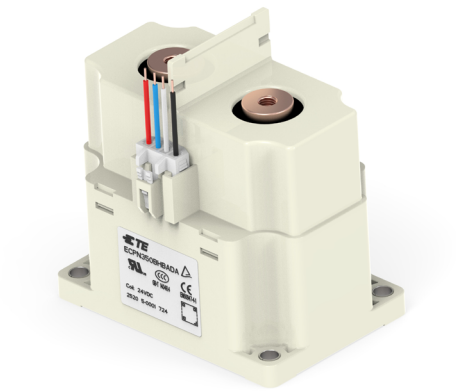
HIGH VOLTAGE DC CONTACTORS ECPN350B SERIES

UP TO 350AMP

INTRODUCTION

TE Connectivity (TE)'s ECPN350B series high-voltage DC contactor is designed for control in high voltage environments like battery energy storage systems, solar inverters, and EV charging applications. It can be used in 1500 VDC voltage systems, and the enhanced insulation distance meets the requirement of UL60947-4-1 & IEC60947-4-1 standards. The contacts provided in this series allow bi-directional load and are hermetically sealed with ceramic sealing technology, making them safer and more reliable.



FEATURES

- Strong short circuit current endurance up to 15KA
- Hermetically sealed with ceramic technology
- Continuous current carrying capacity of upto 350 A
- Enhanced breaking capacity up to 1500 VDC at 1500 A
- Allows bi-directional load
- Dual coil design requiring 5W holding power
- Equipped with auxiliary contact
- Compatibility with DC-1 utilization category in IEC60947-4-1

APPLICATIONS

ECPN350B series contactors can be used for multiple applications including some of the below highlighted

- Battery energy storage systems
- Photovoltaic inverters
- Power conversion system
- Megawatt EV DC charger

APPROVALS

UL, TUV, CE, CCC

Note: Technical data of approved types on request

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MAIN CONTACT DATA

Contact current	350 A
Maximum switching voltage	1500 VDC
Maximum breaking capacity	1500 VDC, 1500A, 1 cycle 1500 VDC, 1000A, 3 cycles 1000 VDC, 2000A, 1 cycle
Contact arrangement	1 Form X (SPST-NO-DM)
Initial contact resistance	≤ 0.2 mOhm (350 A, after 1 minute)
Operate time maximum (at 23°C)	50 ms
Release time, maximum (at 23°C)	20 ms
Mechanical life	200,000 cycles

CONTACT RATINGS

Load	Cycles
100A, 1500Vdc, resistive, make/break	8,000
150A, 1500Vdc, resistive, make/break	3,000
350A, 1500Vdc, resistive, break only, 85 °C	400
500A, 1500Vdc, resistive, break only, 85 °C	250
350A, 1000vdc, resistive, break only	1,300

NOTE:

- Only typical rating listed, please refer to make/break curves in next page for more details at different current and voltage.
- Rating under room temperature if not specific mentioned.

CE DECLARATION (IEC60947-4-1)

Rated Operational Current	Rated Operational Voltage	Utilization Category	Switching Cycles
60 A	1500 VDC	DC-1	6,050

AUXILIARY CONTACT DATA

Contact Form	1 Form A (SPST-NO)
Contact Current, Max.	2A, 24 VDC
Contact Current, Min.	10mA, 12 VDC

COIL VERSIONS, DC COIL

Coil Code	Nominal Voltage	Operate Voltage	Release Voltage	Maximum Operate Voltage	Coil Power
A	12 VDC	≤ 9 VDC	≥ 1.2 VDC	16 VDC	Start: 50 W Hold: 5 W
B	24 VDC	≤ 18 VDC	≥ 2.4 VDC	32 VDC	Start: 50 W Hold: 5 W

All figures are given for coil without pre-energization, at ambient temperature +23°C, and the coil will be automatically switched to 5W hold status after about 200ms energization with coil power 50W.

