

Additional instructions - SMARTCON control with frequency converter

1 General

The SMARTCON control unit with frequency converter is used for monitoring and controlling an actuator and provides the interface between the operator, the control system and the actuator.

This version of the control unit is only available in control cassette design for separate mounting of the actuator. There are 2 different versions, the standard **CSC FU** and explosion-proof **CSCex FU** control unit.

2 Dimensions, Mounting

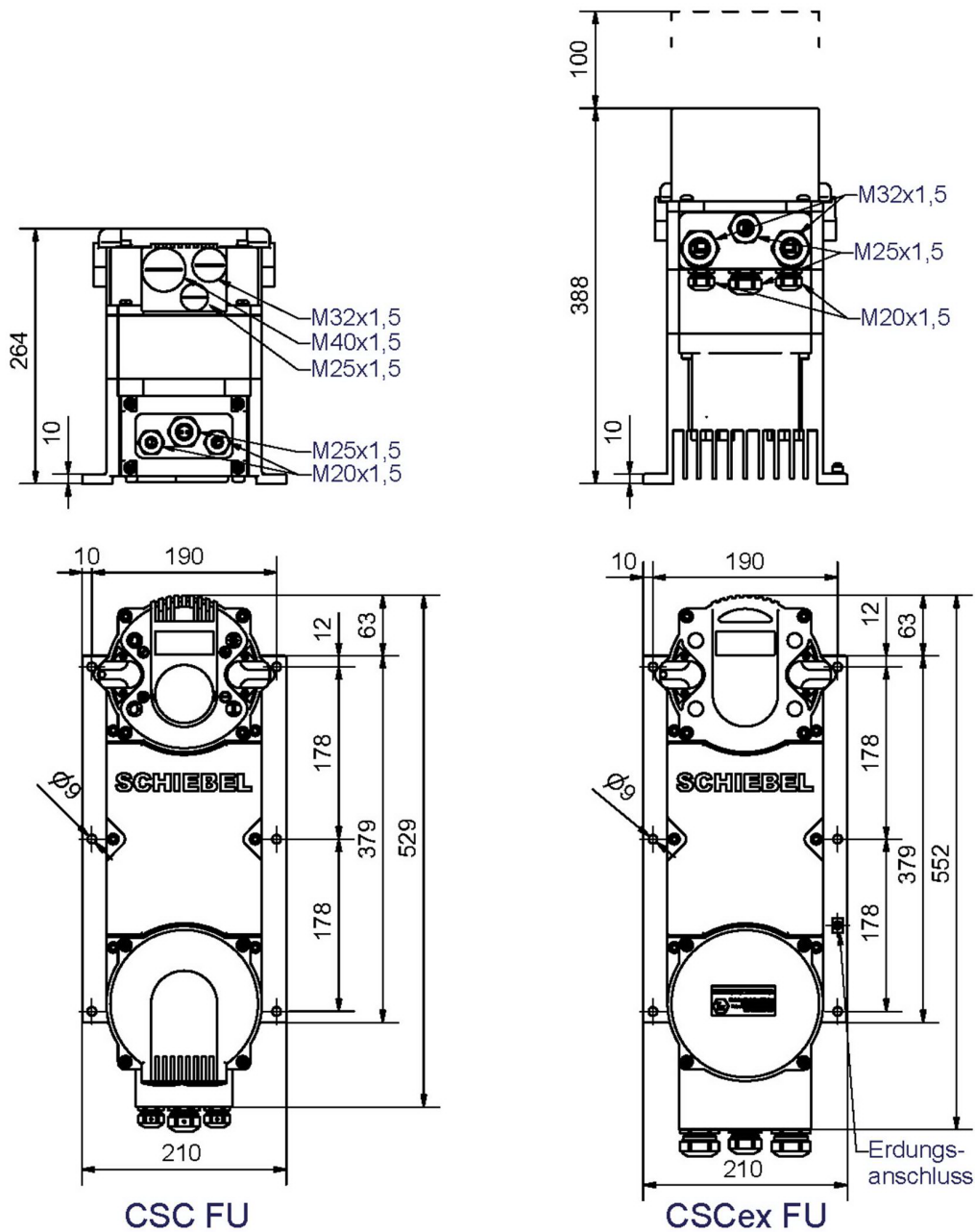


Figure 1: Dimensions

The control unit is designed to be mounted on a flat vertical wall in which a vertical orientation in accordance with the Figure 1. For mounting 6 boreholes (holes $\varnothing 9$ mm) are available at least the outer 4 must to be used.

With the explosion-proof version CSCexFU is to make sure that the cooling fins are not covered on the top and bottom of the unit and allow air circulation is impeded.

3 Electrical connection

Work on the electrical system or equipment must be made in accordance with the applicable electrical engineering rules only by a qualified electrician or by instructed persons under the direction and supervision of a qualified electrician.

Relevant safety regulations (OVE EN 1).

Electric supply in a powered down state.



When working in hazardous areas the European Standards EN 60079-14 "Electrical installations in hazardous areas" and EN 60079-17 must be observed "Inspection and maintenance of electrical installations in hazardous areas".



