AZEV132

32 AMP POWER RELAY

FEATURES

- 32 Amp nominal switching capability
- Isolated NC signal contact for welding monitoring
- Withstands up to 1500 A short circuit current
- Wide contact gap of ≥ 2.25 mm
- Dielectric strength 4 kVAC
- UL / CUR: E365652
- TÜV: B 088793 0014
- CQC: CQC19002216104

CONTACTS

Arrangement	
load contact	SPST-NO (1 Form A)
signal contact	SPST-NC (1 Form B) coupled to load contact
Ratings (max.)	(resistive load)
load contact	
switched power	12800 VA
switched current	40 A
switched voltage	400 VAC
signal contact	
switched current	10 mA at 12 VDC
minimum load	10 mA, 5 VDC, 50mW
Approved ratings	
	UL/CUR
	32 A at 277 VAC, resistive, 85°C, 50k cycles
load contact	40 A at 277 VAC, resistive, 45°C, 6k cycles
signal contact	10 mA at 12 VDC, 85°C, 50k cycles
	TUV
	32 A at 400 VAC, resistive, 85°C, 50k cycles
load contact	40 A at 277 VAC, resistive, 85°C, 10k cycles
signal contact	10 mA at 12 VDC, 85°C, 50k cycles
	CQC
load contact	32 A at 400 VAC, resistive, 85°C, 50k cycles 40 A at 277 VAC, resistive, 45°C, 6k cycles
signal contact	10 mA at 12 VDC, 85°C, 50k cycles
Contact material	
load contact	$AgSnO_2$ (silver tin oxide)
signal contact	AgNi + Au (silver nickel, gold plated)
Contact gap	
load contact	≥ 2.25 mm
Initial contact resistance	≤ 50 mΩ (at 6V, 1A, voltage drop method) < 3 mΩ(typical)

COIL

Nominal coil DC voltages	5, 9, 12, 24, 48
Dropout voltage	> 5% of nominal coil voltage
Holding voltage	> 35% of nominal coil voltage
Coil power	(at 23 °C)
nominal	1.55 W
holding power	190 mW
at pickup voltage	875 mW
Temperature rise	70 K at nom. coil voltage, 85°C
Insulation system	class F, max. temperature 155°C (311°F)

GENERAL DATA

Life Expectancy	(minimum operations)
mechanical	1×10^5
electrical	see approved ratings
Operate Time	30 ms (max.) at nominal coil voltage
Release Time	10 ms (max.) at nominal coil voltage, without coil suppression
Dielectric Strength	(at sea level for 1 min.)
open load contacts	2500 V_{RMS}
coil to load contacts	4000 V_{RMS}
open signal contacts	500 V_{RMS}
coil to signal contacts	500 V_{RMS}
signal to load contacts	4000 V_{RMS}
Pulse current capability	≥ 1,50 kA; ≥ 6.0 kA²s (based on requirements of IEC 62752)
Surge voltage	
open load contacts	6 kV
coil to load contacts	6 kV
signal to load contacts	6 kV
Insulation Resistance	1000 MΩ (min.) at 23°C, 500 VDC, 50% RH
Temperature Range	(at nominal coil voltage)
operating	-40°C (-40°F) to 85°C (185°F)
Vibration resistance	0.062" (1.5 mm) DA at 10–55 Hz
Enclosure	P.B.T. polyester
protection category	RT II, flux proof
material group	IIIa
flammability	UL94 V-0
Terminals	Tinned copper alloy, P. C.
Soldering	(referring IEC 61760-1 wave soldering)
preheating	120°C (248°F) / ≤ 120 s
soldering	260 ±5°C (500 ±9°F) / ≤ 10 s
Dimensions	
length	35.0 mm (1.38")
width	16.0 mm (0.63")
height	27.9 mm (1.10")
Weight	35 grams (approx.)
Compliance	UL 508, IEC 61810-1, GB/T 21711.1-2008 RoHS, REACH designed to meet requirements of IEC 62752
Agency Approvals	
UL / CUR	E365652
TÜV	B 088793 0014
CQC	CQC19002216104
Packing unit in pcs	50 per plastic tray 400 per carton box

AZEV132

COIL VOLTAGE SPECIFICATIONS

Nominal Coil VDC	Must Operate VDC	Min. Holding VDC	Max. Coil VDC	Resistance Ohm ± 10%
5	3.75	1.75	6.0	16.15
9	6.75	3.15	10.8	52.3
12	9.0	4.2	14.4	93.0
24	18.0	8.4	28.8	372
48	36.0	16.8	57.6	1488

Test conditions: 23°C (73°F), upright position, terminals downward.

