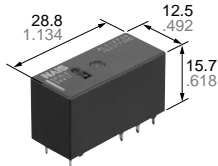


NAiS**16A Low Profile Power Relay****LZ-RELAYS****FEATURES**

- 1. Low profile size: Height 15.7 mm**
28.8 (L)×12.5 (W)×15.7(H) mm 1.134 (L)×.492 (W)×.618(H) inch
- 2. High insulation resistance**
Creepage distance and clearances between contact and coil: Min. 10 mm
- 3. UL coil insulation class B (85°C 185°F) or class F (105°C 221°F).**

- 4. Pb free and Cd free**
- 5. Low operating power**
• Nominal operating power: 400mW
- 6. Conforms to the various safety standards:**
• UL/CSA approved, VDE pending

SPECIFICATIONS**Contact**

Arrangement	1 Form A, 1 Form C	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	100 mΩ	
Contact material	Silver alloy	
Rating (resistive load)	Nominal switching capacity	16 A 250 V AC
	Max. switching power	4,000 V A
	Max. switching voltage	440 V AC
	Max. switching current	16 A
Expected life (min. operations)	Mechanical (at 180 cpm)	1 × 10 ⁷
	Electrical (at 20 cpm) (Resistive load)	5 × 10 ⁴

Coil

Nominal operating power	400 mW
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Remarks

- * Specifications will vary with foreign standards certification ratings.
 *1 Measurement at same location as "Initial breakdown voltage" section.
 *2 Detection current: 10mA
 *3 Wave is standard shock voltage of $\pm 1.2 \times 50\mu\text{s}$ according to JEC-212-1981
 *4 Excluding contact bounce time.
 *5 Half-wave pulse of sine wave: 0.8 ms; detection time: 10 μs
 *6 Half-wave pulse of sine wave: 6 ms
 *7 Detection time: 10 μs
 *8 Refer to 5. Conditions for operation, transport and storage mentioned in NOTES
 *9 Class F type is ambient temperature 105°C 221°F.

Characteristics

Max. operating speed (at rated load)	20 cpm	
Initial insulation resistance*1	Min. 1,000 MΩ (at 500 V DC)	
Initial breakdown voltage*2	Between open contacts	1,000 Vrms for 1 min.
	Between contacts and coil	5,000 Vrms for 1 min.
Initial surge voltage between contact and coil*3	Min. 10,000 V	
Operate time*4 (at nominal voltage)	Max. 15ms (at 20°C 68°F)	
Release time (with diode)*4 (at nominal voltage)	Max. 5ms (at 20°C 68°F)	
Temperature rise (at nominal voltage)	Max. 55°C (resistance method, contact current 16 A, 20°C 68°F)	
Shock resistance	Functional*5	Min. 100 m/s ² {10 G}
	Destructive*6	Min. 1,000 m/s ² {100 G}
Vibration resistance	Functional*7	10 to 55Hz at double amplitude of 1.5mm (NO), 0.82mm (NC)
	Destructive	10 to 55Hz at double amplitude of 1.5mm
Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temp.	-40°C to +85°C -40°F to +185°F (Class B)*9
	Humidity	5 to 85% R.H.
Unit weight	Approx. 12 g .42 oz	

TYPICAL APPLICATIONS

- HVAC
- Oven ranges
- Refrigerators

ORDERING INFORMATION

Ex.	A	LZ	1	2	B	12
Product name	Contact arrangement	Protective construction	Coil insulation class	Coil voltage, V DC		
LZ	1: 1 Form C 2: 1 Form A	1: Flux-resistant type 2: Sealed type	B: Class B insulation F: Class F insulation	05: 5 09: 9 12: 12	18: 18 24: 24 48: 48	

UL/CSA approved type is standard.

Note: Standard packing; Carton: 20 pcs, Case: 800 pcs.

