DCNSEV30 SERIES HIGH CURRENT HIGH VOLTAGE DC CONTACTOR RELAY

Applications

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

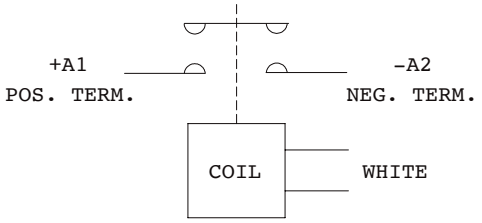
Features and Benefits

- High current (30A) and high voltage (900V) 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.

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.

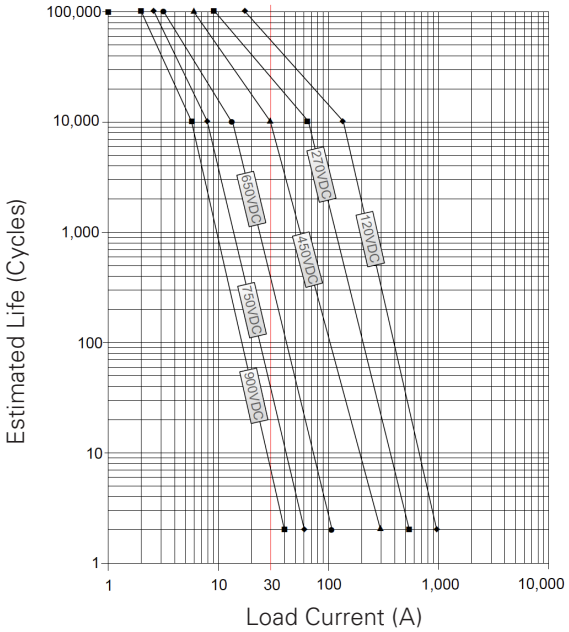
Electrical Diagram



Specifications Overview

Amperage:	30A Continuous Carry
Housing:	Nylon UL 94-V0
Voltage Rating:	12-900V
Output Connectors:	M5 Bolt and Lockwasher Connections (not supplied)
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, 18 - 28V DC Working
Max Coil Inrush Current:	**B:** 500mA Max to coil **C:** 250mA Max to coil
Mounting:	M4 with Compression Limiters (not supplied)
Size:	54mm x 40mm x 45mm
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

Estimated Make Break Chart



Ordering Information

PART NUMBER	DESCRIPTION	COIL VOLTAGE 12V DC	COIL VOLTAGE 24V DC	BOTTOM MOUNT
DCNSEV30-B	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals	●		●
DCNSEV30-C	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals		●	●

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Performance Data

MAIN CONTACT	
Contact arrangement	1 Form X (SPST-NO, DM)
Rated Operating Voltage	12-900VDC
Continuous (Carry) Current	30A*1
Short term	50A (3 minutes)*2
Max short circuit current	1,250A (½ cycle, 60Hz) (through closed contacts)
Dielectric Withstanding Voltage	Between open contacts: 5,600Vrms/8,000Vdc Between contact and coil: 2,200Vrms/4,000Vdc
Insulation Resistance	Terminal to Terminal/Terminal to coil New: Min 100 MΩ @500Vdc End of life: Min 50 MΩ @500Vdc
Voltage Drop (@30A)	≤60mV

1: Current is relevant to the cross-sectional area of conductor.
2: Ambient temperature: +40˚C, 3 minutes

COIL DATA		
Voltage rating	12Vdc	24Vdc
Pickup voltage (25˚C)	8Vdc	18Vdc
Dropout voltage (25˚C)	1.2Vdc	2.4Vdc
Max Pickup voltage (85˚C)	9.6Vdc	19Vdc
Rated coil resistance±5% (25˚C)	25Ω	92Ω
Coil watts (25˚C)	6.0W	6.0W

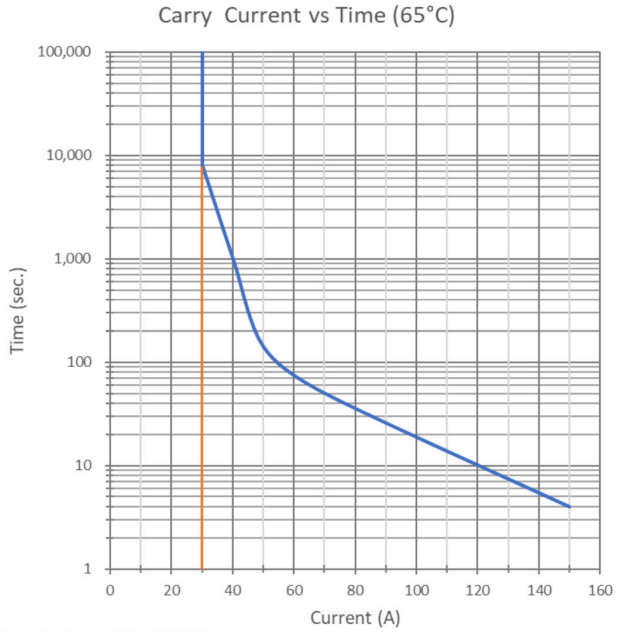
LIFE	
Electrical life	See estimated make break chart
Mechanical life	200,000 cycles

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

MAX. BREAKING LIMIT	MAX. SHORT CIRCUIT
300A@320VDC, 1 cycle	300A, 1 sec

ENVIRONMENTAL DATA	
Shock, 11ms ½ sine, operating	20G Peak
Vibration, Sine, Peak, 20G	55—2,000Hz
Operating Ambient Temperature	-40 to +85˚C
Noise	(@100mm) 70dB(a)
Altitude	<4000m
Weight	0.28 Lb (0.13 kg)

Current vs Time Curve



Copper Conductor: 8.4mm² (8 AWG)

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.
9. After continuous rated voltage / current has been applied to the coil and contacts, turning off the coil and immediately re-energizing the coil will result in a higher pick-up voltage than the rated value. This is due to increased coil resistance (coil temperature rise) of the device.

Web Resources

Download 2D print and technical resources at:
littelfuse.com/DCNSEV30