ORDERING DATA

AZEV132-1AE□□□-□□D

Nominal coil voltage
see coil voltage specifications table

Signal contact
nil: without signal contact
1BG: equipped with 1 Form B signal contact

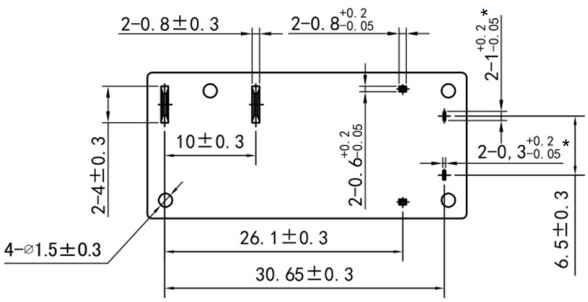
Example ordering data

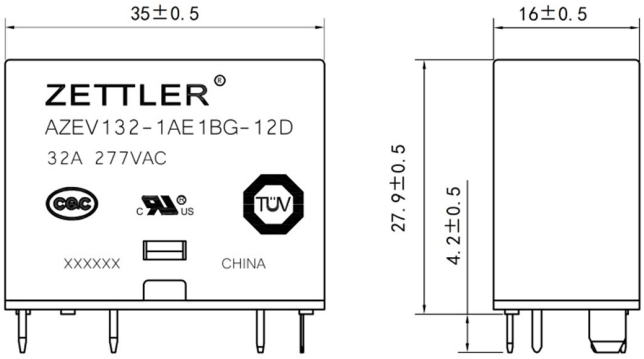
AZEV132-1AE-24D Without signal contact, 24 VDC coil

AZEV132-1AE1BG-12D With 1 Form B signal contact, 12 VDC coil

MECHANICAL DATA

Dimensions in mm. Tolerance: ±0.3 mm if not stated otherwise.
Pin dimensions given without tin coating.
Note: * Pins only present at versions with signal contact.

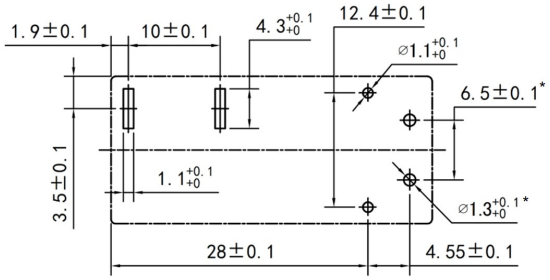


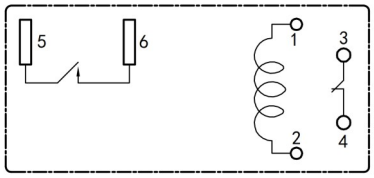


CAD data in attachment of the datasheet.

PC BOARD LAYOUT / WIRING DIAGRAMS

Layout and footprint recommendation. Viewed towards terminals. Dimensions in mm.
Note: * Pins only present at versions with signal contact.





IEC 62752 / IEC 62955 Short Circuit Withstand

Compliance with IEC 62752, IEC 62955 or similar standards for short circuit withstand is a function of both relay design and PCB layout. ZETTLER's relay design and applications engineering teams have developed an application note that contains important design suggestions to optimize the performance of the relay with respect to its short circuit current withstand capability.

In addition, as the overall performance depends on multiple factors such as part arrangement and trace routing, compliance cannot be generically guaranteed by ZETTLER. We strongly encourage customers to conduct their own short circuit tests in accordance with IEC 62752, IEC 62955 or similar standards in the context of their individual application design.

NOTES

General

1. All values in this datasheet are at reference temperature of 23°C (73°F) unless stated otherwise.
2. Evaluate the component's performance and operating conditions under the worst-case conditions of the actual application.
3. The datasheet and the component's specifications are subject to change without notice.

