eddicy A Schaltbau Brand

C330

1 pole bi-directional DC NO contactors up to 1,500 volts and 3,000 amps

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Ready for the future of megawatt charging – the new, compact Eddicy contactors in the C330 series are specifically designed to meet the demands of high-power charging stations. They combine maximum switching capacity with a space-saving design, thus creating the technical basis for future-proof megawatt charging infrastructures. Developed for maximum performance, reliability, and scalability, the C330 series supports the next step in the development of ultra-fast charging for heavy commercial vehicles.

Fast charging at up to 3.75 megawatts sets new standards for heavy trucks and mining trucks. This exceptional performance is made possible by an innovatively designed, two-stage main contact system that has been specially developed for extreme electrical and mechanical requirements. The C330 can withstand a short-term current of 15,000 amps for five milliseconds without the contacts welding together, thereby ensuring maximum operational reliability even under the most extreme conditions.

After the switch-on process, a separate, highly optimized secondary contact system reliably conducts continuous currents of up to 3,000 amps. Thanks to a consistently extremely low contact resistance of only 40 microohms, electrical losses are reduced to a minimum. This increases energy efficiency, reduces power loss, and contributes significantly to an economical, powerful, and future-proof fast-charging infrastructure for heavy-duty applications.

Features

Megawatt charging system for fast charging stations

High-performance contactors for high-end applications with switchting voltages up to 1,500 volts and continuous currents up to 3,000 amps. Thanks to permanently extremely low contact resistances, contact heating is significantly reduced, which minimizes energy losses and significantly increases the efficiency of the overall system. The lower heat input reduces cooling requirements, lowers system costs, and increases the service life of the components—ideal for reliable use in modern high-performance fast charging stations for MSC Level 2 and Level 3.

Safe arc extinguishing – no risk of explosion

The compact air contactor with permanent-magnet arc extinguishing and without gas encapsulation equalizes excess pressure. This ensures long, trouble-free operation in demanding environments without explosion hazards.

Full bi-directionality – reliable disconnection of high power

All versions of the C330 can reliably switch high currents and voltages when required, regardless of the direction of current flow. These properties are achieved through the special arrangement of blow magnets and arcing chambers.

V2G-ready for bi-directional charging stations

Bi-directional contactors are required for the perfect interaction between electric vehicles and charging stations. These enable electric vehicles not only to charge, but also to feed electricity into the grid or use it for the domestic power supply.

Space-saving design for industrial applications

The compact design has been specially developed for use in industrial applications and allows for easy integration even in limited installation spaces. This allows existing system layouts to be used flexibly, reduces installation costs, and enables new and existing applications to be implemented efficiently.

Mirror contact function for maximum operational reliability

The C330 contactors have an integrated auxiliary contact with mirror contact function according to IEC 60947-4-1, annex F. Mirror contacts are required in feedback circuits of safety controls. The mirror contact function informs about the switching state and ensures that the NC contact of the auxiliary contact is not closed at the same time as the NO main contact.

Applications

Applications for e-mobility

- DC fast charging stations
- Battery test benches for the automotive industry
- Battery management for zero-emission propulsion systems in maritime applications and DC charging on and off-shore (in preparation)

Stationary applications

- Grid stabilization and battery energy storage
- Regenerative systems in industrial plants
- Battery management systems
- Uninteruptable Power Supplies (UPS)
- Photovoltaics

Reliable, robust and economical

C330 series contactors are designed for continuous currents of up to 3,000 amps. The switching devices have both a high making and breaking capacity and a high short-time rated current. This ensures a high level of operational reliability. An integrated electronic coil control ensures a consistently reliable contact force regardless of the ambient temperature.

This also significantly reduces energy consumption and the associated heat generation when the device is energized. Depending on the application, electromechanical components are subject to high demands. The new DC contactors are highly resistant to shock and vibration loads in accordance with IEC 61373.

