

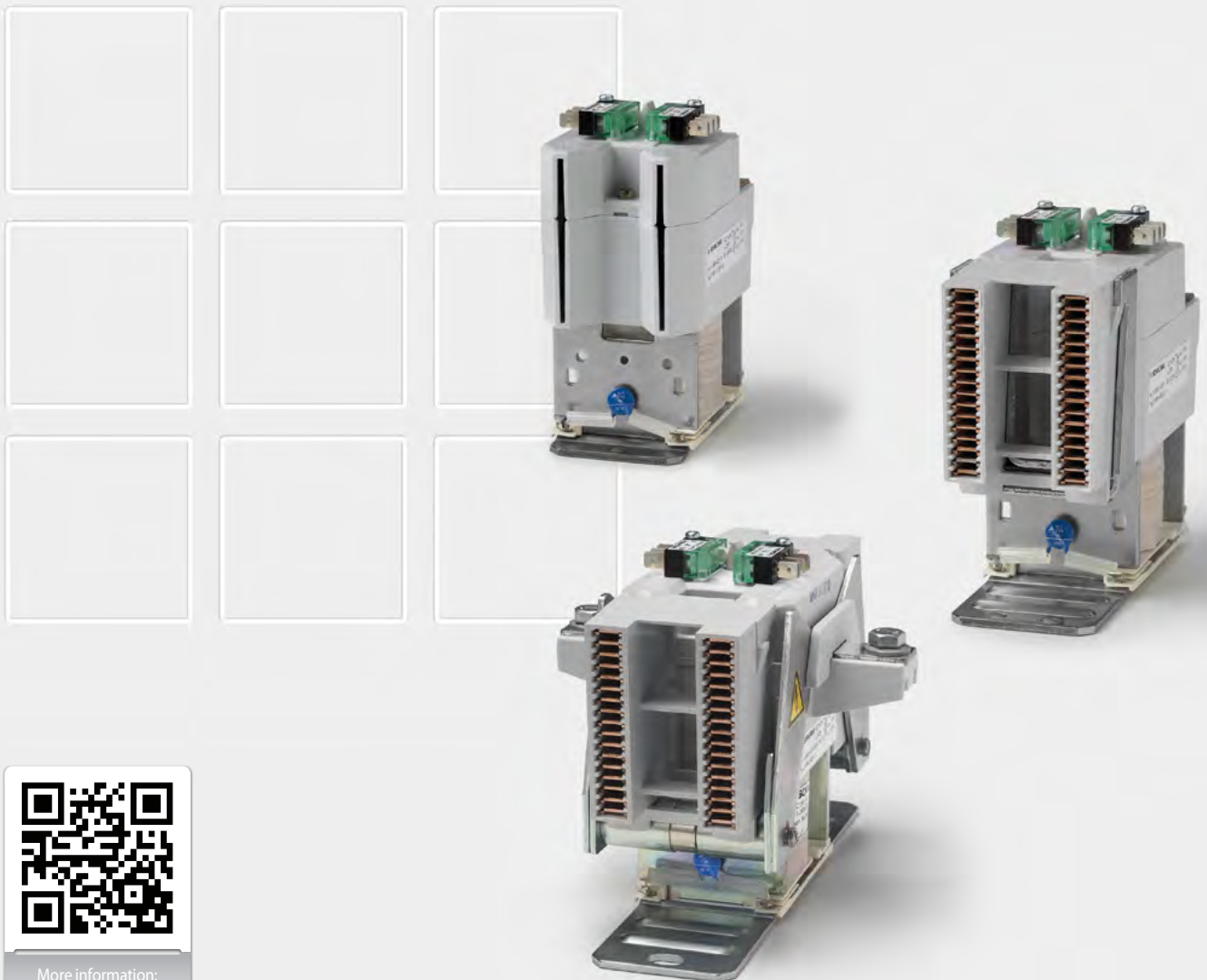
# 3

## Contactors

C195 Series

Single pole  
compact universal NO  
and changeover contactors

Catalogue B195.en



More information:  
[schaltbau.com](http://schaltbau.com)

**C195 Series** Single pole NO and changeover contactors plus bidirectional variants

Compact universal contactors for battery voltages up to 220 V and high voltages up to 1,500 V

Being of compact size and featuring double-break contacts that are covered for the most part, the C195 Series contactors provide high-performance current breaking. Depending on the version you choose C195 series contactors come with blowouts and/or arc chutes.

The coils are fitted as standard with varistors for limiting surge voltages. For coil terminal connections you do *not* need to observe polarity.

