# AEV150 Series DC Contactor Specification
# 150AMPS/900VDC

**ALTRAN MAGNETICS**

## Application

AEV150 series DC contactors are used for battery power supply, DC power control, circuit protection and other electric vehicle power switch controls. Can also be used in uninterruptible power supply and other electronic control systems.

## Features

**HIGH CURRENT AND HIGH VOLTAGE**
Nitrogen sealed contacts to minimize arcing.

**COMPACT STRUCTURE, LOW NOISE**
Contact design yields reduced unit size, low noise while carrying or switching currents.

**COIL ECONOMIZER**
Built-in coil economizer – only 1.7W holding power @12VDC, limits back EMF to 0V.

**HIGH SAFETY**
There is no arc leakage due to tight sealing.

**HIGH CONTACT RELIABILITY**
Stable contact resistance no matter how harsh the environment with sealed contacts.

**NO SPECIAL MOUNTING REQUIREMENT**
Light weight actuator is less impacted by gravity with no special mounting orientation requirements.

**VARIOUS APPLICATIONS**
Application includes battery switch and standby equipment, DC power control, circuit protection, etc.

**OPTIONAL AUXILIARY CONTACT**
Allows for contact position signal.

**EU ROHS DIRECTIVE (2011/65/EU) COMPLIANT**

c(UL)us    CE
UL FILE NUMBER: E501749

## Nomenclauture

| Example | AEV150 | — | M | | AN |

**Series code:**
"AEV150" = AEV150 Series

**Coil Voltage Code:**
"M" = 12 - 24 VDC

**Options (applied in this order):**

Blank = Std. Options (Bottom Mount, Without Aux. Contact & Polarized Load Terminals)

"A" = With Aux. Contact (SPST-NO)

"N" = Non-Polar Load Terminals

## Performance Data

| MAIN CONTACT | | LIFE | |
|---|---|---|---|
| Contact arrangement | 1 Form X (SPST-NO DM) | Resistive load life | See chart below |
| Rated Operating Voltage | 12-900VDC | Mechanical life | 200,000 cycles |
| Continuous (Carry) Current | 150A -200A (65 °C) | **AUX. CONTACT** | |
| Make/Break current | See chart below | Aux. Contact arrangement | 1 Form A |
| Max short circuit current | 2,000A @320VDC, 1 cycle [*1] | Aux. Contact Current Max | 2A@30VDC/ 3A@125VAC |
| Dielectric Withstanding Voltage | Between open contacts: 2,200Vrms, ≤1mA | Aux. Contact Current Min | 100mA@8V |
| | Between contact and coil: 2,200 Vrms, ≤1mA | Max Contact Resistance | 0.417ohms@30VDC/ 0.150ohms @125VAC |
| Insulation Resistance[*2] | Terminal to Terminal/ Terminal to coil | | |
| | New: Min 100 MΩ @500Vdc End of life: Min 50 MΩ @500Vdc | | |
| Voltage Drop (@150A) | ≤60mV | | |
| **ENVIRONMENTAL DATA** | | **OPERATE / RELEASE TIME** | |
| Shock, 11ms ½ sine, operating | 20G Peak | Close (includes bounce) | 25ms, Max. |
| Vibration, Sine, Peak, 20G | 80—2,000Hz | Bounce (after close only) | 7ms, Max. |
| Operating Ambient Temperature | -40 to +85 °C | Release (@2000A includes arc) | 12ms, Max. |
| Altitude | <4000m | | |
| Weight | 0.95 Lb (0. 43 kg) | | |
| **COIL DATA** | | | |
| Coil Voltage | 12-24VDC | | |
| Voltage (Max.) | 36VDC | | |
| Pickup voltage (Max.) | 9VDC | | |
| Hold voltage (Min.) | 7.5 VDC | | |
| Dropout voltage (Min.) | 6VDC | | |
| Inrush Current (Max.) | 3.8A | | |
| Holding Currnet (Avg.) | 0.13A@12VDC / 0.07A@24VDC | | |

## Note:

*1:  Does not meet dielectric & IR after test.