Ordering key

C330-2000-G0P-24I-V1

Series, contact configuration
C330 1 pole bi-directional DC NO contactor

Conventional thermal current
2000 I_{th} = 2,000 A; fixed contact: copper, silver-plated

Assembly
G Mounting holes, attachment on the bottom side
T Mounting holes, attachment to the top side

Design fixed contacts
0 Standard, fixed copper contacts, connection 4x M6 each

Auxiliary switch
1x integrated auxiliary contact SPDT with mirror contact function to IEC 60947-4-1, annex F **V1**

Coil voltage/coil control (monostable)
24 V DC, with PWM module **24I**

Coil/aux. connector
1x 5 pole connector, Phoenix Contact MCV 1.5/5-G-3.5-RN **P**

Accessories
4-pin connector for connecting the coil and auxiliary switch:
Anytek KD0510520000G or Phoenix Contact FMC 1.5/ 5-ST-3.5-RF;
please order separately.

Note: Presented in this catalogue are only stock items which can be supplied in short delivery time. For some variants minimum quantities apply. Please do not hesitate to ask for the conditions.

Special variants: If you need a special variant of the contactor, please do not hesitate to contact us. Maybe the type of contactor you are looking for is among our many special designs. If not, we can also supply customized designs. In this case, however, minimum order quantities apply.

Standards

IEC 60947-4-1
Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor starters – Electromechanical contactors and motor starters

UL 60947-4-1
Low-Voltage Switchgear and Controlgear – Part 4-1: Contactors and Motor-Starters – Electromechanical Contactors and Motor-Starters.

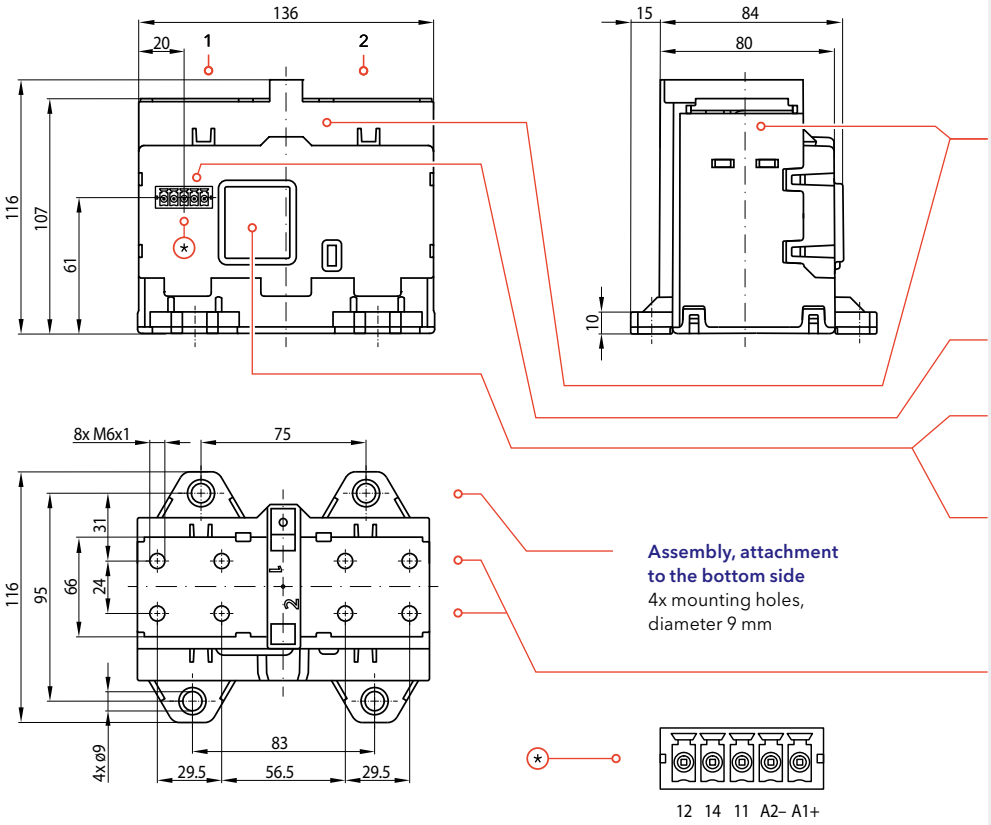
GB/T 14048.4
Low-Voltage Switchgear and Controlgear – Part 4-1: Contactors and Motor-Starters – Electromechanical Contactors and Motor-Starters.

