DCNHE250 Series
1000V DC Max Contactor Relays

DCNHE250MFA-B

DCNHE250NFB-F

Description

The DCNHE250 Series contactor is designed for electric vehicle and energy storage systems requiring reliable switching of high-voltage DC power. It supports continuous current up to 250A and a maximum of 1000V, making it suitable for applications such as battery power supply, DC power control, charging systems, and other electronic control circuits.

A sealed, compact structure with a corrosion-resistant resin housing provides protection in harsh environments. The attached Coil Economizer uses Pulse Width Modulation (PWM) to reduce power consumption and heat generation after the contactor is energized.

The contactor is offered with either polarized or non-polarized load terminals. All models feature polarized coil terminals with voltage options of 12-36V or 48-95V. Auxiliary contact options include SPST-NO and SPST-NC for added control flexibility.

Web Resources

Download 2D print, installation guide and technical resources at: **littelfuse.com/DCNHE250**

Specifications

Rating Continous Current:	250A
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 V-0
Coil Connector:	Wire Leads for Control Circuit
Coil Type:	PWM
Mounting Method:	M5 Bolt
Mounting Torque:	M5 Bolt: 1.7~3.5N·m
Normal Position:	Any Mounting Position
Approvals:	
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 current (250A) and high voltage (1000V) contactor for EV applications
- Compact structure, helping reduce noise when turned on
- Coil Economizer 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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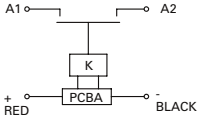
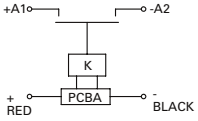
Ordering Information

PART NUMBER	RATED CURRENT(A)	POLARIZED	AUX CONTACT	COIL VOLTAGE(V DC)	MOUNTING	POWER CONNECTION
DCNHE250NFA-B	250	No	No	12~36	Bottom	Stud Terminal
DCNHE250NFB-B	250	No	No	48~95	Bottom	Stud Terminal
DCNHE250NFA-F	250	No	No	12~36	Bottom	Internal Thread
DCNHE250NFB-F	250	No	No	48~95	Bottom	Internal Thread
DCNHE250MFA-B	250	No	SPST-NO	12~36	Bottom	Stud Terminal
DCNHE250MFB-B	250	No	SPST-NO	48~95	Bottom	Stud Terminal
DCNHE250UFA-B	250	No	SPST-NC	12~36	Bottom	Stud Terminal
DCNHE250UFB-B	250	No	SPST-NC	48~95	Bottom	Stud Terminal
DCNHE250MFA-F	250	No	SPST-NO	12~36	Bottom	Internal Thread
DCNHE250MFB-F	250	No	SPST-NO	48~95	Bottom	Internal Thread
DCNHE250UFA-F	250	No	SPST-NC	12~36	Bottom	Internal Thread
DCNHE250UFB-F	250	No	SPST-NC	48~95	Bottom	Internal Thread
DCNHE250PFA-B	250	Yes	No	12~36	Bottom	Stud Terminal
DCNHE250PFB-B	250	Yes	No	48~95	Bottom	Stud Terminal
DCNHE250PFA-F	250	Yes	No	12~36	Bottom	Internal Thread
DCNHE250PFB-F	250	Yes	No	48~95	Bottom	Internal Thread
DCNHE250QFA-B	250	Yes	SPST-NO	12~36	Bottom	Stud Terminal
DCNHE250QFB-B	250	Yes	SPST-NO	48~95	Bottom	Stud Terminal
DCNHE250RFA-B	250	Yes	SPST-NC	12~36	Bottom	Stud Terminal
DCNHE250RFB-B	250	Yes	SPST-NC	48~95	Bottom	Stud Terminal
DCNHE250QFA-F	250	Yes	SPST-NO	12~36	Bottom	Internal Thread
DCNHE250QFB-F	250	Yes	SPST-NO	48~95	Bottom	Internal Thread
DCNHE250RFA-F	250	Yes	SPST-NC	12~36	Bottom	Internal Thread
DCNHE250RFB-F	250	Yes	SPST-NC	48~95	Bottom	Internal Thread

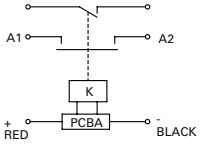
Electrical Diagrams



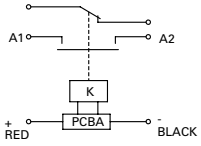
DCNHE250NF



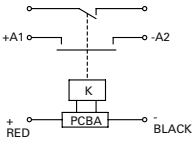
DCNHE250PF



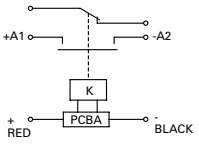
DCNHE250MF



DCNHE250UF



DCNHE250QF



DCNHE250RF

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Performance Data

MAIN CONTACT	
Contact Arrangement	1 Form, SPST-NO
Operating Voltage	12~1,000V DC
Continous Current	250A
Max Short Circuit	3,000A, 1 sec
Max Breaking Limit	2,000A@320V DC, 1 cycle
Dielectric Withstanding Voltage	Between contacts: 4,000V AC, ≤1mA,1min Between contacts and coil: 2,200V AC, ≤1mA,1min Between Aux. contacts: 1,000V AC, ≤1mA,1min
Insulation Resistance	Min. 1,000MΩ@1,000V DC
Contact Voltage Drop	≤80mV@250A

