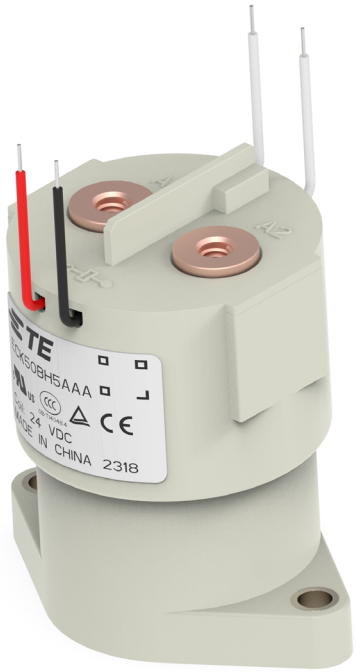
HIGH VOLTAGE DC CONTACTOR ECK50B SERIES

UP TO 50AMP, BI-DIRECTIONAL

INTRODUCTION

TE Connectivity (TE)'s ECK50B series high-voltage DC contactor is designed for control in high voltage applications like battery energy storage system, solar inverters, and EV charging applications. It can be used in 1000VDC voltage systems and the enhanced contacts design provides for high electrical endurance. The contacts provided in this series allows bi-directional load and are hermetically sealed with ceramic sealing technology, making it safer and reliable.



FEATURES

- Hermetically sealed with ceramic technology
- Allow bi-directional load for main contacts
- Continuous current carrying capacity of up to 50A
- Enhanced breaking capacity up to 1000VDC
- Auxiliary contact version available
- Compatibility with DC-1 utilization category in IEC60947-4-1

APPLICATIONS

- DC charging station
- Electric vehicle
- Automated Guided Vehicles (AGV)
- Electric forklift
- Battery energy storage systems
- Photovoltaic inverter

APPROVALS

- UL: E82292
- TUV: R50616669
- CE: 724_00007
- CCC Approved

High Voltage DC Contactor ECK50B Series

CONTACT DATA

Contact current	50A(at 85 °C)
Maximum switching voltage	1000VDC
Contact arrangement	1 Form X (SPST-NO-DM)
Initial contact voltage drop	≤60mV (50A, after 1 minute)
Maximum short circuit current	1500A, 30ms 1000A, 50ms
Operate time, maximum (at 23°C)	30ms
Release time, maximum (at 23°C)	10ms
Mechanical life	300,000 cycles

Note:

For carrying current of 50A (at 40°C), recommended connection conductor size is AWG 6 (16mm²). Smaller conductor size are also applicable but end users are requested to verify with application requirements and take active cooling actions to support long term performance.

CONTACT RATINGS

Load	Cycles
50A , 450 VDC, make/break, resistive	6,000
50A, 1000VDC, make/break, resistive	1,000
50A, 800VDC, make/break, resistive	1,000

CE DECLARATION (IEC60947-4-1)

Rated Operational Current	Utilization Category	Switching Cycles
50A	DC-1	6,050

AUXILIARY CONTACT DATA

Contact form	1 Form A (SPST-NO)
Contact current, maximum	2A, 30VDC
Contact current, minimum	10mA, 24VDC
Contact resistance, maximum	0.4Ω at 30VDC / 0.15Ω at 125VAC

COIL VERSIONS, DC COIL

Coil code	Nominal voltage	Nominal operating current	Operate voltage	Maximum operating voltage	Release voltage	Coil power
4	12VDC	0.462A	≤9VDC	13.2VDC	≥1.2VDC	5.5W
5	24VDC	0.249A	≤18VDC	26.4VDC	≥2.4VDC	6W
6	48VDC	0.122A	≤36VDC	52.8VDC	≥4.8VDC	6W

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

INSULATION DATA

Dielectric withstand voltage (leakage current <1mA)	
between open main contacts	4,300Vrms
between main contact and coil	4,300Vrms
between main contacts and auxiliary contacts	4,300Vrms
between open auxiliary contacts	750Vrms
Initial insulation resistance at 1000VDC	
between insulated elements	> $1x10^9$ Ω

