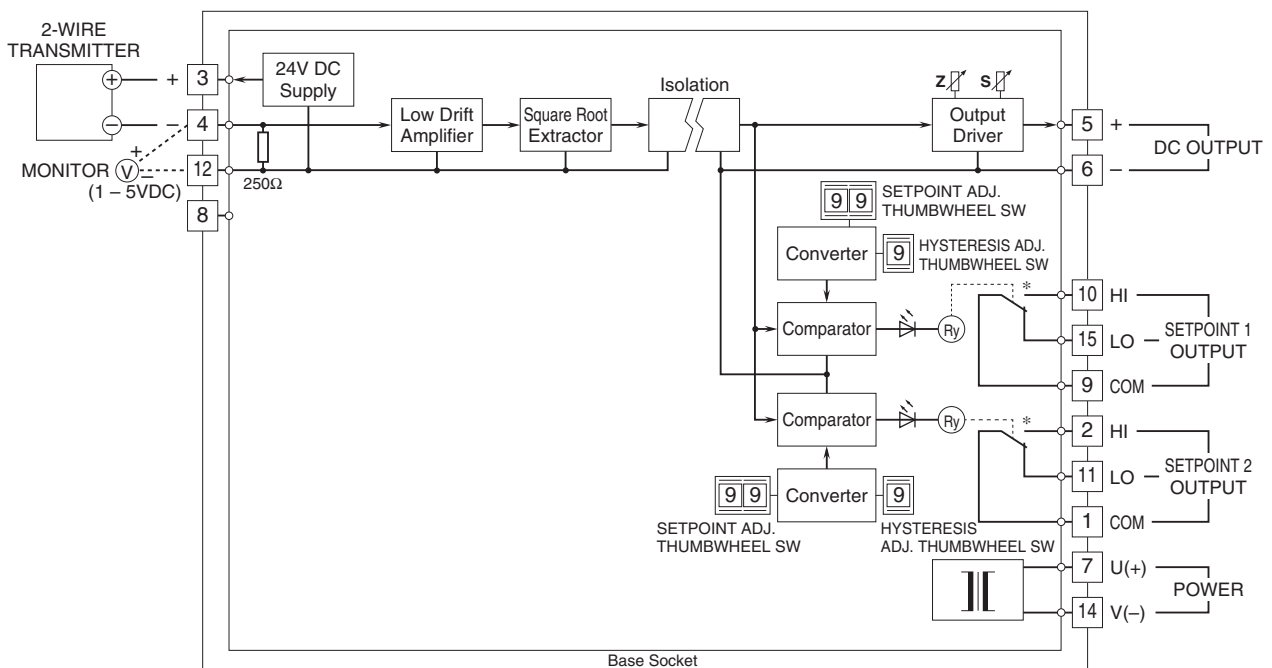


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

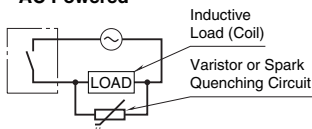
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



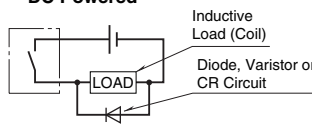
\*Relay status for output codes "1" & "4", at power OFF.

### ■ Relay Protection

#### • AC Powered



#### • DC Powered



Specifications are subject to change without notice.