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## Estimated Make & Break Resistive Load Ratings
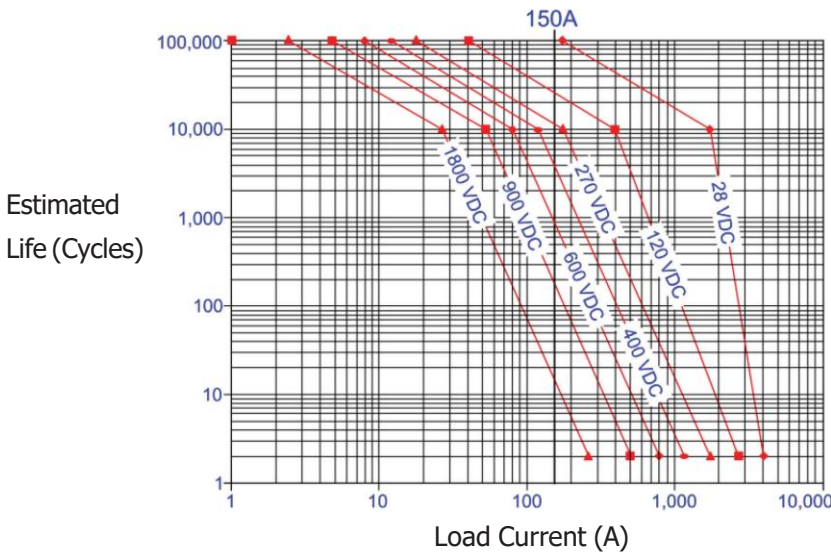


**Note:**

1. For resistive loads with 300uH maximum inductance.
2. The maximum make current is 650A to avoid contact welding.
3. Estimates based on extrapolated data. User to confirm performance in application.

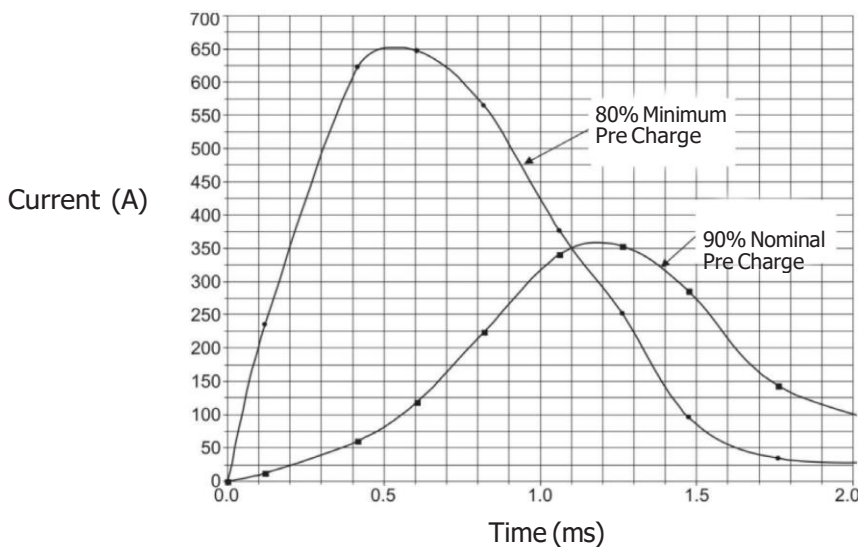## Electrical Load Life Ratings for Typical EV Applications

**MAKE/BREAK LIFE CAPACITIVE & RESISTIVE LOADS AT 320VDC** [*1]

| | |
|---|---|
| @90% pre-charge (make only), see chart below | 50,000 cycles |
| @Min 80% pre-charge (make only), see chart below | 50 cycles |