INSULATION DATA

Dielectric Withstand Voltage (leakage current <1mA)

Between open main contacts	5,400 V_{rms}
Between main contact and coil	5,400 V_{rms}
Between main contacts and aux contacts	5,400 V_{rms}
Between open aux contacts	750 V_{rms}

Initial Insulation Resistance @ 1000 VDC

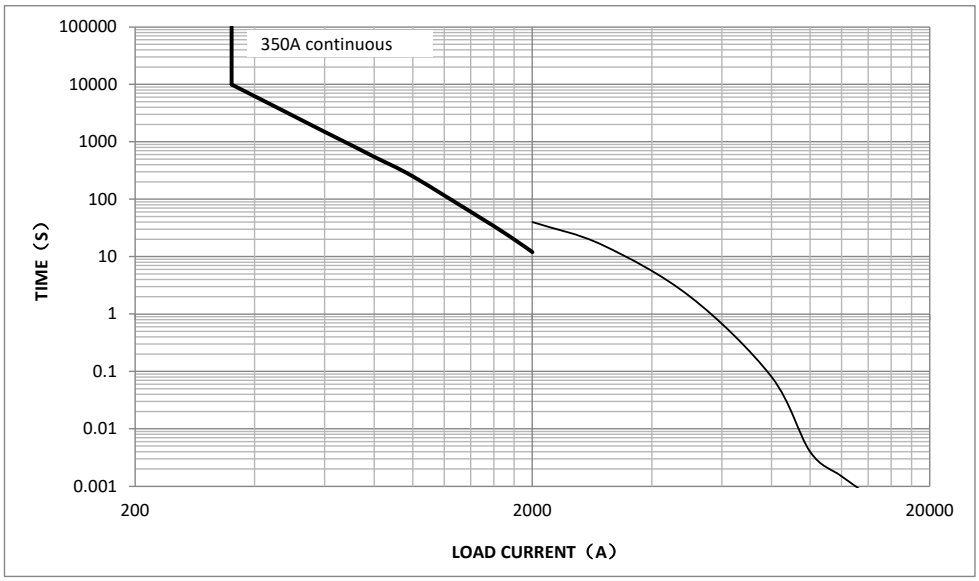
Between insulated elements	> $1x10^9\Omega$

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	-40 °C to 85 °C
Vibration resistance (functional)	Sine, 10-2000Hz, 5G
Shock resistance (functional)	11ms 1/2 Sine, Peak 20G
Terminal type	Screw for contact, wire for coil
Weight	~1135g for female thread version ~1155g for male thread version
Packaging/unit	box/9 pcs.

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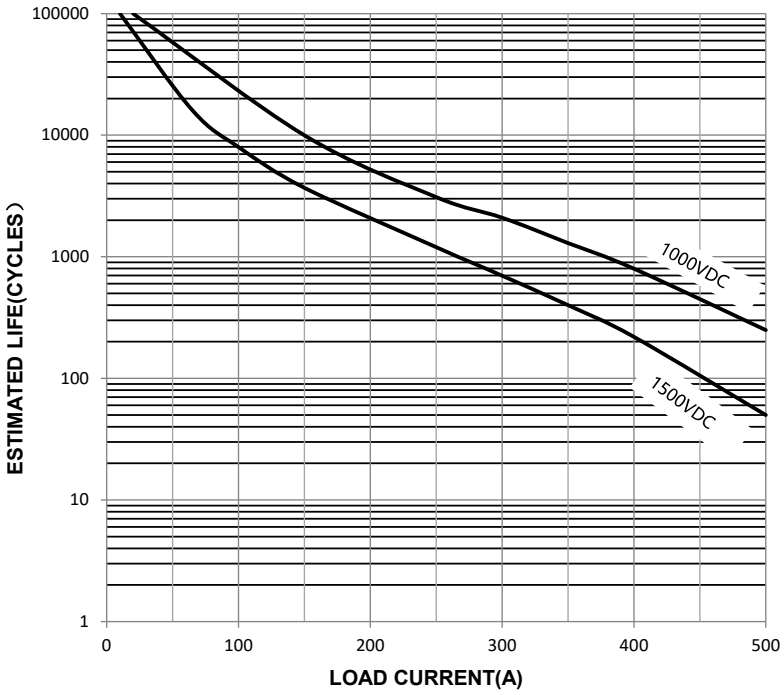
CURRENT CARRY CAPABILITY CURVE



NOTE

1. ——— Overload current carry endurance. The data is measured at the environment temperature 85°C with cross section area of wire 185mm² min.
2. ——— Short circuit current endurance. The data is measured at the environment temperature 23°C with cross section area of wire 185mm² min. Over 2000A load, the judgement criteria of the above reference data is no burning and no explosion.

