

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

Ac Power Relays

EVR Series

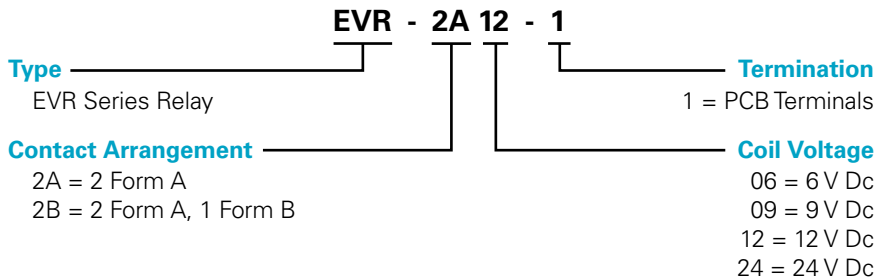
Applications

- 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

Ac Power Relays

EVR Series

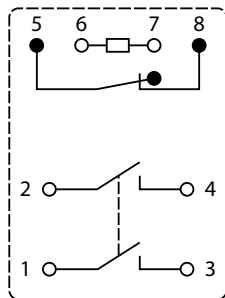
General Specifications

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)
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

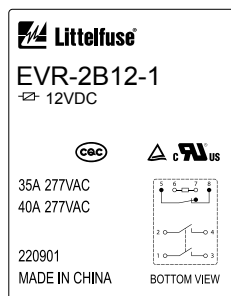
¹Short circuit withstand compliance with IEC 62752, IEC 62955, and UL 2231 is a function of both relay design and PCB layout. Please contact your local Littelfuse support for important application notes and suggestions.

Wiring Schematics

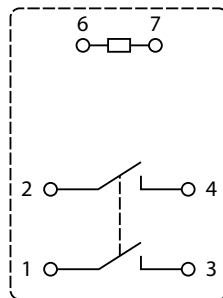
2 Form A, 1 Form B



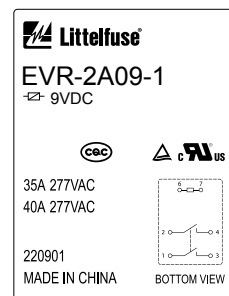
Product Markings



2 Form A



Product Markings

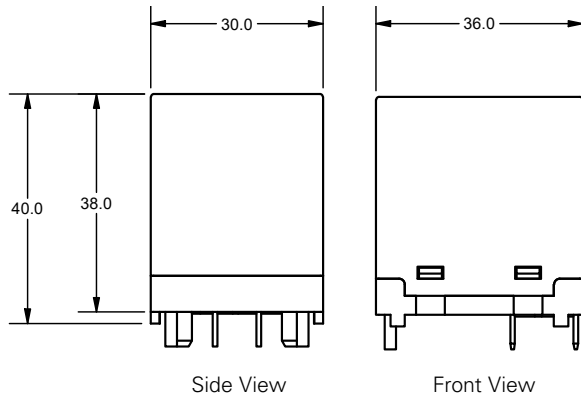


Ac Power Relays

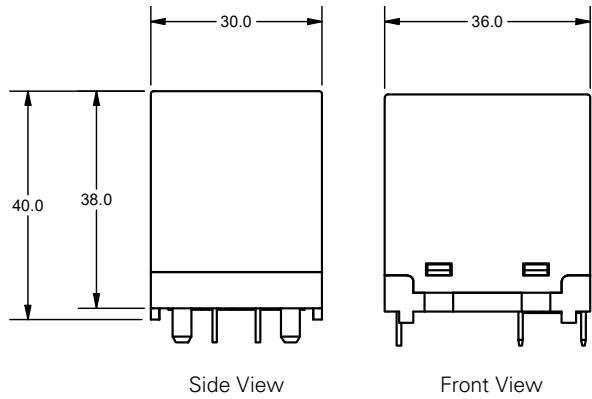
EVR Series

Dimensions in Millimeters

2 Form A, 1 Form B

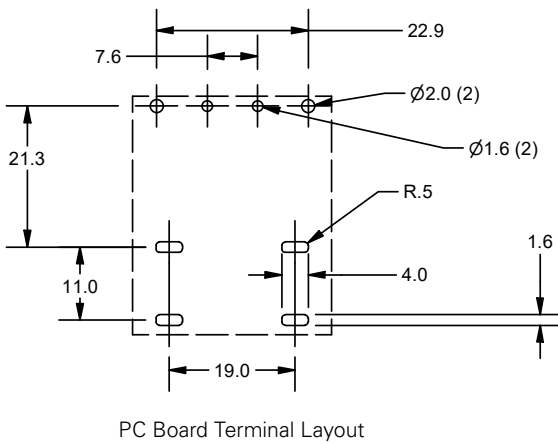


2 Form A

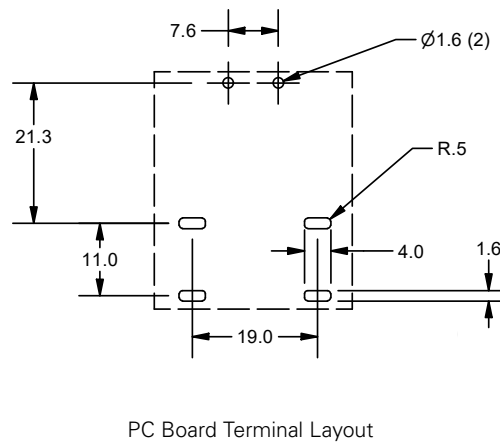


PCB Recommended Footprint

2 Form A, 1 Form B



2 Form A



Disclaimer Notice – Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/product-disclaimer.