

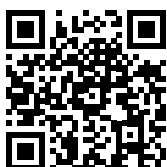
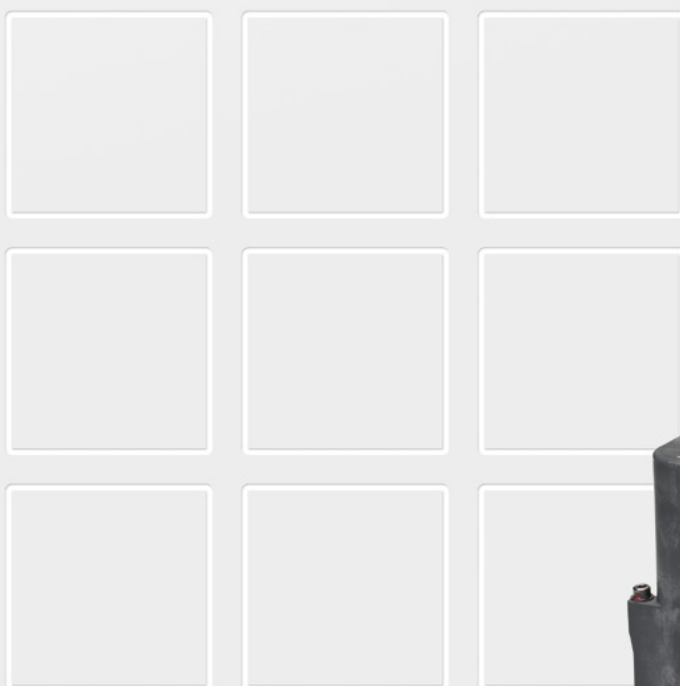
3

Contactors

CA1315/04, CA1330/08

3 pole
power contactors
for AC applications

Catalogue C28.en



More information
schaltbau.com

CA1315/04, CA1330/08 Power contactors for AC applications

3-pole AC contactors for higher supply voltage frequencies

With the CA series contactors, Schaltbau provides a switchgear concept for the safe disconnection of inverters.

In the New Energy sector, the CA contactor safely disconnects the central inverter from the mains and reconnects it to the mains when required. However, the switchgear can also switch much higher frequencies than

the 50 to 60 Hertz customary in the grid: for example, up to 400 Hertz in the drive system of multiple units. Due to their technical features, compact design, high switching functionality and reliability, CA contactors can be used flexibly and with an eye to the future. The product family includes different versions, matched to a wide range of applications.

Features

- Innovative design:**
 - 3-pole AC power contactor in the performance class up to 3,000 volts nominal voltage and 800 amps continuous current
 - High short-circuit breaking capacity for frequencies up to 400 Hertz
 - Double-break contacts
 - Compact, rugged design
- Excellent insulation properties:**
 - Reinforced insulation between main circuit and control circuit/auxiliary circuit
- Easy maintenance:**
 - Easy inspection and replacement of main contact tips
 - Easy to replace arc chute

Applications

- Power contactors in photovoltaic or wind power systems**
The switching devices are used on the AC side in the output circuit of inverters and are capable of disconnecting large loads. The switchgear is thus a cost-effective alternative to circuit breakers for safely disconnecting central inverters from the mains and reconnecting them to the mains.
- Traction contactors in electrically operated multiple units**
CA contactors are required for reliable disconnection of inverter-fed permanent magnet drive motors (PEM) in the event of a fault, for example in the event of a short circuit in the output circuit of the traction converter. The contactors are particularly suitable for permanently excited drive motors with higher supply voltage frequencies.