Storage, handling, and environmental guidelines

4. Relays are electromechanical components that are sensitive to shock. The relay's adjustment can be affected if the relay is subjected to excessive shock or excessive pressure is applied to the relay case. Relays which have been dropped must no longer be used.
5. Substances containing silicone or phosphorus must be avoided in the vicinity to the relay. Outgassing from these substances can penetrate the relay and adhere on the contacts. Deposits of these substances may act as insulators and adversely affect the contact resistance. Silicone can be found e.g. in gaskets, lubricants or filling materials, phosphorus can be found e.g. as a flame retardant in plastics.
6. Protect relays from atmospheres containing corrosive gases, liquids, or solids such as water vapor, H2S, SO2, NO2, Cl, P, dust, and other harmful substances and elements. Corrosion of internal structures and contacts leads to malfunction and shortens the component's service life.
7. Prevent non-sealed relays and relays with opened vent hole from atmospheres subject to dust. Dust particles may enter the case and get stuck between the contacts, causing the contact circuits to fail.
8. Do not use these relays in environments with explosive or flammable gases. Electrical arcing at the contacts could ignite these gases and cause fire.
9. For automated dual wave soldering process we recommend preheating with 120°C (248°F) for max. 120 seconds and a soldering temperature of 260 ±5°C (500 ±9°F) for max. 10 seconds soldering time (max. 5 seconds per wave). For manual soldering we recommend 350°C (662°F) max. temperature for max. 5 seconds. During the soldering process, no force may be exerted on the relay terminals.
10. Non-sealed relays must not be washed, immersion cleaned or conformal coated as substances may enter the case and cause corrosion or seizure of mechanical parts.
11. With sealed versions of this relay type, the vent hole must be cut open after washing or conformal coating to achieve the specified performance and service life. Care must be taken to ensure no particles get into the relay as a result of the cutting process.
12. Avoid high frequency or ultrasonic vibrations on the relays as these can cause contact welding and misalignment or destruction of internal structures.
13. During operation, storage and transport, ambient temperature should be within the specified operating temperature range. Humidity should be in the range of 5% to 85% RH. Icing and condensation must be avoided. Relays stored for an extended period of time may show initially increased contact resistance values due to chemical effects such as oxidation.

Design guidelines

14. The relay may pull in and operate with less than the specified *must operate* voltage value.
15. The coil's *must operate* and *min. holding* voltages, the coil's *ohmic resistance* and the relay's *operate time* depend on the temperature of the coil. The specified values are given for a coil temperature of 23°C and increase by approx. 0.39% per Kelvin of temperature rise. This circumstance must be considered, especially during operation with high load currents and elevated ambient temperature.
16. At elevated ambient temperatures, after applying the rated nominal coil voltage for ≥ 200 milliseconds, the coil energization must be reduced to a holding level in order to reduce thermal stress and prevent the coil from overheating.
17. Coil suppression circuits such as diodes, etc. in parallel to the coil will lengthen the release time. We recommend using suppression circuits with a breakdown voltage of approx. 2 times the nominal coil voltage in order to achieve a quick release time.
18. For short-circuit performance according IEC62955, IEC61008-1 or IEC62752, coil suppression circuits with a breakdown voltage of ≥ 2 times the nominal coil voltage must be used. Using rectifier diodes or similar in parallel to the coil is not appropriate.
19. When using PWM coil control, use a fast-switching recirculation diode in parallel with the coil to keep the coil current during pulse pauses. To achieve the IEC62955, IEC61008-1 or IEC 62752 required short-circuit performance, when de-energizing the coil, the recirculation diode must be eliminated from the circuit to get a fast decay of coil current and a short release time. As PWM frequency we recommend ≥ 15 kHz in order to avoid audible noise from magnetostriction. To reduce EMI effects, we recommend to apply the PWM to the coil's inner layer terminal and have the outer layer terminal connected to ground or the supply rail.
20. Contact resistance is a function of load current, dwell time and wear level of the contacts. Immediately after closing the contacts, or if tested with low current only, the contact resistance will show a relatively high value. A low level steady state contact resistance is reached at higher current after a certain time in thermal equilibrium.
21. The relay dissipates heat form power losses through its load terminals. Provide sufficient cross section and area of the PCB traces so that they can act as heat spreader.
22. For PCBs with multiple relays, do not place the components directly next to each other. We suggest providing a mounting distance of minimum 10 mm to allow for better cooling.
23. For load current greater than 50 Amps, the load contact sets must be connected in parallel to share the load current. See section *Wiring Diagram* for details.
24. A minimum load of 10 mA / 5 V / 50 mW is recommended for the gold plated monitor contact to ensure a reliable and stable electrical connection.
25. As with any contact mechanism, the relay's NC monitor contact bounces when switching. For evaluation of its signal, suitable debouncing measures must be taken to get a reliable signal.

DISCLAIMER

This product specification is to be used in conjunction with the application notes which can be downloaded from the regional ZETTLER relay websites. The specification provides an overview of the most significant part features. Any individual applications and operating conditions are not taken into consideration. It is recommended to test the product under application conditions. Responsibility for the application remains with the customer. Proper operation and service life cannot be guaranteed if the part is operated outside the specified limits.

ZETTLER GROUP

Building on a foundation of more than a century of expertise in German precision engineering, ZETTLER Group is a world-class enterprise, engaged in the design, manufacturing, sales and distribution of electronic components. Our industry leadership is based on a unique combination of engineering competence and global scale.

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