

Ac Power Relays

EVR Series

40 A • 277 V ac



Description

The EVR Series printed circuit board (PCB) two-pole (2P) ac power relay is designed to switch EV charging applications on and off. Its extended contact gap of greater than 3 mm provides better isolation and allows for usage in higher elevation environments. The very compact form factor has a low temperature rise and heavy-duty power switching current up to 40 A/277 V ac. This relay family enables compliance with all EV charging infrastructure standards such as IEC 62955, IEC 62752 and UL 2231.

Features & Benefits

FEATURES	BENEFITS
Low contact resistance	Low temperature rise at rated current
Contact rating up to 40 A	Suitable for Mode 2 and Mode 3 EV charging defined by IEC 61851-1 and Ac Level 2 EV charging defined by SAE J1772
Meets requirements in IEC 62752, IEC 62955, and UL 2231*	Single form factor supports global standards and simplifies inventory
Certified to IEC 61810-1: Contact load category CC 2 50,000 cycles @ 85 °C (185 °F) for 35 A load	Enables compliance to IEC 61851-1 for switching of main current path
Mirror contact mechanism according to IEC 60947-4-1	Enables detection of power contacts welding
Contact gap > 3 mm	Meets overvoltage category III requirement and provides enhanced protection against shock and vibration for added safety and longevity
Load switching endurance: 40 A load: 10,000 cycles @ 85 °C (185 °F) 35 A load: 50,000 cycles @ 85 °C (185 °F)	Provides longer lifetime expectancy
PCB terminals	Offers easy installation onto PCBs, enabling high-speed assembly and replacement of DIN rail-mounted ac contactors and associated wiring & assembly
Compact size	Smaller footprint than two single-pole relays for similar current rating adding design flexibility

*Can be easily paired with residual current monitoring (RCM) solutions from Western Automation, now part of Littelfuse

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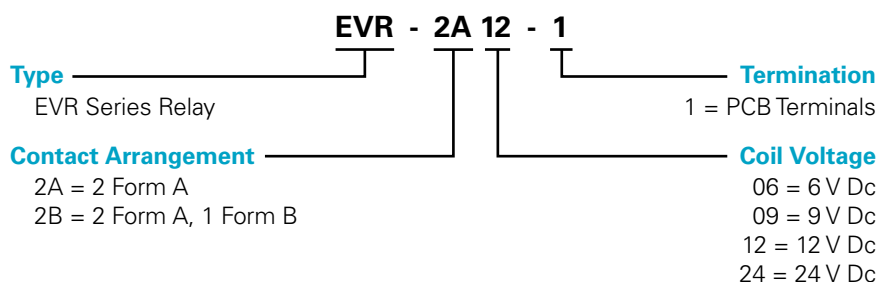
Applications

- EV charging station (charging pile)
- Ac wallbox
- In-Cable Control Box (ICCB)

Certification & Compliance

TUV	File No. R 50621288
CQC	Certificate No. CQC24002424257
cURus	File No. E536699
RoHS	Directive 2011/65/EU
REACH	Regulation (EC) 1907/2006
Pb free	Yes

Part Numbering System



Contact Specifications

PARAMETER		SPECIFICATION
Contact Arrangement		2 Form A (2A) or 2 Form A, 1 Form B (2A1B)
Form A	Contact Material	AgSnO ₂
	Contact Resistance	10 mΩ max @ 6 V dc, 1 A 2 mΩ initial typical @ 6 V dc, 1A
	Contact Rating	40 A @ 277 V ac resistive
Form B	Contact Material	AgNi
	Contact Resistance	100 mΩ max @ 6 V dc, 1 A
	Contact Rating	1 A @ 277 V ac or 30 V dc

Coil Specifications @ 23 °C (73 °F)

RATED COIL VOLTAGE	MAXIMUM OPERATE VOLTAGE	MINIMUM RELEASE VOLTAGE	COIL RESISTANCE (± 10%)	NOMINAL OPERATING POWER	HOLDING POWER
6 V dc	4.5 V dc	0.30 V dc	19.1 Ω	1.88 W	0.17 W
9 V dc	6.75 V dc	0.45 V dc	43.1 Ω		
12 V dc	9 V dc	0.60 V dc	76.6 Ω		
24 V dc	18 V dc	1.2 V dc	306.4 Ω		

Insulation System	Class F, 155 °C (311 °F) maximum temperature
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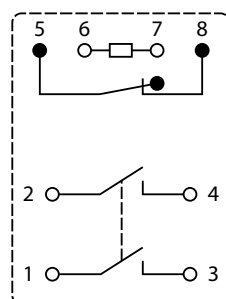
General Specifications

