



High voltage contactors

Series/Type: HVC500B-24

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B88269X1180C011		2024-01-12	2024-04-26	2024-07-26

Please contact your nearest TDK sales office if you need support in selecting a suitable substitute. The addresses of our worldwide sales network are presented at www.tdk-electronics.tdk.com/sales.

Product description

The HVC series has been especially designed to meet the requirements of high-voltage DC switching applications. The optimized hermetically sealed design exhibits excellent reliability performance against harsh environments. HVC series can be used in a wide range of applications.


Features

- Gas-filled and hermetically sealed
- No EMI, low operating power
- No polarity of contact terminals
- RoHS compatible

Applications

- Battery charge/ discharge systems
- Renewable energy storage systems
- DC high-voltage/ high-current applications
- DC fast charging stations

Characteristics

Contact arrangement	1A	
Inner contact material	Cu alloy	
Internal contact gap (full disconnection)	3.0 (2 × 1.5)	mm
Recommended connection cable cross section ¹	> 200	mm ²
Coil wires		
- length	300	mm
- cross section	0.5	mm ²
- material	Cu	
Vibration in closed state, xyz-axis		
- shock, 11 ms ½ sine, peak	20	g
- vibration, sine 100 ... 2000 Hz, peak	20	g
- wideband random vibration, 10 ... 1000 Hz ²	5	g _{eff}
Operation and storage ³		
- temperature	-40 ... +85	°C
- humidity	5 ... 85	%
- air pressure	69 ... 106	kPa
Climatic category (IEC 60068-1)	40/085/21	
Weight	~ 500	g
Certifications	UL 60947-4-1 (E491412) CE	