Specifications

Series		C330
Type of voltage		DC bi-directional
Main contacts, configuration		1x, NO
Switching voltage max. U		1,500 V
Continuous current, recommended cross section		2,000 A @ 3x 500 mm² 3,000 A @ 3x 1,000 mm² *1
Insulation resistance, new contacts	Main contact – ground Main contact – coil / aux. contact Main contact – main contact	> 200 MΩ > 200 MΩ > 100 MΩ
Breaking capacity, L < 25 µH, bi-directional		Switching cycles
1 contactor in the circuit: 1 main contact	U_e = 1,500 V / I_e = 2,200 A	1
	U_e = 1,500 V / I_e = 500 A	3
	U_e = 1,500 V / I_e = 350 A	10
	U_e = 850 V / I_e = 2,500 A	1
	U_e = 850 V / I_e = 1,200 A	5
Dielectric strength		
Contact to contact; contact to coil; contact to aux (Leakage < 1 mA)		6,000 VAC, 60 sec
Electrical data according to IEC/UL 60947-4-1		
Rated operational voltage U_e	max.	1,000 V (1,500 V for occasional switching)
Rated insulation voltage U_i		1,000 V @ PD3 / 1,500 V @ PD2
Rated impulse withstand voltage U_{imp}		10 kV
Pollution degree / Overvoltage category		PD2 or PD3, see U_i / OV3
Conventional free air thermal current I_{th} *1	@ cross section	2,000 A @ 3x 500 mm²
Power dissipation	@ I_{th} = 2,000 A, typical	160 W
Pole impedance		40 µΩ
Utilization category DC-1*2, U_e = 1,000 V Rated operational current I_e		 10 A
Frequency of operation (operations per hour) I_e	DC-1 (10 A)	360 h^{-1}
Rated short-time withstand current I_{cw} (L < 50 µH)	@ t ≤ 5 ms, typical	15,000 A Contactor fully functional, no contact welding 30,000 A Contact welding, no detachment of conductive parts
Rated short-circuit making capacity I_{cm}	L < 50 µH	2,000 A
Main contacts		
Contact material		$AgSnO_2$
Terminals		Thread M6
Torque		8±0.2 Nm for screws with strength class 8.8
Auxiliary contacts		
Number, configuration / contact material		1 CO (SPDT) / silver
Mirror contact function	IEC 60947-4-1, annex F	●
Utilisation category		AC-15: 50 V / 1.0 A DC-13: 50 V / 0.5 A
Maximum voltage / current		50 V / 1 A
Minimum voltage / current		5 V / 10 mA
Terminals		5 pole connector
Magnetic drive with PWM module, monostable		
Coil voltage U_s (operating range) *3		24 V DC (19 ... 32 V DC)
Pollution degree / Overvoltage category		PD3 / OV2
Coil power, max.	Pull-in @ T_a = 20°C Holding @ T_a = 20°C	95 W 11 W
Pull-in time / drop-off time	@ T_a = 20 °C / U_s, typical	< 200 ms / < 100 ms
Coil suppression		PWM module with suppressor diode integrated
Coil terminal		5 pole connector
Mounting position		vertical / horizontal (see permissible mounting orientations on page 6)
Mechanical endurance		200,000 operations
Shock / Vibration	IEC 61373	Category 1, Class B
Environmental conditions	Operating temperature / Storage temperature Altitude / Humidity (EN 50125-1)	-40° C ... +85° C / -40° C ... +95° C < 4,000 m above sea level / < 75 % on an annual average
Approvals *4		CE (CCC) cULus UKCA
Weight		approx. 2.3 kg

*1 In the application, the terminal temperature 95° C max. must not be exceeded continuously. This value must be ensured during system integration.
*2 Corresponds to 50 switching operations 1.5 x I_e and 6,000 switching operations 1.0 x I_e
*3 For a safe pull-in, the voltage must reach the lower value of the coil voltage U_s function range within a maximum of 1 ms.
*4 In preparation

C330 – Dimension diagram for mounting on the bottom side of the device



C330 – 1 pole bi-directional DC NO contactor up to 1,500 volts and up to 3,000 amps; mounting holes on the bottom side

Main contact system with arc chamber
1-pole NO contact with two-stage contact system for making/breaking and an additional, extremely low-resistance NO contact for carrying high continuous currents with maximum contact protection and long operating life.

