DCNHE350 Series
1000V DC Max Contactor Relays


DCNHE350MF12-B


DCNHE350NF12-F

Specifications

Rating Continous Current	350A
Contact Max. Voltage	1000V DC
Contact Circuitry	SPST NO
Ingress Protection	Main Contacts IP67 PCBA Circuit IP54
Contacts Material	Copper Alloy
Terminals	M8 Silver-Plated Copper or M6 Silver-Plated Copper
Contact Torque	M8 Nut: 8~10N·m or M6 Bolt:6~8N·m
Housing	Nylon UL 94-V0
Coil Connector	Wire Leads for Control Circuit
Coil Type	Dual Coil
Mounting Method	M5 Bolt
Mounting Torque	M5 Bolt: 1.7~3.5N·m
Normal Position	Any Mounting Position
Approvals:	
CE:	EN 60947-4-1,2018

Description

The DCNHE350 Series high voltage DC contactor relay, rated for 350A continuous current and up to 1000V DC, is designed for electric vehicle and industrial applications, including battery systems, charging equipment, motor control, circuit isolation, and circuit protection. Its non-polarized design supports flexible installation and simplified system layout.

This EV contactor features a compact, corrosion-resistant housing with sealed contacts to reduce contamination and arc exposure. Dual-coil operation provides very low continuous coil power, greatly reducing coil power and heating.

Featuring SPST normally open (NO) circuitry and non-polarized contacts, the DCNHE350 Series contactor is available with a 12V DC or 24V DC coil voltage rating, an optional SPST-NO auxiliary contact, and stud or internal-thread terminals, making it well suited as a DC contactor for electric vehicles and other high-current DC systems.

Web Resources

Download 2D print, installation guide and technical resources at: **littelfuse.com/DCNHE350**

Applications

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

Features and Benefits

- High current (350A) and high voltage (1000V) contactor for EV applications
- Compact structure, helping reduce noise when turned on
- Dual DC Coils – Very low continuous coil power, greatly reduces coil power and heating
- Resin housing provides corrosion resistance in harsh automotive environments
- Sealed contacts with no leakage of electrical arc for maximum safety
- No mounting orientation restrictions
- Complies with EU RoHS & REACH
- Available with mechanically linked auxiliary contacts

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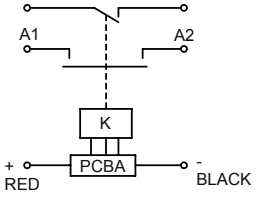
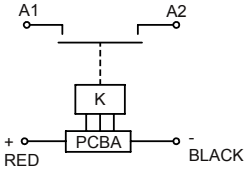
Ordering Information

PART NUMBER	RATED CURRENT (A)	POLARIZED	AUX. CONTACT	COIL VOLTAGE (V DC)	MOUNTING	POWER CONNECTION
DCNHE350NF12-B	350	No	No	12	Bottom	Stud Terminal
DCNHE350NF24-B	350	No	No	24	Bottom	Stud Terminal
DCNHE350NF12-F	350	No	No	12	Bottom	Internal Thread
DCNHE350NF24-F	350	No	No	24	Bottom	Internal Thread
DCNHE350MF12-B	350	No	SPST-NO	12	Bottom	Stud Terminal
DCNHE350MF24-B	350	No	SPST-NO	24	Bottom	Stud Terminal
DCNHE350MF12-F	350	No	SPST-NO	12	Bottom	Internal Thread
DCNHE350MF24-F	350	No	SPST-NO	24	Bottom	Internal Thread

Electrical Diagrams



DCNHE300MF



DCNHE300NF

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Performance Data

MAIN CONTACT	
Contact Arrangement	1 Form, SPST-NO
Operating Voltage	12~1,000VDC
Continous Current	350A
Max short circuit	3,000A, 1sec
Max Breaking Limit	2,000A@320VDC, 1cycle
Dielectric Withstanding Voltage	Between contacts: 4,000VAC, ≤1mA,1min Between contacts and coil: 2,200VAC, ≤1mA,1min Between Aux. contacts : 1,000VAC, ≤1mA,1min
Insulation Resistance	Min. 100 MΩ@1,000VDC
Contact Voltage Drop	≤140mV@350A

COIL DATA		
Rating Voltage	12VDC	24VDC
Pickup Voltage (25°C)	16VDC	28VDC
Release Voltage (25°C)	≤9VDC	≤18VDC
Release Voltage (25°C)	≥1.2VDC	≥2VDC
Starting Power (25°C)	3.8A	2.2A
Holding Power (25°C)	Approx. 6W	

Note: This product is a double-coil, and the coil control voltage must be a step voltage. A slowly rising voltage cannot make the contactor work.

