

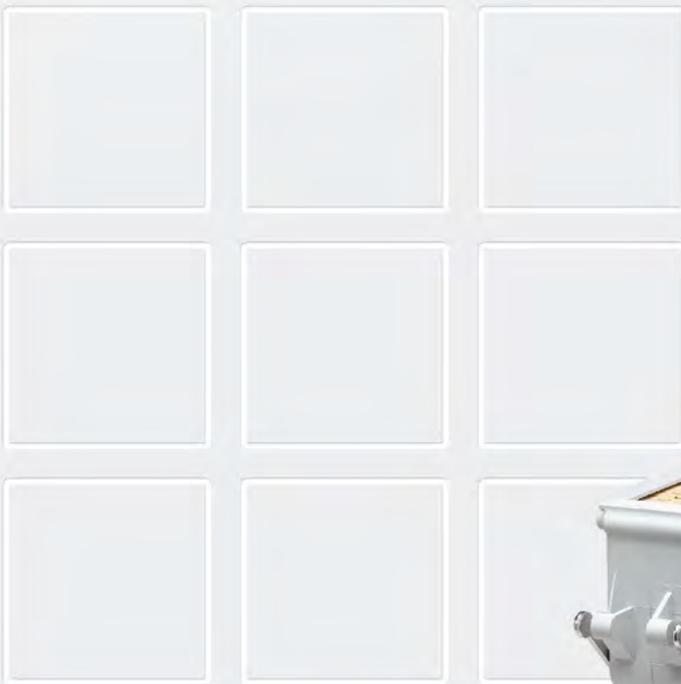
# 3

## Contactors

CT1115/04, CT1130/04  
CT1115/08, CT1130/08

Single pole  
power contactors  
for AC and DC

Catalogue [C20.en](#)



**CT1115/04, CT1130/04, CT1115/08, CT1130/08** Single pole power contactors for AC and DC

**CT1000 – revolutionary method of arc quenching for both DC and AC**

With the CT contactor series Schaltbau is introducing an innovative contactor concept to the market. The outstanding technical feature is the innovative combination of electromagnetic and permanent-magnetic blowout technology for electric arc control. The successful combination of these two principles greatly improves both switching functionality and reliability and forms a practical and economically impressive device concept.

The CT contactor concept is flexible and can be adapted to suit the needs of the customer. Due to its technical characteristics, its economical advantages, its compactness and versatility, the CT power contactor series is simply predestined for use in industrial and railway applications alike. The product family, which is currently being expanded, comprises a number of various design versions catering to a wide range of uses.

**Features**

- Compact, rugged innovative design
- 2 breaking capacity levels (1,500 V, 3,000 V)
- Double-break contacts, (normally open)
- 1, 2\*<sup>1</sup>, and 3\*<sup>2</sup> pole versions
- Easy maintenance:
  - Easy inspection and replacement of main contact tips
  - Easy to replace arc chute
- Drive system with coil tolerance according to railway standards
- Functional insulation for main circuit
- Basic insulation between main circuit and protective earth
- Reinforced insulation between main circuit and control circuit / auxiliary circuit

**Applications**

- Main contactor for:
  - traction converters
  - inverters for auxiliary equipment
- Contactor for:
  - field circuits of motors
  - conventional resistor based traction units (retrofit)
  - starter and compressor motors
  - heating circuits
- Contactor for a host of industrial and railway applications:
  - locomotives
  - cranes
  - mining

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**

- **IEC 60077:** Railway applications – Electric equipment for rolling stock
- **EN 50124-1:** Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment
- **IEC 61373:** Railway applications - Rolling stock equipment - Shock and vibration tests

**Ordering code**

Example:

**CT1130/04 H 110ET-00**
**Series**

CT11	1 pole NO contactor
CT12	2 pole NO contactor * <sup>1</sup>
CT13	3 pole NO contactor * <sup>2</sup>