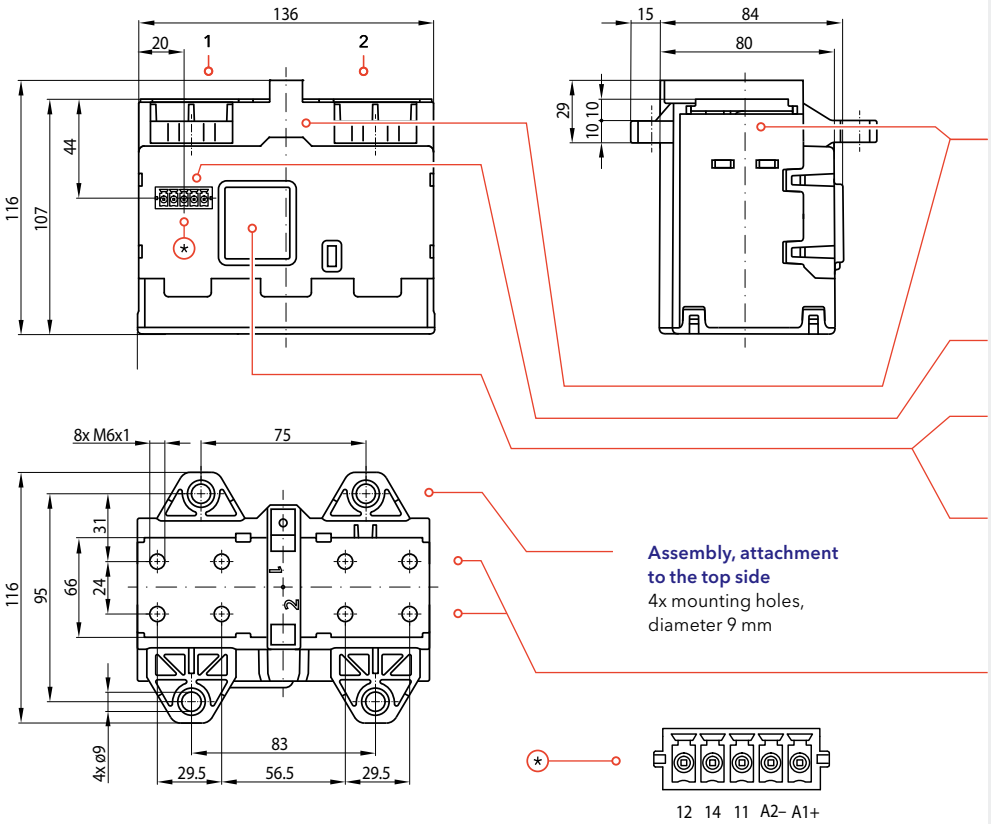
5-pin connector auxiliary switch/coil*
For pin layout, see circuit diagram on page 6.

Auxiliary switch
CO (SPDT) with mirror contact function according to IEC 60947-4-1, annex F

Electronic coil controller
PWM module for permanently reliable switching behaviour regardless of ambient temperature, reduced energy consumption and less heat generation.

Fixed contacts main contact system
- Material: Copper, silver-plated
- Connection: 8x threaded holes for 2x 4 M6 connecting screws, length 15 mm + screw lock and thickness of the busbar; Tightening torque: 8±0.2 Nm for screws of strength class 8.8

