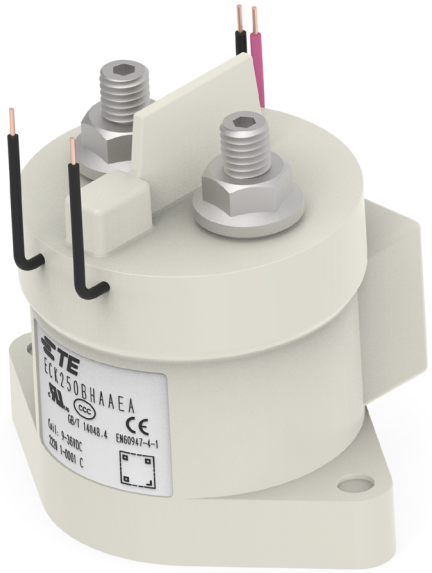
HIGH VOLTAGE DC CONTACTOR ECK250B SERIES

UP TO 500AMP, BI-DIRECTIONAL

INTRODUCTION

ECK250B series high-voltage DC contactor is designed for control in new energy applications. The ECK250B 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. ECK250B is hermetically sealed with ceramic technology and enable high switching capability under 1000VDC. The special contacts design makes it allow bi-directional load to improve reliability and connection efficiency.



FEATURES

- Hermetically sealed with ceramic technology
- Allow bi-directional load for main contacts
- Designed with built-in economizer, hold power 1.7W
- Continuous current carrying capacity of 500A
- Maximum DC breaking current at 2000A
- Maximum DC breaking voltage at 1000VDC
- Auxiliary contact version available
- Compatibility 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

- CE: 724-00006
- UL: E82292
- TUV: R50616662
- CCC approved

High Voltage DC Contactor ECK250B Series

CONTACT DATA

Contact current	500A
Max. Switching voltage	1000VDC
Contact arrangement	1 Form X (SPST-NO-DM)
Initial contact resistance	≤ 0.4mΩ (250A, after 1 minute)
Operate time, max. (At 23°C)	30ms
Release time, max. (At 23°C)	10ms
Mechanical life:	
With auxiliary contact	200,000 cycles
Without auxiliary contact	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
300A, 1000VDC, break only, resistive	100

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 www.te.com/customersupport/rohssupportcenter	
Ambient temperature	-40ºC to 85ºC
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	~400g
Packaging/Unit	Box/24 pcs.

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, 24VDC
Contact resistance, Max.	0.4Ω @ 30VDC

INSULATION DATA

Dielectric Withstand Voltage (leakage current <1mA)	
Between open main contacts	4300Vrms
Between main contact and coil	4300Vrms
Between main contacts and aux contacts	4300Vrms
Between open aux contacts	750Vrms
Initial Insulation Resistance @ 1000VDC	
Between insulated elements	> $1x10^9\Omega$

COIL VERSIONS, DC COIL

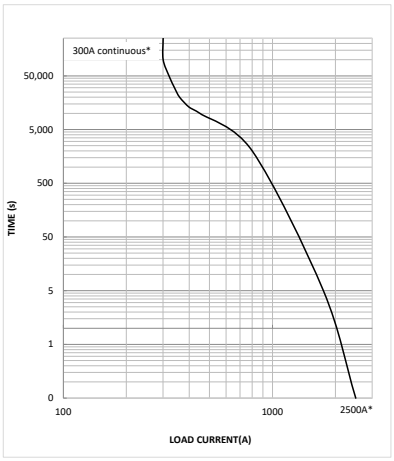
Coil Code	Nominal Voltage	Nominal Operating Current	Max Starting Current	Operating Voltage	Maximum Operating Voltage	Release Voltage	Coil Power
A	9~36VDC	0.13A@12VDC 0.07A@24VDC	3.6A	≤9VDC	36VDC	≥3VDC	Start: 43.2W Hold: 1.7W

Note:

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

High Voltage DC Contactor ECK250B Series

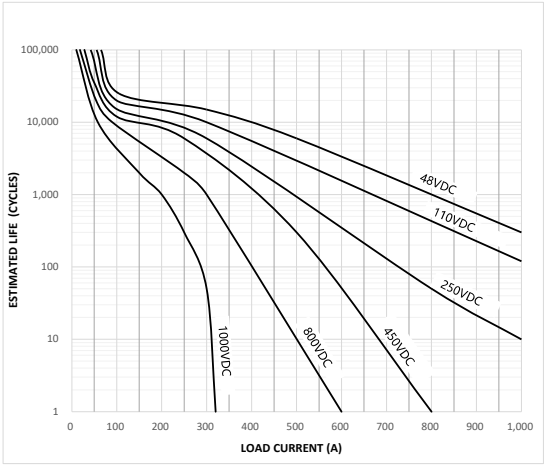
CURRENT CARRYING CAPABILITY CURVE



Notes:

1. The data is measured at the environment temperature 85ºC with cross section area of wire 185mm² min. Smaller cable cross section wires are also allowed depending on the end users conditions.
2. For 500Amp application, recommend >202mm² 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, 140°C max for two hours.
3. For short circuit current, the curve ends at 2500A 50ms, for higher current short circuit capability, recommend end user to evaluate with the fuse together or consult with TE engineers.

