

## C310 K Preliminary data information



### PRODUCT INFORMATION

**C310 K**  
**Bidirectional DC contactor**  
**Normally open contact**  
**Current: 150A/300A/500A**

The C310 is a single pole bidirectional DC NO contactor. It was designed to ensure safe switching of high loads and to protect reliably in case of a system malfunction. The new bidirectional contactors are suitable for typical applications such as the DC end of inverters, combiner boxes of photovoltaic installations, battery storage systems and electric vehicles.

The key features and benefits of the C310 series are the compact design, double-break contacts, very efficient newly developed arc chamber as well as the high breaking capacity.

#### Features

- DC bidirectional with permanent magnetic blowout
- Conventional thermal current 150 A, 300 A or 500 A
- High making and breaking capacity
- High rated short-time withstand current
- High resistance to shock and vibration
- Compact and robust, low weight
- Low energy consumption:
  - standard magnetic drive – optimized thanks to electronic coil controller;
  - bistable magnetic drive – no power consumption in open/closed position


## Specification overview

#### Specifications


| Series   | .../150   | .../300 | .../500 |
|--|---|---------|---------|
| Type of voltage  | DC bidirectional, AC (f ≤ 60 Hz)  |         |         |
| Main contacts, configuration   | 1 NO  |         |         |
| Nominal voltage $U_e$  | PD2: C310A: 1,500 V<br>PD3: C310A: 1,000 V  |         |         |
| Rated insulation voltage $U_i$   | PD2: 1,500 V<br>PD3: 1,000 V  |         |         |
| Rated impulse withstand voltage $U_{imp}$  | 8 kV  |         |         |
| Pollution degree   | PD2, PD3  |         |         |
| Overtoltage category   | OV3   |         |         |
| Conv. thermal current $I_{th}$ @ $T_a = 40^\circ C$  | 150 A   | 300 A   | 500 A   |
| Rated short-time withstand current $I_{cw}$  | 3,000 A / 1 s   |         |         |
| Rated short-circuit breaking capacity $I_{cn}$<br>@ L/R = 0.1 ms, $U_e=1500V$ , $I_e = 300A$ | 60 operations   |         |         |
| Auxiliary contacts   | 1x SPDT, single-break, S880 series,<br>AC-15: 230 VAC / 1.0 A; DC-13: 60 VDC / 0.5 A        |         |         |
| Coil control supply voltage $U_s$  | Standard: 12 ... 24 V DC<br>Bistable: 12 / 24 / 48 V DC                                     |         |         |
| Mounting orientation   | horizontal, vertical<br>exception: do not mount upside down                                 |         |         |
| Temperature range  | -40° C ... +70° C (+ 85° C)   |         |         |
| Mechanical endurance   | 2 million op. cycles (standard magnetic drive)<br>100,000 op. cycles (latch magnetic drive) |         |         |