CA series

Ordering code

CA series

Example: **CA1330/08 110ET-09**

Series, contact configuration

CA13 3-pole AC contactor

Nominal voltage/conv. thermal current

15/04 $U_n = 1.500\text{ V}, 400\text{ Hz} / I_{th} = 350\text{ A}^{*1}, I_{th} = 540\text{ A}^{*2}$
30/08 $U_n = 3.000\text{ V}, 400\text{ Hz} / I_{th} = 800\text{ A}^{*2}$

Coil voltage

24 / 36 / 48 / 72 / 110 VDC^{*3}

Coil tolerance

E -30% ... +25%

^{*1} with suppressor diode «T» ^{*2} with DCC module «CM» ^{*3} others on request

Auxiliary switches, number and type

1x S870 (a ₁) + 1x S870 (b ₀) + 2x S826	00
4x S826	02
2x S970 (a ₁) + 2x S970 (b ₀)	09
1x S970 (a ₁) + 1x S970 (b ₀)	11

Coil suppression

Suppressor diode, standard	T
Double coil controller with integrated suppressor diode for magnetic drives with double winding coil	CM



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 variant:

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.

i Do you need support for a special application? Please contact us! We would be glad to assist you in the selection of the contactor that suits your application best.

Standards

CA series

- IEC 60077-1:** Railway applications – Electric equipment for rolling stock – Part 1: General service conditions and general rules
- IEC 60077-2:** Railway applications – Electric equipment for rolling stock – Part 2: Electrotechnical components – General rules
- IEC 61373:** Railway applications – Rolling stock equipment – Shock and vibration tests

- IEC 62497-1:** Railway applications – Insulation coordination Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment
- EN 50125-1:** Railway applications – Environmental conditions for equipment – Part 1: Equipment on board rolling stock