PARAMETER		SPECIFICATION
Electrical Life		10 x 10 ³ cycles – 40 A, 277 V ac resistive @ 85 °C (185 °F), 1s on, 9s off 50 x 10 ³ cycles – 35 A, 277 V ac resistive @ 85 °C (185 °F), 1s on, 9s off
Mechanical Life		1 million cycles minimum
Insulation Resistance		1000 mΩ min. (@ 500 V dc)
Short Circuit Capability ¹	Based on IEC 62752	Test condition: ≥ 1.50 kA; ≥ 6.0 kA ² s; I _{nc} = 1.5 kA
	Based on IEC 62955	Test condition: ≥ 2.05 kA; ≥ 5.0 kA ² s; I _{nc} = 4.5 kA
	Based on UL 2231	Test condition: ≥ 2.05 kA; ≥ 5.0 kA ² s; I _{nc} = 4.5 kA
Dielectric Strength	Between Form A Contacts	2,000 V ac for 1 min (10 mA)
	Between Form A Contacts & Coil	5,000 V ac for 1 min (10 mA)
	Between Form A Contact Sets	5,000 V ac for 1 min (10 mA)
	Between Open Form B Contacts	1,000 V ac for 1 min (10 mA)
	Between Form B Contacts & Coil	2,000 V ac for 1 min (10 mA)
	Between Form A and Form B Contacts	5,000 V ac for 1 min (10 mA)
Surge Voltage	Between Form A Contact & Coil	10,000 V (1.2 x 50 μs)
	Between Form B Contact & Coil	2,500 V (1.2 x 50 μs)
Shock Resistance	Functional	98 m/s ² (half-sine shock pulse: 11 ms, detection time: 10 μs)
	Destructive	980 m/s ² (half-sine shock pulse: 6 ms)
Vibration Resistance	Functional	10 to 55 Hz (@ double amplitude of 1 mm, detection time: 10 μs)
	Destructive	10 to 55 Hz (@ double amplitude of 1.5 mm)
Weight		65 grams (2.29 ounces)
Country of Origin		China

¹Short circuit withstand compliance with IEC 62752, IEC 62955, and UL 2231 is a function of both relay design and PCB layout. Please contact your local Littelfuse support for important application notes and suggestions.

Wiring Schematics

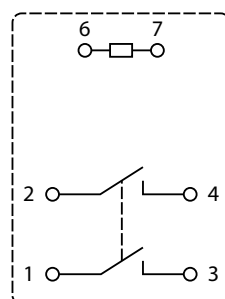
2 Form A, 1 Form B



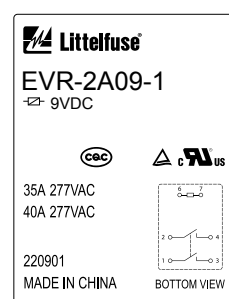
Product Markings



2 Form A



Product Markings

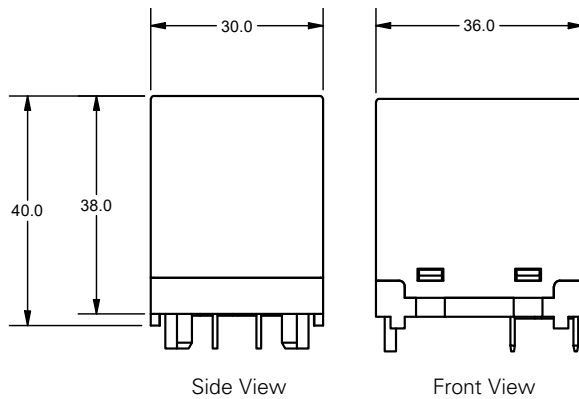


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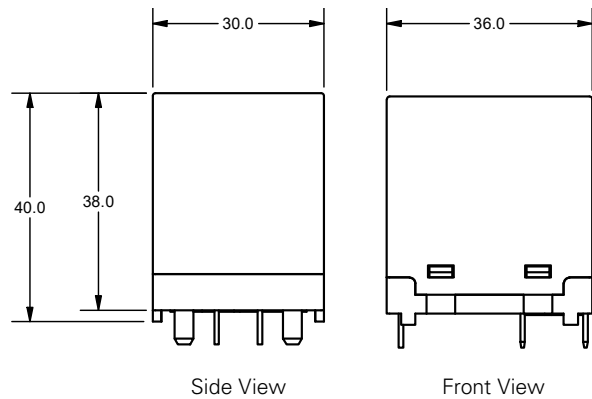
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Dimensions in Millimeters

2 Form A, 1 Form B

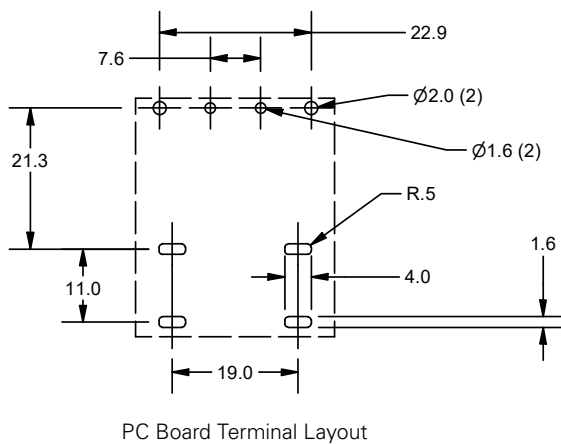


2 Form A

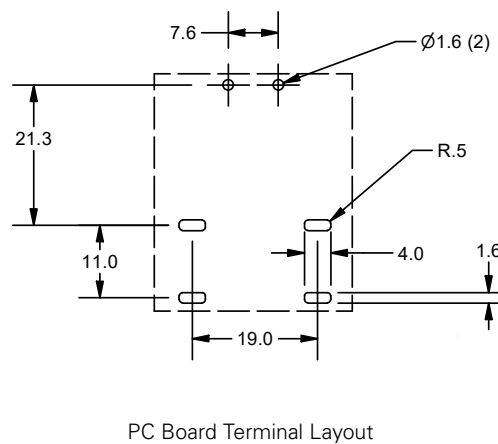


PCB Recommended Footprint

2 Form A, 1 Form B



2 Form A



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