Smart Solutions by **NAiS**

TYPES

Contact arrangement	Coil voltage, V DC	Flux-resistant type		Sealed type	
		Class B	Class F	Class B	Class F
1 Form A	5	ALZ21B05	ALZ21F05	ALZ22B05	ALZ22F05
	9	ALZ21B09	ALZ21F09	ALZ22B09	ALZ22F09
	12	ALZ21B12	ALZ21F12	ALZ22B12	ALZ22F12
	18	ALZ21B18	ALZ21F18	ALZ22B18	ALZ22F18
	24	ALZ21B24	ALZ21F24	ALZ22B24	ALZ22F24
	48	ALZ21B48	ALZ21F48	ALZ22B48	ALZ22F48
1 Form C	5	ALZ11B05	ALZ11F05	ALZ12B05	ALZ12F05
	9	ALZ11B09	ALZ11F09	ALZ12B09	ALZ12F09
	12	ALZ11B12	ALZ11F12	ALZ12B12	ALZ12F12
	18	ALZ11B18	ALZ11F18	ALZ12B18	ALZ12F18
	24	ALZ11B24	ALZ11F24	ALZ12B24	ALZ12F24
	48	ALZ11B48	ALZ11F48	ALZ12B48	ALZ12F48

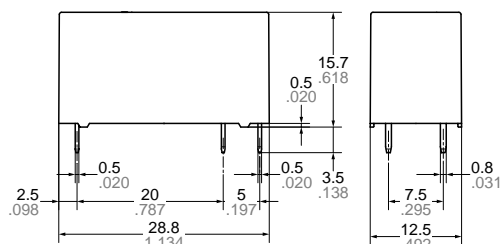
COIL DATA

Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating current, mA ($\pm 10\%$)	Nominal operating power, W	Maximum allowable voltage, V DC
5	3.5	0.5	63	80	0.4	6.5
9	6.3	0.9	203	44.4		11.7
12	8.4	1.2	360	33.3		15.6
18	12.6	1.8	810	22.2		23.4
24	16.8	2.4	1,440	16.7		31.2
48	33.6	4.8	5,760	8.3		62.4

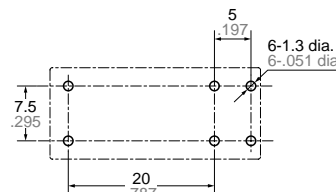
DIMENSIONS

mm inch

1. 1 Form A type

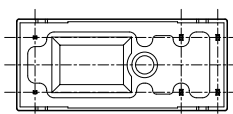


PC board pattern (Copper-side view)



Tolerance : $\pm 0.1 \pm 0.04$

Schematic (Bottom view)

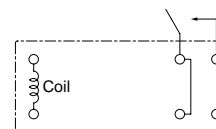


Dimension :

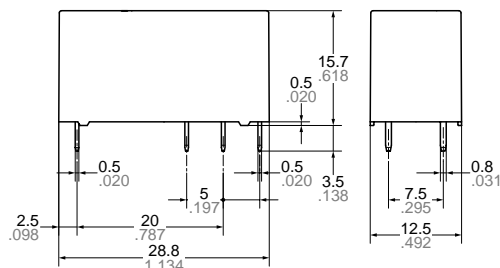
Max. 1mm .039 inch:
1 to 3mm .039 to .118 inch:
Min. 3mm .118 inch:

Tolerance

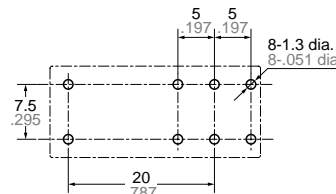
$\pm 0.1 \pm 0.04$
 $\pm 0.2 \pm 0.08$
 $\pm 0.3 \pm 0.12$



2. 1 Form C type

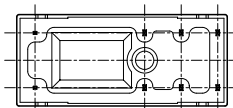


PC board pattern (Copper-side view)



Tolerance : $\pm 0.1 \pm 0.04$

Schematic (Bottom view)

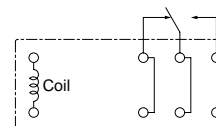


Dimension :

Max. 1mm .039 inch:
1 to 3mm .039 to .118 inch:
Min. 3mm .118 inch:

