

# DCNHE300 Series

## 1000V DC Max Contactor Relays



DCNHE300NFA-B



DCNHE300NFA-F

### Description

The DCNHE300 Series high-voltage DC contactor relay is designed for electric vehicle and industrial applications, including battery power supply, charging systems, motor control, circuit isolation, and circuit protection. Its compact, corrosion-resistant resin housing ensures reliable performance in harsh environments. Sealed contacts prevent contamination and electrical arc leakage, providing maximum safety and long-term reliability.

Supporting 300A continuous current—or up to 500A when using 400 MCM cable—the SPST normally open (NO) contact circuitry handles a maximum voltage of 1000V DC. A PWM coil design reduces power consumption and heat generation during operation. The DCNHE300 Series contactor is offered with non-polarized load terminals in internal-thread or stud terminal configurations, along with a 12–36V DC coil voltage rating, delivering flexible, high-performance DC switching for demanding applications.

### Web Resources

Download 2D print, installation guide and technical resources at: [littelfuse.com/DCNHE300](http://littelfuse.com/DCNHE300)

### Specifications

<b>Rating Continuous Current</b>	300A (500A with 400MCM cable)
<b>Contact Max. Voltage</b>	1000V DC
<b>Contact Circuitry</b>	SPST NO
<b>Ingress Protection</b>	Main Contacts IP67, PCBA IP54
<b>Contacts Material</b>	Copper Alloy
<b>Terminals</b>	M6 or M8 Stud Silver Plated Copper
<b>Contact Torque</b>	M6 Bolt: 6–8N·m or M8 Stud: 8–10N·m
<b>Housing</b>	Nylon UL 94-V0
<b>Coil Connector</b>	Wire Leads for Control Circuit
<b>Coil Type</b>	Single (PWM)
<b>Mounting Method</b>	M5 Bolt
<b>Mounting Torque</b>	M5 Bolt: 2.5–3.5N·m
<b>Normal Position</b>	Any Mounting Position
<b>Approvals:</b>	
UL File Number:	E47258 Recognized
CE:	EN 60947-4-1, 2018

### Applications

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

### Features and Benefits

- High voltage (1000V) contactor for EV applications
- Compact structure, helping reduce noise when turned on
- Resin housing provides corrosion resistance in harsh automotive environments
- Sealed contacts with no leakage of electrical arc for maximum safety
- No mounting orientation restrictions
- RoHS and REACH compliant
- Available with mechanically linked auxiliary contacts

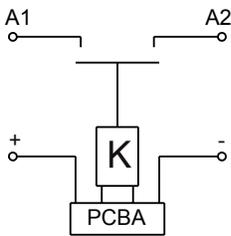
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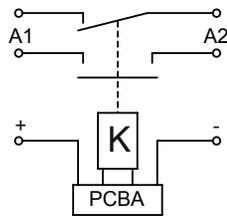
### Ordering Information

PART NUMBER	RATED CURRENT(A)	POLARIZED	AUX. CONTACT	COIL VOLTAGE(V DC)	MOUNTING	POWER CONNECTION
DCNHE300MFA-B	300	No	Yes	12-36	Bottom	Stud Terminal
DCNHE300MFA-F	300	No	Yes	12-36	Bottom	Internal Thread
DCNHE300NFA-B	300	No	No	12-36	Bottom	Stud Terminal
DCNHE300NFA-F	300	No	No	12-36	Bottom	Internal Thread

### Electrical Diagrams



DCNHE300NFA



DCNHE300MFA

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### Performance Data

MAIN CONTACT	
Contact Arrangement	1 Form, SPST-NO
Operating Voltage	12-1000V DC
Continous Current	300A (500A with 400MCM cable)
Max Short Circuit	2000A, 1sec
Max Breaking Limit	2500A@320V DC, 1cycle
Dielectric Withstanding Voltage	Between open contacts: 4000V AC, ≤1mA,1min Between contact and coil and Aux. contact: 2200V AC, ≤1mA,1min
Insulation Resistance	100 MΩ@1000V DC End of Life: Min. 50 MΩ@1000V DC
Contact Voltage Drop	≤120mV@300A

COIL DATA	
Rating Voltage	12-36V DC
Pickup Voltage (25°C)	8-9V DC
Release Voltage (25°C)	5.5-7V DC
Starting Power (25°C)	50W
Holding Power (25°C)	4W

