Features

HIGH CURRENT CARRY AND HIGH VOLTAGE
Inert gas filled arc chamber suitable for high voltage switching

COMPACT STRUCTURE, LOW NOISE
Small, low-profile design with low noise while carrying or switching loads

COIL ECONOMIZER
Economized coil for low power consumption

SAFE FOR EXPLOSIVE ENVIRONMENTS
No arc leakage due to a hermetically sealed design

HIGH RELIABILITY DESIGN
Hermetic sealing creates a stable environment for high voltage switching

VARIOUS APPLICATIONS
Battery disconnect, EV charging, energy storage systems, photovoltaics, power control, circuit protection and much more

Sealing Type: Epoxy/Resin
✓ Perfect for energy storage applications
✓ Bidirectional switching option

Certification Information
1. Meet RoHS (2011/65/EU)
2. CE certified
3. UL approved

Nomenclature

Series code:
“AES500” = AES500

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-Polarized Load Terminals
High Voltage DC Contactor
AES500 Series
500A+/1500VDC

Product Data Sheet

<table>
<thead>
<tr>
<th>MAIN CONTACT</th>
<th>OPERATE / RELEASE TIME</th>
<th>ENVIRONMENTAL DATA</th>
<th>COIL DATA</th>
<th>AUX. CONTACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Arrangement</td>
<td>1 Form X (SPST-NO)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated Operating Voltage</td>
<td>1500VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated Current</td>
<td>500A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Short Circuit Current</td>
<td>2500A (20s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectric Withstanding Voltage (initial)</td>
<td>Between Open Contacts: 4500 VAC/5mA/60s Between Contacts to Coil: 4500 VAC/5mA/60s</td>
<td>Shock Functional: 196m/s² Sine half-wave pulse Shock Destructive: 490m/s² Sine half-wave pulse</td>
<td>Nominal Voltage</td>
<td>12/24 VDC</td>
</tr>
<tr>
<td>Insulation Resistance (initial)</td>
<td>Terminal to Terminal: Min. 1000 MΩ@500VDC Terminals to Coil: Min. 1000 MΩ@500VDC</td>
<td>Operating Temperature</td>
<td>-40 to +85°C</td>
<td></td>
</tr>
<tr>
<td>Contact Voltage Drop (initial)</td>
<td>Max. 0.5 mΩ (Max. 50mV/100A)</td>
<td>Humidity</td>
<td>5% to 85%RH</td>
<td></td>
</tr>
<tr>
<td>Short Term Current</td>
<td>1000A (1min.) / 2000A (0.5min)</td>
<td>Weight</td>
<td>2.6 Lb. (1180g)</td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED LIFE**

<table>
<thead>
<tr>
<th>Electrical Endurance</th>
<th>Mechanical life</th>
</tr>
</thead>
<tbody>
<tr>
<td>500A@750VDC, 1000 Cycles</td>
<td>200,000 cycles</td>
</tr>
<tr>
<td>100A@1500VDC, 6000 Cycles</td>
<td></td>
</tr>
</tbody>
</table>

**Current Carry Curve (300m² conductor)**

**Operate Time**

<table>
<thead>
<tr>
<th>Operate Time</th>
<th>40ms, Max. @20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release Time</td>
<td>10ms, Max. @20°C</td>
</tr>
</tbody>
</table>

**AUX. CONTACT**

| Aux. Contact Arrangement | 1 Form A |
| Aux. Contact/Current Max. | 3A@24VDC/ 3A@125VAC |
| Aux. Contact Current Min. | 100mA@8V |
Electrical Life
Estimated Make and Break Resistive Load Ratings

Outline Dimensions : inches (mm)

Matching fastener components:
2 x M6 stainless steel flat washer
2 x M6 stainless steel spring washer
2 x M6×1.25 stainless steel nut
Torque: 8.8-11Nm

*Note:
1. The wire size is 22 AWG
2. The wire length is 15.4±0.4 (390 ± 10)
Application Notes

1. To prevent loosening, split washers should be used whenever the contactor is installed. All terminals or conductors must be in direct contact with the contactor’s main terminals. Please control the tightening torque of each part within the specified range in the table below. If the torque exceeds the recommended range, it may cause damage to the sealed cavity and thread damage.
   - 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. Products with polarity marked on the load end must be used correctly according to the product label. When the load connection polarity is reversed, the electrical characteristics in this data sheet cannot be guaranteed.

3. Products with a coil economizer are already equipped with back EMF circuits, so there is no need to use surge protectors.

4. Avoid installing the contactor in a strong magnetic field environment (near transformers or magnets) and avoid placing the contactor near objects with heat radiation.

5. When continuous current is applied to the contacts of the relay, and the coil is turned on immediately after the power is cut off. At this time, as the temperature of the coil increases, the resistance of the coil will also increase, which will increase the pull-in voltage of the product, which may result in exceeding the rated pull-in voltage. In this case, the following measures should be taken to reduce the load current; limit the continuous power-on time or use a coil voltage higher than the rated pull-in voltage.

6. When the voltage applied to the coil exceeds the maximum allowable applied voltage, the coil temperature may rise and lead to coil damage and inter-layer short circuit.

7. The rated values in the contact parameters are values for resistive load. When using an inductive load with \( L/R > 1\text{ms} \), please connect a surge current protection device to the inductive load in parallel. If no measures are taken, the electrical life may be reduced and the continuity may be poor. Please consider sufficient margin space in the design.

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

9. Please do not allow debris and oil to adhere to the main terminals; Make sure that the main terminals are in reliable contact with the load conductor, otherwise the temperature rise of the terminal / conductor connection may be too high due to the excessive contact resistance.

10. The load conductor must have the corresponding current load capacity and heat dissipation capacity (it is recommended to use a copper bar with min 300mm²), to prevent overheating and affecting the life of the contactor.

11. It is impossible to determine the performance parameters of contactors in each specific application, therefore, customers should choose the products according to their own conditions of use. If in doubt, contact Altran. The customer will be responsible for validating that the products meet their application.

12. Do not use if dropped.

13. Altran reserves the right to make product changes as needed. Customers should reconfirm the contents of the specification or ask for us to supply a new specification if necessary.