

# HIGH VOLTAGE CONTACTORS ECK250 SERIES - UP TO 500AMP

## INTRODUCTION

ECK250 series high-voltage DC contactor is designed for control in new energy applications. The ECK250 product line is an innovative and reliable solution for EV charging stations, solar inverters, battery energy storage systems, automated-guided vehicles (AGV) and e-Forklifts. ECK250 is hermetically sealed with ceramic technology and enable high switching capability under 1000VDC. The built-in PWM module design makes it smaller to save space.

## FEATURES

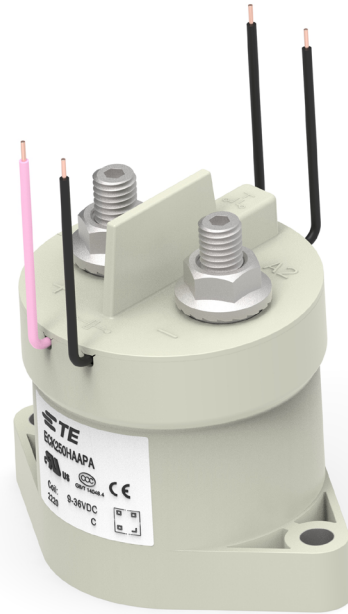
- Hermetically sealed with ceramic technology
- Designed with built-in economizer, hold power 1.7W
- 500A carry current capability (see cautions)
- Maximum DC breaking current at 2000A
- Maximum DC breaking voltage at 1000VDC
- Auxiliary contact version available
- Comply with DC-1 utilization category in IEC60947-4-1

## APPLICATIONS

- DC Charging station
- Electric vehicle
- AGV
- Electric forklift
- Energy storage systems
- Photovoltaic inverter
- DC converter
- Battery protection board

## APPROVALS

- CCC: 2022960304002220
- CE: 724-00004
- UL: E82292
- TUV: CN221S2D 002



## High Voltage Contactors ECK250 Series

### CONTACT DATA

Contact current	500A
Max. Switching voltage	1000VDC
Contact arrangement	1 Form X (SPST-NO-DM)
Initial contact resistance	$\leq 0.4\text{m}\Omega$ (250A, after 1 minute)
Operate time, max. (At 23°C)	30ms
Release time, max. (At 23°C)	10ms
Mechanical life	500,000 cycles

### CONTACT RATINGS

Load	Cycles
250A, 450VDC, make/break, resistive	6000
250A, 800VDC, make/break, resistive	1000
200A, 1000VDC, make/break, resistive	1000
250A, 1000VDC, make/break, resistive	400

#### Note:

- Only typical rating listed, please refer to make/break curves in next page for more details at different current and voltage.

### OTHER DATA

Material compliance:EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the product Compliance Support Center at <a href="http://www.te.com/customer-support/rohssupportcenter">www.te.com/customer-support/rohssupportcenter</a>	
Ambient temperature	-40°C to 85°C
Vibration resistance (functional)	Sine, 10-2000Hz, 6G
Shock resistance (functional)	11ms 1/2 Sine, Peak 20G
Terminal type	Screw for contact, wire for coil
Weight	380g
Packaging/Unit	Box/24 pcs.

### COIL VERSIONS, DC COIL

Coil Code	Nominal Voltage	Nominal Operate Current	Max Starting Current	Operate Voltage	Maximum Operate Voltage	Release Voltage	Coil Power
A	9-36VDC	0.13A@12VDC 0.07A@24VDC	3.6A	$\leq 9\text{VDC}$	36VDC	$\geq 3\text{VDC}$	Start: 43.2W Hold: 1.7W

All figures are given for coil without pre-energization, at ambient temperature +23°C.

### CE DECLARATION (IEC60947-4-1)

Rated Operational Current	Utilization Category	Switching Cycles
100A	DC-1	6,050

### AUXILIARY CONTACT DATA

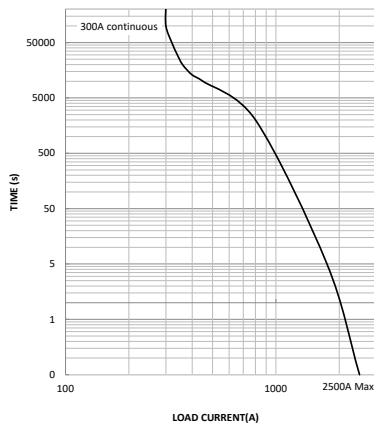
Contact form	1 Form A (SPST-NO)
Contact current, Max.	2A, 30VDC
Contact current, Min.	10mA, 8VDC
Contact resistance, Max.	0.4 $\Omega$ @ 30VDC

### INSULATION DATA

<b>Dielectric Withstand Voltage (leakage current &lt;1mA)</b>	
Between open main contacts	3500Vrms
Between main contact and coil	3500Vrms
Between main contacts and aux contacts	3500Vrms
Between open aux contacts	750Vrms
<b>Initial Insulation Resistance @ 1000VDC</b>	
Between insulated elements	$> 1 \times 10^9 \Omega$

