HIGH VOLTAGE CONTACTORS ECK250 SERIES - UP TO 500AMP

INTRODUCTION

TE Connectivity's (TE) ECK250 series high-voltage DC contactor is designed for control in latest energy applications. The ECK250 product line is a noteworthy and reliable solution for EV charging stations, solar inverters, battery energy storage systems, automated-guided vehicles (AGV) and electric forklifts. ECK250 is hermetically sealed with ceramic technology and enables high switching capability under 1000 VDC. 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 1.7 W
- 500A carry current capability (see cautions)
- Maximum DC breaking current at 2000 A
- Maximum DC breaking voltage at 1000 VDC
- Auxiliary contact version available
- Comply with DC-1 utilization category in IEC60947-4-1

APPLICATIONS

- DC charging stations
- Electric vehicles
- AGV
- Electric forklift
- Energy storage systems
- Photovoltaic inverters
- DC converters
- Battery protection boards

APPROVALS

- CE: 724-00004
- UL: E82292
- TUV: R50571784
- CCC approved

High Voltage Contactors ECK250 Series

CONTACT DATA

Contact current	500 A
Maximum Switching voltage	1000 VDC
Contact arrangement	1 Form X (SPST-NO-DM)
Initial contact resistance	≤ 0.4 mΩ (250A, after 1 minute)
Operating time, maximum (At 23°C)	30 ms
Release time, maximum (At 23°C)	10 ms
Mechanical life	
With auxiliary contact	500,000 cycles
Without auxiliary contact	500,000 cycles

CONTACT RATINGS

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

Note:

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

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, maximum	2 A, 30 VDC
Contact current, minimum	10 mA, 24 VDC
Contact resistance, maximum	0.4 Ω @ 30 VDC

INSULATION DATA

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

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	
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	380 g
Packaging/Unit	Box/24 pcs.

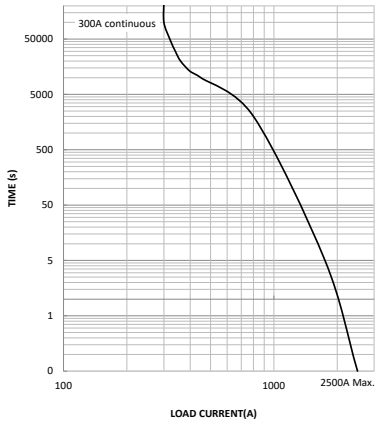
COIL VERSIONS, DC COIL

Coil Code	Nominal Voltage	Nominal Operating Current	Max Starting Current	Operating Voltage	Maximum Operating Voltage	Release Voltage	Coil Power
A	9VDC ~ 36VDC	0.13 A @ 12 VDC 0.07 A @ 24 VDC	3.6 A	≤9 VDC	36 VDC	≥3 VDC	Start: 27.7 W Hold: 1.7 W

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

High Voltage Contactors ECK250 Series

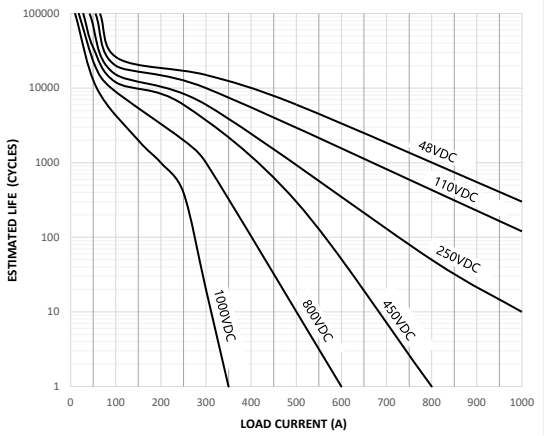
CURRENT CARRYING CAPABILITY CURVE



Notes:

- The data is measured at the environment temperature 85 °C with cross section area of wire 185 mm² minimum. Smaller cable cross section wires are also allowed depending on the end users thermal conditions..
- For 500 Amp application, recommend >202 mm² 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.