With the C195 X there is also a *bidirectional* version, for which the direction of the current is irrelevant, as required for battery storage systems of public utilities. And with 320 A, the C195 X is also characterised by a higher current-carrying capacity.

In addition to that, there is the option of a SPDT version of the C195 series contactor which has an added galvanically isolated NC contact.

**Features**

- Compact universal contactors up to 1,500 V
- Unidirectional, bidirectional and latching contactor variants
- Broad range of possible applications
- Suitable for years of continuous operation
- Intended for high ambient temperatures
- Double-break contacts that are covered for the most part
- Versions for AC and DC operation available
- DC versions coming with magnetic blowout
- Extended coil tolerance according to railway standard

**Applications**

Series C195

The contactors are typically used:

- for traffic engineering equipment, particularly in heating circuits and for air conditioning (HVAC equipment)
- as line contactor in mainline AC and DC rail networks – or in combination with a precharging contactor for a host of applications in trains, multiple units, rail cars and light rail vehicles
- for central inverters of complex power supplies
- for battery storage systems of utilities, specifically in grid stabilisation where bidirectional switching is a requirement

**Ordering code**

Series C195

Example: **C195 A/ 24EV-U1**

<p><b>Series</b></p> <p>C195 Single pole universal contactor</p> <p><b>Main contacts: type, nominal voltage <math>U_n</math></b></p> <p>X/ NO contactor with blowouts and arc chamber, <math>U_n = 1,500</math> V</p> <p>A/ NO contactor with blowouts and arc chamber, <math>U_n = 1,000</math> V DC</p> <p>B/ NO contactor with arc chamber, <math>U_n = 1,000</math> V AC</p> <p>S/ NO contactor, <math>U_n = 220</math> V DC</p> <p>T/ NO contactor, <math>U_n = 220</math> V AC</p> <p>W/ Changeover (SPDT) contactor, <math>U_n = 220</math> V DC</p> <p><b>Coil voltages</b></p> <p>24 / 36 / 48 / 60 / 72 / 80 / 96 / 110 V DC</p>	<p><b>Aux. contacts*: # of, type</b></p> <p>2x snap-action switches S870 W1D1a 012, silver contacts U2</p> <p>2x snap-action switches S870 W1D4a 012, gold contacts I2</p> <p><b>Coil suppression</b></p> <p>Diode D</p> <p>Varistor V</p> <p>None X</p> <p><b>Coil tolerance</b></p> <p>-30 % ... +25 % E</p> <p>-40 % ... 0 % J</p> <p>Latching contactor -30 % ... +25 % B</p>
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\*1 2x snap-action switches: versions X/, A/, B/, S/, T/;  
1x snap-action switch: versions A/ ...BD, S/ ...BD;  
0x snap-action switch: version W/  
For detailed information see catalogue D70  
on S870 Series snap-action switches

**Notice:**  
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 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.

**Applicable standards**

Series C195

Industry standards:

- **IEC 60947-1:2014** Low-voltage switchgear and controlgear – Part 1: General rules
- **IEC 60947-4-1:2012** Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor starters - Electromechanical contactors and motor starters.

Railway standards:

- **DIN EN 60077-1:2003-04** Railway applications – Electric equipment for rolling stock – Part 1: General service conditions and general rules.
- **DIN EN 60077-2:2003-04** Railway applications – Electric equipment for rolling stock – Part 2: Electrotechnical components; General rules