**Nominal voltage**

15	U <sub>n</sub> = 1,500 V
30	U <sub>n</sub> = 3,000 V

**Conv. thermal current**

04	I <sub>th</sub> = 400 A
06	I <sub>th</sub> = 600 A* <sup>3</sup>
08	I <sub>th</sub> = 800 A
11	I <sub>th</sub> = 1,100 A* <sup>3</sup>
15	I <sub>th</sub> = 1,500 A* <sup>4</sup>

**Mounting position**

H	horizontal (lock bar yellow)
V	vertical (lock bar red)

**Coil voltage**

24 / 36 / 72 / 110 V DC

**Coil tolerance**

E	-30 % ... +25 %
---	-----------------

**Coil suppression**

T	Suppressor diode, standard
H	Economy circuit: prepared for external excitation of pull-in and hold-in coil * <sup>3</sup>

**Auxiliary switches, number and type**

00	1x S870* <sup>5</sup> (a <sub>1</sub> ) 1x S870* <sup>5</sup> (b <sub>0</sub> ) 2x S826 a L* <sup>6</sup>	} M3 screw-type terminals
01	1x S870* <sup>5</sup> (a <sub>1</sub> ) 1x S870* <sup>5</sup> (b <sub>0</sub> ) 2x S826* <sup>6</sup>	} M3 screw-type terminal Flat tabs 6.3 x 0.8
02	4x S826* <sup>6</sup>	} M3 screw-type terminals
03	4x S826* <sup>6</sup>	} Flat tabs 6.3 x 0.8