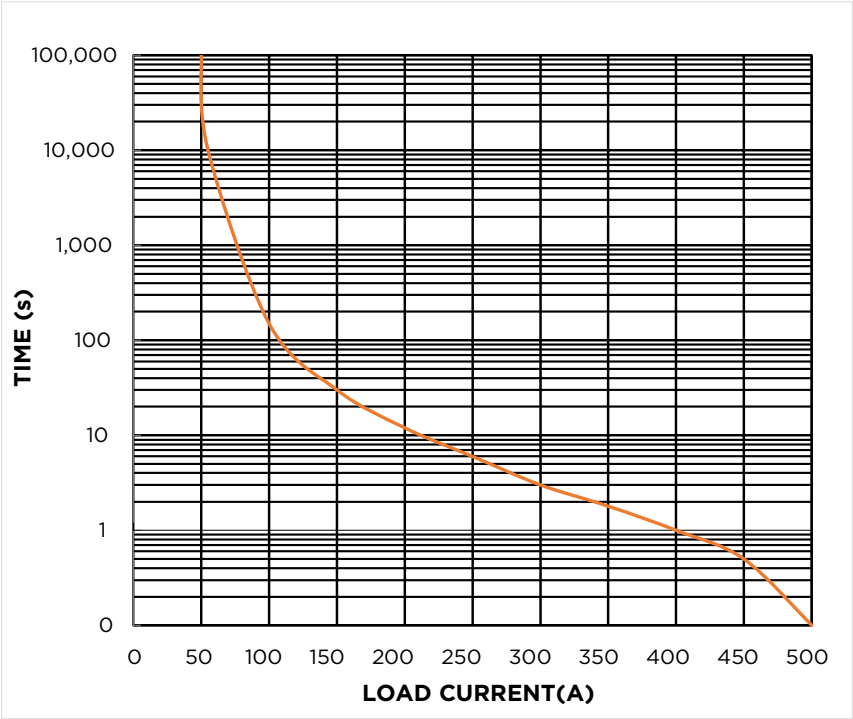
Note: End of life is reached when insulation resistance is <50MΩ at 1,000V.

OTHER DATA

Material compliance: EU RoHS/ELV, China RoHS, REACH, and for halogen content refer to the product Compliance Support Center at www.te.com/customersupport/rohssupportcenter	
Protection category	IP67
Ambient temperature	-40°C to 85°C
Shock 11ms ½ sine (functional)	20G peak
Vibration sine, peak (functional)	6G, 10 Hz - 2000 Hz
Terminal type	Screw for main load contact, wire for coil and auxiliary contact
Weight	0.18 kg

High Voltage DC Contactor ECK50B Series

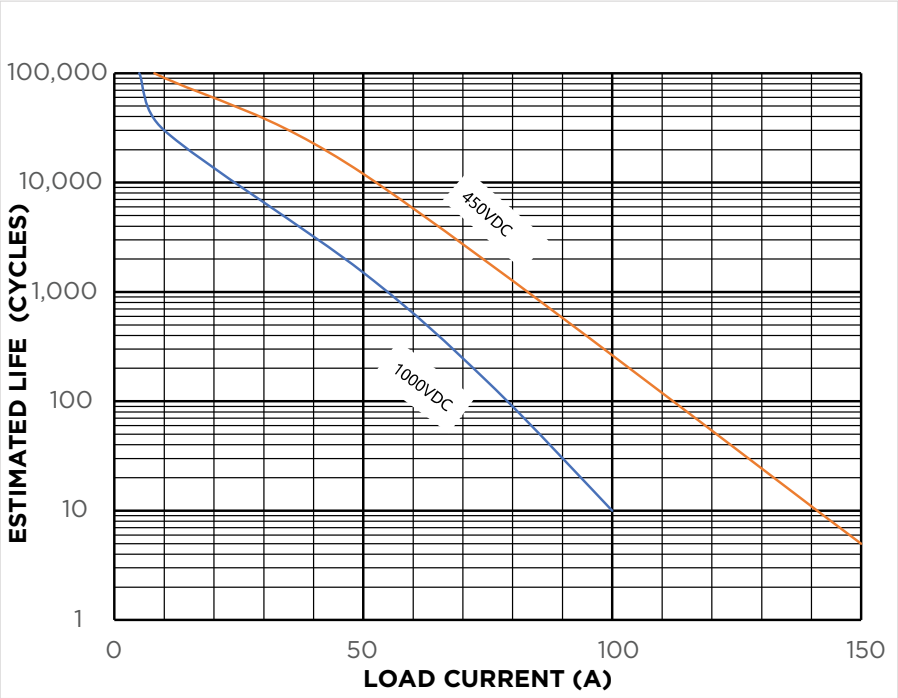
CURRENT CARRYING CAPABILITY CURVE



Note:

1. The data is measured at the environment temperature 85°C with cross section area of wire 16mm² min.

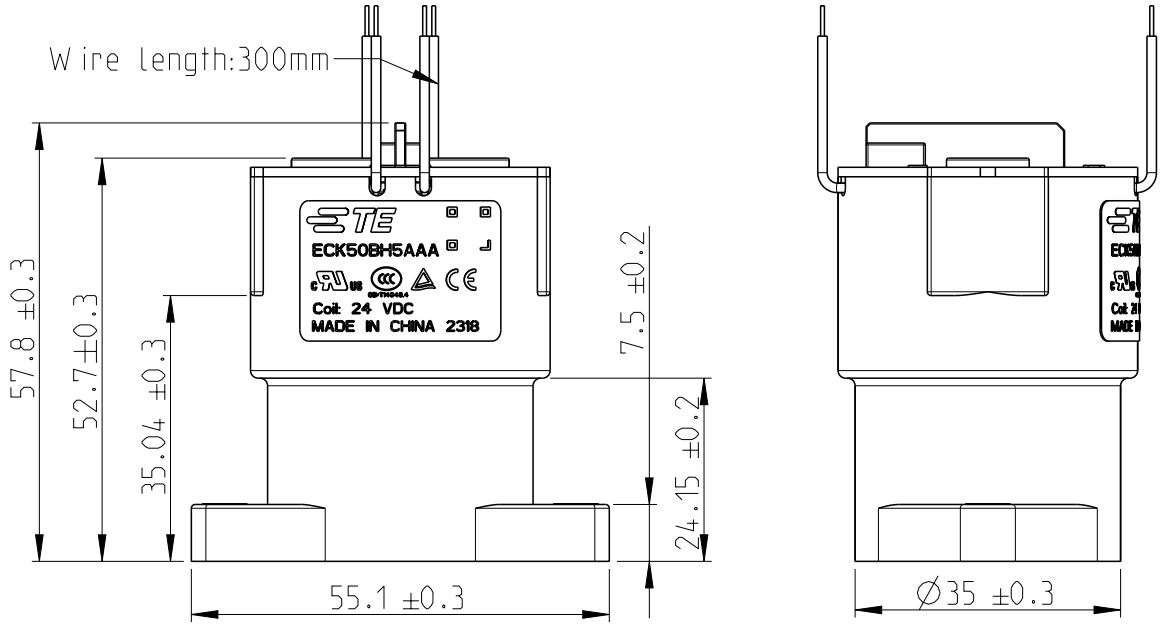
ESTIMATED MAKE AND BREAK POWER SWITHCHING RATINGS

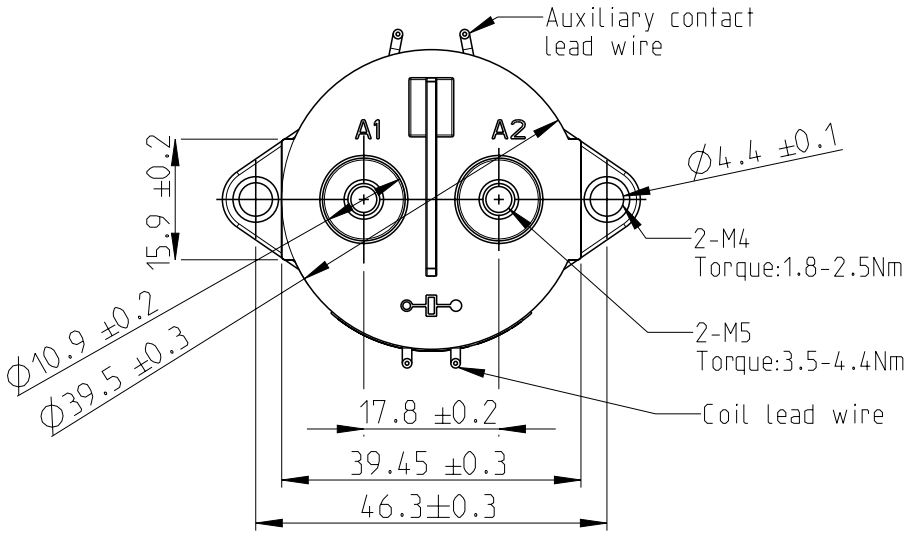


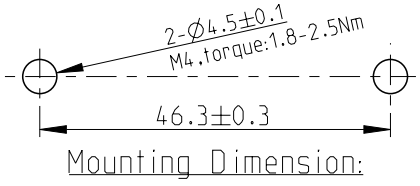
Notes:

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.

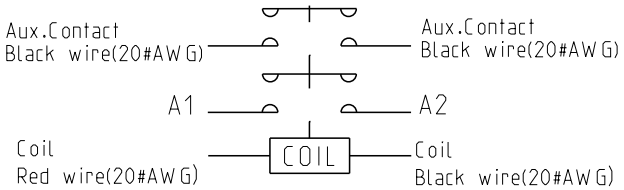
DIMENSIONS (Unit: mm)







Mounting Dimension:



Electrical Diagram:

Notes:

1. ECK50B series, non-polarized, 1 form A of main contact, gas-filled and ceramic seal contactor.
2. Lead wire: UL3266, 20AWG, 300V, -40°C to 120°C. Customized length of lead wire is available.
3. Product require label marking.
4. Coil voltage 12VDC and 24VDC are available.

ORDERING INFORMATION

Part Number
ECK50B H 5 A A A ,XX

Product series

ECK50B	ECK50B series, bi-directional

Contact form

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

Coil voltage

4	12VDC
5	24VDC
6	48VDC

Customer special designator

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

Mounting position

A	Bottom mount

Main contact connection

A	Internal thread

Coil termination

A	Flying leads

PRODUCT PART NUMBER TABLE

Product Code	Contact Form	Mounting Position	Main Contact Connection	Coil	Part Number
ECK50BH4AAA	Normally open + Auxiliary contact (N.O)	Bottom	Internal thread	12 VDC	2071584-1
ECK50BH5AAA				24 VDC	2071584-2
ECK50BH6AAA				48 VDC	2071584-3
ECK50BA4AAA	Normally open			12 VDC	2071584-4
ECK50BA5AAA				24 VDC	2071584-5
ECK50BA6AAA				48 VDC	2071584-6

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

CAUTIONS

- Do not use the contactor when contactor is dropped or broken.
- Avoid mounting the contactor with the main contact screw terminals in downward direction, otherwise the contactor performance will not be achieved.
- Please drive the contactor coil through the fast rising (step type power supply mode), otherwise the contactors will not operate.
- 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 3.5 N·m - 4.4 N·m for M5 screw. Screw locking torque of contactor bottom mounting should be 1.8 N·m - 2.5 N·m for M4 screw.

te.com

11/24 ED