**Specifications**

Baureihe C195

C195 Series, versions	X/	A/	B/	S/	T/	W/	
<b>Main contacts</b>							
Type of voltage	AC, DC bidirectional	DC unidirectional	AC	DC unidirectional	AC	DC unidirectional	
Number of, type	1x NO	1x NO	1x NO	1x NO	1x NO	1x SPDT	
Latching contactor, optional	---	•	---	•	---	---	
Nominal voltage $U_n$	1,500 V	1,000 V	1,000 V	220 V	220 V	220 V	
Rated insulation voltage $U_i$	1,800 V	1,200 V	1,200 V	1,200 V	1,200 V	600 V	
Rtd impulse withstand voltage $U_{imp}$	10 kV	8 kV	8 kV	8 kV	8 kV	6 kV	
Overtoltage category	OV3	OV3	OV3	OV3	OV3	OV3	
Pollution degree	PD3	PD3	PD3	PD3	PD3	PD3	
Conventional thermal current $I_{th}$							
	NO	320 A	250 A	250 A	250 A	250 A	
	NC	---	---	---	---	160 A	
Short time (3 minutes) at $T_a = 50^\circ\text{C}$							
	NO	550 A	450 A	450 A	450 A	450 A	
	NC	---	---	---	---	250 A	
<b>Making capacity</b>							
(resistive, $T = 0$ ms),	NO	1,800 A	1,800 A	1,800 A	1,800 A	1,500 A	
(inductive, $T > 5$ ms),	NO	2,300 A	2,300 A	2,300 A	2,300 A	2,000 A	
(resistive, $T = 0$ ms),	NC	---	---	---	---	250 A	
(inductive, $T > 5$ ms),	NC	---	---	---	---	300 A	
<b>Breaking capacity</b> (at rated operating voltage)							
	NO	950 V DC, $T = 1$ ms: 320 A $T = 15$ ms: 40 A	950 V DC, $T = 1$ ms: 240 A $T = 15$ ms: 40 A	1,200 V AC, 50 Hz $\cos\phi = 1.0$ : 210 A 1,200 V AC, 50 Hz $\cos\phi = 0.8$ : 150 A	220 V DC, $T = 0$ ms: 2,000 A $T = 15$ ms: 1,000 A	220 V AC, 50 Hz $\cos\phi = 1.0$ : 1,500 A	220 V DC, $T = 0$ ms: 1,500 A $T = 15$ ms: 700 A
	NC	---	---	---	---	220 V DC, $T = 0$ ms: 250 A $T = 15$ ms: 100 A	
<b>Short-circuit current</b>							
	NO	2,300 A	2,300 A	2,300 A	2,300 A	2,300 A	
	NC	---	---	---	---	1,000 A	
Arc chamber for DC	•	•	---	---	---	---	
Magnetic blowout	•	•	---	•	---	•	
Arc chamber for AC	•	---	•	---	---	---	
Contact material	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>					
Terminals	M8 screw	M8 screw					
Torque	10 Nm max.	NO: 12 Nm max. / NC: 6 Nm max.					
<b>Auxiliary switch</b>							
Number of and type	2x snap-action switches S870*2, SPDT silver contacts, optional gold contacts (see catalogue D70)*1						
Utilization category (IEC 60947-5-1)	Silver contacts*3: AC-15: 1.5 A at 230 V AC; DC-13: 0.5 A at 60 V DC or 2.0 A at 24 V DC					---	
Terminals	Flat tabs 6.3 x 0.8 mm						
<b>Coil</b>							
Coil voltage $U_c$	24 / 36 / 48 / 60 / 72 / 80 / 96 / 110 V DC						
Coil tolerance	E, B: -30 % ... +25 % at $T_a = 70^\circ\text{C}$ max. / J: -40 % ... 0 % at $T_a = 40^\circ\text{C}$						
Coil power consumption	cold coil approx. 27 W at $U_{s,max}$ , $T_a = 20^\circ\text{C}$ / warm coil approx. 13.5 W at $U_{s,max}$ , $T_a = 20^\circ\text{C}$						
Coil temperature	155° C at $T_{a,max}$ and $U_{s,max}$						
Coil suppression	Varistor						
Coil terminals	Flat tabs 6.3 x 0.8 mm						
IP rating (IP code to IEC 60529)	IP00						
Mechanical endurance, operating cycles	> 3m	> 3m / latch: 100.000					
Electrical endurance, operating cycles	250,000 @ $U_e = 750$ V DC, $I_e = 70$ A, $T = 1$ ms	1 million @ $U_e = 750$ V DC, $I_e = 30$ A, $T = 1$ ms					
Shock / Vibration (IEC 61373)	Category 1, Class B						
Duty cycle	100 %						
Mounting orientation	any, except: do not mount with mounting plate pointing upwards						
Ambient conditions							
Operating temperature $T_a$	-25° C ... +50° C for industrial applications / -40° C ... +70° C for railway applications*4						
Storage temperature $T_L$	-40° C ... +80° C						
Weight	3 kg	2 kg / 2.4 kg*5	1.9 kg	1.6 kg	1.6 kg	1.9 kg	