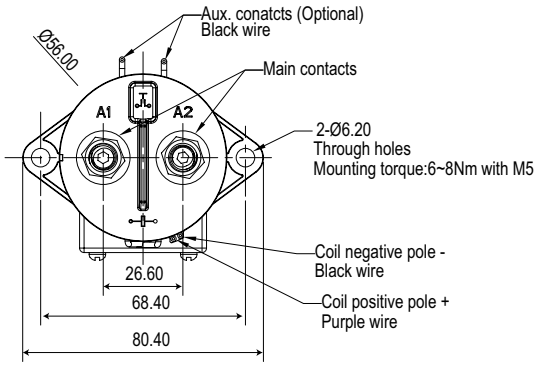
ESTIMATED MAKE & BREAK POWER SWITCHING RATINGS

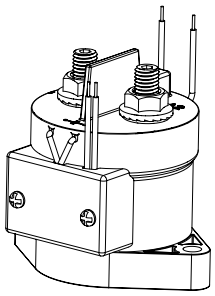


Notes:

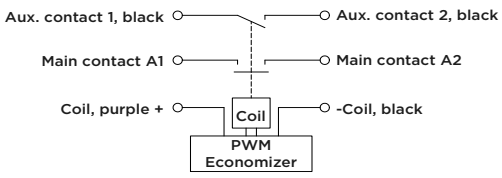
1. The curve was created based on extrapolated data with few typical points, users are recommended to confirm performance in actual application.
2. The typical data were estimated with resistive load at room temperature.
3. For 1000VDC curve, >200Amp load is evaluated with "break only" test condition.

DIMENSIONS (Unit: mm)





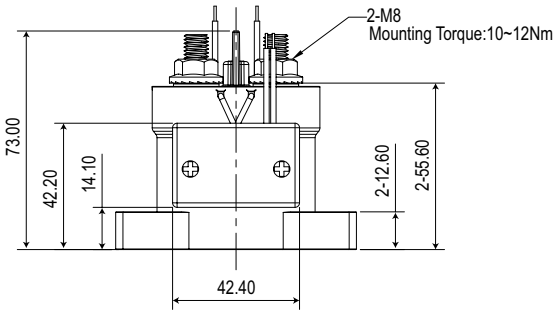
CIRCUIT DIAGRAM

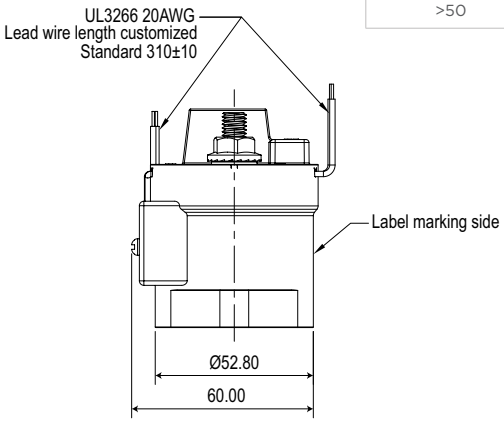


General Tolerance	
Dimension	Tolerance
<10	±0.3
10 - 50	±0.6
>50	±1.0

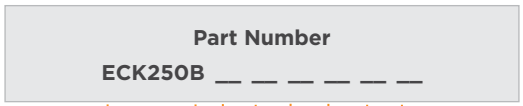
Note:

- Coil connection with positive and negative difference.





ORDERING INFORMATION



Product series

ECK250B	ECK250B contactor, bi-directional up to 500A

Contact form

A	Normally open, without auxiliary contacts
H	Normally open, with auxiliary contacts (N.O.)

Coil Voltage

A	9-36VDC

Coil Termination

A	Flying leads

Customer Special Designator

Blank	Standard version
XX	2 digit or letter specified by manufacturer (Eg. wire can be terminated with connector, wire length can be customized.)

Mounting position

A	Bottom mount

Coil Control Mode

E	External built-in PWM economizer

PRODUCT PART NUMBER TABLE

Product Code	Contact Form	Mounting Position	Coil	Coil Control Mode	Part Number
ECK250BAAAEA	Normally open, without auxiliary contacts	Bottom	9-36VDC	External built-in PWM economizer	2-2071576-1
ECK250BHAAEA	Normally open, with auxiliary contacts (N.O.)				2-2071576-2

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 connect coils correctly according to the Circuit Diagram guide in the datasheet, there is polarity difference, when the connection polarity is reversed, the product cannot operate. The main contact terminals and auxiliary contact terminals does not have polarity difference.
- There are diodes built in the PWM economizer of the coil inside the contactor, additional diodes are not required.
- 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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