# High Voltage Contactors ECK250 Series

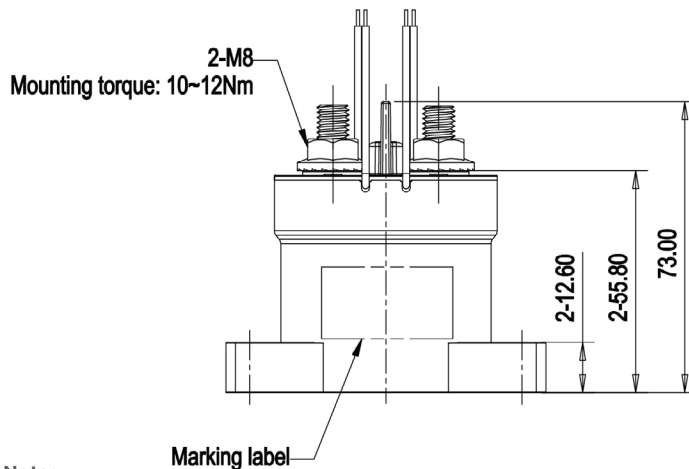
## CURRENT CARRYING CAPABILITY CURVE



### Notes:

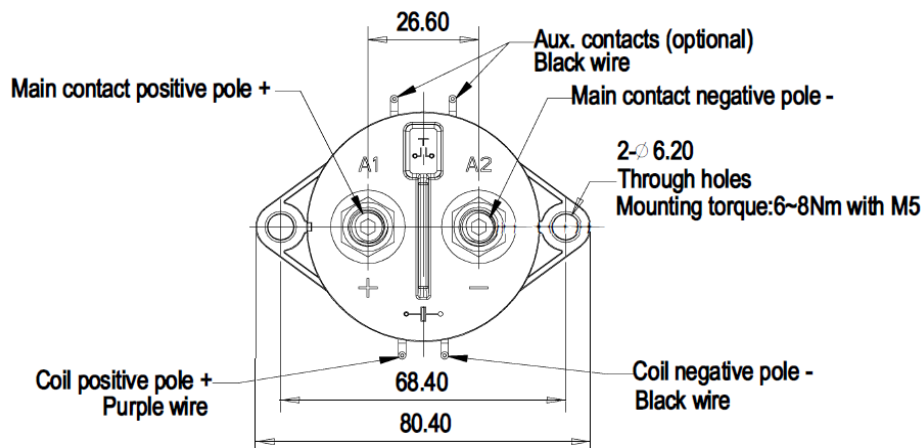
- The data is measured at the environment temperature 85°C with cross section area of wire 185mm<sup>2</sup> min. Smaller cable cross section wires are also allowed depending on the end users conditions.
- For 500Amp application, recommend >202mm<sup>2</sup> conductor size and please users select the appropriate connection conductor cross section or active cooling to control the temperature. Keep main contact terminals 130°C max for long-term continuous carry, 170°C max for two hours.

## DIMENSIONS

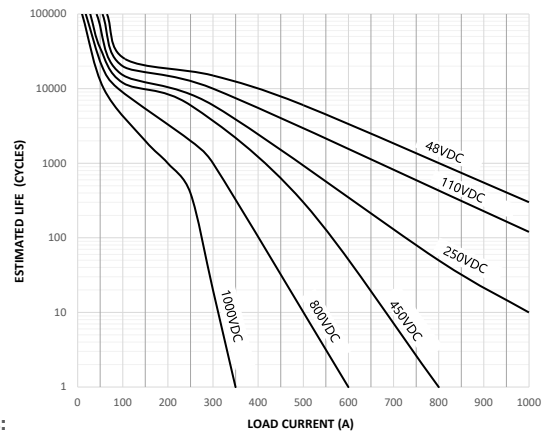


### Notes:

- Main contact terminal connection and coil connection with positive and negative difference.

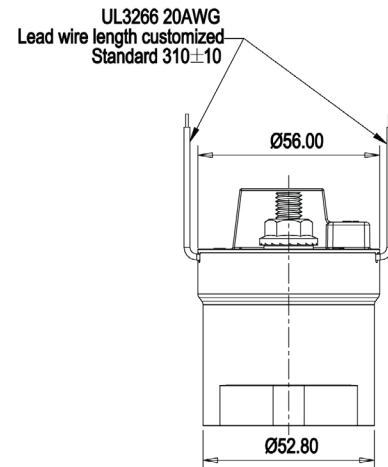


## ESTIMATED MAKE & BREAK POWER SWITCHING RATINGS

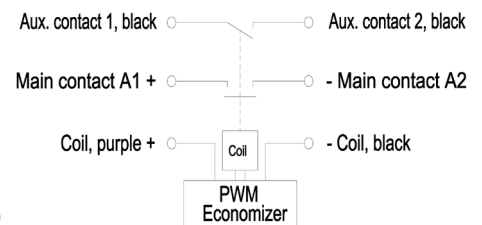


### Notes:

- The curve was created based on extrapolated data with few typical points, users are recommended to confirm performance in actual application.
- The typical data were estimated with resistive load at room temperature.