C330 – Dimension diagram for mounting on the top side of the device



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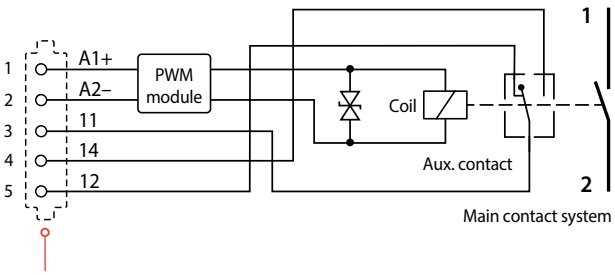
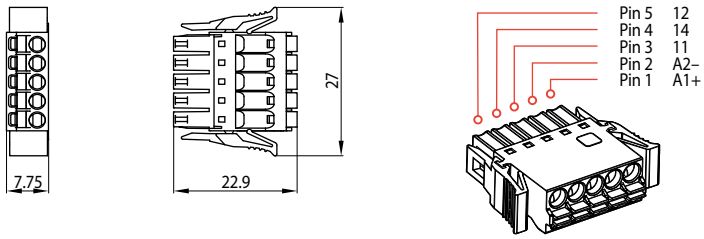
Circuit diagram



5-pin connector for connecting magnetic drive with PWM module and auxiliary contact with mirror contact function

The magnetic drive with PWM module and auxiliary contact with mirror contact function is connected via a 5-pin connectors.

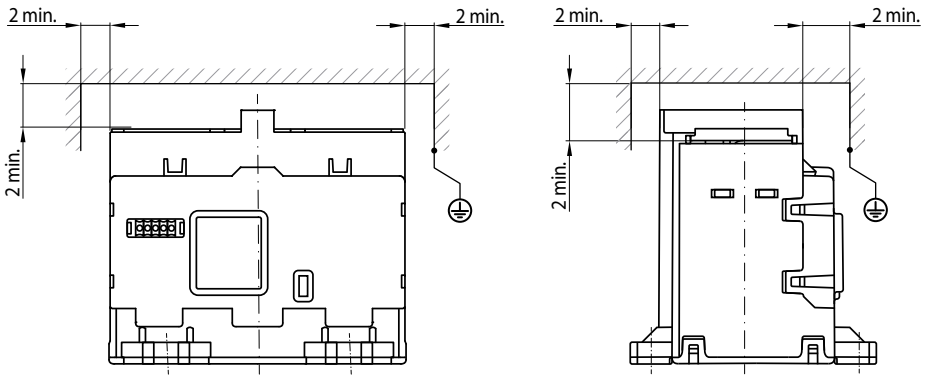
Mating connector



5 pole connector Anytek KD0510520000G or Phoenix Contact FMC 1.5/ 5-ST-3.5-RF

- Cross-section: 1.5 mm² max.
- Connection: Push-in spring connection
- Fastening type: Snap-in tabs

Minimum distances to magnetically active, live, or grounded parts

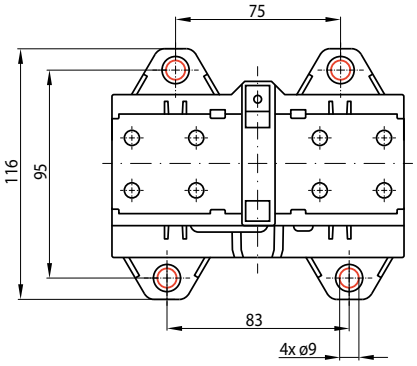


For the C330 series, a minimum distance of 2 mm applies for short-circuit currents up to 30 kA to magnetically active, live, or earthed parts.
Minimum distances for short-circuit currents greater than 30 kA are available on request.

The minimum distances also apply to the "attachment to the top side" not shown here.

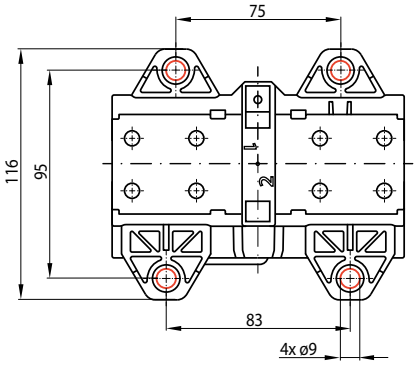
Mounting holes

Mounting option: "Attachment to the bottom side"