\*1 See catalogue C21  
\*2 Upon request

\*3 Series in development  
\*4 Series planned

\*5 See also catalogue D70  
\*6 See also catalogue D26


**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.

## Specifications

CT series

Series	CT1115/04	CT1130/04	CT1115/08	CT1130/08
Type of voltage	DC (bidirectional), AC (f < 60 Hz)		DC (bidirectional), AC (f < 60 Hz)	
Main contacts, number of, configuration	CT11xx/04: 1x SPST-NO		CT11xx/08: 1x SPST-NO	
Nominal voltage $U_n$	1,500 V	3,000 V	1,500 V	3,000 V
Rated operating voltage $U_e$	1,800 V	3,600 V	1,800 V	3,600 V
Rated insulation voltage $U_{Nm}$	3,000 V	4,800 V	3,000 V	4,800 V
Rated impulse withstand voltage $U_{Ni}$	15 kV	25 kV	15 kV	25 kV
Pollution degree / Overvoltage category	PD3 / OV3		PD3 / OV3	
Switching overvoltages at $U_e = 1,800$ V	<9 kV (<11 kV at T2 = 40 ms)	---	<9 kV (<11 kV at T2 = 40 ms)	---
$U_e = 3,600$ V	---	< 14,4 kV	---	< 15 kV
Conventional thermal current $I_{th}$	400 A *1	400 A *1	800 A	800 A
Component category (IEC 60077-2)	A2	A2	A2	A2
Short-circuit making capacity	3,5 kA (new contacts) / 5 kA (used contacts)		4 kA (new contacts) / 8 kA (used contacts)	
Rated operating current $I_e$ (at operational frequency C2)				
DC, $U_e = 1,800$ V (T2 = 15 ms)	300 A		450 A	
DC, $U_e = 3,600$ V (T2 = 15 ms)	---	200 A	---	320 A
Rated operating current $I_e$ (at operational frequency C2)				
AC, $U_e = 1,800$ V (f = 16.7 / 50 Hz; cosφ = 0.8)	400 A / 300 A		--- / 550 A	---
AC, $U_e = 3,600$ V (f = 16.7 / 50 Hz; cosφ = 0.8)	--- / ---	350 A / 280 A	---	--- / 650 A
Breaking capacity (T2 = 15 ms)				
DC, $U_e = 1,200$ V	700 A	900 A	1,200 A	---
DC, $U_e = 1,800$ V	400 A	700 A	800 A	1,300 A
DC, $U_e = 3,600$ V	---	400 A	---	750 A *2
Breaking capacity (T2 = 1 ms)				
DC, $U_e = 1,200$ V	1,300 A	2,000 A	2,500 A	---
DC, $U_e = 1,800$ V	900 A	1,600 A	1,800 A	2,500 A
DC, $U_e = 3,600$ V	---	800 A	---	1,300 A *2
Breaking capacity (cosφ = 0,8)				
AC, $U_e = 1,200$ V (f = 16.7 / 50 Hz)	1,000 A / 700 A	2,000 A / 1,200 A	1,900 A / 1,400 A	--- / ---
AC, $U_e = 1,800$ V (f = 16.7 / 50 Hz)	800 A / 500 A	1,600 A / 900 A	1,500 A / 1,000 A	2,300 A / 1,500 A
AC, $U_e = 3,600$ V (f = 16.7 / 50 Hz)	--- / ---	900 A / 500 A	--- / ---	1,300 A / 900 A
Breaking capacity (cosφ = 1)				
AC, $U_e = 1,200$ V (f = 16.7 / 50 Hz)	1,300 A / 1,000 A	2,500 A / 1,500 A	2,200 A / 1,600 A	--- / ---
AC, $U_e = 1,800$ V (f = 16.7 / 50 Hz)	1,000 A / 700 A	2,100 A / 1,200 A	1,900 A / 1,200 A	2,900 A / 1,700 A
AC, $U_e = 3,600$ V (f = 16.7 / 50 Hz)	--- / ---	1,300 A / 800 A	--- / ---	1,600 A / 1,300 A
Rated short-time withstand current $I_{cw}$ (T < 100 ms)	6 kA	6 kA	8 kA	8 kA
Critical current range	None	None	None	None
Main contacts				
Contact material	AgSnO <sub>2</sub>		AgSnO <sub>2</sub>	
Terminals	M10		M12	
Torque	20 Nm max.		30 Nm max.	
Auxiliary contacts				
Number and type	1x S870 (a <sub>1</sub> ), 1x S870 (b <sub>0</sub> ), 2x S826 or 4x S826) *3		1x S870 (a <sub>1</sub> ), 1x S870 (b <sub>0</sub> ), 2x S826 or 4x S826) *3	
Contact material	Silver		Silver	
S826 switching capacity (T = 5 ms)	16 A at 24 V DC; 13.5 A at 80 V DC; 7 A at 110 V DC		16 A at 24 V DC; 13.5 A at 80 V DC; 7 A at 110 V DC	
Terminals	Screws M3 / Flat tabs 6.3 x 0.8 mm		Screws M3 / Flat tabs 6.3 x 0.8 mm	
Magnetic drive (Coil suppression »T«, diode)				
Pollution degree / overvoltage category	PD3 / OV2		PD3 / OV2	
Coil voltage $U_s$	24 / 36 / 72 / 110 V DC		24 / 36 / 72 / 110 V DC	
Coil tolerance	-30 % ... +25 % $U_s$		-30 % ... +25 % $U_s$	
Coil power dissipation at $U_s$ and T <sub>a</sub> = 20 °C	Cold coil: 55 W / warm coil: 40 W		Cold coil: 72 W / warm coil: 54 W	
Pull-in voltage, typical at T <sub>a</sub> = 20 °C	0.6 x $U_s$		0.6 x $U_s$	
Pull-in time, typical at T <sub>a</sub> = 20 °C	120 ms		250 ms	
Drop-off voltage, typical at T <sub>a</sub> = 20 °C	0.1 x $U_s$		0.08 x $U_s$	
Drop-off time, typical at T <sub>a</sub> = 20 °C	60 ms		60 ms	
Coil suppression	Suppressor diode		Suppressor diode	
Coil terminal	Cage clamp		Cage clamp	
Degree of protection	IP00		IP00	
Mechanical endurance	> 2 million operating cycles		> 2 million operating cycles	
Vibration / shock (EN 61373)	Category 1, class B		Category 1, class B	
Mounting position	horizontal / vertical		horizontal / vertical	
Ambient conditions				
Operating temperature / storage temperature	-40 °C ... +70 °C / -40 °C ... +85 °C		-40 °C ... +70 °C / -40 °C ... +85 °C	
Altitude	< 2,000 m above sea level		< 2,000 m above sea level	
Humidity (EN 50125-1)	< 75 % yearly average		< 75 % yearly average	
Weight	11 kg	13 kg	19 kg	21 kg