Specifications

CA series

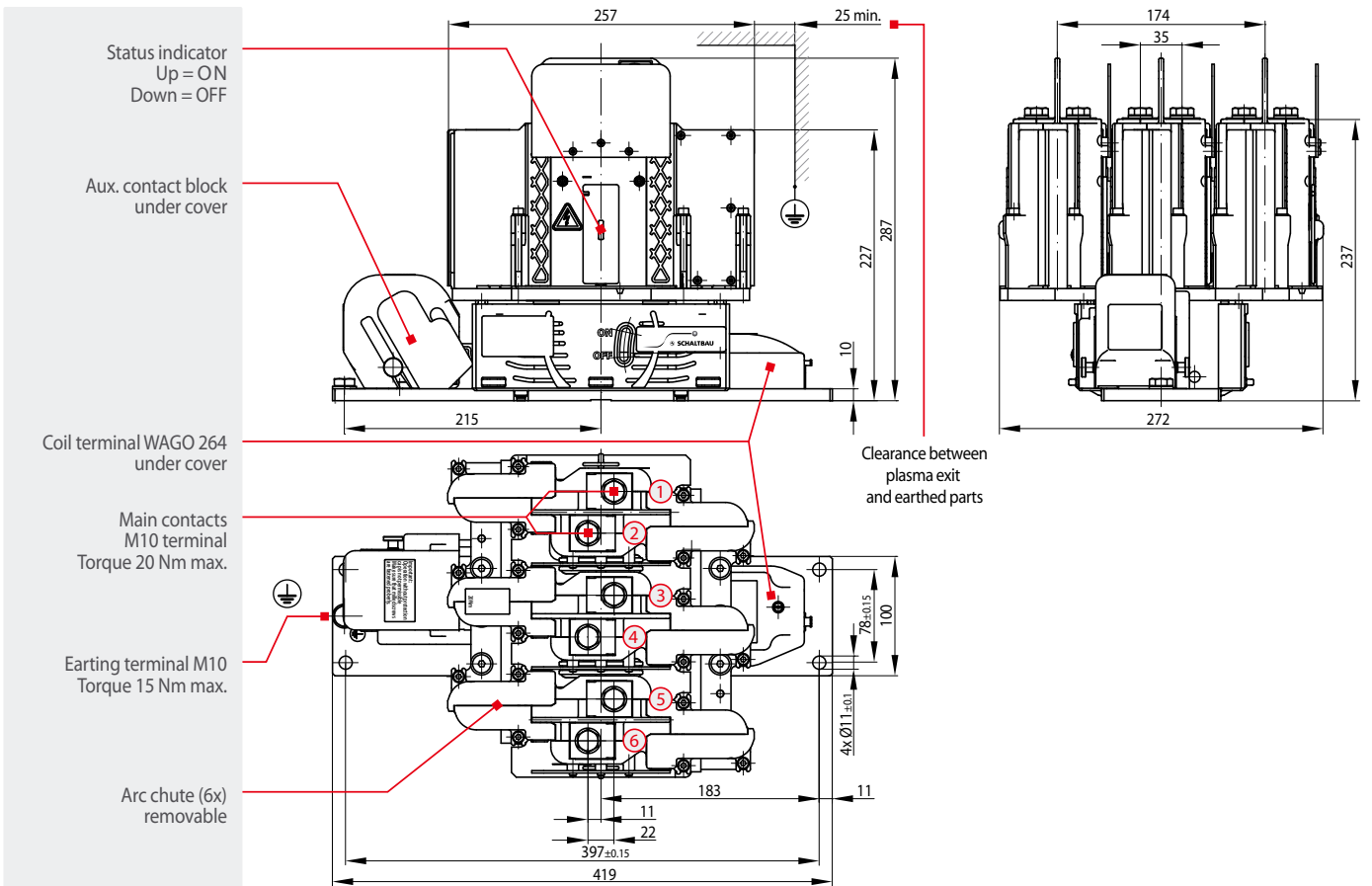
Series		CA1315/04	CA1330/08
Type of voltage			AC (f ≤ 400 Hz)
Main contacts, configuration			3x SPST-NO
Electrical data			
Nominal voltage U_n		1,500 V	3,000 V
Rated operating voltage U_e		1,800 V	3,600 V
Rated insulation voltage U_{Nm}		2,000 V	4,800 V
Rated impulse withstand voltage U_{Ni}		15 kV	25 kV
Pollution degree / Overvoltage category		PD3 / OV3	PD2 / OV3
Conventional thermal current I_{th}		350 A *1 / 540 A *2	800 A
Component category	IEC 60077-2		A2
Switching frequency class			C1
Short-circuit making capacity			Please contact, optimized for switching off 400 Hz
Short-circuit breaking capacity			Please contact, optimized for switching off 400 Hz
Rated short-time withstand current I_{cw}	T < 100 ms		Please contact, optimized for switching off 400 Hz
Design			
Contact material			AgSnO ₂
Terminals			M10
Torque			20 Nm max.
Auxiliary contacts			
Number and type	Snap-action switches		1x S970 (a ₁) + 1x S970 (b ₀)*3 2x S970 (a ₁) + 2x S970 (b ₀)*3 1x S870 (a ₁) + 1x S870 (b ₀) + 2x S826*3 4x S826*3
Contact material			Silver
Switching capacity	Snap-action switch S826, T = 5 ms		16 A at 24 V DC; 13.5 A at 80 V DC; 7 A at 110 V DC
Terminals			Plug connection / Screws M3 / Flat tabs 6.3 x 0.8 mm
Magnetic drive (coil suppression »T«, suppressor diode)			
Pollution degree / Overvoltage category			PD3 / OV2
Coil voltage U_s			24 / 36 / 48 / 72 / 110 V DC
Coil tolerance			-30 % ... +25 % U_s
Coil suppression		Suppressor diode *1 or Coil changeover *2	Coil changeover *2
Power dissipation at U_s and $T_a = 20$ °C			---
Coil suppression: Suppressor diode		Cold coil: 100 W / warm coil: 75 W	
Coil suppression: Coil changeover		Cold coil: 280 W / warm coil: 27 W	Cold coil: 280 W / warm coil: 27 W
Pull-in voltage, typical at $T_a = 20$ °C			0.6 x U_s
Pull-in time, typical at $T_a = 20$ °C			150 ms
Drop-off voltage, typical at $T_a = 20$ °C			0.1 x U_s
Drop-off time, typical at $T_a = 20$ °C			50 ms
Coil terminal			WAGO 264: Cage clamp for solid and stranded copper conductors, AWG14 (2.5 mm ² max.)
Ingress protection rating			IP00
Mechanical endurance			> 500,000 operating cycles
Vibration / Shock	IEC 61373		Category 1, class B
Mounting position			Any
Ambient conditions			
Operating / storage temperature			-40 °C ... +70 °C / -40 °C ... +85 °C
Altitude			< 2,000 m above sea level
Humidity	IEC 50125-1		< 75 % yearly average
Weight		20 kg	25 kg