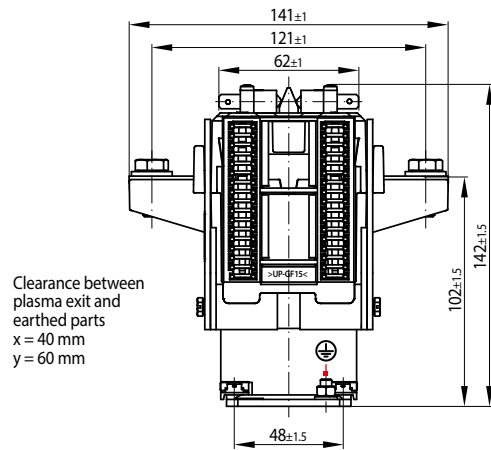
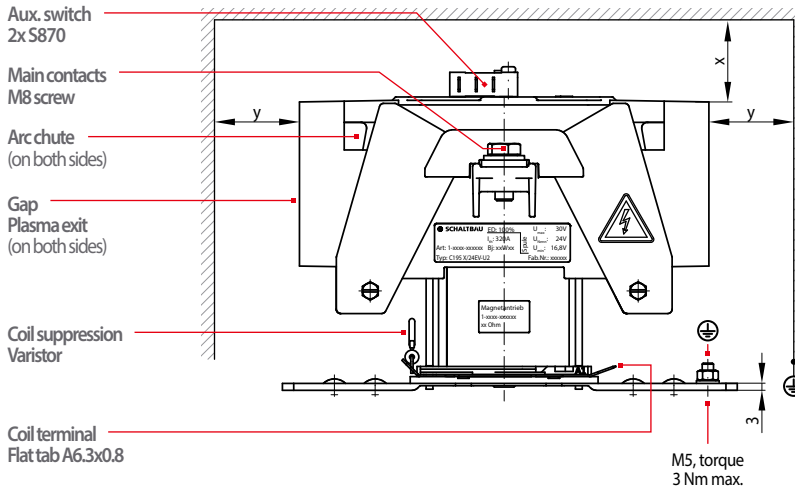


\*1 See footnote page 2 \*2 1x S870 Series snap-action switch for latching contactors \*3 Data for gold contacts upon request \*4 -25° C ... +70° C for latch versions \*5 latch versions

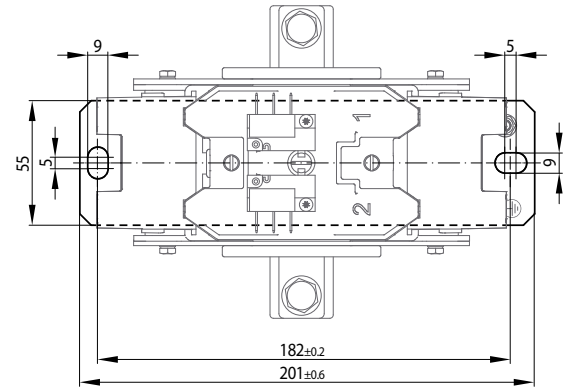
**C195 X/** Single pole NO AC / DC contactor, bidirectional

Series C195

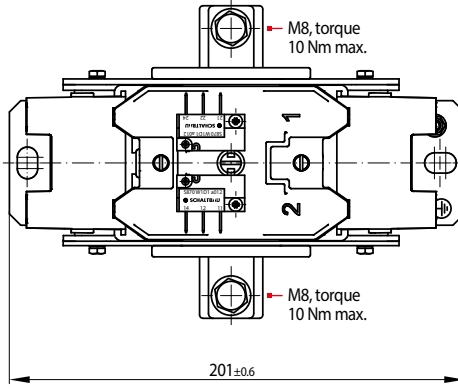
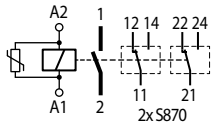
• Dimension diagram



• Mounting holes



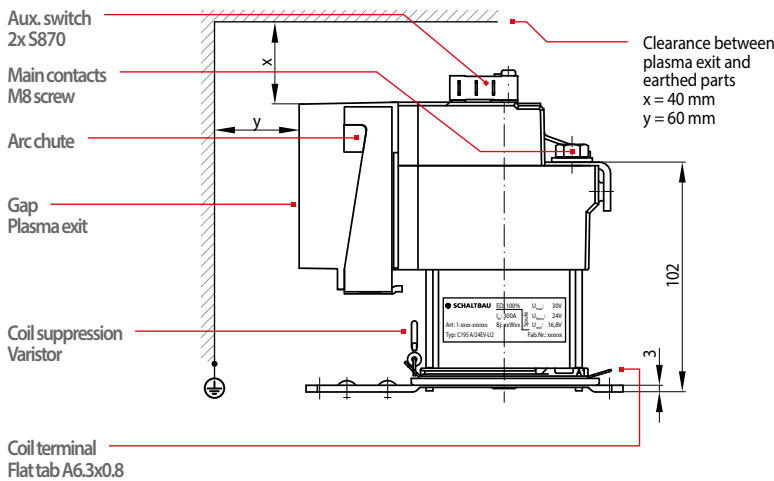
• Circuit diagram



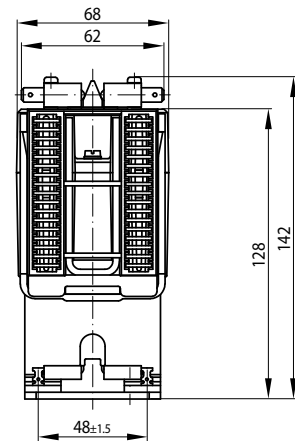
**C195 A/** Single pole NO contactor, unidirectional DC