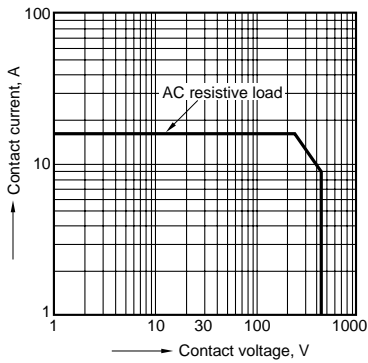
Tolerance

$\pm 0.1 \pm 0.04$
 $\pm 0.2 \pm 0.08$
 $\pm 0.3 \pm 0.12$

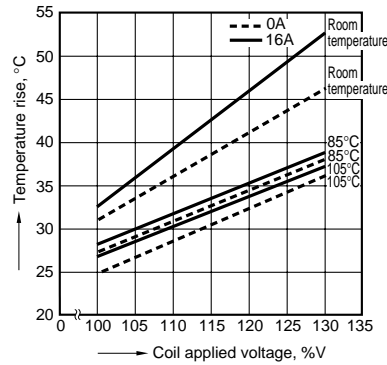


REFERENCE DATA

1. Max. switching power



2. Coil temperature rise



NOTES

1. Coil operating power

Pure DC current should be applied to the coil. The wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%. However, check it with the actual circuit since the characteristics may be slightly different.

2. Voltage applied to coil

To ensure reliable operation, please apply nominal voltage to the coil. Beware of the fact that pick-up voltage and dropout voltage vary depending on the ambient temperature and conditions.

3. Cleaning

This relay is not sealed, so it cannot be immersion cleaned. Be careful that flux does not overflow onto the PC board or penetrate inside the relay.

4. Operating life

Operating life varies depending on the type and load of the coil drive circuit, as well as factors like the operating frequency, operating phase and ambient atmosphere, so please check with actual equipment.

5. Soldering

We recommend the following soldering conditions.

1) Automatic soldering

* Preheating: 100°C 212°F, within 2 mins (PC board solder surface)

* Soldering: 260°C 500°F, within 5 s

2) Hand soldering

* Iron tip temperature: 280 to 300°C 536 to 572°F

* Soldering iron: 30 to 60W

* Soldering time: Within 5 s

6. Usage, transport and storage conditions

1) Ambient temperature, humidity, and atmospheric pressure during usage, transport, and storage of the relay:

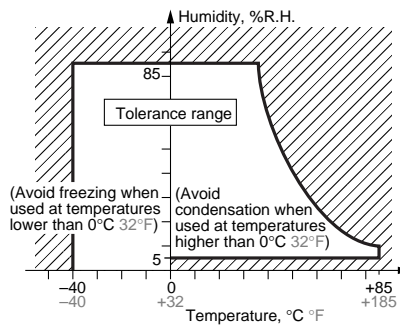
(1) Temperature:

−40 to +85°C −40 to +185°F (Class B)

(2) Humidity: 5 to 85% RH

(Avoid freezing and condensation.)

The humidity range varies with the temperature. Use within the range indicated in the graph below.



(3) Atmospheric pressure: 86 to 106 kPa

2) Condensation

Condensation forms when there is a sudden change in temperature under high temperature and high humidity conditions. Condensation will cause deterioration of the relay insulation.

3) Freezing

Condensation or other moisture may freeze on the relay when the temperatures are lower than 0°C 32°F.

This will causes problems such as sticking of movable parts or operational time lags.

4) Low temperature, low humidity environments

The plastic becomes brittle if the relay is exposed to a low temperature, low humidity environment for long periods of time.

7. Rating

Standard	File No.	Rating
UL	E43149	16A 277V AC (Flax-resistant type) 34.8LRA/72FLA 120V AC (Sealed type)
VDE pending	—	16A 250V AC ($\cos\phi = 1.0$)

(CSA: C-UL approved)

8. Others

1) If the relay has been dropped, the appearance and characteristics should be checked before use.

2) Please do not use organic material coating which contains solvents such as xylene and toluene for this product.