See "Notes" on page 6

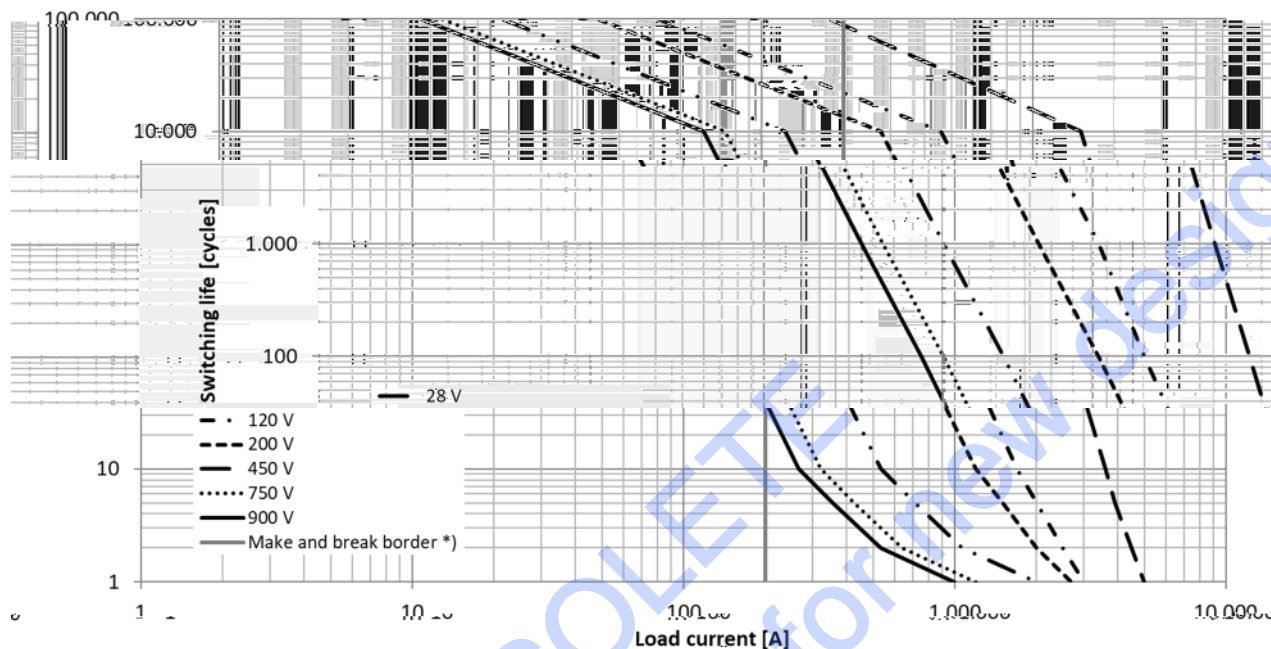
Specification ⁴

Contact			
Maximum operating voltage		900	V _{DC}
Continuous carry current	I _{th}	500	A
Temporary overcurrent (10 min)	I _{cw1}	600	A
Temporary overcurrent (1 min)	I _{cw2}	750	A
Rated operational voltage ⁵	U _e	450	V
Rated operational current ⁵	I _e	100	A
Mechanical life time ⁶		1 000 000	switchings
Minimum make and break current		1	A
Maximum cut-off current (1 operation) ^{7 8}		2000	A
Contact resistance typical (> 100 A)		< 0.4	m
Insulation resistance at 1000 V (initial) contact to contact / contact to coil		> 1	G
Dielectric strength contact to contact / contact to coil ⁹		> 3800	V _{AC}
Operating time			
make		< 35	ms
break		< 15	ms
Coil ¹⁰			
Rated operation voltage	U _c	24	V _{DC}
Operating voltage range	U ₁ ... U ₂	18 ... 32	V _{DC}
Pick-up voltage (max.)	U ₁	18	V _{DC}
Drop-out voltage (min.)		2	V _{DC}
Minimum holding current		0.08	A
Power at nominal voltage ¹¹		6	W
Nominal resistance		96	

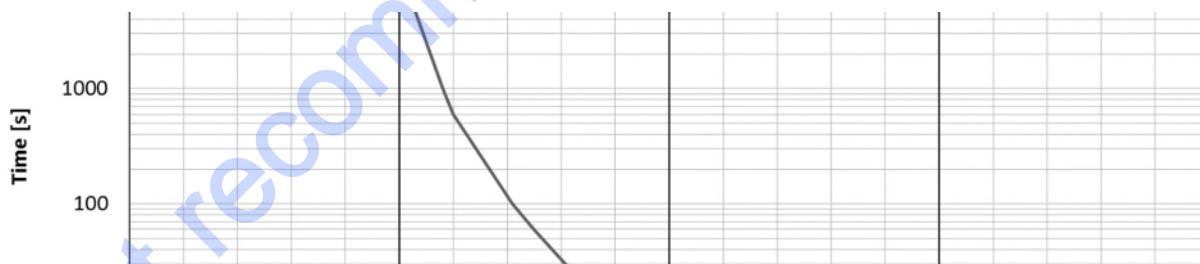
See "Notes" on page 6

Characteristics ¹²

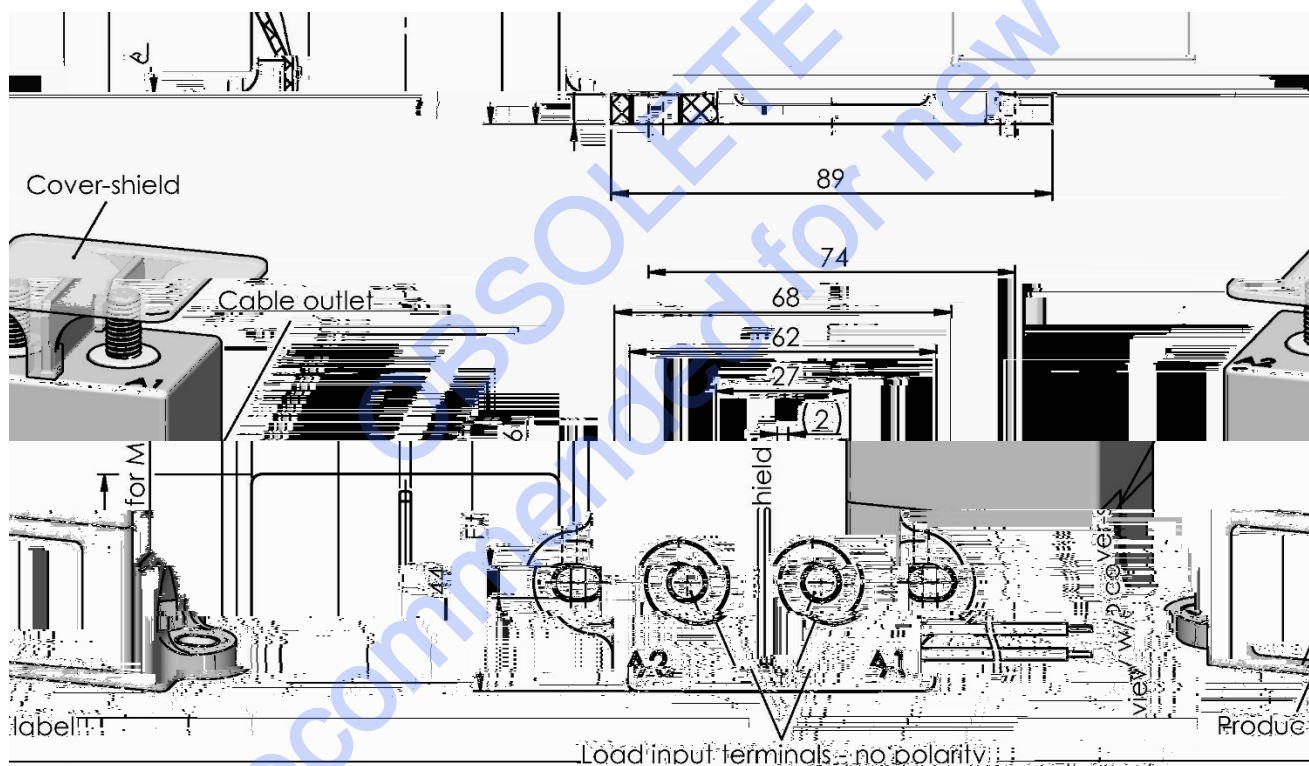
Estimated service life
for resistive loads with $\tau \leq 1$ ms