Series C195

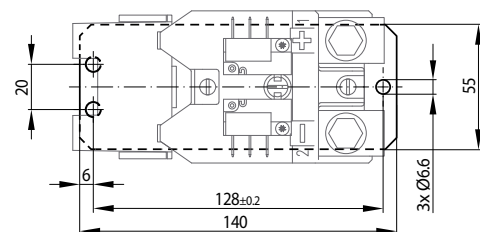
• Dimension diagram



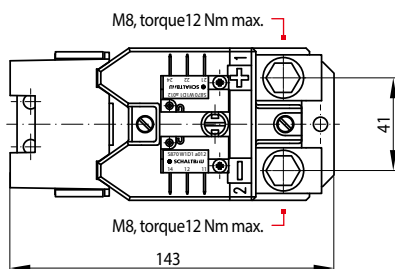
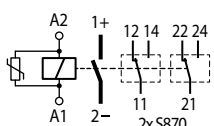
Clearance between plasma exit and earthed parts  
x = 40 mm  
y = 60 mm



• Mounting holes



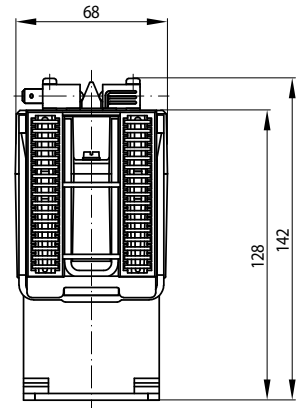
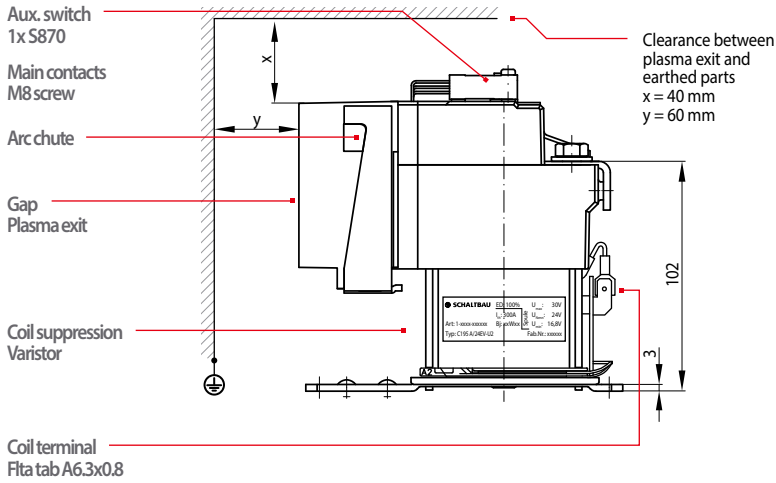
• Circuit diagram



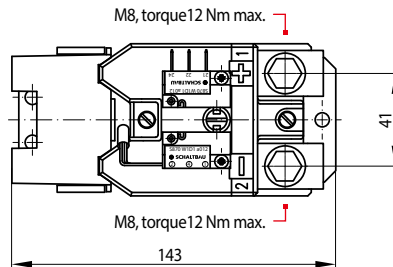
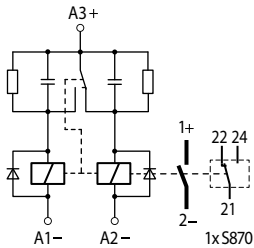
**C195 A/ ...BD** Single pole NO latching contactor, unidirectional DC