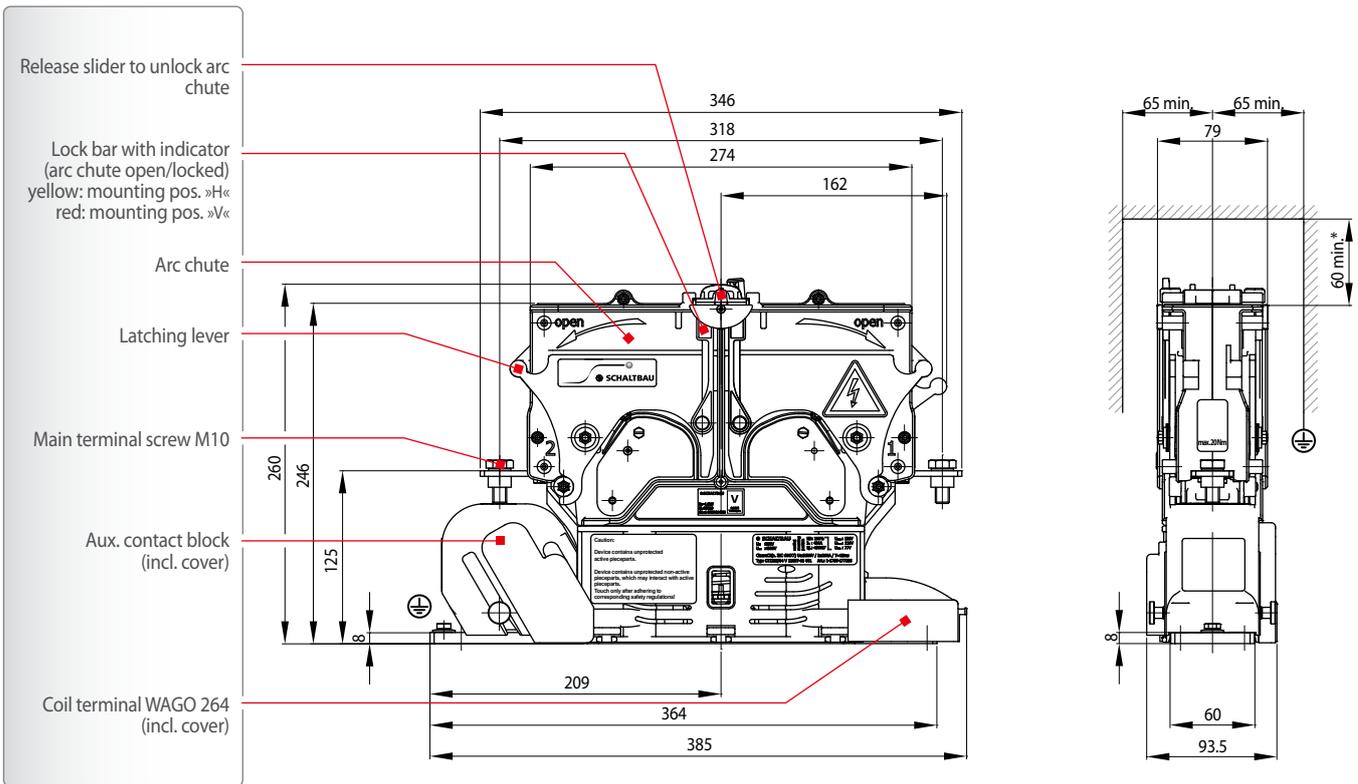
\*1 With frequent switching under load the conv. thermal current  $I_{th}$  must be limited to 350 A.

\*2 Please observe »Dimensioning instructions for C1130/08 Series« on page 6.