**Note:** All data informations are **preliminary** !  
 Catalogue datasheet is under construction and will follow soon.

# Technical Data

|   |  |  |  |
|---|--|--|--|
| Author/Date   | Kapfer / 2020-02-25  |  |  |
| Version:  | V1.1   |  |  |
|   |  |  |  |
| <b>Technical Data</b>   |  | <b>Contactor C310K-Series (mono- and bistable)</b>   |  |
| <b>Series</b>   | <b>C310K/150</b>   | <b>C310K/300</b>   | <b>C310K/500</b>   |
| Kind of current   | DC<br>AC (f = 60 Hz, max. 1000 V)  | DC<br>AC (f = 60 Hz, max. 1000 V)  | DC<br>AC (f = 60 Hz, max. 1000 V)  |
| Main contacts (poles)   | 1 (NO)   | 1 (NO)   | 1 (NO)   |
| Rated operational voltage $U_n$ (max.)  | 1,000 V (PD3)<br>1,500 V (PD2)   | 1,000 V (PD3)<br>1,500 V (PD2)   | 1,000 V (PD3)<br>1,500 V (PD2)   |
| Rated insulation voltage $U_i$  | 1,000 V (PD3)<br>1,500 V (PD2)   | 1,000 V (PD3)<br>1,500 V (PD2)   | 1,000 V (PD3)<br>1,500 V (PD2)   |
| Rated impulse withstand voltage $U_{imp}$   | 8 kV   | 8 kV   | 8 kV   |
| Overvoltage category  | OV3  | OV3  | OV3  |
| Other electrical ratings of main circuit  |  |  |  |
| Conventional free air thermal current $I_{th}$<br>$T_a = 85\text{ °C}$ (Cross section)<br>Terminal heating $T_t$  | 200 A (50 mm <sup>2</sup> )<br>45 K  | 350 A (120 mm <sup>2</sup> )<br>45 K   | 500 A (185 mm <sup>2</sup> )<br>65 K   |
| Power dissipation per pole ( $I_{th}$ ), typ.   | 5.0 W  | 15 W   | 30 W   |
| Pole impedance, typ.  | 120 $\square\square$   | 120 $\mu\Omega$  | 120 $\mu\Omega$  |
| Rated short-time withstand current $I_{sw}$<br>1s   | 3,000 A  | 3,000 A  | 3,000 A  |
| Rated short-circuit making capacity $I_{cm}$<br>(L/R = 0 ms)<br>For mono- or bistable drive<br>(depending on mounting position)   | monostable<br>horizontal: 2,500 A<br>vertical: 2,000 A<br><br>bistable<br>horizontal: 750 A<br>vertical: 750 A | monostable<br>horizontal: 2,500 A<br>vertical: 2,000 A<br><br>bistable<br>horizontal: 750 A<br>vertical: 750 A | monostable<br>horizontal: 2,500 A<br>vertical: 2,000 A<br><br>bistable<br>horizontal: 750 A<br>vertical: 750 A |
| Breaking capacity<br>( $L_{max} = 0,25\text{mH}$ , other values on request)<br>Single contact<br>$U_n = 1,500\text{ V} / I_n = 300$<br>$U_n = 900\text{ V} / I_n = 700\text{ A}$<br>$U_n = 750\text{ V} / I_n = 800\text{ A}$ | 60 operations  | 60 operations  | 60 operations  |
| Main contacts   |  |  |  |
| Contact material  | AgSnO <sub>2</sub>   | AgSnO <sub>2</sub>   | AgSnO <sub>2</sub>   |
| Terminals   | M8   | M10  | M10  |
| Torque  | Max. 6 Nm  | Max. 10 Nm   | Max. 10 Nm   |
| Auxiliary contacts  |  |  |  |
| Number, configuration   | 1x S880 W1R6 k   |  |  |
| Contact material  | Silver   |  |  |
| Making / breaking capacity S880   | AC-15: 230 VAC / 1.0 A; DC-13: 60 VDC / 0.5 A  |  |  |
| Terminals   | Flat quick connect 2.8 x 0.5 mm  |  |  |
| Minimum voltage / current   | 5 V / 5 mA   |  |  |
| <b>Magnetic drive (monostable)</b>  |  |  |  |
| Pollution degree / Overvoltage category   | PD3 / OV2  | PD3 / OV2  | PD3 / OV2  |
| Rated control supply voltage $U_c$  | 12 – 24 V  | 12 – 24 V  | 12 – 24 V  |
| Operating range   | 9.5 V - 36 V   | 9.5 V - 36 V   | 9.5 V - 36 V   |
| Coil power dissipation, max. ( $T_a = 20\text{ °C} / U_c$ )   |  |  |  |
| Pull-In Power (0.2s)  | 50 W (24 V)  | 50 W (24 V)  | 50 W (24 V)  |
| Holding Power   | 2.6 W  | 2.6 W  | 2.6 W  |
| Frequency of operation (operations per hour)  |  |  |  |
| (No load)   |  |  |  |
| $T_a = 20\text{ °C}$  | 3,600 h <sup>-1</sup>  | 3,600 h <sup>-1</sup>  | 3,600 h <sup>-1</sup>  |
| $T_a = 70\text{ °C}$  | 1,800 h <sup>-1</sup>  | 1,800 h <sup>-1</sup>  | 1,800 h <sup>-1</sup>  |
| Typical pull-in time ( $T_a = 20\text{ °C} / U_c$ )   |  |  |  |
| Typical drop-off time ( $T_a = 20\text{ °C} / U_c$ )  | 33 ms  | 33 ms  | 33 ms  |
| Coil suppression (integrated)   | 25 ms  | 25 ms  | 25 ms  |
| Coil terminal (flat tap)  | Suppressor diode<br>6.3 x 0.8 mm   | Suppressor diode<br>6.3 x 0.8 mm   | Suppressor diode<br>6.3 x 0.8 mm   |
| <b>Magnetic drive (bistable)</b>  |  |  |  |
| Pollution degree / Overvoltage category   | PD3 / OV2  | PD3 / OV2  | PD3 / OV2  |
| Rated control supply voltage $U_c$  | 24 V   | 24 V   | 24 V   |
| (ON-Time 0.1 – max. 0.5 s)  |  |  |  |
| Minimum operating voltage   | 15 V   | 15 V   | 15 V   |

