

DCNHF60 Series

1000V DC Max Contactor Relays



Description

The DCNHF60 Series high-voltage DC contactor relay is designed for electric vehicle and industrial high-voltage DC applications that require flexible system integration. Rated for 60A continuous current and up to 1000V DC, it is well suited for battery power supply systems, charging piles, motor control, circuit isolation, circuit protection, and industrial safety devices.

Featuring SPST normally open (NO) circuitry with non-polarized contacts, the DCNHF60 Series contactor supports bidirectional current switching to accommodate a wide range of electrical systems. Its compact structure helps reduce operational noise, while a durable housing provides reliable performance in demanding automotive and industrial environments.

The DCNHF60 Series is equipped with internal-thread terminals for secure connections and simplified integration. Multiple coil voltage options (12V DC, 24V DC, and 48V DC) are available to support a variety of EV and industrial control requirements.

Web Resources

Download 2D print, installation guide and technical resources at: littelfuse.com/DCNHF60

Ordering Information

| PART NUMBER | RATED CURRENT(A) | POLARIZED | AUX. CONTACT | COIL VOLTAGE(V DC) | MOUNTING | POWER CONNECTION |
|---------------|------------------|-----------|--------------|--------------------|----------|------------------|
| DCNHF60NG12-F | 60 | No | No | 12 | Bottom | Internal Thread |
| DCNHF60NG24-F | 60 | No | No | 24 | Bottom | Internal Thread |
| DCNHF60NG48-F | 60 | No | No | 48 | Bottom | Internal Thread |

Specifications

| | |
|----------------------------------|-----------------------|
| Rating Continuous Current | 60A |
| Contact Max. Voltage | 1000V DC |
| Contact Circuitry | SPST NO |
| Ingress Protection | Contact IP67 |
| Contacts Material | Copper Alloy |
| Terminals | M4 Copper |
| Contact Torque | M4 Bolt: 2~3N·m |
| Housing | Nylon UL 94-V0 |
| Coil Connector | Wire Leads |
| Coil Type | Single |
| Mounting Method | M5 Bolt |
| Mounting Torque | M5 Bolt: 3~4N·m |
| Normal Position | Any Mounting Position |
| Approvals: | |
| 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

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Performance Data

| MAIN CONTACT | |
|---------------------------------|-----------------------------------------------------------------------------------------------------|
| Contact Arrangement | 1 Form, SPST-NO |
| Operating Voltage | 12-1000V DC |
| Continuous Current | 60A |
| Max Short Circuit | 400A, 0.6s |
| Max Breaking Limit | 400A@300V 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@1000V DC |
| Contact Voltage Drop | ≤80mV@40A |

| COIL DATA | | | |
|-----------------------|--------|---------|----------|
| Rating Voltage | 12V DC | 24V DC | 48V DC |
| Voltage (Max.) | 16V DC | 32V DC | 64V DC |
| Pickup Voltage (25°) | ≤9V DC | ≤18V DC | ≤36V DC |
| Release Voltage (25°) | ≥1V DC | ≥2V DC | ≥4V DC |
| Holding Current (25°) | 0.375A | 0.1875A | 0.09375A |
| Wattage (25°) | 4.5W | 4.5W | 4.5W |

Note: The coil of the product may operate at maximum voltage for a maximum duration of 30 minutes.

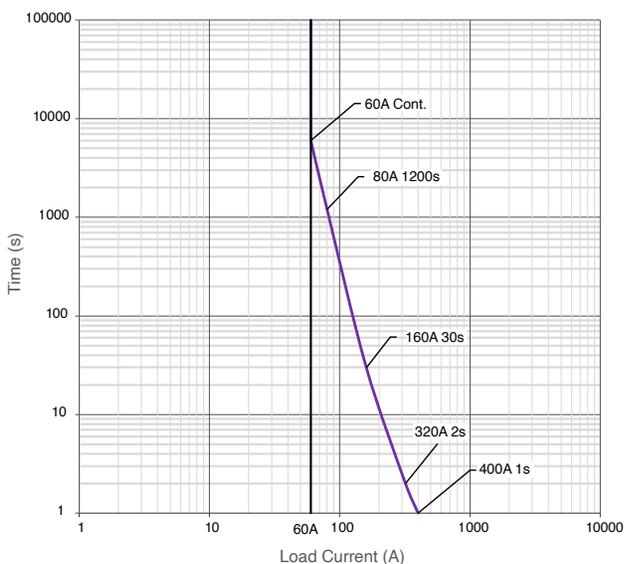
| LIFE | |
|-----------------------------|--------------------------------------------------------------------------------|
| Electrical Life (Resistive) | 1000cycles, 60A@750V DC 6000cycles, 40A@750V DC 1000cycles, 30A@1000V DC |
| Mechanical Life | 200,000 cycles |

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.

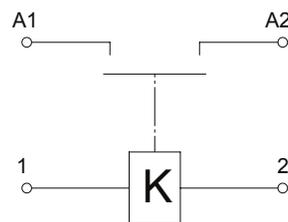
| OPERATE / RELEASE TIME | |
|-------------------------------|-------|
| Pickup Time (includes bounce) | ≤30ms |
| Release Time | ≤10ms |

| 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 | 160g |

Carry Current vs Time at 65°C Chart



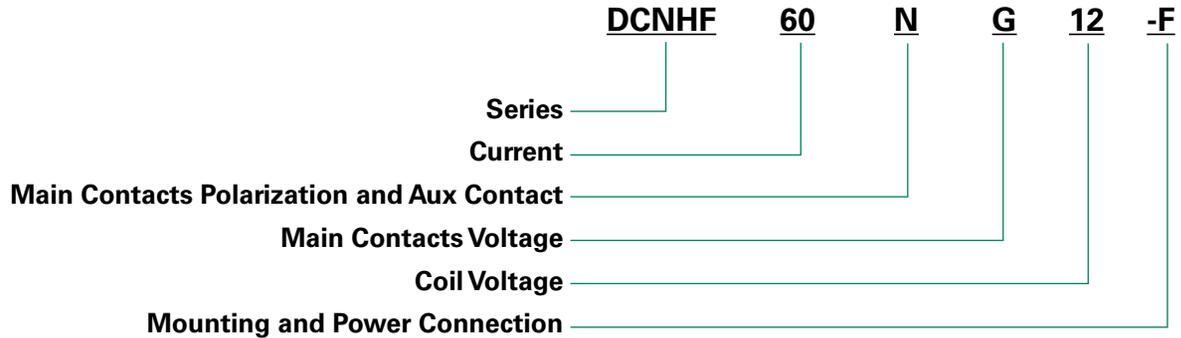
Electrical Diagrams



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Part Number System



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

| MAIN CONTACT TEST VOLTAGE | | |
|---------------------------|-----|------|
| G: | 750 | V DC |

| COIL VOLTAGE | | |
|--------------|----|------|
| 12: | 12 | V DC |
| 24: | 24 | V DC |
| 48: | 48 | V DC |

| MOUNTING | | POWER CONNECTION |
|----------|--------|------------------|
| 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: in (2 ~3) 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.