

# DCNHF600 Series

## 1500V DC Max Contactor Relays



DCNHF600NH12-F



DCNHF600NH12-B

### Description

The DCNHF600 Series high-voltage DC contactor relay is designed for demanding electric vehicle and industrial high-power DC applications. Rated for 600A continuous current and up to 1500V DC contact voltage, it is well suited for applications requiring high current capacity and reliable high-voltage switching, including battery power supply, electric vehicle power distribution, charging pile, motor control, circuit isolation, circuit protection, and safety devices for industrial machinery.

Featuring SPST normally open (NO) circuitry with non-polarized contacts, the DCNHF600 Series contactor supports bidirectional current switching to accommodate a wide range of electrical systems. Its bottom-mounting design enables secure installation, while a double-coil design with wire lead coil connection enhances operational stability in high-power environments.

The DCNHF600 Series contactor is available with internal-thread terminals or stud terminals, providing flexibility for high-current connections. The 12V DC and 24V DC coil voltage options support common EV and industrial control system requirements.

### Web Resources

Download 2D print, installation guide and technical resources at: [littelfuse.com/DCNHF600](http://littelfuse.com/DCNHF600)

### Ordering Information

PART NUMBER	RATED CURRENT(A)	POLARIZED	AUX. CONTACT	COIL VOLTAGE(V DC)	MOUNTING	POWER CONNECTION
DCNHF600NH12-F	600	No	No	12	Bottom	Internal Thread
DCNHF600NH24-F	600	No	No	24	Bottom	Internal Thread
DCNHF600NH12-B	600	No	No	12	Bottom	Stud Terminal
DCNHF600NH24-B	600	No	No	24	Bottom	Stud Terminal



### Specifications

<b>Rating Continuous Current</b>	600A
<b>Contact Max. Voltage</b>	1500V DC
<b>Contact Circuitry</b>	SPST NO
<b>Ingress Protection</b>	Contact IP67
<b>Contacts Material</b>	Copper Alloy
<b>Terminals</b>	M8 or M10 Copper
<b>Contact Torque</b>	M8 Bolt: 9~11N·m, M10 Nut: 20~25N·m
<b>Housing</b>	Nylon UL 94-V0
<b>Coil Connector</b>	Wire Leads
<b>Coil Type</b>	Double
<b>Mounting Method</b>	M5 Bolt
<b>Mounting Torque</b>	M5 Bolt: 3~4N·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 (1500V) 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

# DCNHF600 Series

## 1500V DC Max Contactor Relays

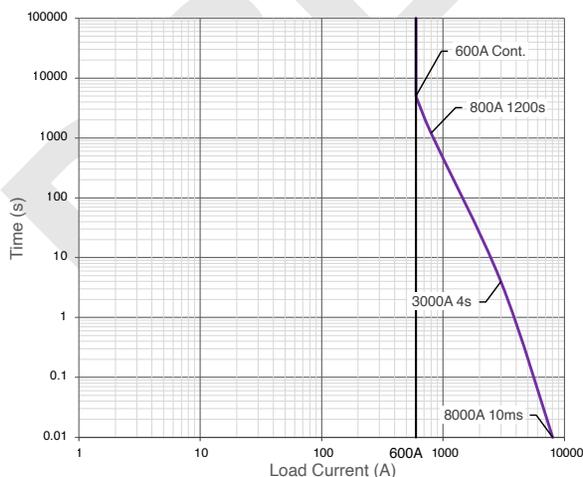
### Performance Data

MAIN CONTACT	
Contact Arrangement	1 Form, SPST-NO
Operating Voltage	12-1500V DC
Continuous Current	600A
Max Short Circuit	8000A,10ms
Max Breaking Limit	2500A@800V DC, 1cycle
Dielectric Withstanding Voltage	Between open contacts: 3000V AC, ≤1mA,1min Between contact and coil : 4000V AC, ≤1mA,1min
Insulation Resistance	Min. 1000 MΩ@1500V DC
Contact Voltage Drop	≤180mV@600A

COIL DATA		
Rating Voltage	12V DC	24V DC
Voltage (Max.)	16V DC	32V DC
Pickup Voltage (25°)	≤8V DC	≤16V DC
Release Voltage (25°)	≥4.5V DC	≥9V DC
Starting Current (25°)	≤4.2A	≤2.1A
Starting Power (25°)	50W	50W
Holding Current (25°)	≤0.75A	≤0.375A
Holding Power (25°)	9W	9W

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

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



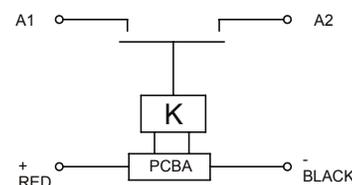
LIFE	
Electrical Life (Resistive)	6000cycles, 100A@1000V DC 100cycles, 600A@1000V DC 50cycles, 300A@1500V DC
Mechanical Life	200,000 cycles

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.

OPERATE / RELEASE TIME	
Pickup Time (includes bounce)	≤50ms
Release Time	≤30ms

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	DCNHF600NHXX-F: 1100g DCNHF600NHXX-B: 1800g

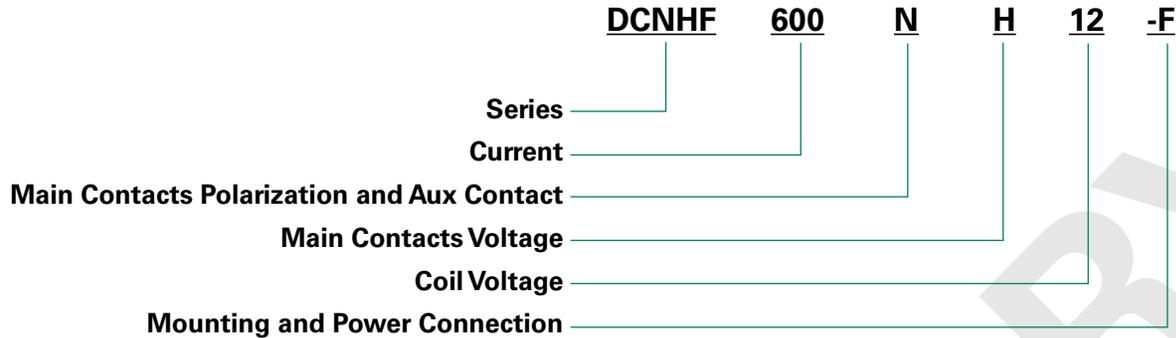
### Electrical Diagrams



# DCNHF600 Series

## 1500V DC Max Contactor Relays

### Part Number System



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

MAIN CONTACT TEST VOLTAGE		
H:	1000	V DC

COIL VOLTAGE		
12:	12	V DC
24:	24	V DC

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

- 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: in (9~11) Or (20~25) N.m.
  - Mounting torque: in (3~4) N.m.
- Contact terminals are polarized, Coil terminals are non-polarized, so refer to drawing during connecting. We suggest using a varistor rather than diode as a surge protector.
- Do not use if dropped.
- 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.