\*3 a1 and b0 according to IEC60077

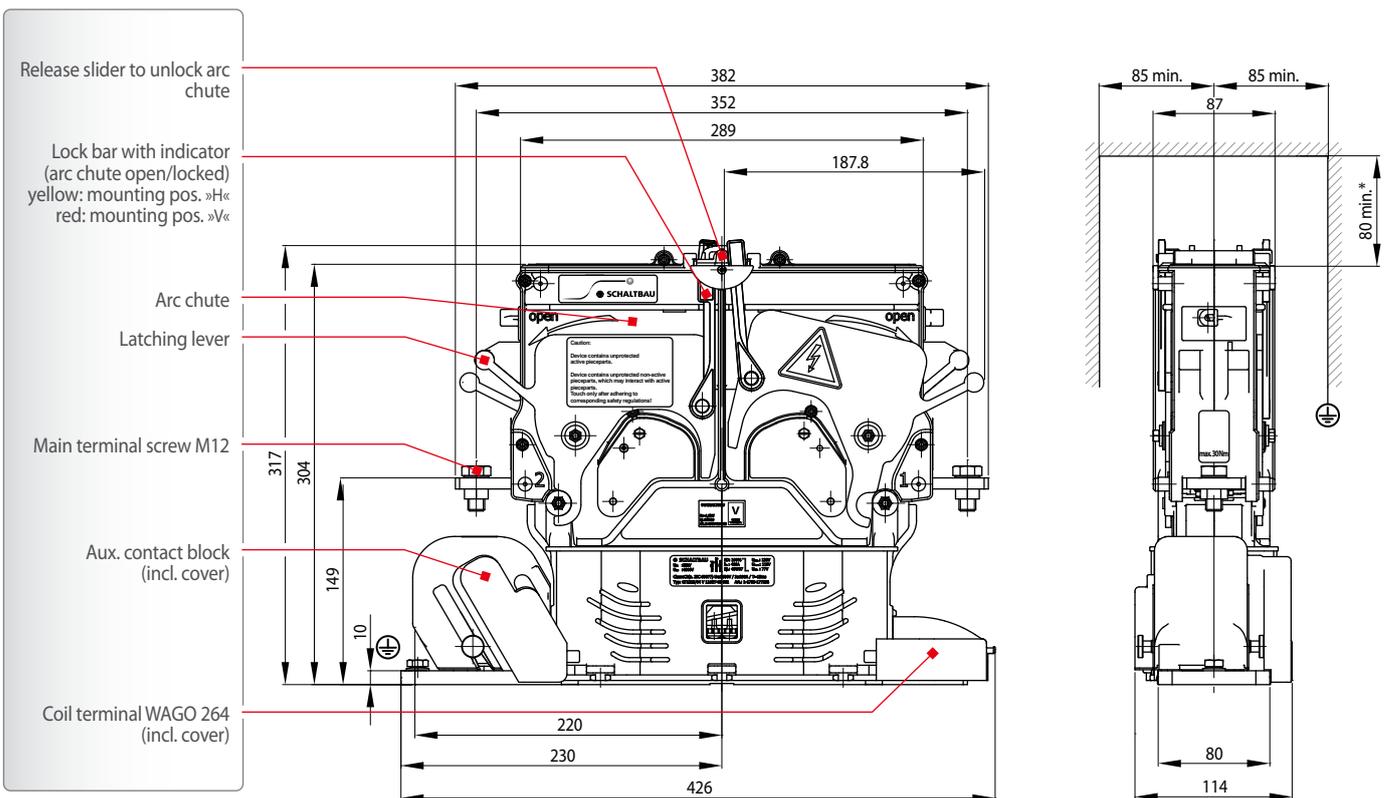
**CT1x15/04** Dimension diagram single pole NO contactor for 1,500 V / 400 A

