## Limit Alarms (rotary switch adj.) AL-UNIT

## FREQUENCY ALARM

( 50 Hz minimum)
Functions \& Features

- Providing SPDT relay outputs at preset frequency levels
- Dual (Hi/Lo) trip
- Low-end cutout
- Energized or de-energized coil at a tripped condition
selectable
- Rotary switch setpoint adjustments
- Enclosed relays
- Relays can be powered 110 V DC
- High-density mounting

Typical Applications

- Annunciator
- Various alarm applications



## MODEL: ALSP-[1][2][3]-[4][5]

## ORDERING INFORMATION

- Code number: ALSP-[1][2][3]-[4][5]

Specify a code from below for each of [1] through [5].
(e.g. ALSP-111-B/Q)

- Frequency range (e.g. 0-500 Hz)
- Specify the specification for option code /Q (e.g. /C01/S01)


## [1] INPUT

1: Dry contact
2: Voltage pulse

## [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] 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

## [5] 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 output 1 to output 2 to power
Setpoint adjustments: 10-position rotary switches (front); 0

- 99 \% independently; 1 \% increments

Remark: The ALSP has low-end cutout function below 2-5 \% input. A setpoint below this equals $0 \%$.
Hysteresis (deadband): 0.7-2.5 \%
Front LEDs: Red LED turns on when the coil is energized.
Power ON timer: Relays de-energized for approx. 2 seconds after power is turned on.
Low-end cutout: 2 to $5 \%$

## INPUT SPECIFICATIONS

Frequency range: $0-50 \mathrm{~Hz}$ through 10 kHz
Pulse width (time) requirement: Duty ratio 20-80 \% at 100
\% input
■ Dry Contact: Mechanical contact or open collector
Sensing: Approx. 7.5 V DC @1 mA
ON/OFF level: $\leq 200 \Omega$ / 0.6 V for ON, $\geq 100 \mathrm{k} \Omega / 2 \mathrm{~V}$ for OFF
Voltage Pulse: Square or sine waveforms
Input pulse sensing: Capacitor coupled; detecting pulse rise Input amplitude: 2-50 Vp-p
Input impedance: $100 \mathrm{k} \Omega$ min.

## OUTPUT SPECIFICATIONS

- Relay Contact: 100 V AC @ $1 \mathrm{~A}(\cos \varnothing=1)$

120 V AC @ 1 A $(\cos \varnothing=1)$
240 V AC @ $0.5 \mathrm{~A}(\cos \varnothing=1)$
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: $5 \times 10^{7}$ cycles
For maximum relay life with inductive loads, external protection is recommended.

```
Alarm Trip Operation Terminal No. in parentheses
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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
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## INSTALLATION

## Power input

- AC: Operational voltage range: rating $\pm 10 \%$, $50 / 60 \pm 2 \mathrm{~Hz}$, approx. 2 VA
- DC: Operational voltage range: rating $\pm 10 \%$, or $85-150$

V for 110 V rating (ripple $10 \% \mathrm{p}-\mathrm{p}$ max.)
approx. $2 \mathrm{~W}(80 \mathrm{~mA}$ at 24 V )
Operating temperature: -5 to $+60^{\circ} \mathrm{C}\left(23\right.$ to $\left.140^{\circ} \mathrm{F}\right)$
Operating humidity: 30 to 90 \%RH (non-condensing)
Mounting: Surface or DIN rail
Weight: $370 \mathrm{~g}(0.82 \mathrm{lb})$

## PERFORMANCE in percentage of span

Setpoint accuracy: $\pm 0.7$ \%
Trip point repeatability: $\pm 0.05 \%$
Temp. coefficient: $\pm 0.015 \% /{ }^{\circ} \mathrm{C}\left( \pm 0.008 \% /{ }^{\circ} \mathrm{F}\right)$
Response time: (0-100 \% at $90 \%$ setpoint)
approx. 2 seconds for $0-50 \mathrm{~Hz}$
approx. 1 second for $0-100 \mathrm{~Hz}$
approx. 0.5 seconds for $0-500 \mathrm{~Hz}$
approx. 0.5 seconds for $0-10 \mathrm{kHz}$
Line voltage effect: $\pm 0.1 \%$ over voltage range Insulation resistance: $\geq 100 \mathrm{M} \Omega$ with 500 V DC Dielectric strength: 2000 V AC @1 minute (input to output 1 to 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



Specifications are subject to change without notice.