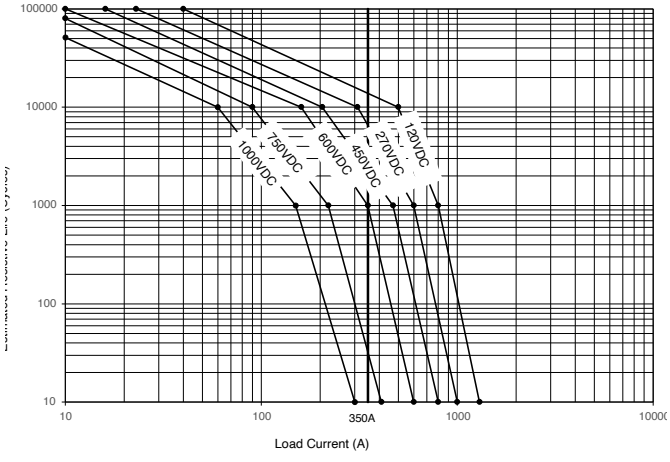
LIFE	
Electrical Life	3,000Cycle,250A@450VDC 400Cycle,150A@1,000VDC
Mechanical Life	300,000 cycles

OPERATE / RELEASE TIME	
Pickup Time(includes bounce)	≤30ms
Release Time	≤10ms

ENVIRONMENTAL DATA	
Shock, 11ms ½ sine, operating	20g, Peak
Vibration, Sine	80~2,000Hz, 10g, Peak
Operating Temperature	-40°C~+85°C
Humidity	20%~90%RH
Weight	About450g

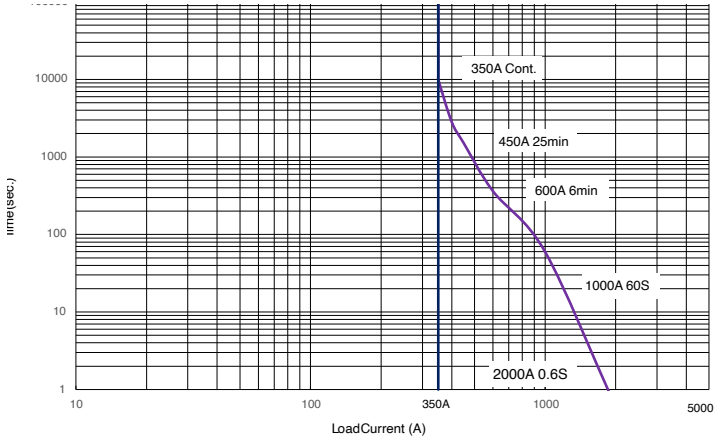
AUX. CONTACT	
Aux.Contact Arrangement	1 Form A
Aux.Contact Current Max.	2A@24VDC
Aux.Contact Current Min.	100mA@8VDC
Max. Contact Resistance	0.3Ω

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≥185mm²

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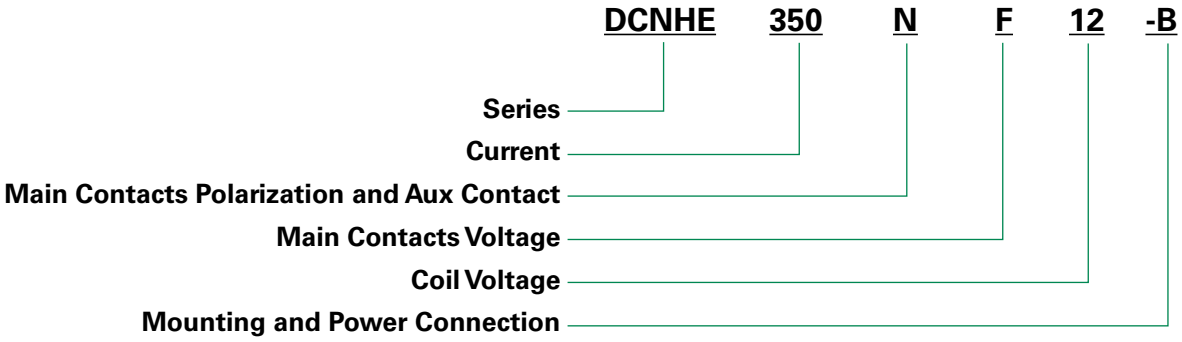
Part Number System



MAIN CONTACTS POLARIZATION AND AUX CONTACT		
	POLARIZED?	INCLUDE AUX CONTACT?
N:	No	No
M:	No	SPST-NO

MAIN CONTACT TEST VOLTAGE		
F:	450	V DC

COIL VOLTAGE		
12:	12	V DC
24:	24	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 (M8): 8 - 10 N.m; (M6): 6 - 8 N.m
  - Mounting torque: 1.7 - 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.
- Do not use dropped products.