CT series



**CT1x15/08** Dimension diagram single pole NO contactor for 1,500 V / 800 A

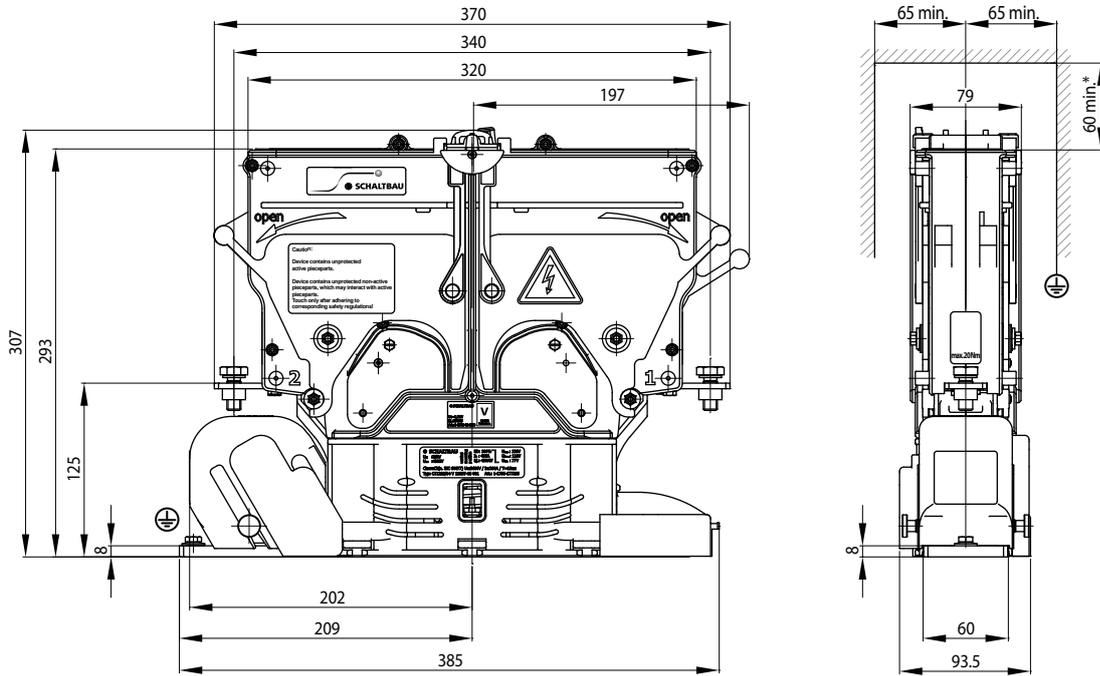
CT series



\* Interrupting at maximum capacity could require larger clearance!  
Feel free to contact us, we will be happy to assist you with dimensioning.

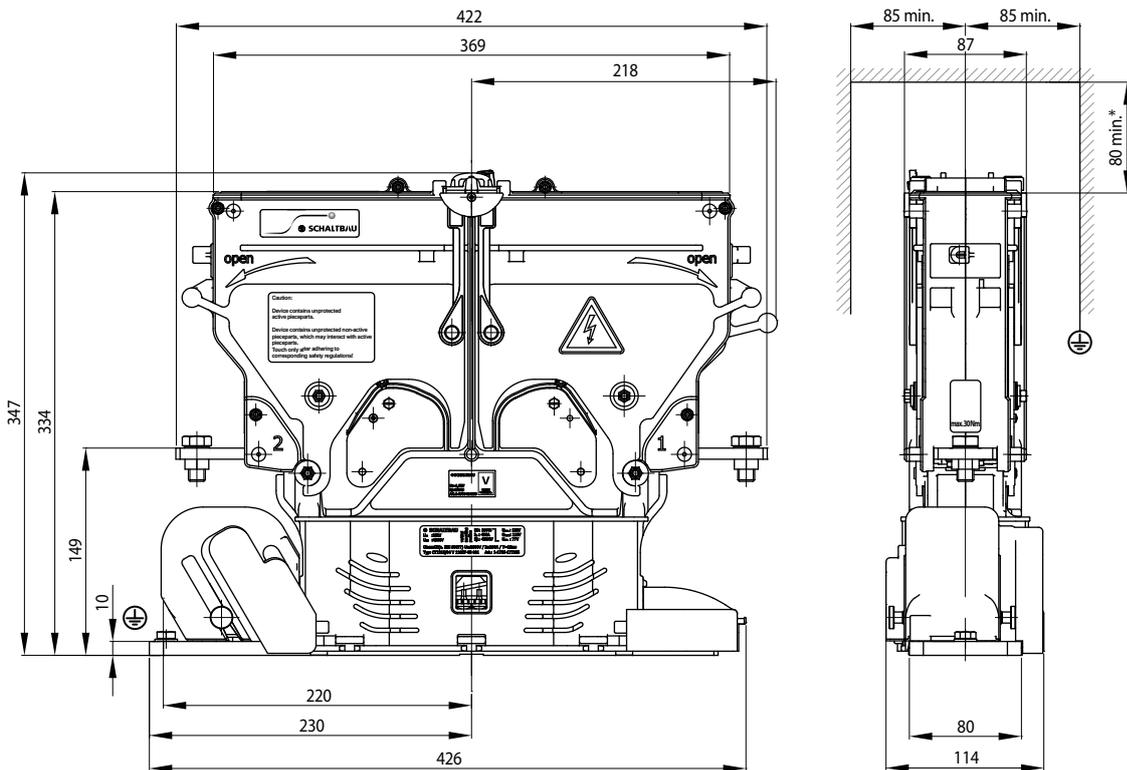
**CT1x30/04** Dimension diagram single pole NO contactor for 3,000 V / 400 A

