Limit Alarms (potentiometer adj.) A-UNIT
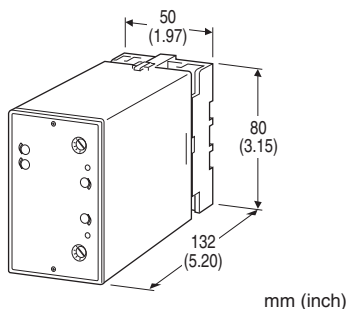
POTENTIOMETER ALARM

Functions & Features
• Providing SPDT relay outputs at preset potentiometer or slidewire positions
• Dual (Hi/Lo) trip
• Constant voltage excitation allows use with pots with total resistances from 100 Ω – 10 kΩ without affecting accuracy
• 50 % zero/span adjustments with minimal interaction
• Energized or de-energized coil at a tripped condition selectable
• Hysteresis (deadband) adjustable
• Enclosed relays
• Relays can be powered 110 V DC
• High-density mounting

Typical Applications
• Annunciator
• Various alarm applications

mm (inch)

MODEL: APOT–1[1][2]–[3][4]

ORDERING INFORMATION
• Code number: APOT-1[1][2]-[3][4]
Specify a code from below for each of [1] through [4].
  (e.g. APOT-113-B/Q)
• Specify the specification for option code /Q
  (e.g. /C01/S01)

INPUT POTENTIOMETER
Total resistance 100 Ω – 10 kΩ

SETPOINT ADJUSTMENTS
1: Single-turn screws

[1] 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)

[2] 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 screw at alarm)

[3] 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

[4] OPTIONS
blank: none
/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)
COATING (For the detail, refer to our 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 output 1 to output 2 to power
Zero adjustment: 0 – 50 % of total resistance (front)
Span adjustment: 50 – 100 % of total resistance (front)
Setpoint adjustments: 270°-turn screwdriver adjustments (front); 0 – 100 % independently

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Hysteresis (deadband) adjustments: 1 – 100 % (front)
Front LEDs: LED turns on at a tripped condition; red for output 1, green for output 2
Power ON timer: Relays de-energized for approx. 2 seconds after power is turned on.

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 1 to output 2 to power to ground)

INPUT SPECIFICATIONS

Minimum span: 50 % of total resistance
Excitation: 0.5 V DC

OUTPUT SPECIFICATIONS

■ **Relay Contact**: 100 V AC @ 1 A (cos ø = 1)
120 V AC @ 1 A (cos ø = 1)
240 V AC @ 0.5 A (cos ø = 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 10^7 cycles
For maximum relay life with inductive loads, external protection is recommended.

Alarm Trip Operation Terminal No. in parentheses
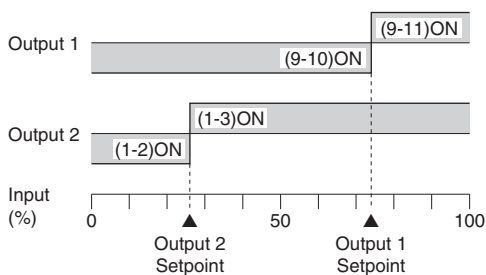
Trip Operation in Power Failure
• **Output Code: 1 & 4**: Terminals 1 – 2, 9 – 10 turn ON
• **Output Code: 2 & 3**: Terminals 1 – 3, 9 – 11 turn ON