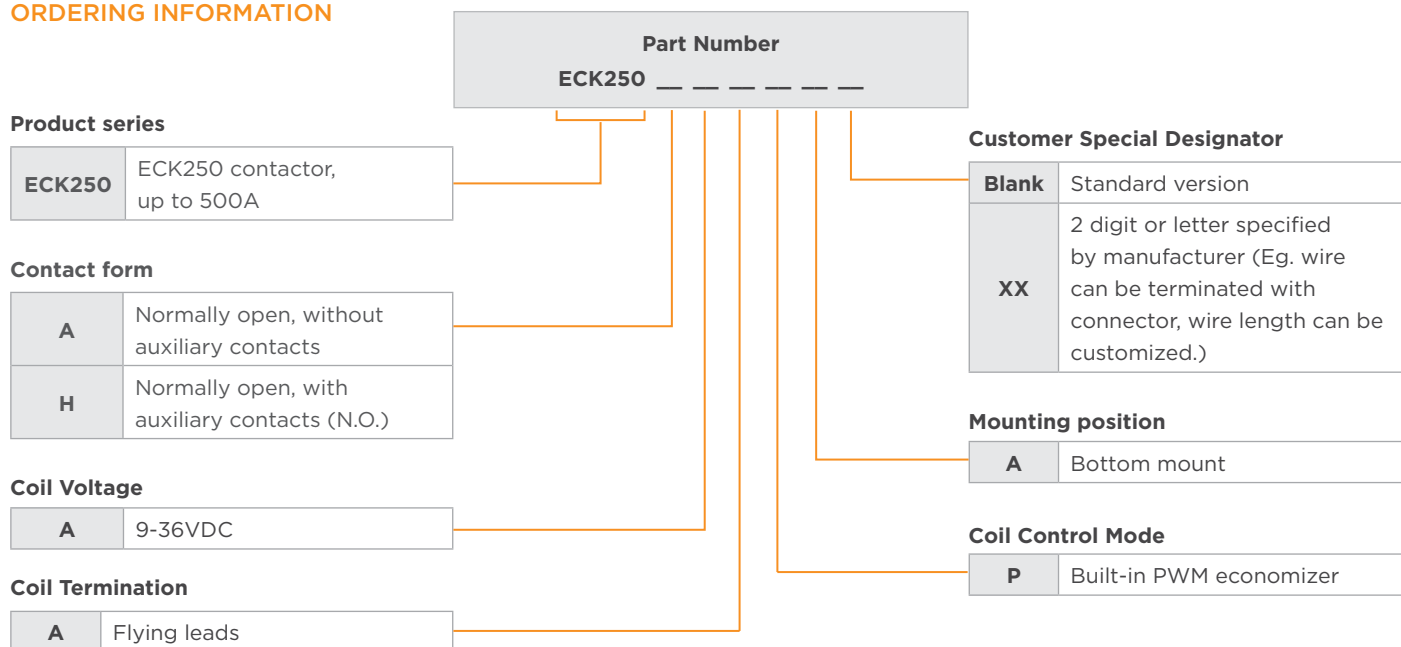


## CIRCUIT DIAGRAM



General Tolerance	
Dimension	Tolerance
<10	±0.3
10 - 50	±0.6
>50	±1.0

## ORDERING INFORMATION



## PRODUCT PART NUMBER TABLE

Product Code	Contact Form	Mounting Position	Coil	Coil Control Mode	Part Number
ECK250AAAPA	Normally open, without auxiliary contacts	Bottom	9-36VDC	Built-in PWM economizer	<u>2-2071567-2</u>
ECK250HAAPA	Normally open, with auxiliary contacts (N.O.)				<u>2-2071567-1</u>

Note: Only typical part numbers are listed above, other types please contact TE engineer.

## CAUTIONS

- Do not use the product when product is dropped or broken.
- Avoid mounting the contactor with the main contact screw terminals in downward direction, otherwise the contactor performance will not be guaranteed.
- Please use correctly according to the mark on the surface of the product. Main contact terminals and coil wires have polarity difference. When the connection polarity is reversed, the electrical characteristics promised in the datasheet will not be guaranteed.
- If using with diodes for coil, it may lead to a decline in product switching performance.
- Please consider electromagnetic interference when using the product.
- Screw locking torque of main contact terminals should be 10-12 N·m for M8 screw. Screw locking torque of product bottom mounting should be 6-8 N·m for M5 screw.
- Suitable for applications under Uimp 6kV.

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