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*1 $I_{th} = 250$ A / $I_{th} = 350$ A: Coil suppression »T« suppressor diode, standard*2 $I_{th} = 540$ A: Economy circuit »CM« integrated double coil controller for automatic coil changeover

*3 a1 and b0 according to IEC 60077

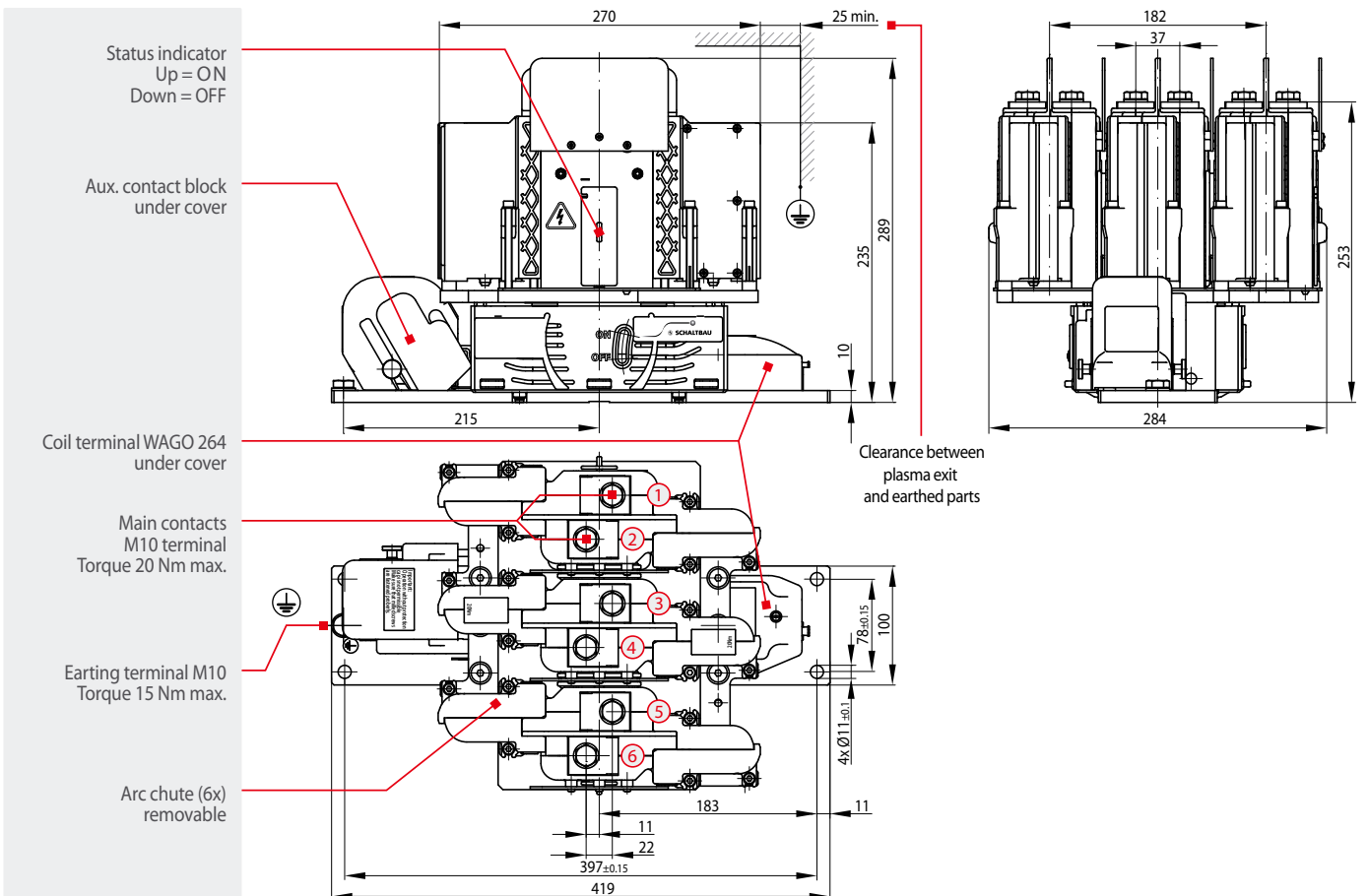
CA1315/04 Dimension diagram 3 pole AC power contactor for 1,500 V and 350 A / 540 A

