Littelfuse Expertise Applied | Answers Delivered

C € (Ψ)

DCNLEV100 SERIES HIGH CURRENT HIGH VOLTAGE DC CONTACTOR RELAY



Description

High current and high voltage DC contactor relays for electric vehicle applications such as battery power supply, charging pill, motor control, circuit insulation, circuit protection, and also safety devices for industrial machinery. Available with polarized and non-polarized contacts to best suit electrical systems' polarity.

Features and Benefits

- High current (100A) and high voltage (750V) contactor for EV applications
- Compact structure, helping reduce noise when turned on
- Sealed IP67, gas-filled relay which mitigates arcing
- No mounting orientation restrictions
- Designed and manufactured under the IATF16949 certification for Automotive Quality Systems.
- Designed specifically for automotive applications.

Applications

- Battery Electric Vehicles
- Hybrid Electric Vehicles
- Material Handling
- Electric Maintenance and Transport Vehicles
- Industrial applications

Ordering Information

Please see page 2 for more information

Specifications Overview

•				
Amperage:	100A Continuous Carry			
Housing:	Nylon UL 94-V0			
Voltage Rating:	750V			
Output Connectors:	M5 Bolt and Lockwasher Connections			
Connectors:	Wire Leads for Control Circuit			
Ingress Protections:	IP67			
Operating Temperature:	-40 to 85°C			
Circuitry:	SPST NO			
Coil Voltage:	B: 12V DC Nominal, 8-16V DC Working C: 24V DC Nominal, 16-28V DC Working E: 48V DC Nominal, 33-52V DC Working			
Max Coil Inrush Current:	B: 461mA Max to Coil C: 250mA Max to Coil E: 122mA Max to Coil			
Mounting:	M4 with Compression Limiters			
Size:	46mm x 53mm x 53mm			
Mounting Bolt Torque:	2.3 Nm (20 in-lb)			
Contact Torque:	3.4 - 4.5 Nm (30 - 40 in-lb)			
Terminals:	M5 Silver Plated Copper			

Web Resources

Approvals:

Download 2D print and technical resources at: littelfuse.com/DCNLEV100

UL File No. E510407 Recognized



DCNLEV100 SERIES HIGH CURRENT HIGH VOLTAGE DC CONTACTOR RELAY

Ordering Information

PART NUMBER	DESCRIPTION	COIL VOLTAGE 12V DC	COIL VOLTAGE 24V DC	COIL VOLTAGE 48V DC	AUXILIARY CONTACT SPST-NO	BOTTOM MOUNT	SIDE MOUNT	NON-POLARIZED TERMINALS
DCNLEV100-B	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals	•				•		
DCNLEV100-BA	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit with Polar Load Terminals	•			•	•		
DCNLEV100-BAN	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit & Non-Polar Load Terminals	•			•	٠		•
DCNLEV100-BAS	High Voltage DC Contactor Relay Side Mount with Auxiliary Circuit with Polar Load Terminals	•			•		•	
DCNLEV100-BASN	High Voltage DC Contactor Relay Side Mount with Auxiliary Circuit & Non-Polar Load Terminals	•			•		•	•
DCNLEV100-BN	High Voltage DC Contactor Relay Bottom Mount with Non-Polar Load Terminals	•				•		•
DCNLEV100-BS	High Voltage DC Contactor Relay Side Mount with Polar Load Terminals	•					•	
DCNLEV100-BSN	High Voltage DC Contactor Relay Side Mount with Non-Polar Load Terminals	•					•	•
DCNLEV100-C	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals		٠			٠		
DCNLEV100-CA	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit with Polar Load Terminals		•		•	•		
DCNLEV100-CAN	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit & Non-Polar Load Terminals		•		•	•		•
DCNLEV100-CAS	High Voltage DC Contactor Relay Side Mount with Auxiliary Circuit with Polar Load Terminals		•		•		•	
DCNLEV100-CASN	High Voltage DC Contactor Relay Side Mount with Auxiliary Circuit & Non-Polar Load Terminals		•		•		•	•
DCNLEV100-CN	High Voltage DC Contactor Relay Bottom Mount with Non-Polar Load Terminals		•			•		•
DCNLEV100-CS	High Voltage DC Contactor Relay Side Mount with Polar Load Terminals		•				•	
DCNLEV100-CSN	High Voltage DC Contactor Relay Side Mount with Non-Polar Load Terminals		•				•	•
DCNLEV100-E	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals			•		٠		
DCNLEV100-EA	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit with Polar Load Terminals			•	•	•		
DCNLEV100-EAN	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit & Non-Polar Load Terminals			•	•	•		•
DCNLEV100-EAS	High Voltage DC Contactor Relay Side Mount with Auxiliary Circuit with Polar Load Terminals			•	•		•	
DCNLEV100-EASN	High Voltage DC Contactor Relay Side Mount with Auxiliary Circuit & Non-Polar Load Terminals			•	•		•	•
DCNLEV100-EN	High Voltage DC Contactor Relay Bottom Mount with Non-Polar Load Terminals			•		•		•
DCNLEV100-ES	High Voltage DC Contactor Relay Side Mount with Polar Load Terminals			•			•	
DCNLEV100-ESN	High Voltage DC Contactor Relay Side Mount with Non-Polar Load Terminals			•			•	•