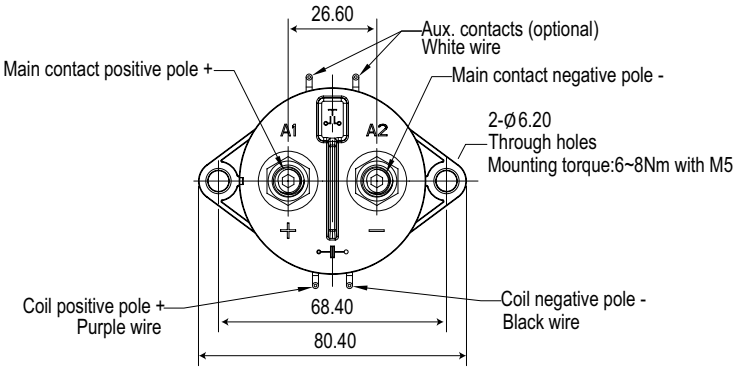
ESTIMATED MAKE & BREAK POWER SWITCHING RATINGS

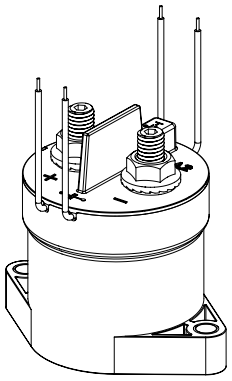


Notes:

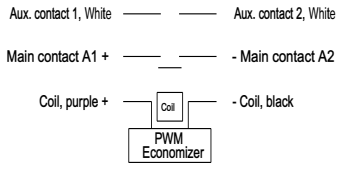
- The curve was created based on extrapolated data with few typical points, users are recommended to confirm performance in actual application.
- The typical data were estimated with resistive load at room temperature.

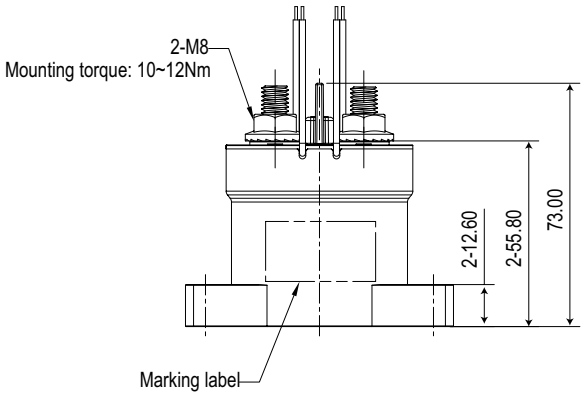
DIMENSIONS

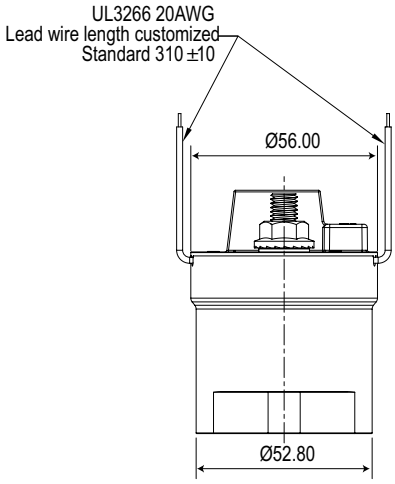




CIRCUIT DIAGRAM





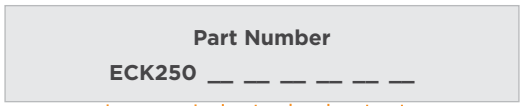


General Tolerance	
Dimension	Tolerance
<10	±0.3
10 ~ 50	±0.6
>50	±1.0

Note:

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

ORDERING INFORMATION



Product series

ECK250	ECK250 contactor, up to 500A

Contact form

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

Coil voltage

A	9VDC - 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

P	Built-in PWM economizer

PRODUCT PART NUMBER TABLE

Product code	Contact form	Mounting position	Coil	Coil control mode	Part number
ECK250AAAPA	Normally open, without auxiliary contacts	Bottom	9VDC - 36VDC	Built-in PWM economizer	2-2071567-2
ECK250HAAPA	Normally open, with auxiliary contacts (N.O.)				2-2071567-1

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 achieved.
- 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.
- 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 N·m - 12 N·m for M8 screw. Screw locking torque of product bottom mounting should be 6 N·m - 8 N·m for M5 screw.
- Suitable for applications under Uimp 6kV.

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