Series C195

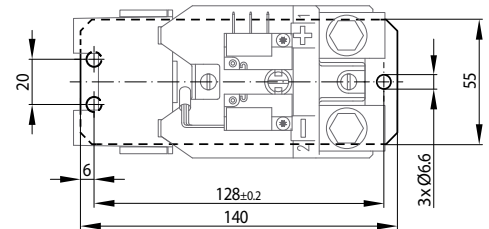
• **Dimension diagram**



• **Circuit diagram**



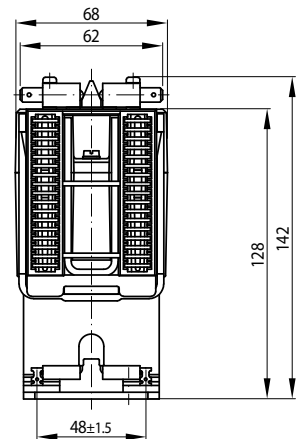
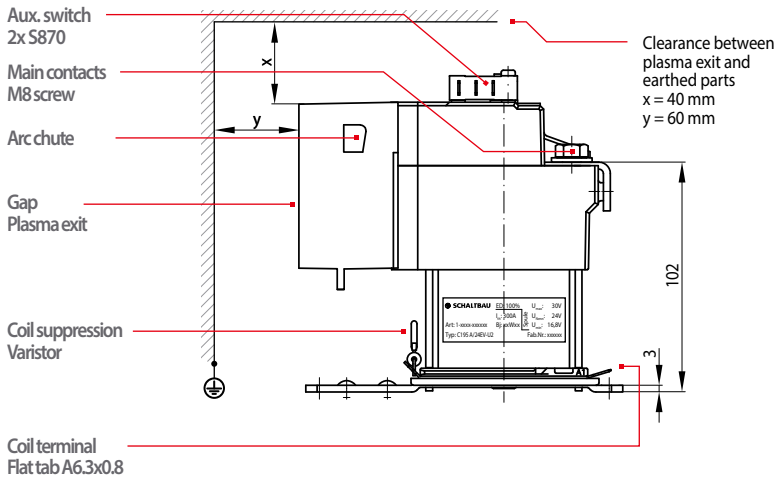
• **Mounting holes**



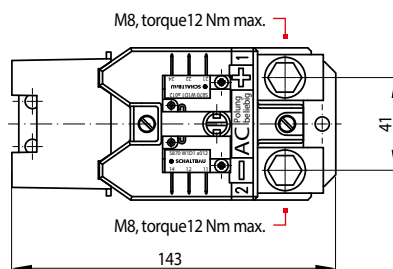
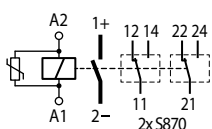
**C195 B/** Single pole NO AC contactor

Series C195

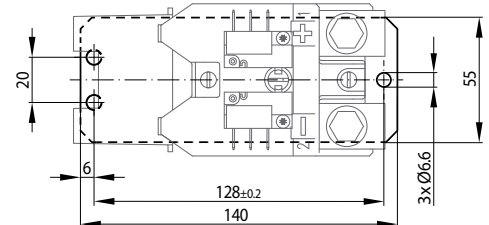
• **Dimension diagram**



• **Circuit diagram**



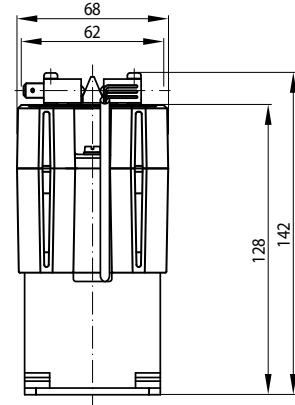
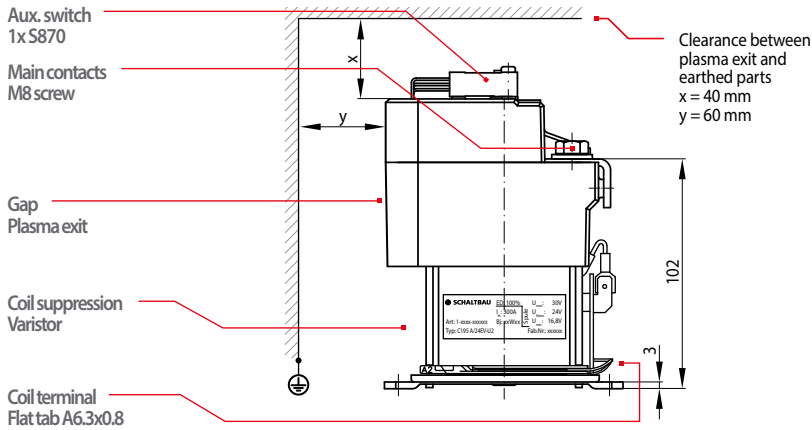
• **Mounting holes**