ESTIMATED MAKE & BREAK POWER SWITCHING RATINGS

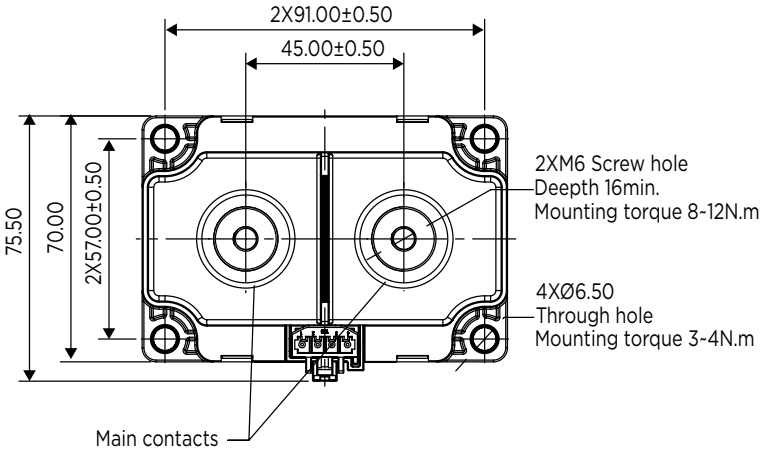


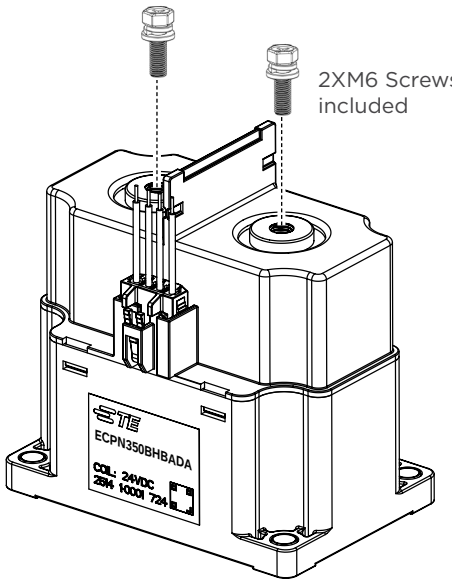
Notes:

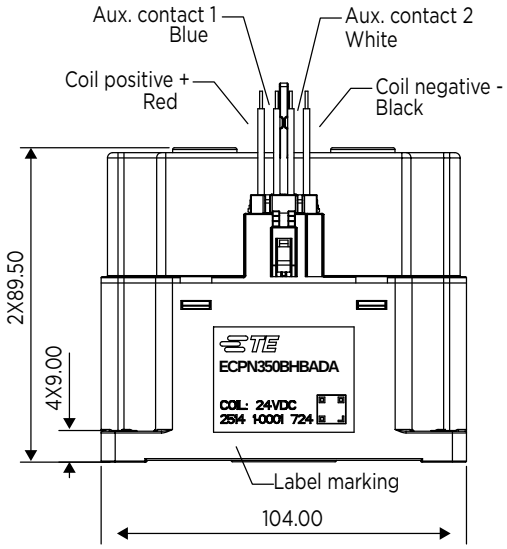
1. The curve was created based on extrapolated data with few typical points, users are recommended to confirm performance in actual application.
2. The typical data were estimated with resistive load, less than 250A were estimated under make and break, 1s on/9s off, over 250A were estimated under break only, 1s on/30-60s off based on IEC60947--1 recommendation according to related current level.

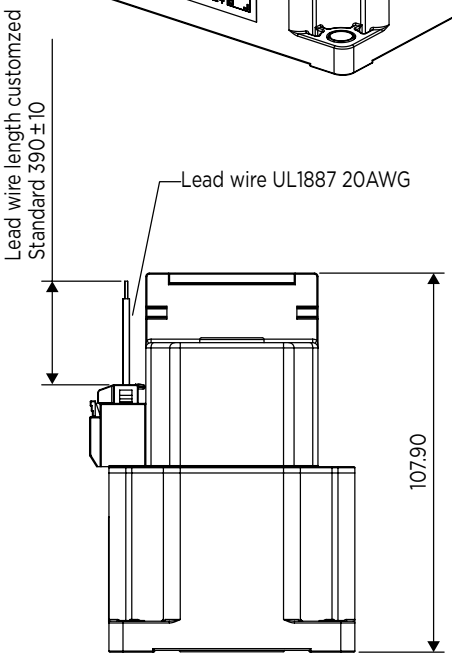
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DIMENSIONS (Unit:mm)