CT series



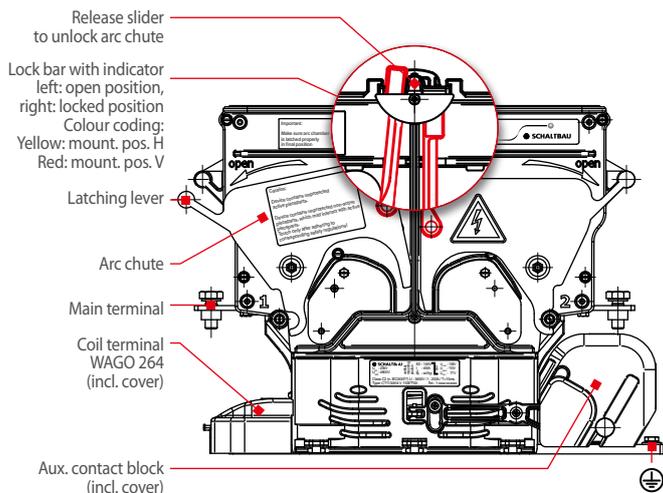
**CT1x30/08** Dimension diagram single pole NO contactor for 3,000 V / 800 A

CT series



**Mounting instructions**

Baureihe CT



**Dimensioning instructions**

- Do you need some help? For selecting the contactor that suits your application best do not hesitate to ask our advice.
- For connection of the main contacts Schaltbau recommends the use of busbars with the following dimensioning:
  - Conv. thermal current  $I_{th} = 400\text{ A}$ : 60 x 5 mm
  - Conv. thermal current  $I_{th} = 800\text{ A}$ : 80 x 8 mm
- Observe clearance of live parts to arc chute! Refer to dimension drawings on page 4 and 5 for data.
- For nominal voltages  $U_n \geq 3.000\text{ V DC}$ , however, we offer a special design, the CT1130/08 ... 200.

**Start up**

Before initial start up make sure that:

- the arc chute is mounted properly and the lock bars are locked in position
- the protective covers are mounted properly
- the contactor is earthed (PE terminal on mounting plate)

**Coil suppression**

Coil suppression »T«, suppressor diode: Coil suppression for reducing surges when the coil is switched off is optimally attuned to the contactor's switching behaviour. Caution: Parallel connection with a simple diode will override the existing coil suppression.

**Taking off the arc chute:**

1. Push both release sliders in the direction indicated by the arrow and hold them in this position.
2. Move all four levers for unlocking the arc chute in the direction indicated by the arrow.
3. The arc chute incorporating the stationary main contacts can now be lifted from the contactor.

**Mounting the arc chute:**

1. Mount the arc chute onto the magnetic drive. Note: The arc chute has keys on one side to fit into slots on the corresponding side of the contactor. So you cannot mount it the wrong way round.
2. Move all four levers for unlocking the arc chute into the original position.
3. Check: The arc chute is locked properly, if all four lock bars click into place and cannot be opened without pushing the release slider.