**Note:**
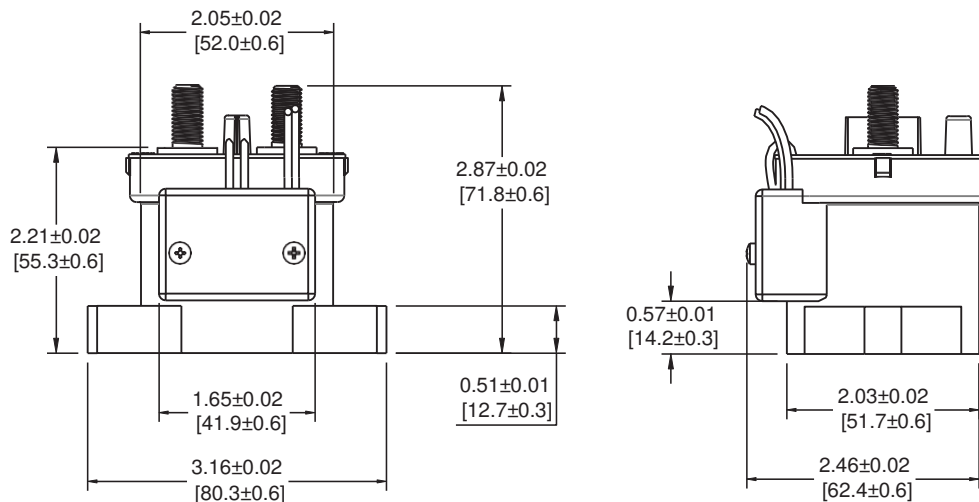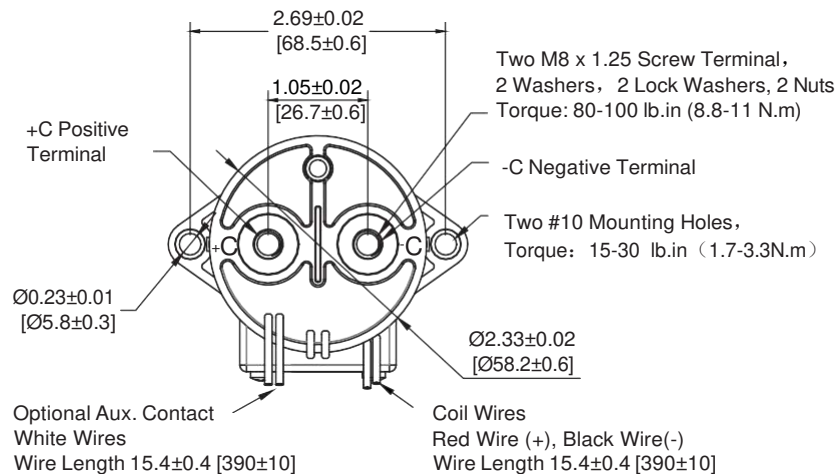
*1: Resistive load includes L=25uH. Load @2500A, test @200uH

## AEV150 Capacitive Make Test Curves for Pre-Charged Motor Controller

## Outline Dimensions: in. (mm)

2.69±0.02
[68.5±0.6]

1.05±0.02
[26.7±0.6]

+C Positive
Terminal

Two M8 x 1.25 Screw Terminal，
2 Washers，2 Lock Washers, 2 Nuts
Torque: 80-100 lb.in (8.8-11 N.m)

-C Negative Terminal

Two #10 Mounting Holes，
Torque：15-30 lb.in（1.7-3.3N.m）

Ø0.23±0.01
[Ø5.8±0.3]

Ø2.33±0.02
[Ø58.2±0.6]

Optional Aux. Contact
White Wires
Wire Length 15.4±0.4 [390±10]

Coil Wires
Red Wire (+), Black Wire(-)
Wire Length 15.4±0.4 [390±10]

2.05±0.02
[52.0±0.6]

2.87±0.02
[71.8±0.6]

2.21±0.02
[55.3±0.6]

1.65±0.02
[41.9±0.6]

0.51±0.01
[12.7±0.3]

3.16±0.02
[80.3±0.6]

0.57±0.01
[14.2±0.3]

2.03±0.02
[51.7±0.6]

2.46±0.02
[62.4±0.6]

## Application Note:

1. Be sure to use washer to prevent screws from loosening. Screw tightening torque range is specified as below. Exceeding the maximum torque can lead to product failure.

   - Contact torque (M8): 80 - 100 lb.in (8.8 - 11 N.m)
   - Mounting torque: 15 - 30 lb.in (1.7 - 3.3 N.m)

2. 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 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.

6. 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 to +85 °C.

7. If inductive load(L/R>1ms) then a surge current protection device should be connected in parallel to the inductive load.

8. Drive power must be greater than coil power or it will reduce performance capability.

9. Avoid debris or oil contamination of the main terminals to optimize contact and avoid excess heat generation.

10. Unit operates after power applied for 0.1s, do not rapidly switch unit.

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