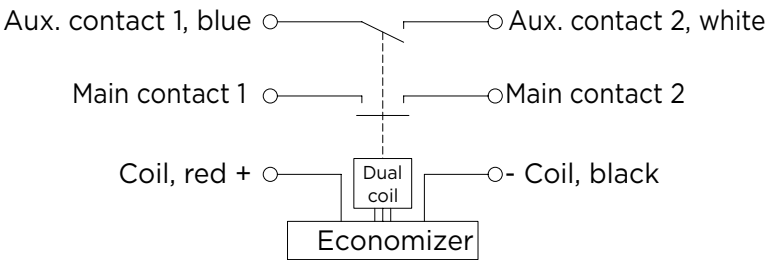






General tolerance	
Dimension	Tolerance
<10	±0.4
10~50	±0.8
>50	±1.2

CIRCUIT DIAGRAM



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PRODUCT CODE STRUCTURE



Product series

ECPN350B	ECPN350B Series, bi-directional, 500Amp

Contact form

H	Normally Open + N.O. auxiliary contacts

Coil voltage

A	12 VDC
B	24 VDC

Coil termination

A	Flying leads

Coil control mode

D	Dual coil

Mounting position

A	Bottom mount, female thread

Coil termination

Blank	Standard version
,XXX	3 digits or letters specified by manufacturer (e.g., wire can be terminated with connector, wire length can be customized.)

PRODUCT INFORMATION

Product code	Contact Form	Mounting Position	Coil	Coil Control Mode	Part Number
ECPN350BHAADA	Normally open, with auxiliary contacts (N.O.)	Bottom mount, female thread	12 VDC	Dual coil	2071630-1
ECPN350BHBADA			24 VDC		2071630-2

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CAUTIONS

1. Do not use the contactor when contactor is dropped or broken.
2. Avoid mounting the contactor main contact terminals in downward direction, otherwise the contactor performance will not be achieved.
3. There is no polarity difference at the load connection end of this contactor, and no polarity difference at the auxiliary contact connection end. There is a polarity difference at the coil connection end: the red wire is connected to the positive pole of the control power supply, and the black wire is connected to the negative terminal of the control power supply. Please pay attention to the correct installation and use.
4. The nominal value of the contact is the value when the resistive load is applied. In the case of an inductive load (L-load) of L/R ≥ 1 ms, take surge absorption measures in parallel with the inductive load. Otherwise the electrical performance cannot be achieved.
5. This contactor has built-in coil suppression reverse electromotive force circuit, so it does not require surge suppression device. When performing this action voltage test, the voltage cannot rise slowly. Please drive the contactor coil through the fast rising (step type power supply mode), otherwise the contactors will not operate.
6. The coil type of this contactor is dual coil, and the coil will be automatically switched to “hold” status after about 0.2 seconds of energization, and the contactor may not operate if energization is less than 0.2 s.
7. It is strictly forbidden to place the contactor in an environment that exceeds the temperature range of the product (-40°C ~ +85°C) for a long time.
8. Please avoid installing near strong magnetic boundaries (around transformers and magnets) and heating objects.
9. In order to prevent loosening, please use the washer correctly when installing the contactor. Screw locking torque of main contact terminals should be 10 N.m-12 N.m for M8 screw. Screw locking torque of contactor bottom mounting should be 3-4 N.m for M5 screw.
10. Please avoid adhering to foreign matter such as grease on the lead end. To maintain the maximum long-term performance, user should select the appropriate connection cable cross section or active cooling to control the temperature.

Notes:

1. Datasheets and product specification according to IEC 61810-1, EN/IEC60947-4-1, UL60947-4-1 and to be used only together with the ‘Definitions’ section.
2. Datasheets and product data is subject to the terms of the disclaimer and all chapters of the ‘Definitions’ section, available at **http://relays.te.com/definitions.**
3. Datasheets, product data, ‘Definitions’ section, application notes and all specifications are subject to change.

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