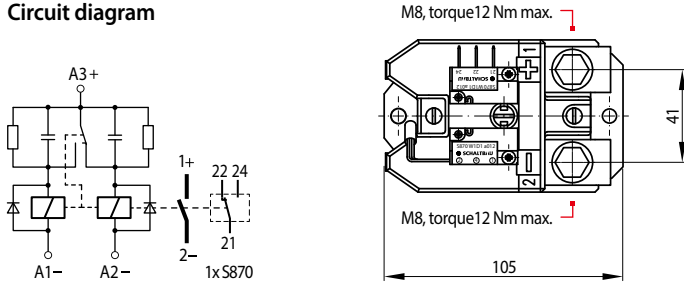
**C195 S/ ...BD** Single pole NO latching contactor, unidirectional DC

Series C195

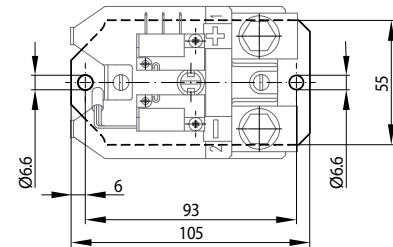
• Dimension diagram



• Circuit diagram



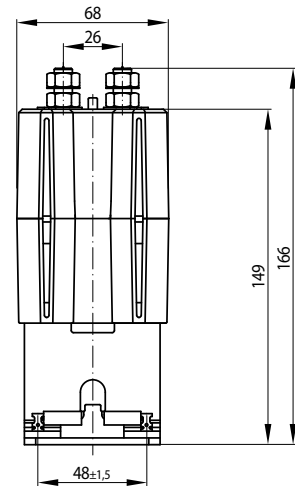
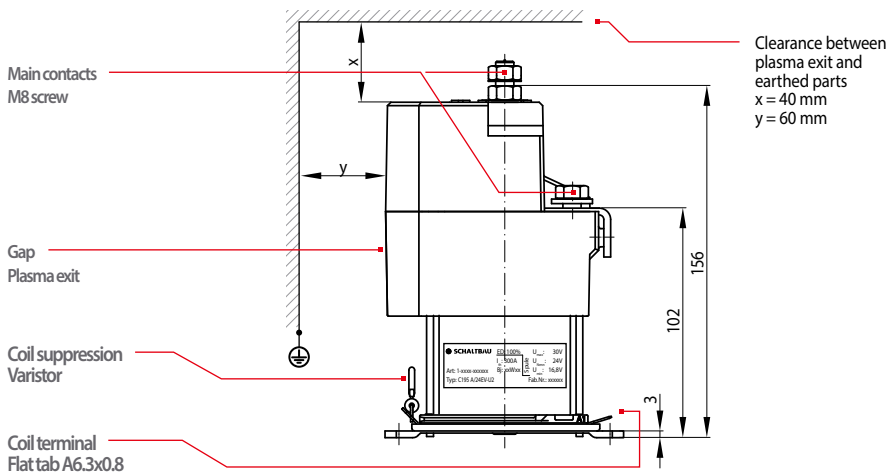
• Mounting holes



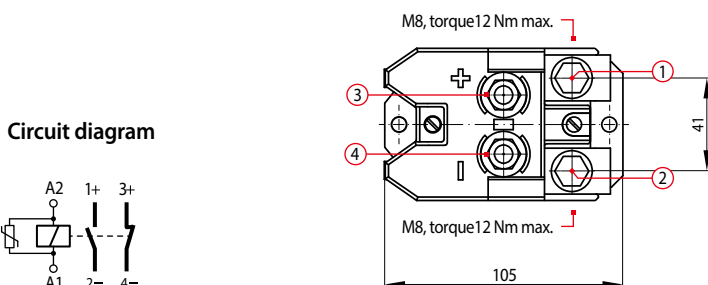
**C195 W/** Single pole changeover (SPDT) contactor, unidirectional DC