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|             |                     |  |
|-------------|---------------------|--|
| Author/Date | Kapfer / 2020-02-25 | <br><small>Control - Contact - Control</small> |
| Version:    | V1.1                |  |

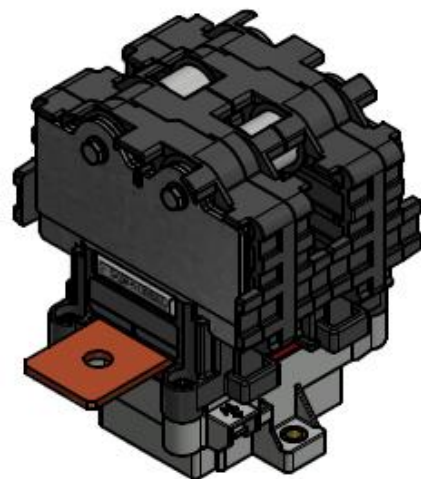
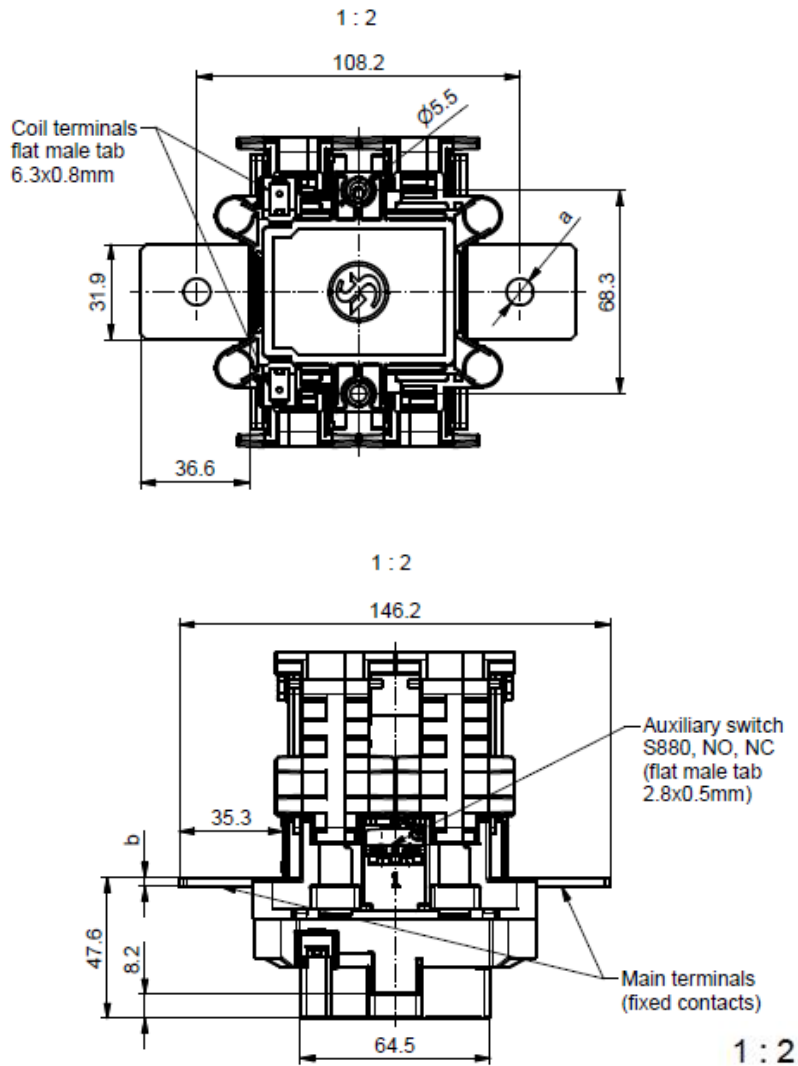
|                       |  |
|-----------------------|--|
| <b>Technical Data</b> | <b>Contactor C310K-Series (mono- and bistable)</b> |
|-----------------------|--|