**Disassembly of protective covers:**

- Protective cover auxiliary switches: Dismount arc chute first, then loosen knurled head screws and remove protective cover.
- Protective cover coil terminals: Unscrew cover and take it off.

**Assembly of protective covers:**

- Protective cover auxiliary switches: Position protective cover and screw in both knurled head screws. Then mount arc chute.
- Protective cover coil terminals: Introduce protective cover into the groove of the coil drive and locate in position. Then tighten screws.

**Mounting positions**

The colour of the lock bars is an indication of the correct mounting position:

- Yellow: horizontal
- Red: vertical

Mounting position	Horizontal	Vertical
Lock bars	YELLOW	RED
Mounting position	»H« horizontal	»V« vertical
Please observe the mounting position as shown on the nameplate		

**Circuit diagrams**

CT series

Available versions:

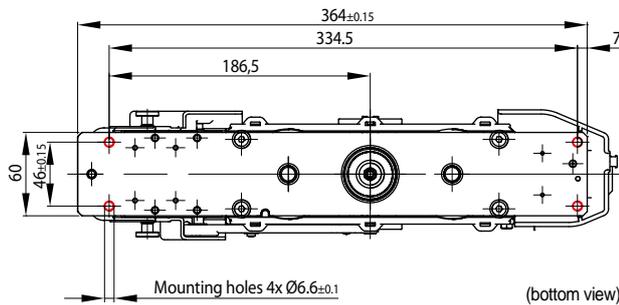
- Single pole NO contactor with auxiliary contacts, standard
- Single pole NO contactor with auxiliary contacts, to railway standard

Single pole version:	CT1115/04, CT1130/04, CT1115/08, CT1130/08
Standard version with auxiliary switches 4 x S826	
Version acc. to railway standard IEC 60077 with auxiliary switches 2 x S826, 2 x S870 (a1, b0)	

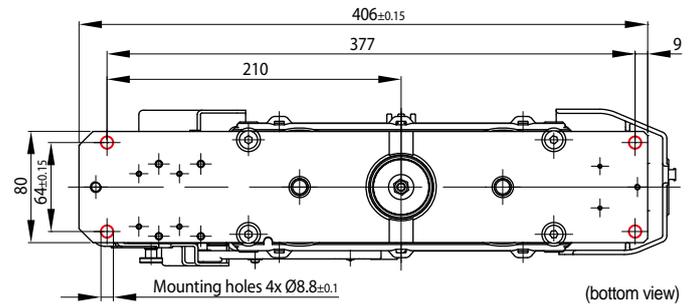
## Mounting holes

CT series

### • Single pole NO contactor, CT1115/04, CT1130/04 series



### • Single pole NO contactor, CT1115/08, CT1130/08 series



## Spare parts

CT series

Items	Spare part, description	Ordering code			
		C1115/04	C1130/04	C1115/08	C1130/08
1	Stationary contact, complete Order 2 of them if needed for contactor	MC CT1015/04	MC CT1030/04	MC CT1015/08	MC CT1030/08
1	Contact bridge with mounted contact holder, mounting position »H« horizontal	CBH CT1015/04	CBH CT1030/04	CBH CT1015/08	CBH CT1030/08
1	Contact bridge with mounted contact holder, mounting position »V« vertical	CBV CT1015/04	CBV CT1030/04	CBV CT1015/08	CBV CT1030/08
1	Protective cover coil terminals	CC CT1030/04		CC CT1030/08	
1	Protective cover aux. switches	CA CT1030/04		CA CT1030/08	
1	Snap-action switch (SPDT)	S826 a L			
1	Contact block of 2x S870 (momentary switches a1, b0)	AS S870			

## Maintenance instructions

## Safety instructions

CT series



**For detailed maintenance, safety and mounting instructions please refer to our operating manuals C20/04-M.en and C20/08-M.en!**

- CT1000 Series 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. The design of the CT1000 contactor series allows for easy replacement of the main contacts. For detailed information please refer to our manuals C20/04-M.en and C20/08-M.en respectively.

- 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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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