COIL DATA		
Rating Voltage	12~36V DC	48~95V DC
Voltage (Max.)	36V DC	95V DC
Pickup Voltage (25°C)	8~9V DC	30~32V DC
Release Voltage (25°C)	5~7V DC	17~20V DC
Starting Current (25°C)	2.4A@12V DC 2A@24V DC	0.7A@48V DC
Wattage (25°C)	Approx. 2.5W	

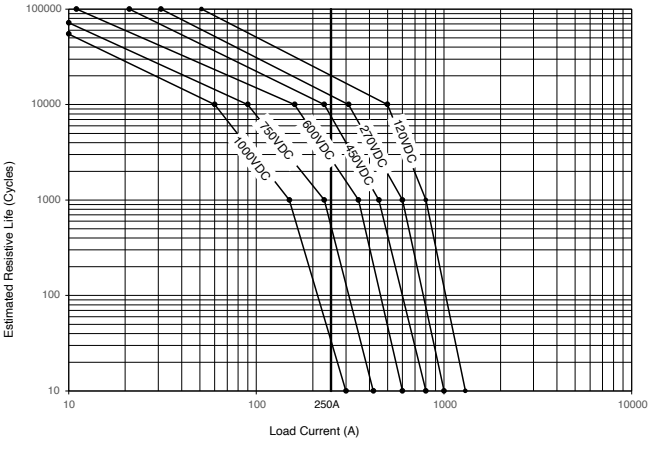
LIFE	
Electrical Life	Please See Estimated Make Break Chart
Mechanical Life	300,000 cycles

OPERATE / RELEASE TIME	
Pickup Time (includes bounce)	≤25ms
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	About 450g

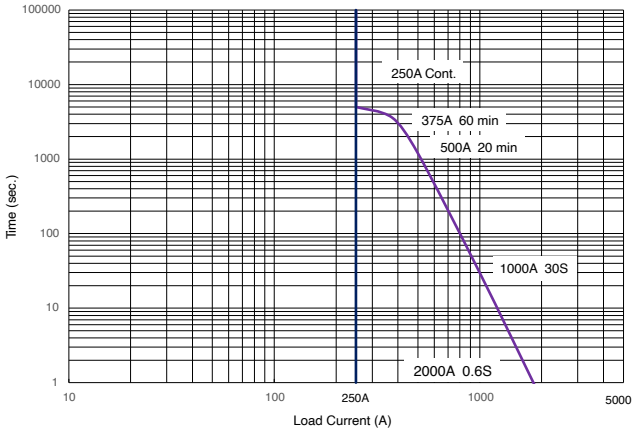
AUX. CONTACT	
Aux.Contact Arrangement	1 Form A
Aux.Contact Current Max.	2A@24V DC
Aux.Contact Current Min.	100mA@8V DC
Max. Contact Resistance	0.3Ω

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 at 65°C Chart



Note: The above data was tested at 65°C, cross-sectional area of the wire≥95mm².

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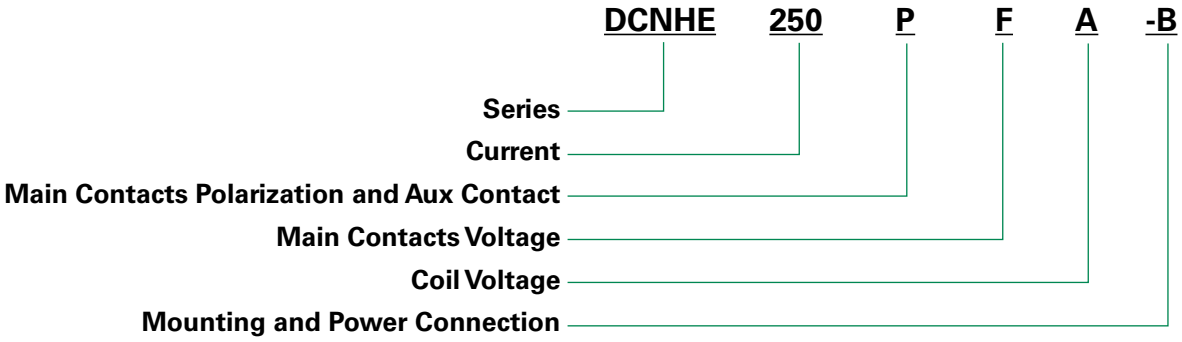
Part Number System



MAIN CONTACTS POLARIZATION AND AUX CONTACT		
	POLARIZED	INCLUDE AUX CONTACT
P:	Yes	No
Q:	Yes	SPST-NO
R:	Yes	SPST-NC
N:	No	No
M:	No	SPST-NO
U:	No	SPST-NC

MAIN CONTACT TEST VOLTAGE		
F:	450	V DC

COIL VOLTAGE		
A:	12~36	V DC
B:	48~95	V DC

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

- Be sure to use washer to prevent screws from loosening. Tighten the screw torque range is specified as below. Exceeding the maximum torque can lead to product rupture.
- Contact torque (M8): 8 - 10 N.m; (M6): 6 - 8 N.m
- Mounting torque: 1.7 - 3.5 N.m
- Do not use dropped products.
- Avoid to install the product in a strong magnetic field (Close to the transformer or magnet), or near an object with heat radiation.
- Electrical life
  Please use under load capability and life cycle so as not to cause a function failure. (Please also 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 happens. So it is necessary to take layout into account 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 rising by contact energizing).Therefore environment temperature should be from -40 to +85˚C.
- Do not let particle and oil stain on the main terminal with which the load shall make a reliable contact. Or it will cause a lot of heat.
- Applications with capacitors will require a pre-charge circuit
- The coil wires are polarized and the contact terminals are available in polarized and non-polarized variants. For correct wiring, please refer to the provided schematic diagram.