

# DCNHC350 Series

## 1000V DC Max Contactor Relays



### Description

Designed for electric vehicles and industrial machinery, the DCNHC350 Series high-voltage DC contactor is suited for demanding applications, including battery power supply, charging pile, motor control, circuit insulation, circuit protection, and industrial safety devices. Its compact design helps reduce operational noise, while the corrosion-resistant resin housing delivers reliable performance even in harsh environments.

Sealed, non-polarized contacts prevent electrical arc leakage for safety and ensure the contactor is a match for a variety of electrical systems. Using Pulse Width Modulation (PWM), the attached Coil Economizer minimizes coil power draw and heat once the contactor is energized, ensuring efficient operation.

### Web Resources

Download 2D print, installation guide and technical resources at: [littelfuse.com/DCNHC350](http://littelfuse.com/DCNHC350)



### Specifications

<b>Rating Continous Current:</b>	350A
<b>Contact Max. Voltage:</b>	1000V DC
<b>Contact Circuitry:</b>	SPST NO
<b>Ingress Protection:</b>	Contact IP67
<b>Contacts Material:</b>	Copper Alloy
<b>Terminals:</b>	M6 Copper
<b>Contact Torque:</b>	M6 Bolt: 8~10N·m
<b>Housing:</b>	Nylon UL 94 V-0
<b>Coil Connector:</b>	Wire Leads for Control Circuit
<b>Coil Type:</b>	PWM
<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>	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
- Non-polarized contacts for flexible system integration
- Coil Economizer uses Pulse Width Modulation (PWM) to efficiently maintain contact closure, reducing power consumption and heat buildup after energization
- No mounting orientation restrictions
- Ceramic arc chamber enables higher contact voltage capability
- RoHS and REACH compliant

### Ordering Information

PART NUMBER	RATED CURRENT(A)	POLARIZED	AUX CONTACT	COIL VOLTAGE(V DC)	MOUNTING	POWER CONNECTION
DCNHC350MHA-F	350	No	Yes	12-36	Bottom	Internal Thread

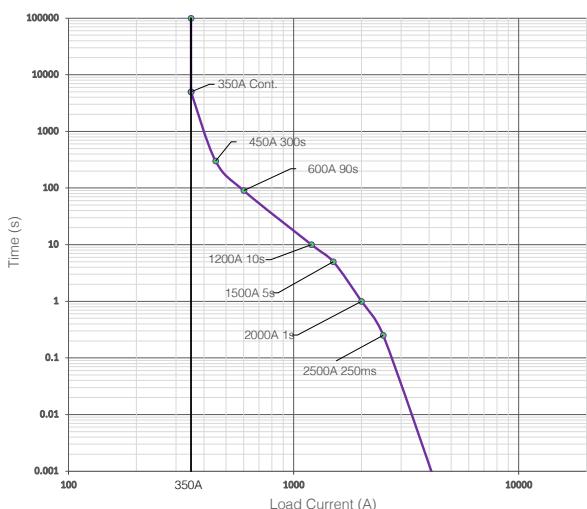
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### Performance Data

MAIN CONTACT	
Contact Arrangement	1 Form, SPST-NO
Operating Voltage	12~1000V DC
Continous Current	350A
Max Short Circuit	2500A, 250ms
Max Breaking Limit	2000A@320V DC, 1cycle,
Dielectric Withstanding Voltage	Between open contacts: 3300VAC, $\leq$ 1mA,1min Between contact and coil : 3300VAC, $\leq$ 1mA,1min Between contact and Aux.: 3300VAC, $\leq$ 1mA,1min
Insulation Resistance	Min. 1000 M $\Omega$ @1000V DC
Contact Resistance	$\leq$ 0.4m $\Omega$ @350A
COIL DATA	
Rating Voltage	12V DC~36V DC
Pickup Voltage (25°)	$\leq$ 9V DC
Release Voltage (25°)	$\geq$ 4.5V DC
Starting Power (25°)	29W
Holding Power (25°)	3W

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



### LIFE

Electrical Life (Resistive)	10 cycles, 350A@450V DC 1000 cycles, Only break 100A@1000V DC
Mechanical Life	200,000 cycles

Note: Electrical life rating is based on resistive load with 27 $\mu$ H 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)	$\leq$ 50ms
Release Time	$\leq$ 30ms

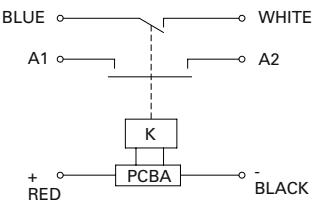
### ENVIRONMENTAL DATA

Shock, 11ms $\frac{1}{2}$ sine, Operating	20g, Peak
Vibration, Sine	10~55Hz, 5g, Peak
Operating Temperature	-40°C~+85°C
Humidity	5%~85%RH
Weight	400g

### AUX. CONTACT

Aux.Contact Arrangement	1 Form A
Aux.Contact Current Max.	0.1A@24V DC
Aux.Contact Current Min.	5mA@12V DC
Max. Contact Resistance	300m $\Omega$

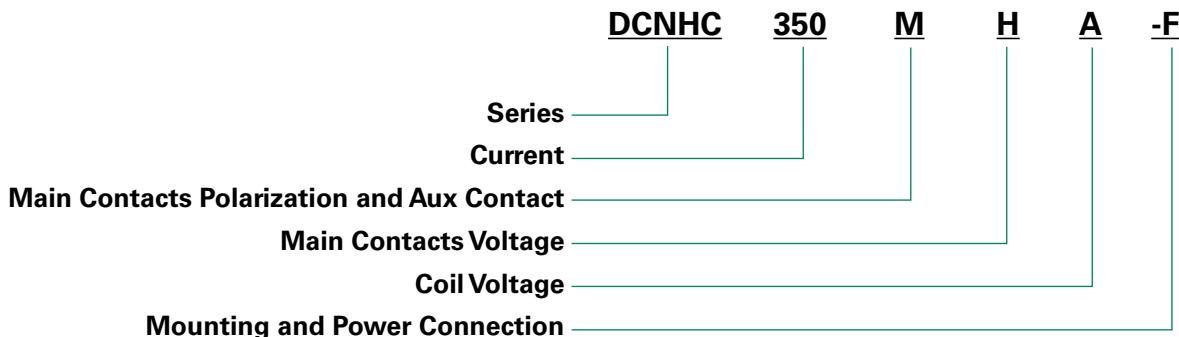
### Electrical Diagram



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### Part Number System



MAIN CONTACTS POLARIZATION AND AUX CONTACT		MAIN CONTACT TEST VOLTAGE			COIL VOLTAGE			MOUNTING		POWER CONNECTION	
POLARIZED?	INCLUDE AUX CONTACT?	H:	1000	V DC	A:	12~36	V DC	F:	Bottom		Internal Thread
M:	No			Yes							

- 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 (8~10) N.m.
  - Mounting torque: in (3~4) N.m.
- Contact terminals are non-polarized, Coil terminals are 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.