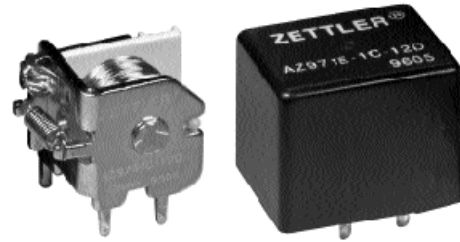


# AZ970E/AZ971E

## 45 AMP AUTOMOTIVE RELAY

### FEATURES

- Up to 45 Amp switching capability in a compact size
- Open, covered or sealed
- Coils to 24 VDC
- Small footprint
- 1 Form A, B and C contacts available
- Vibration and shock resistant
- ISO/TS 16949, ISO14001
- Cost effective
- Designed for high in-rush applications



### CONTACTS

|             |                                                                                                                                                                                                                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Arrangement | SPST (1 Form A)<br>SPST (1 Form B)<br>SPDT (1 Form C)                                                                                                                                                                                                                                                                    |
| Ratings     | Resistive load:<br>Max. switched power: Form A: 560 W<br>Form B: 420 W<br>Form C: 420W<br><br>Max. switched current: Form A: 45 A<br>Form B: 30 A<br>Form C: 30A<br><br>Max. switched voltage: 150* VDC<br>* If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory. |
| Material    | Silver tin oxide                                                                                                                                                                                                                                                                                                         |
| Resistance  | < 100 milliohms initially<br>(24 V, 1 A voltage drop method)                                                                                                                                                                                                                                                             |

### COIL

|                             |                                                                                  |
|-----------------------------|----------------------------------------------------------------------------------|
| Power                       |                                                                                  |
| At Pickup Voltage (typical) | 514 mW (12 and 24 VDC coil)<br>573 mW (6 VDC coil)                               |
| Max. Continuous Dissipation | 5.3 W 20°C (68°F) ambient (AZ970E)<br>4.6 W 20°C (68°F) ambient (AZ971E)         |
| Temperature Rise            | 56°C (101°F) nominal coil VDC (AZ970E)<br>59°C (106°F) nominal coil VDC (AZ971E) |
| Max. Temperature            | 155°C (311°F)                                                                    |

### GENERAL DATA

|                                                                                                 |                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Life Expectancy<br>Mechanical<br>Electrical                                                     | Minimum operations<br>5 x 10 <sup>6</sup> operations<br>1 x 10 <sup>5</sup> 40 A 14 VDC Res.                                                                    |
| Operate Time (typical)                                                                          | 5 ms at nominal coil voltage                                                                                                                                    |
| Release Time (typical)                                                                          | 3 ms at nominal coil voltage<br>(with no coil suppression)                                                                                                      |
| Dielectric Strength<br>(at sea level for 1 min.)                                                | 500 VDC coil to contact<br>500 VDC between open contacts                                                                                                        |
| Insulation Resistance                                                                           | 100 megohms min. at 20°C, 500 VDC,<br>50% RH                                                                                                                    |
| Dropout                                                                                         | Greater than 6% of nominal coil voltage                                                                                                                         |
| Ambient Temperature<br>AZ970E Operating<br>AZ970E Storage<br>AZ971E Operating<br>AZ971E Storage | At nominal coil voltage<br>-40°C (-40°F) to 125°C (257°F)<br>-40°C (-40°F) to 155°C (311°F)<br>-40°C (-40°F) to 125°C (257°F)<br>-40°C (-40°F) to 155°C (311°F) |
| Vibration                                                                                       | 0.062" DA at 10–55 Hz                                                                                                                                           |
| Shock                                                                                           | 10 g                                                                                                                                                            |
| Enclosure                                                                                       | P.B.T. polyester                                                                                                                                                |
| Terminals                                                                                       | Tinned copper alloy, P.C.                                                                                                                                       |
| Max. Solder Temp.                                                                               | 270°C (518°F)                                                                                                                                                   |
| Max. Solder Time                                                                                | 5 seconds                                                                                                                                                       |
| Max. Solvent Temp.                                                                              | 80°C (176°F)                                                                                                                                                    |
| Max. Immersion Time                                                                             | 30 seconds                                                                                                                                                      |
| Weight                                                                                          | 20 grams                                                                                                                                                        |

### NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.



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# AZ970E/AZ971E

## RELAY ORDERING DATA – AZ970E – OPEN STYLE

| COIL SPECIFICATIONS |                  |                     |                            | ORDER NUMBER  |               |               |
|---------------------|------------------|---------------------|----------------------------|---------------|---------------|---------------|
| Nominal Coil VDC    | Must Operate VDC | Max. Continuous VDC | Coil Resistance $\pm 10\%$ | Form A (SPST) | Form B (SPST) | Form C (SPDT) |
| 6                   | 3.3              | 9.8                 | 19.0                       | AZ970E-1A-6D  | AZ970E-1B-6D  | AZ970E-1C-6D  |
| 9                   | 5.1              | 15.9                | 50.0                       | AZ970E-1A-9D  | AZ970E-1B-9D  | AZ970E-1C-9D  |
| 12                  | 6.8              | 21.3                | 90.0                       | AZ970E-1A-12D | AZ970E-1B-12D | AZ970E-1C-12D |
| 24                  | 13.9             | 42.7                | 362.0                      | AZ970E-1A-24D | AZ970E-1B-24D | AZ970E-1C-24D |