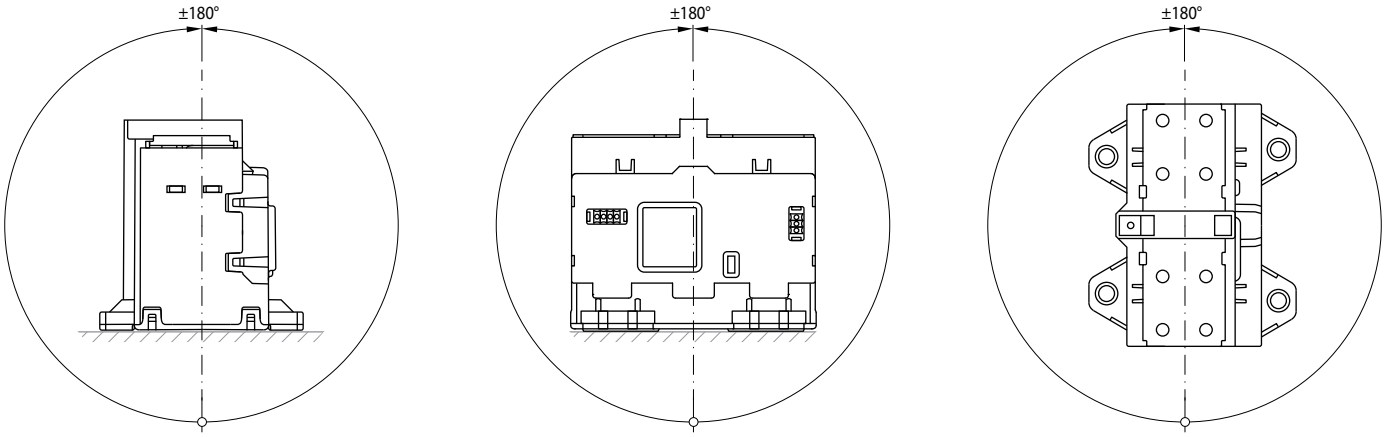
The contactors are mounted on a suitable mounting plate using four M8 screws. Tightening torque: 15 ±2 Nm for screws with strength class 8.8

Mounting option: "Attachment to the top side"



The contactors are mounted at the top using four M8 screws. Tightening torque: 15 ±2 Nm for screws with strength class 8.8

Permissible mounting orientations



Horizontal assembly «Table mounting»

Vertical assembly «Wall mounting»

The mounting positions also apply to the "attachment to the top side" not shown here.

Maintenance and safety instructions

Maintenance:

- C330 series contactors are basically maintenance free.
- Make regular in-depth visual inspections once or twice a year.

Safety instructions:

- The device must be used according to the intended purpose as specified in the technical documentation. You are obliged to observe all specifications depending on operating temperature, degree of pollution etc. that are relevant to your application.
- Without further safety measures the contactors are not suited for use in potentially explosive atmospheres.
- In case of malfunction of the device or uncertainties stop using it any longer and contact the manufacturer instantly.
- Tampering with the device can seriously affect the safety of people and equipment. This is not permitted and leads to an exclusion of liability and warranty.
- Coil suppression for reducing surges when the coil is switched off is optimally attuned to the contactors switching behaviour. The existing opening characteristic must not be negatively influenced by parallel connection with an external diode.
- Contactors running permanently may heat up. So make sure that the contactor has sufficiently cooled down before you start any inspection or maintenance work.
- When installing contactors with magnetic blowout make sure to do it in such a way that no magnetizable parts can be attracted by the permanent magnets that are also capable of destroying all data of swipe cards.
- In general, strong electromagnetic fields can be generated in the area around the contactors. These can influence other components in the area of the contactors.
- Improper handling of the contactor, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.

Defective contactors or parts (e.g. arc chambers, auxiliary switches) must be replaced immediately!

For a detailed list of all safety instructions see here: > schaltbau.info/safety3en!

We enable electrification for a sustainable future

Schaltbau is a global technology leader specializing in contactors, connectors, switches, and electrical devices.

As pioneers of electrification, Schaltbau has been championing safety on rail for generations. Building on nearly a century of rail experience, with our brand Eddicy we also create future-oriented products and solutions with the highest standards of safety and reliability to switch, connect, control and protect DC applications in energy and e-mobility.

Headquartered in Germany, Schaltbau has a worldwide presence with 12 production and sales sites on all major continents.

Find out more on www.schaltbau.com.

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