*) For currents > "make and break border" only break is permitted to avoid tack welding, duty cycle 1%, 600 s cycle duration.
For currents < "make and break border" make and break is permitted duty cycle 10%, 10 s cycle duration.



See "Notes" on page 6

Dimensional drawings in mm


The cover over the main contacts is optional. It can be removed and reapplied if needed.

Connection name	Type	Marking	Finishing	Remarks
A1	Main terminal	A1	copper contact surface	tightening torque 8...12 Nm
A2	Main terminal	A2		
Coil (+)	Coil wire	red	stripped and tinned	
Coil (-)	Coil wire	black		

Packing unit

B88269X....C 11 = 1 pc. in cardboard box

Notes:

- ¹ The diameter must be matched to actual current and operation temperature (see: Cautions and warnings).
- ² Acc. to IEC 60068-2-64
- ³ Freezing or condensing must be avoided.
- ⁴ Acc. to IEC/EN 61810-1
- ⁵ Acc. to IEC 60947-4-1, 6000 operations make & break
- ⁶ Duty cycle 50%, cycle duration 1 s, value represents B10 life time acc. to Weibull analysis.
- ⁷ Tested at 450 V for resistive loads with 1 ms
- ⁸ No fire and no explosion will occur after this break. Afterwards, the dielectric strength and insulation resistance may not meet initial data sheet specification.
- ⁹ Detection limit 10 mA
- ¹⁰ Specified according to JIS C 5442 (temperature 15 °C to 35 °C, humidity 25% to 85% RH).
- ¹¹ Tolerance $\pm 10\%$ at thermal equilibrium
- ¹² End of life is reached when insulation resistance is $< 50 \text{ M}\Omega$ at 1000 V.

Cautions and warnings

- To guarantee a satisfying performance of this contactor in the application we strongly recommend to implement redundancy, take measures to prevent the spread of fire, take the possibilities of malfunction into account, and perform regular maintenance.
- It is also required to always use a suitable backup fuse for the contactor.
- It is not allowed to use the contactor outside of the parameter range specified in this datasheet. This also includes temperature and humidity. Overloading the contactor may destroy the component.
- The lifetime is dependent on several factors: e.g. load type, driving circuit and ambient conditions.

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- The contactor must not be operated without any load, as this may increase the contact resistance.
- Contactors may become hot during extended periods of current overload (burn hazard).
- Contactors must be handled with care and must not be dropped.
- Damaged contactors must not be re-used.
- The manufacturer cannot be held liable for failures caused by condensation or icing. The customer has to apply suitable measures to avoid these circumstances.
- This contactor is not waterproof.
- It is forbidden to use this contactor in atmospheres loaded with organic solvents (alcohol, petroleum, etc.) or strong alkaline substances (ammoniac, acids in general, etc.).
- It must be ensured that during installation and operation no kind of foreign matter adheres to the main contact. Especially oils and silicones must be avoided.
- It is forbidden to attach any kind of additional construction to or on the contactor.
- This contactor is tested and classified according to UL as an open-type device. This means the contactor is intended to be installed in an ultimate enclosure provided by a third party.

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Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is

Important notes

8. The trade names EPCOS, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, ExoCore, FilterCap, FormFit, LeaXield, MiniBlue, MiniCell, MKD, MKK, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, ThermoFuse, WindCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks.

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OBSOLETE
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