

AZEV140

40 AMP POWER RELAY

FEATURES

- 40 Amp nominal switching capability
- Isolated NC signal contact for welding monitoring
- Withstands up to 1850 A short circuit current
- Wide contact gap of ≥ 2.25 mm
- Dielectric strength 4 kV_{RMS}
- UL / CUR: E365652
- TÜV: B 088793 0016
- CQC: CQC20002276475



CONTACTS

Arrangement load contact signal contact	SPST-NO (1 Form A) SPST-NC (1 Form B) coupled to load contact
Ratings (max.) load contact switched power switched current switched voltage signal contact switched current minimum load	(resistive load) 22000 VA 50 A 440 VAC 10 mA at 12 VDC 10 mA, 5 VDC, 50mW
Approved ratings load contact signal contact	(UL/CUR/TÜV/CQC) 40 A at 440 VAC, resistive, 85°C, 30k cycles 32 A at 440 VAC, resistive, 85°C, 50k cycles 50 A at 440 VAC, resistive, 85°C, 6k cycles 20 A make, 50 A carry, 20 A break at 440 VAC, resistive, 85°C, 50k cycles 10 mA at 12 VDC, 85°C, 50k cycles
Contact material load contact signal contact	AgSnO ₂ (silver tin oxide) AgNi + Au (silver nickel, gold plated)
Contact gap load contact	≥ 2.25 mm
Contact resistance load contact initial typical	≤ 50 m Ω < 3 m Ω

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 nominal holding power at pickup voltage	(at 23 °C) 2.1 W 258 mW 1.2 W
Temperature rise	70 K (126°F) at nominal coil voltage, 85°C
Insulation system	class F, max. temperature 155°C (311°F)

GENERAL DATA

Life Expectancy mechanical electrical	(minimum operations) 1 x 10 ⁵ see UL/CUR/TÜV/CQC ratings
Operate Time	30 ms (max.) at nominal coil voltage
Release Time	10 ms (max.) at nominal coil voltage, without coil suppression
Dielectric Strength open load contacts coil to load contacts open signal contacts coil to signal contacts signal to load contacts	(at sea level for 1 min.) 2500 V _{RMS} 4000 V _{RMS} 500 V _{RMS} 500 V _{RMS} 4000 V _{RMS}
Pulse current capability	≥ 1.50 kA, ≥ 6.0 kA ² s (based on requirements of IEC 62752) ≥ 1.85 kA, ≥ 4.5 kA ² s (based on requirements of IEC 62955)
Surge voltage open load contacts coil to load contacts signal to load contacts	6 kV 6 kV 6 kV
Insulation Resistance	1000 M Ω (min.) at 23°C, 500 VDC, 50% RH
Temperature Range operating	(at nominal coil voltage) -40°C (-40°F) to 85°C (185°F)
Vibration resistance	0.062" (1.5 mm) DA at 10–55 Hz
Enclosure protection category material group flammability	P.B.T. polyester RT II, flux proof Illa UL94 V-0
Terminals	Tinned copper alloy, P. C.
Soldering preheating soldering	(referring IEC 61760-1 wave soldering) 120°C (248°F) / ≤ 120 s 260 ± 5 °C (500 ± 9 °F) / ≤ 10 s
Dimensions length width height	35.0 mm (1.38") 16.0 mm (0.63") 28.0 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 and IEC 62955
Agency Approvals UL / CUR TÜV CQC	E365652 B 088793 0016 CQC20002276475
Packing unit in pcs	50 per plastic tray 400 per carton box

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COIL VOLTAGE SPECIFICATIONS

Nominal Coil VDC	Must Operate VDC	Min. Holding VDC	Max. Coil VDC	Resistance Ohm $\pm 10\%$
5	3.75	1.75	6.0	11.8
9	6.75	3.15	10.8	38.4
12	9.0	4.2	14.4	68.5
24	18.0	8.4	28.8	274
48	36.0	16.8	57.6	1096