| Series   | C310K/150  | C310K/300  | C310K/500  |
|--|--|--|--|
| Coil power dissipation, max. ( $T_a = 20\text{ °C} / U_d$ )  | 35 W   | 35 W   | 35 W   |
| Frequency of operation (operations per hour)<br>(No load)<br>$T_a = 20\text{ °C} / 70\text{ °C}$   | 1,800 h <sup>-1</sup>                              | 1,800 h <sup>-1</sup>                              | 1,800 h <sup>-1</sup>                              |
| Typical pull-in time ( $T_a = 20\text{ °C} / U_d$ )<br>Typical drop-off time ( $T_a = 20\text{ °C} / U_d$ )<br>Coil suppression (integrated)<br>Coil terminal (flat tap) | 20 ms<br>13 ms<br>Suppressor diode<br>6.3 x 0.8 mm | 20 ms<br>13 ms<br>Suppressor diode<br>6.3 x 0.8 mm | 20 ms<br>13 ms<br>Suppressor diode<br>6.3 x 0.8 mm |

|  |  |  |  |
|--|--|--|--|
| Dimensions   | H = 124 mm<br>W = 146.2 mm<br>D = 104 mm   | H = 124 mm<br>W = 146.2 mm<br>D = 104 mm           | H = 124 mm<br>W = 146.2 mm<br>D = 104 mm           |
| Mounting position  | vertical / horizontal<br>(not upside-down)   | vertical / horizontal<br>(not upside-down)         | vertical / horizontal<br>(not upside-down)         |
| Weight   | 1.23 kg  | 1.3 kg   | 1.3 kg   |
| Degree of protection (IEC 60529)   | IP00   |  |  |
| Mechanical endurance (operations)  | monostable<br>2,000,000<br><br>bistable<br>100,000   | monostable<br>2,000,000<br><br>bistable<br>100,000 | monostable<br>2,000,000<br><br>bistable<br>100,000 |
| Shock and Vibration<br>EN 61373<br>ISO 16750-1   | Category 1, class B<br>Class C   |  |  |
| Temperature<br>Operating temperature<br>Storage temperature<br>Altitude<br><br>Humidity (EN 50125-1) | -40 °C ... +85 °C<br>-40 °C ... +85 °C<br>< 4,500 m @ $U_i = 1,000\text{ V}$ , < 3,500 m @ $U_i = 1,500\text{ V}$<br>(other limits on request)<br>< 75% yearly average |  |  |

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## Drawing / C310 K (500A Version)



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## Ordering Code

# C310A/300 24I-V1 001

Type: \_\_\_\_\_

C310

Ausführung / Type: \_\_\_\_\_

A: 1000 V DC

K: 1500 V DC

S: 60 V DC cover only

Thermischer Dauerstrom  $I_{th}$  / \_\_\_\_\_

Thermal Current  $I_{th}$ :

150 A

300 A

500 A

Spulenspannung  $U_s$  / \_\_\_\_\_

Supply Voltage  $U_s$ :

12-24 V (9-36 V) mono-stable

48 V (32-60 V) mono-stable

24 V bi-stable

48 V bi-stable

Spulentoleranz  $U_s$  / \_\_\_\_\_

Tolerance of  $U_s$ :

I = PWM-module

B = bi-stable

R = PWM-module rail applications

Hilfsschalterausführung / \_\_\_\_\_

Auxiliary Contact:

V = S880 W1R6 k

Kundenversionen / Customer Versions: \_\_\_\_\_

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