Littelfuse
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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
Approvals:	UL File No. E510407 Recognized

Web Resources

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

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Ordering Information

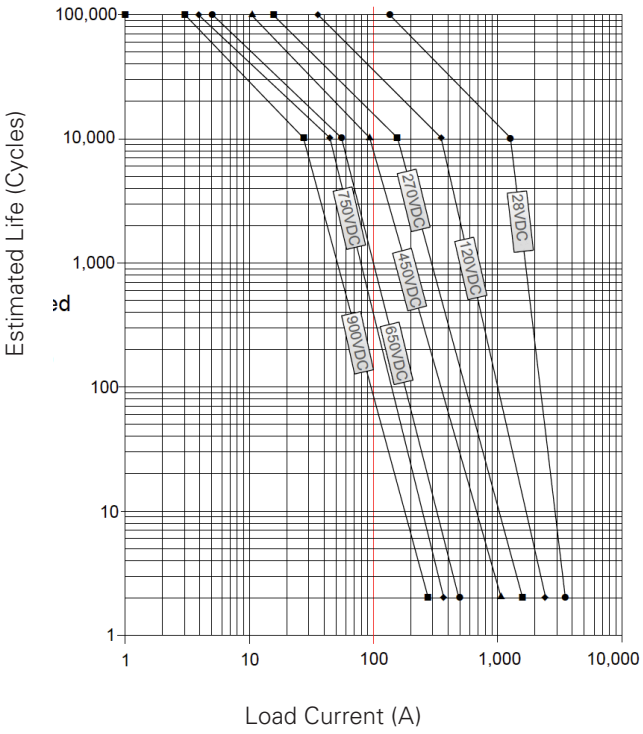
PART NUMBER	DESCRIPTION	COIL VOLTAGE 12V DC	COIL VOLTAGE 24V DC	COIL VOLTAGE 48V DC	AUXILIARY CONTACT SPST-NO	BOTTOM MOUNT	SIDE MOUNT	NON-POLARIZED TERMINALS
DCNLEV100-B	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals	●				●		
DCNLEV100-BA	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit with Polar Load Terminals	●			●	●		
DCNLEV100-BAN	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit & Non-Polar Load Terminals	●			●	●		●
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		●			●		
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			●		●		
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

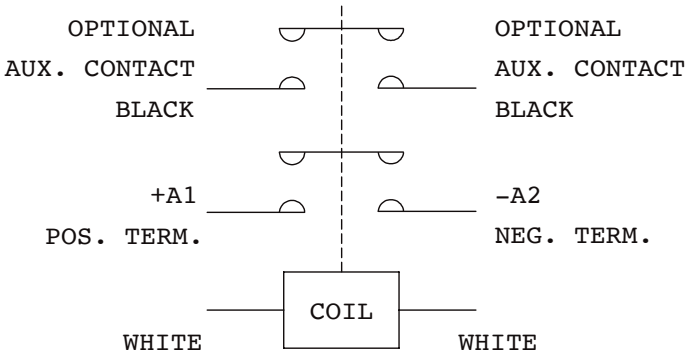
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Estimated Make Break Chart

