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	SPST-NO (1 Form A)
signal contact	SPST-NC (1 Form B) coupled to load contact

Ratings (max.)	(resistive load)
load contact	
switched power	22000 VA
switched current	50 A
switched voltage	440 VAC
signal contact	
switched current	10 mA at 12 VDC
minimum load	10 mA, 5 VDC, 50mW

Approved ratings	(UL/CUR/TÜV/CQC)
load contact	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
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

Contact resistance	
load contact	
initial	≤ 50 mΩ
typical	< 3 mΩ

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

GENERAL DATA

Life Expectancy	(minimum operations)
mechanical	1 x 10^5
electrical	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	(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) ≥ 1.85 kA , ≥ 4.5 kA²s (based on requirements of IEC 62955)

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	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	E365652
TÜV	B 088793 0016
CQC	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 ± 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
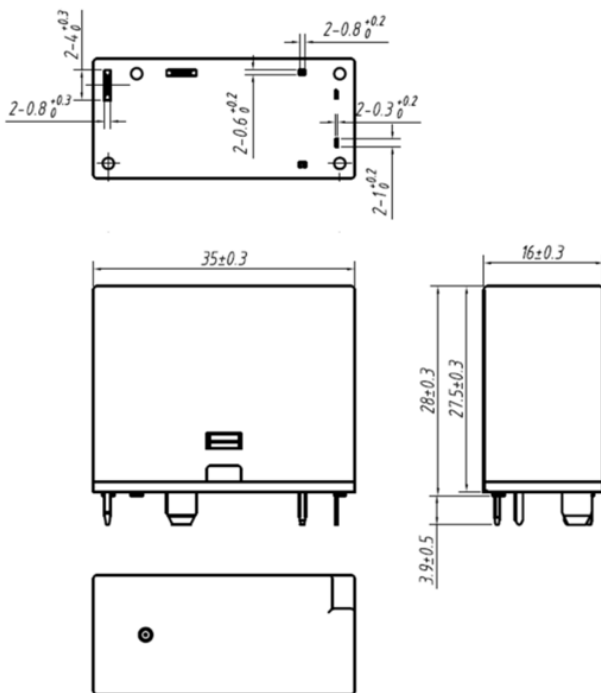1BG: equipped with 1 Form B signal contact

Example ordering data

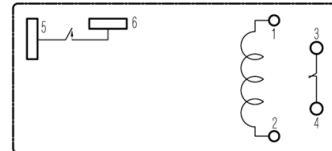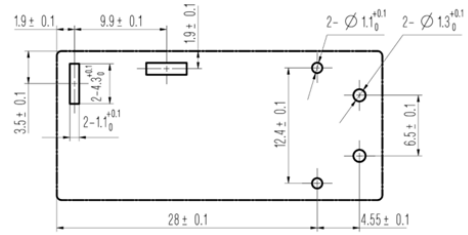|	
AZEV140-1AE-24D	Without signal contact, 24VDC coil
AZEV140-1AE1BG-12D	With 1 From B signal contact, 12VDC coil

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

1. All values at reference temperature of 23°C (73°F) unless stated otherwise.
2. Relay may pull in with less than "Must Operate" value.
3. "Maximum Coil Voltage" is the maximum voltage the coil can endure for a short period of time.
4. 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.
5. 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.
6. For the gold plated signal contact a minimum load of 10mA/5V/50mW is recommended.
7. Provide sufficient PCB cross section at Form A load terminals as a heat spreader to dissipate power loss form contact resistance.
8. 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.
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. RTII (flux proof) relays must not be washed, immersion cleaned or conformal coated.
11. During storage, transport and usage, ensure a dry, non-condensing and non-icing environment.
12. Substances containing silicone or phosphorus must be avoided in the vicinity to the relay as these will shorten its service life.
13. Avoid corrosive gases near the relay. Contact corrosion will lead to malfunction.
14. Specifications subject to change without notice.

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AZEV140

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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