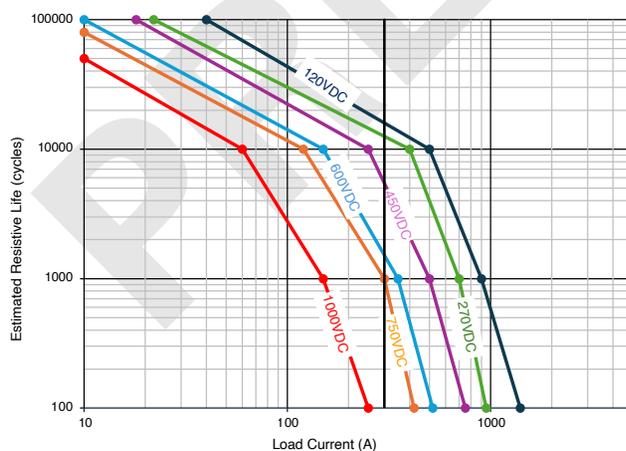
LIFE	
Electrical Life	See estimated make break chart
Mechanical Life	300,000 cycles

OPERATE / RELEASE TIME	
Pickup Time(includes bounce)	≤35ms
Release Time	≤10ms

ENVIRONMENTAL DATA	
Shock, 11ms ½ Sine, Operating	20g, Peak
Vibration, Sine	10-500Hz, 5g, Peak
Operating Temperature	-40°C~+85°C
Humidity	5%-85%RH
Weight	650g

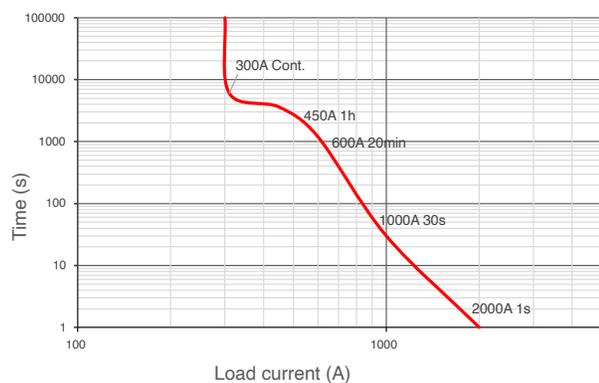
AUX. CONTACT	
Aux. Contact Arrangement	1 Form A
Aux. Contact Current Max.	2A@30V DC/3A@125V AC
Aux. Contact Current Min.	100mA@8V DC
Max. Contact Resistance	300mΩ

### Estimated Make Break Chart



Note: Electrical life rating is based on resistive load with 27μH maximum inductance in circuit. Because your application may be different, we suggest you test the contactor in your circuit to verify life is as required.

### Carry Current vs Time Chart 65°C Chart

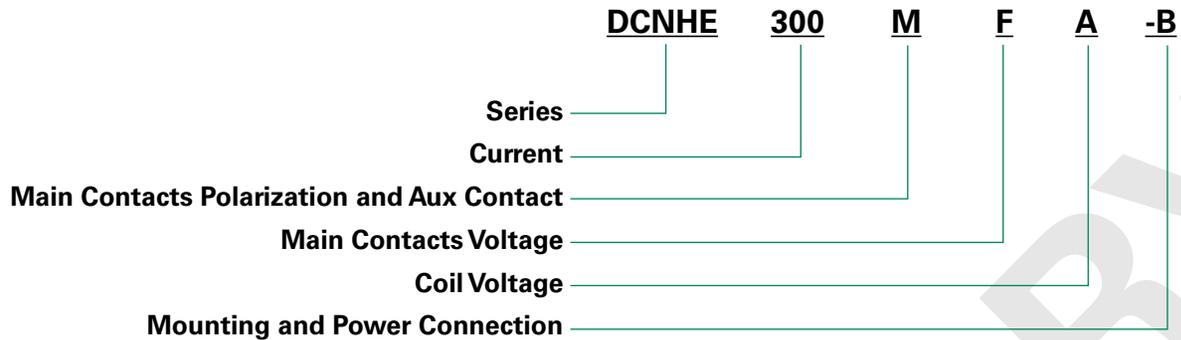


Note: The above data was tested at 65°, cross-sectional area of the wire≥100mm²

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### Part Number System



MAIN CONTACTS POLARIZATION AND AUX CONTACT		
	POLARIZED?	INCLUDE AUX CONTACT?
N:	No	No
M:	No	Yes

MAIN CONTACT TEST VOLTAGE		
F:	450	V DC

COIL VOLTAGE		
A:	12~36	V DC

MOUNTING		POWER CONNECTION
B:	Bottom	Stud Terminal
F:	Bottom	Internal Thread

- 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: M6 Bolt (6 ~8) N.m or M8 Stud(8 ~10) N.m.
  - Mounting torque: M5 Bolt (2.5~3.5) N.m.
- The contact terminals are non-polarized and the coil wires are polarized. For correct wiring, please refer to the provided schematic diagram.
- We suggest using a varistor rather than diode as a surge protector.
- Avoid installing in a strong magnetic field (close to a transformer or magnet), or near a heat source.
- 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.
- 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°C to +85°C.
- Drive power must be greater than coil power or it will reduce performance capability.
- Avoid debris or oil contamination on the main terminals to optimize contact and avoid excess heat generation.
- Applications with capacitors will require a pre-charge circuit.