CA series



CA1330/08 Dimension diagram 3 pole AC power contactor for 3,000 V and 800 A

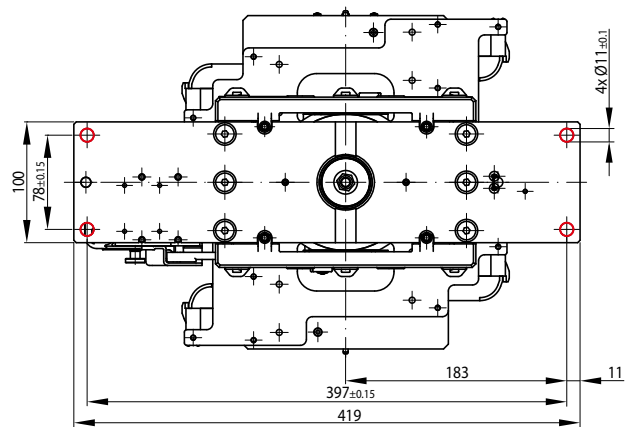
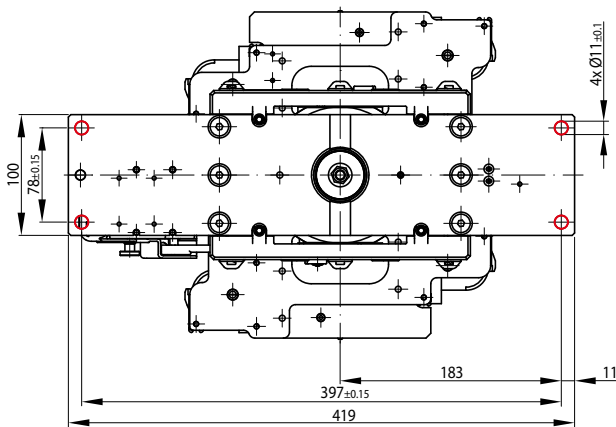
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CA1315/04 Mounting holes

CA1330/08 Mounting holes

CA series



Circuit diagram

CA series

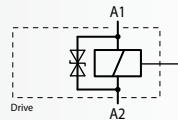
Drive, terminal and coil circuit

Main contacts

Aux. contacts, terminal

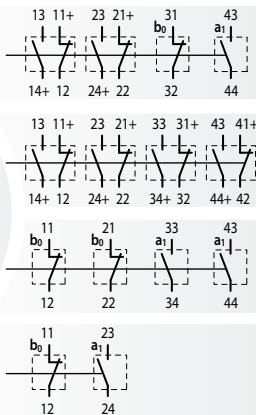
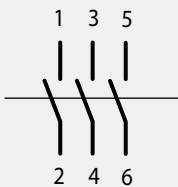
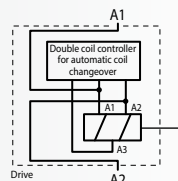
Coil circuit:
«T» Suppressor diode, standard