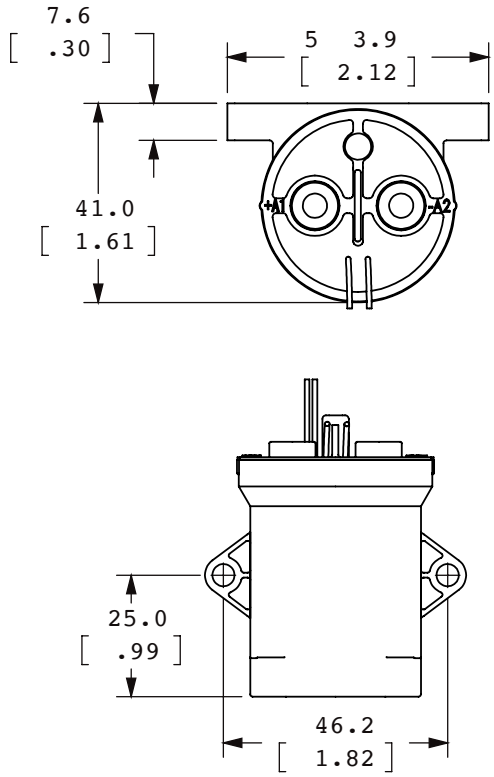


Electrical Diagram

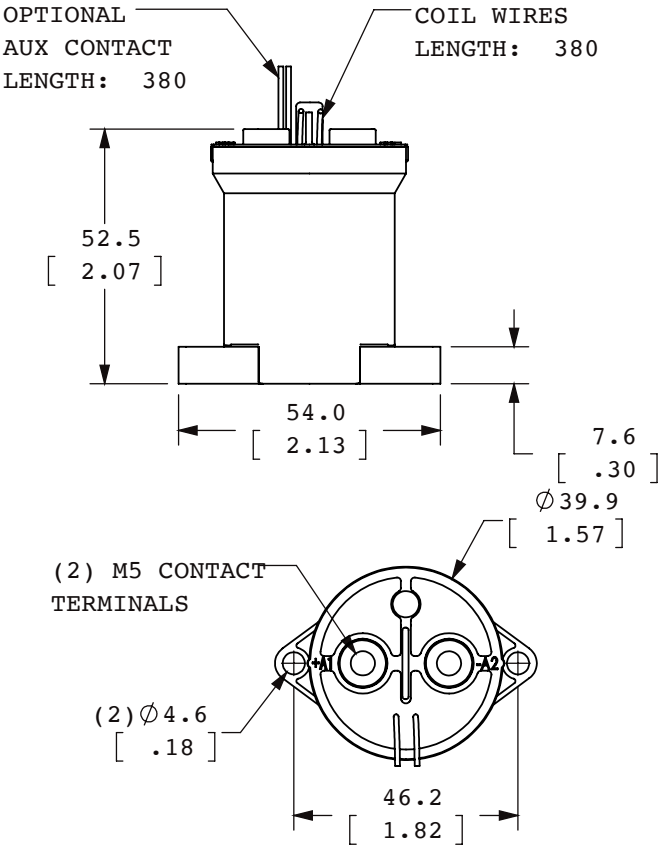


Dimensions in MM

Side Mount



Bottom Mount



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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.
*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. BREAKING LIMIT	MAX. SHORT CIRCUIT
1,250A@320VDC, 1 cycle	1,250A, 1sec

LIFE	
Electrical Life	See estimated make break chart
Mechanical life	200,000 cycles

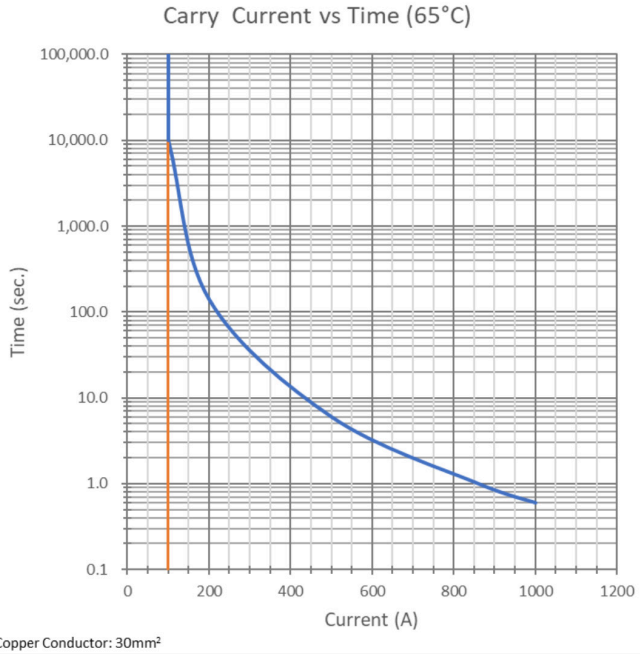
OPERATE / RELEASE TIME	
Close (includes bounce)	25ms, Max.
Release	10ms, Max.

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	
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

	POLARIZED 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

Current vs Time Curve



Copper Conductor: 30mm²

Application Note:

1. 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.
4. 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.

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