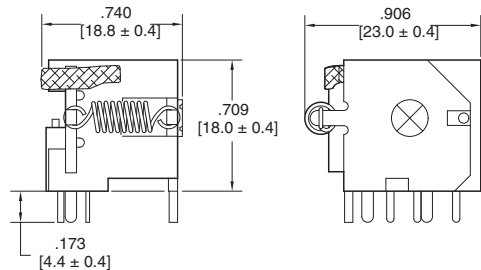
## RELAY ORDERING DATA – AZ971E – With Dust Cover

| COIL SPECIFICATIONS |                  |                     |                            | ORDER NUMBER* |               |               |
|---------------------|------------------|---------------------|----------------------------|---------------|---------------|---------------|
| Nominal Coil VDC    | Must Operate VDC | Max. Continuous VDC | Coil Resistance $\pm 10\%$ | Form A (SPST) | Form B (SPST) | Form C (SPDT) |
| 6                   | 3.3              | 9.4                 | 19.0                       | AZ971E-1A-6D  | AZ971E-1B-6D  | AZ971E-1C-6D  |
| 9                   | 5.1              | 15.2                | 50.0                       | AZ971E-1A-9D  | AZ971E-1B-9D  | AZ971E-1C-9D  |
| 12                  | 6.8              | 20.4                | 90.0                       | AZ971E-1A-12D | AZ971E-1B-12D | AZ971E-1C-12D |
| 24                  | 13.9             | 41.0                | 362.0                      | AZ971E-1A-24D | AZ971E-1B-24D | AZ971E-1C-24D |

\*Add suffix "E" for epoxy sealed version.

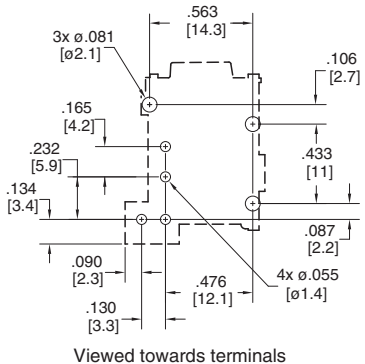
## MECHANICAL DATA

AZ970E Outline Dimensions and PCB Layout



Top view dimensions: .740 [18.8 ± 0.4], .906 [23.0 ± 0.4], .173 [4.4 ± 0.4]

Side view dimensions: .709 [18.0 ± 0.4]



Dimensions: .563 [14.3], .106 [2.7], .165 [4.2], .232 [5.9], .134 [3.4], .090 [2.3], .130 [3.3], .476 [12.1], .433 [11], .087 [2.2], 3x ø.081 [ø2.1], 4x ø.055 [ø1.4]

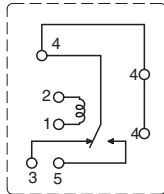
Viewed towards terminals

Terminal Dimensions

| Term. | Dimensions                |
|-------|---------------------------|
| 3,5   | .041 [1.02] x .03 [0.76]  |
| 1,2   | .041 [1.02] x .018 [0.46] |
| 4     | .041 [1.02] x .062 [1.57] |

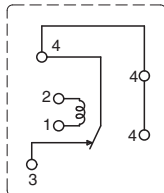
Wiring Diagrams

FORM C



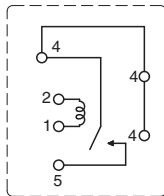
Wiring diagram for FORM C showing terminal connections: 4, 2, 1, 3, 5, 4, 4.

FORM B



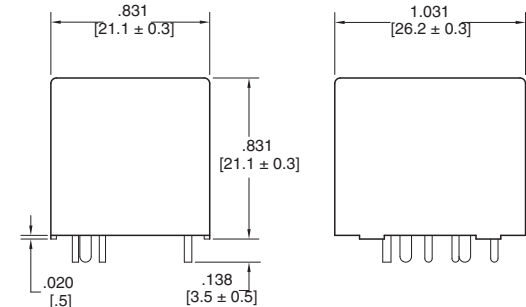
Wiring diagram for FORM B showing terminal connections: 4, 2, 1, 3, 4, 4.

FORM A



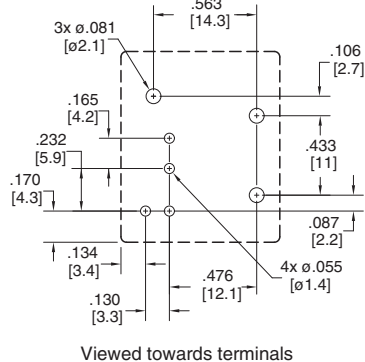
Wiring diagram for FORM A showing terminal connections: 4, 2, 1, 5, 4, 4.

AZ971E Outline Dimensions and PCB Layout



Top view dimensions: .831 [21.1 ± 0.3], 1.031 [26.2 ± 0.3], .020 [.5], .138 [3.5 ± 0.5]

Side view dimensions: .831 [21.1 ± 0.3]



Dimensions: .563 [14.3], .106 [2.7], .165 [4.2], .232 [5.9], .170 [4.3], .134 [3.4], .130 [3.3], .476 [12.1], .433 [11], .087 [2.2], 3x ø.081 [ø2.1], 4x ø.055 [ø1.4]

Viewed towards terminals

Viewed towards terminals

Dimensions in inches with metric equivalents in parentheses. Tolerance:  $\pm 0.010"$



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