* Box Packaging Available



DCNLEV100 SERIES HIGH CURRENT HIGH VOLTAGE DC CONTACTOR RELAY



Estimated Make Break Chart

Electrical Diagram



Dimensions in MM

Side Mount





Bottom Mount



DCNLEV100 SERIES HIGH CURRENT HIGH VOLTAGE DC CONTACTOR RELAY

Performance Data

MAIN CONTACT				
Contact arrangement	1 Form X (SPST-NO, DM)			
Rated Operating Voltage	12-750VDC			
Continuous (Carry) Current	100A*1			
Short term	200A (3 minutes)*2			
Max short circuit current	1,250A (½ cycle, 60Hz)			
Dielectric Withstanding Voltage	Between Contacts: 2500VDC, ≤1mA			
	Contact to Coil: 2,200Vrms, ≤1mA			
Insulation Resistance	Terminal to Terminal/Terminal to coil			
	New: Min 100 MΩ @500Vdc End of life: Min 50 MΩ @500Vdc			
Voltage Drop (@100A)	≤80mV			
*1: Current is relevant to the cross sectional area of conductor				

1: Current is relevant to the cross-sectional area of conductor

*2: Ambient temperature: +40°C, 3 minutes

COIL DATA					
Voltage rating	12Vdc	24Vdc	48Vdc		
Voltage (Max.)	16Vdc	28Vdc	52Vdc		
Pickup voltage (20 °C)	8Vdc	16Vdc	33Vdc		
Dropout voltage (20 °C)	1.2Vdc	2.4Vdc	4.8Vdc		
Coil current (20°C, voltage rating, nominal)	461mA	250mA	122mA		
Coil wattage (20°C, voltage rating, nominal)	5.5W	6.0W	6.0W		
Max pickup voltage (85°C)	9.6Vdc	19.2Vdc	38.4Vdc		
Rated coil resistance±5% (20°C)	26 Ω	96 Ω	392 Ω		
		•			

MAX. SHORT CIRCUIT

1,250A, 1sec

1,250A@320VDC, 1 cycle



MAX. BREAKING LIMIT



LIFC						
Electrical Life	See estimated make break chart					
Mechanical life	200,000 cycles					
OPERATE / RELEASE TIME						
Close (includes bounce)	25ms, Max.					
Release	10ms, Max.					
ENVIRONMENTAL DATA						
Shock, 11ms ½ sine, operating	20G Peak					
Vibration, Sine, Peak, 20G	80—2,000Hz					
Operating Ambient Temperature	-40 to +85°C					
Weight	0.42 Lb (0.19 kg)					
AUX. CONTACT						

elfuse

Expertise Applied Answers Delivered

Aux. Contact Arrangement	1 Form A
Aux. Contact Current Max	2A@30VDC/ 3A@125VAC
Aux. Contact Current Min	100mA@8V
Max. Contact Resistance	0.417Ω@30VDC 0.150Ω@125VAC

	POLARIZ	ZED LOAD	NON-POLARIZED LOAD			
Voltage (VDC)	650	450	650	450		
Current(A)	100	100	100	100		
Electrical Life (cycles)	2,000	10,000	1,000	10,000		

Application Note:

- Be sure to use washer to prevent screws from loosening, all the terminals or copper bar must be in direct contact with the contactor's terminals. Screw tightening torque is specified below. Exceeding the maximum torque can lead to product failure.
 - Contact torque: 30 40 lb.in (3.4 4.5 N.m) Max. Active length of thread is 7.0 mm
 - Mounting torque: 20 lb.in (2.3 N.m)
- 2. Contact terminals are polarized so refer to drawing during connecting. We suggest using a varistor rather than diode as a surge protector.
- 3. Do not use if dropped.
- Avoid installing in a strong magnetic field (close to a transformer or magnet), or near a heat source.
- 5. Electrical life

Use per load capability and life cycle limits so as not to cause a function failure (treat the contactor as a product with specified life and replace it when necessary). It is possible to make parts burn around the contactor once operating failure occurs. It is necessary to take layout into account and to make sure power shall be cut off within 1 second.

6. Lifetime of internal gas diffusion

The contactor is sealed and filled with gas, lifetime of gas diffusion is determined by temperature in contact chamber (ambient temperature + temperature generated by contact operation). Operate only in an ambient temperature from -40 to +85 °C.

- 7. Drive power must be greater than coil power or it will reduce performance capability.
- 8. Avoid debris or oil contamination on the main terminals to optimize contact and avoid excess heat generation.