Series C195

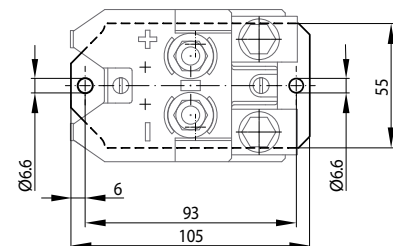
• Dimension diagram



• Circuit diagram



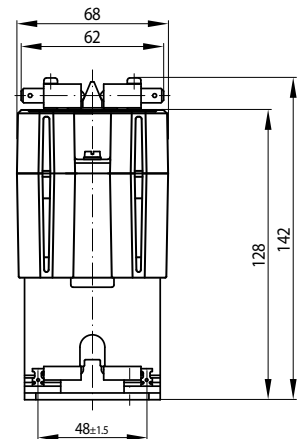
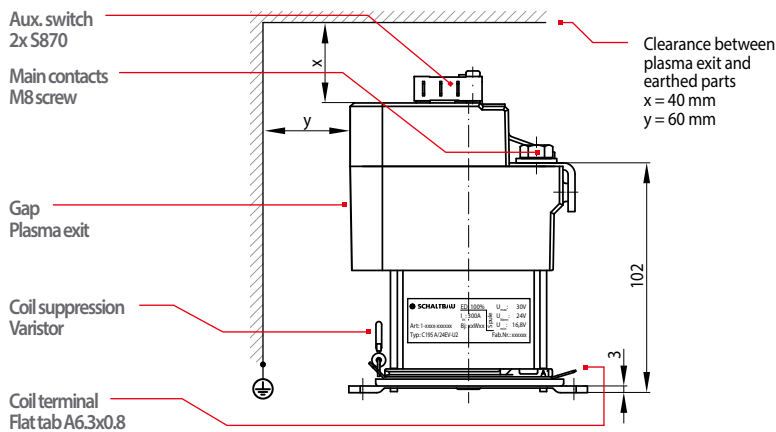
• Mounting holes



**C195 S/, C195 T/** Single pole NO DC / AC contactor, unidirectional

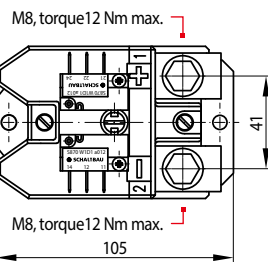
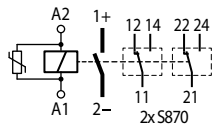
Series C195

• **Dimension diagram**

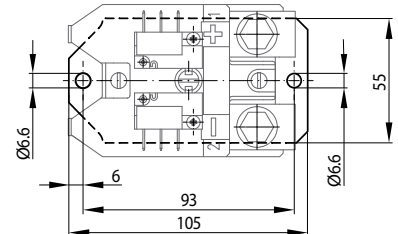


• **C195 S/** version for DC

**Circuit diagram**

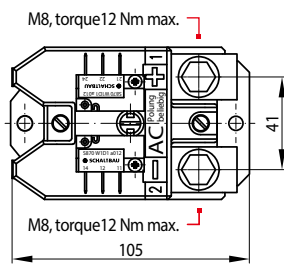
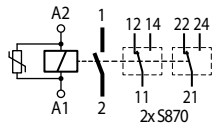


• **Mounting holes**



• **C195 T/** version for AC

**Circuit diagram**

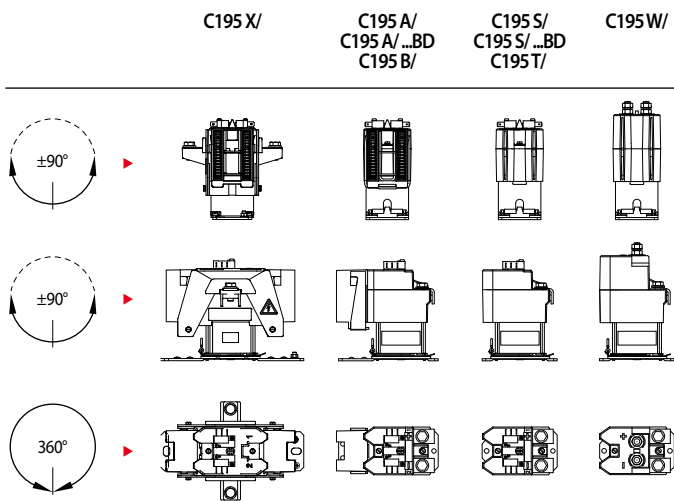


**Safety instructions** Series C195

- 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 C195 Series universal 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 contactor's 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 CS 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.
- Strong electromagnetic induction caused when switching off can influence other components installed near the contactor.
- Improper handling of the contactor, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.

**Mounting orientation, Maintenance**

• **Possible mounting orientations:**



• **Maintenance**



For detailed instructions on safety, maintenance and mounting refer to our manual 195-M.en!



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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with compliments:



Schaltbau GmbH manufactures in compliance with RoHS.



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
- Enabling switches
- Special switches to suit customer requirements

### Contactors

- 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

We reserve the right to make technical alterations without prior notice.

For updated product information visit [www.schaltbau-gmbh.com](http://www.schaltbau-gmbh.com).

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