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

ORDERING DATA

AZEV140-1AE - D

Nominal coil voltage
see coil voltage specifications table

Signal contact

nil: without signal contact

1BG: equipped with 1 Form B signal contact

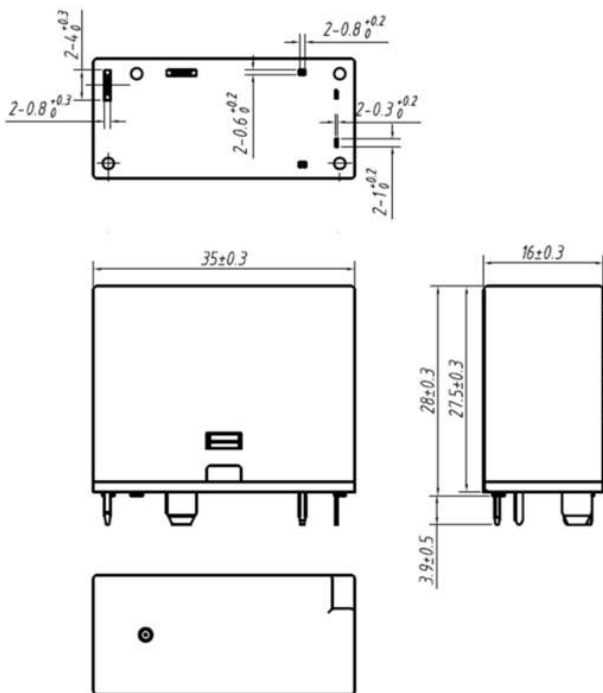
Example ordering data

AZEV140-1AE-24D Without signal contact, 24VDC coil

AZEV140-1AE1BG-12D With 1 Form B signal contact, 12VDC coil

MECHANICAL DATA

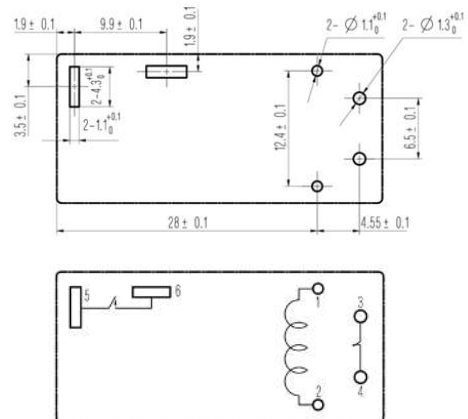
Dimensions in mm. Pin dimensions given without tin coating.



CAD data in attachment of the datasheet.

PC BOARD LAYOUT / WIRING DIAGRAMS

Layout and footprint recommendation. Viewed towards terminals.
Dimensions in mm.



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

- All values at reference temperature of 23°C (73°F) unless stated otherwise.
- Relay may pull in with less than "Must Operate" value.
- "Maximum Coil Voltage" is the maximum voltage the coil can endure for a short period of time.
- Coil suppression circuits such as diodes, etc. in parallel to the coil will lengthen the release time. We recommend to use coil suppression circuits with a reverse breakdown voltage of around 3 times the nominal coil voltage to achieve a fast release time.
- For applications requiring long term high current carrying, we recommend to reduce the coil energization to around half of the nominal coil voltage as holding voltage.
- For the gold plated signal contact a minimum load of 10mA/5V/50mW is recommended.
- Provide sufficient PCB cross section at Form A load terminals as a heat spreader to dissipate power loss from contact resistance.
- Relay adjustment may be affected if excessive shock is applied to the relay or if undue pressure is exerted on the relay case. Dropped relays must not be used anymore.
- 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.
- RTII (flux proof) relays must not be washed, immersion cleaned or conformal coated.
- During storage, transport and usage, ensure a dry, non-condensing and non-icing environment.
- Substances containing silicone or phosphorus must be avoided in the vicinity to the relay as these will shorten its service life.
- Avoid corrosive gases near the relay. Contact corrosion will lead to malfunction.
- Specifications subject to change without notice.

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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.

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