INSTALLATION

Power input
• **AC**: Operational voltage range: rating ±10 %, 50/60 ±2 Hz, approx. 2 VA
• **DC**: Operational voltage range: rating ±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 +60°C (23 to 140°F)
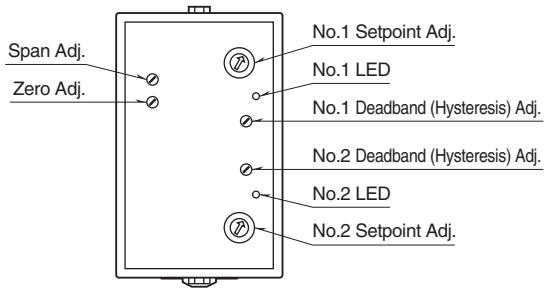**Operating humidity**: 30 to 90 %RH (non-condensing)
Mounting: Surface or DIN rail
Weight: 450 g (0.99 lb)
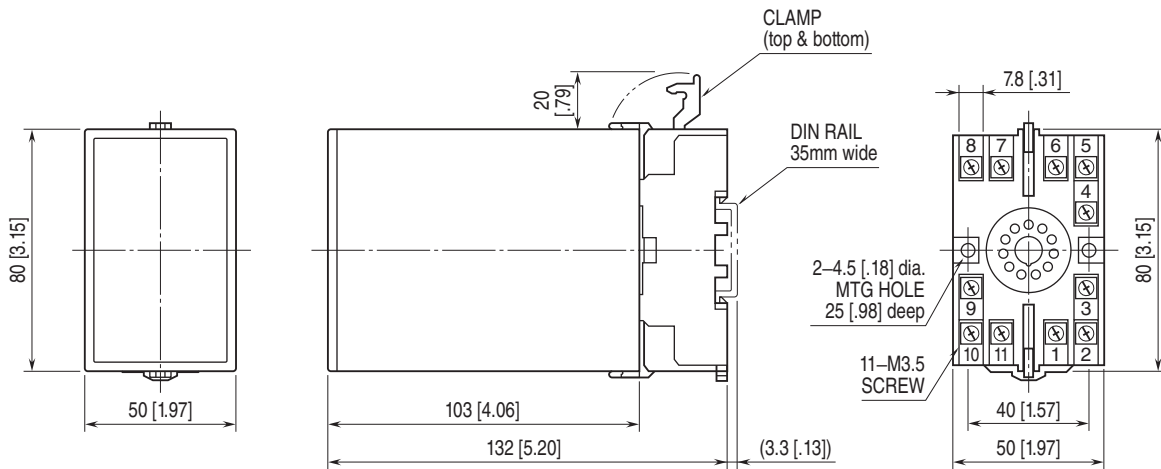
PERFORMANCE in percentage of span

Trip point repeatability: ±0.5 %
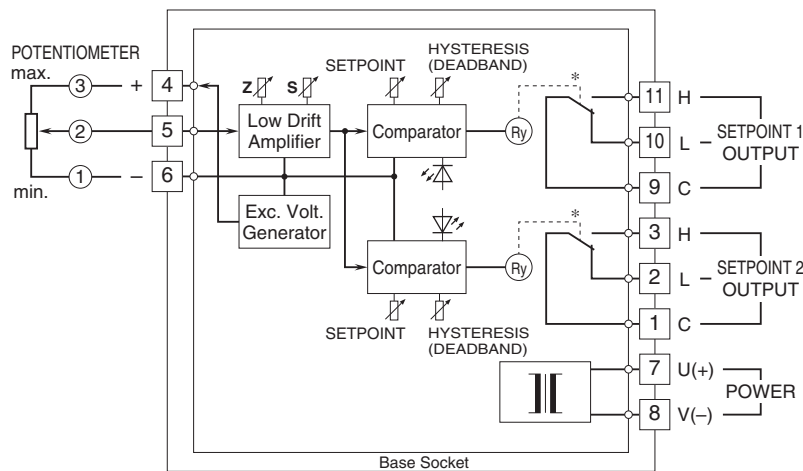**Temp. coefficient**: ±0.05 %/°C (±0.03 %/°F)

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EXTERNAL VIEW

Span Adj.
Zero Adj.

No.1 Setpoint Adj.
No.1 LED
No.1 Deadband (Hysteresis) Adj.
No.2 Deadband (Hysteresis) Adj.
No.2 LED
No.2 Setpoint Adj.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS   unit: mm [inch]

CLAMP
(top & bottom)

20 [.79]

DIN RAIL
35mm wide

7.8 [.31]

80 [3.15]

80 [3.15]

2–4.5 [.18] dia.
MTG HOLE
25 [.98] deep

11–M3.5
SCREW

8	7	6	5
9			4
10	11	1	2
			3

50 [1.97]

103 [4.06]

132 [5.20]

(3.3 [.13])

40 [1.57]

50 [1.97]

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

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

POTENTIOMETER
max.

③ + 4
② 5
① − 6

min.

z $\square$ s $\square$
Low Drift
Amplifier

SETPOINT

HYSTERESIS
(DEADBAND)

Comparator

Ry

Exc. Volt.
Generator

Comparator

Ry

SETPOINT

HYSTERESIS
(DEADBAND)

*

11 H
10 L   SETPOINT 1
9   C   OUTPUT

3   H
2   L   SETPOINT 2
1   C   OUTPUT

7   U(+)
8   V(−)   POWER

Base Socket

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

■ Relay Protection
• AC Powered

Inductive
Load (Coil)

LOAD

Varistor or Spark
Quenching Circuit

• DC Powered

Inductive
Load (Coil)

LOAD

Diode, Varistor or
CR Circuit
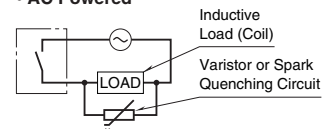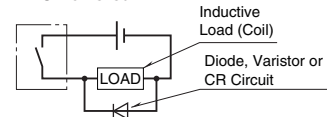
⚠ Specifications are subject to change without notice.