- CA1315/04 $I_{th} = 350\text{ A}$



Coil circuit:
«CM» Integrated double coil controller

- CA1315/04 $I_{th} = 540\text{ A}$
- CA1330/08 $I_{th} = 800\text{ A}$



- Aux. contact block «00»**
2x S826*1 + 1x S870*2 (b₀) + 1x S870*2 (a₁)
- Aux. contact block «02»**
4x S826*1
- Aux. contact block «09»**
2x S970*2 (b₀) + 2x S970*2 (a₁)
- Aux. contact block «11»**
1x S970*2 (b₀) + 1x S970*2 (a₁)

Note:

Optionally, we offer separate plug connections for coil and auxiliary contacts. We also supply customized designs. In this case, however, minimum order quantities apply. So do not hesitate to contact us!

Note:

- *1 Aux contact, version with blowout magnetics, see also catalogue D26
- *2 Aux contact, see also catalogue D70

Maintenance instructions

Safety instructions

CA series

For detailed maintenance, safety and mounting instructions please refer to our operating manual [C28-M.en!](#)

- CA contactors are maintenance-free with normal use.
- Make regular inspections once or twice a year. So when installing the contactor, make sure that there is enough space to remove and replace the arc chute with ease and that the main contacts become accessible for inspection.
- Frequent switching or switching under high load may lead to increased wear of the main contacts. In this case replacement of the main contacts may become necessary. For detailed information please refer to our manual.

- The switching device meets the requirements of basic insulation. Make sure the plate onto which the drive of the contactor is mounted is earthed in a vibration resistant way.
- Do not use contactor without properly mounted arc chute.
- The contactor has unprotected live parts and carries a label that warns of the hazard. This caution must be observed and the label must not be removed in any way.
- The required clearance of live parts to ground and other parts of the contactor is to be observed as well as the safety regulations of the applicable standards.
- Switching at maximum breaking capacity might require larger clearance! Do not hesitate to ask our advice for dimensioning.
- Do not use contactor without protective covers (for coil terminals and auxiliary switches).
- Coil suppression for reducing surges when the coil is switched off is optimally attuned to the contactor's switching behaviour. The existing opening characteristic must not be negatively influenced by parallel connection with an external diode.
- Improper handling of the contactor, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.

Defective parts must be replaced immediately!

Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

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Internet www.schaltbau.de
e-mail contact@schaltbau.de

Find your worldwide contact person. We are here for you, personally!



with compliments:



The production facilities of Schaltbau GmbH have been IRIS certified since 2008.



Certified to DIN EN ISO 14001 since 2002. For the most recent certificate visit our website.



Certified to DIN EN ISO 9001 since 1994. For the most recent certificate visit our website.

Electrical Components and Systems for Railway Engineering and Industrial Applications

Connectors

- Connectors manufactured to industry standards
- Connectors to suit the special requirements of communications engineering (MIL connectors)
- Charging connectors for battery-powered machines and systems
- Connectors for railway engineering, including UIC connectors
- Special connectors to suit customer requirements

Snap-action switches

- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Snap-action switch made of robust polyetherimide (PEI)
- Snap-action switch with two galvanically isolated contact bridges
- Special switches to suit customer requirements

Contactors Emergency disconnect switches

- Single and multi-pole DC contactors
- High-voltage AC/DC contactors
- Contactors for battery powered vehicles and power supplies
- Contactors for railway applications
- Terminal bolts and fuse holders
- DC emergency disconnect switches
- Special contactors to suit customer requirements

Electrics for rolling stock

- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements