

# DCNEVT350 SERIES HIGH CURRENT HIGH VOLTAGE DC CONTACTOR RELAY



# **Description**

High current and high voltage DC contactor relays for electric vehicle, hybrid electric vehicle, circuit protection, battery switch, and main power break. Coil Economizer greatly reduces coil power and heating after the contactor is energized. Once the contactor is energized, it takes minimal coil power to keep the contacts closed due to Pulse Width Modulation (PWM) reducing the average power delivered by pulsing the electrical signal. Utilizes polarized contacts for optimum performance amidst polarized electrical loads.

#### **Web Resources**

Download 2D print and technical resources at: littelfuse.com/DCNEVT350

# **Ordering Information**

<b>Specifications</b>	Overview
Amnerage:	3504 (



350A Continuous Carry

Housing: Nylon UL 94-V0

Voltage Rating: 1800V

**Connectors:** Sealed Control Wire Connector (Included)

Aptiv P/N 12162017

Ingress Protections: IP54

**Operating Temperature:** -40°C to 85°C **Circuitry:** SPST NO

Coil Voltage: B: 12V DC Nominal, 9-16V DC Working

C: 24V DC Nominal, 18-28V DC Working

Max Coil Inrush Current: B: 2.8A Max to coil

C: 1.8A Max to coil

Size: Reference Dimensions on Page 2

Mounting: M6

Mounting Bolt Torque: 1.7-3.3 Nm (15-30 in-lb)

Contact Torque: 6-8 Nm (53-70 in-lb)

Terminals: M6 Silver Plated Copper

Approvals: UL File No. E510407 Recognized

### **Features and Benefits**

- High current (350A) and high voltage (1800V) contactor for EV applications
- Coil Enonomizer greatly reduces coil power and heating
- Hermetically sealed contact chamber to protect all moving parts
- Sealed control wire connector included
- Able to handle harsh environments
- Designed and manufactured under the IATF16949 certification for Automotive Quality Systems.
- Designed specifically for automotive applications.

# **Applications**

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

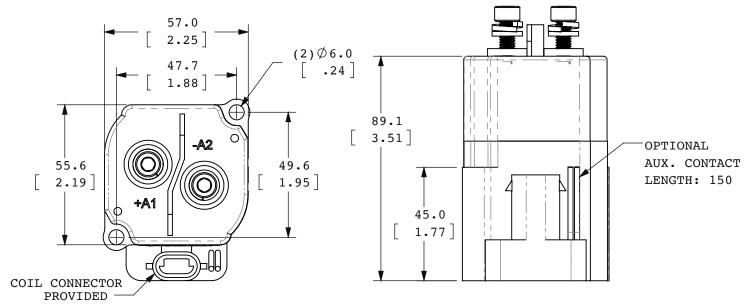
PART NUMBER	DESCRIPTION	COIL VOLTAGE 12V DC	COIL VOLTAGE 24V DC	BOTTOM MOUNT	AUXILIARY CONTACT SPST-NO
DCNEVT350-B	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals	•		•	
DCNEVT350-BA	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit with Polar Load Terminals	•		•	•
DCNEVT350-C	High Voltage DC Contactor Relay Bottom Mount with Polar Load Terminals		•	•	
DCNEVT350-CA	High Voltage DC Contactor Relay Bottom Mount with Auxiliary Circuit with Polar Load Terminals		•	•	•

<sup>\*</sup> Box Packaging Available

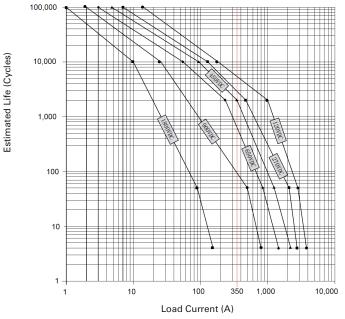


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## **Dimensions in MM**

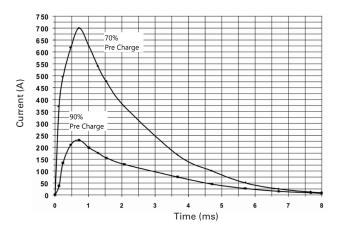


## **Estimated Make Break Chart**

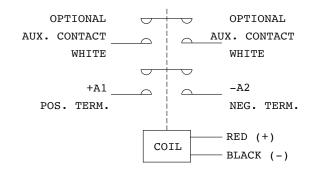


Test run under controlled conditions. User to verify in actual application.

## **Capacitive Make Test Curve**



## **Electrical Diagram**





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#### **Performance Data**

MAIN CONTACT		
Contact arrangement	1 Form X (SPST-NO, DM)	
Rated Operating Voltage	12-1,800VDC	
Continuous (Carry) Current	350A*1	
Short term Carry Current	400A (6.5 minutes) *2	
Max short circuit current	2,300A @ 450VDC (1 cycle)	
Dielectric Withstanding Voltage	Between open contacts: 4,000VDC (leakage ≤1mA) Between contact and coil: 2,200Vrms (leakage ≤1mA)	
Insulation Resistance	Terminal to Terminal/Terminal to coil	
	New: Min 100 MΩ @500Vdc	
Voltage Drop (@350A)	≤120mV	

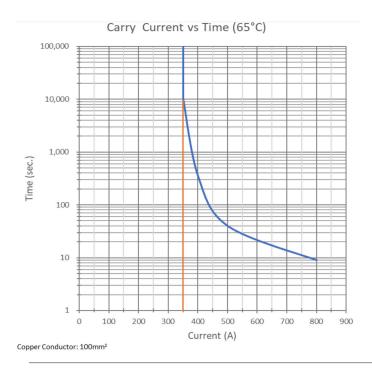
<sup>1:</sup> Current is relevant to cross-sectional area of conductor.

<sup>2:</sup> Ambient Temperature +65°C

COIL DATA		
Voltage rating	12Vdc	24Vdc
Pickup voltage (25°C)	10Vdc	19Vdc
Dropout voltage (25°C)	4Vdc	9Vdc
Inrush current @ nominal voltage	2.8A	1.8A
Holding current @ nominal voltage	0.40A	0.11A

MAX. BREAKING LIMIT	MAX. SHORT CIRCUIT
3,000A @ 750VDC, 1 cycle	3,500A, 1 sec

#### **Current vs Time Curve**



LI	FE
Electrical Life	See estimated make break chart
Mechanical life	200,000 cycles

OPERATE / RELEASE TIME		
Close (includes bounce)	18ms, Max.	
Bounce (after close)	5ms, Max.	
Release	15ms, Max.	

ENVIRONMENTAL DATA		
Shock, 11ms ½ sine, operating	20G Peak	
Vibration, Sine, Peak, 20G	10—1,000Hz	
Operating Ambient Temperature	-40 to +85°C	
Weight	1.76 lb (0.8 kg)	
Altitude	<4000m	
Noise (@100mm)	70dB(a)	

AUX. CONTACT		
Aux. Contact Arrangement	SPST-NO (1 Form A)	
Aux. Contact Rating (Max Wattage)	10W	
Aux. Contact Rating (Max Voltage)	100 VDC	
Aux. Contact Resistance (Max)	500mΩ	

### **Application Note:**

- 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.
  - Contact Terminal Torque: 53 70 lb.in (6 8 N.m)
  - Mounting Torque: 15 30 lb.in (1.7 3.3 N.m)
- Contact terminals are polarized so refer to drawing during connecting. There is a reverse surge absorption circuit so that it is not necessary to use a surge protective device.
- 3. Do not use if dropped.
- 4. Avoid installing in a strong magnetic field (close to a transformer or magnet), or near a heat source.
- 5. 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 considerations into account and to make sure power shall be cut off within 1 second.
- Avoid debris or oil contamination of the main terminals to optimize contact and avoid excess heat generation.

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