Warnings located on the control unit:



Check whether the system-side supply (voltage, frequency) with the motor data (refer to motor type plate) matches.



The connection of the electrical wiring must be in accordance with the operating instructions for actuators including Smartconsteuerung and the relevant connection diagram. This is in reporting or connection housing. The diagram can be ordered quoting the serial number at SCHIEBEL.

Indicated on the nameplate of protection is only ensured if suitable cable glands are used, ie the protection of the cable glands must be at least equal to the protection of his control, and the cable gland must be suitable for the corresponding cable diameter. Unused cable entries must be fitted with suitable blanking screws may or supplied blind screws can not be removed.

For controllers in EX version, the cable glands must additionally have an Ex "e" approval!

General it should be observed when mounting that not only the tightness of the cable gland for cable, but also the tightness of the housing or cover part is guaranteed.

The corresponding manufacturer's instructions must be observed!



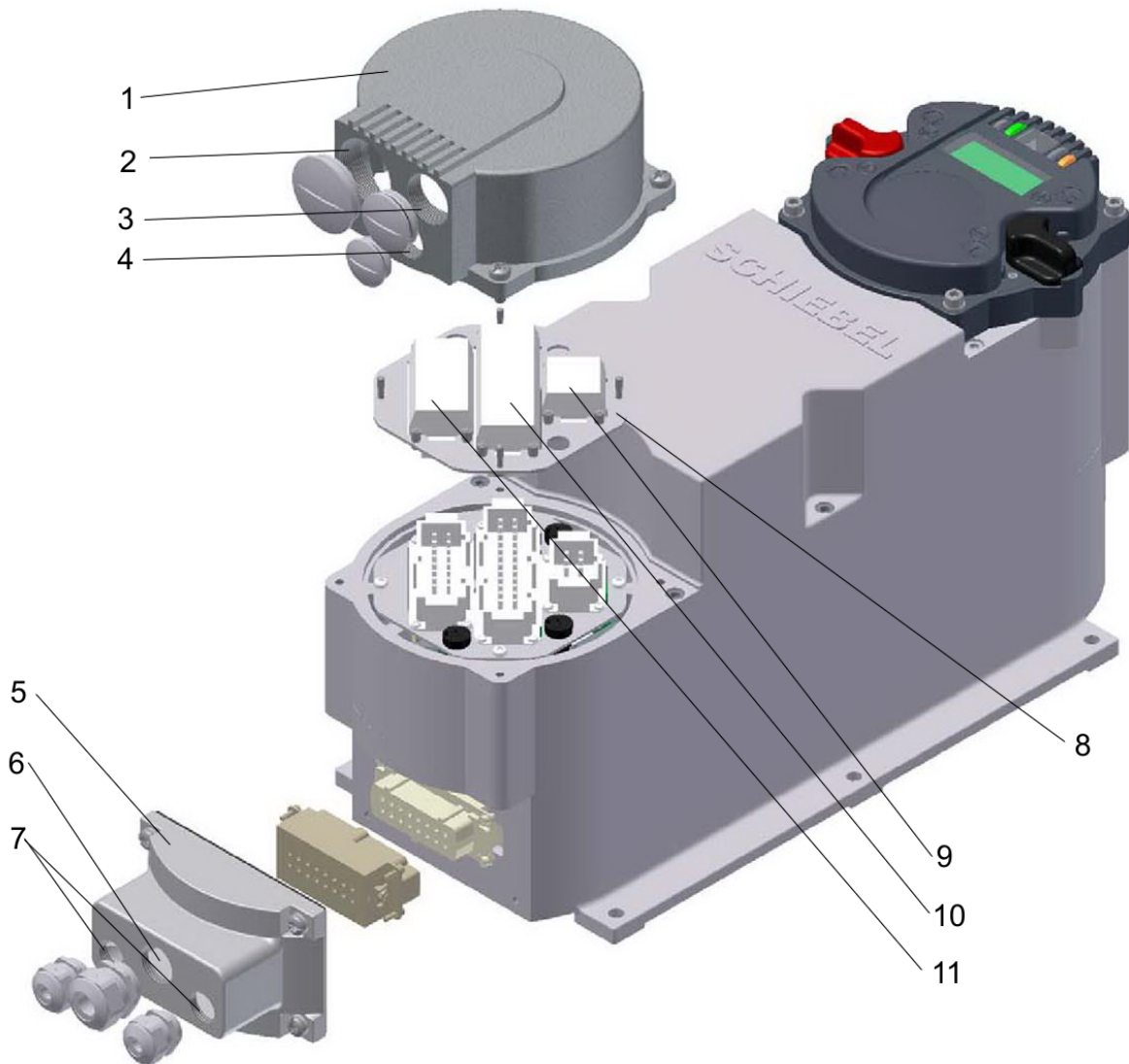


Figure 2: Connection normal version

1...Connection cover customer connection, 2...metric screw (are sealed delivered with blind screws) M40x1,5, 3...M32x1,5, 4...M25x1,5, 5...Connector cover joint actuator, 6...M25x1,5, 7...M20x1,5, 8...connector plate, 9... Plug insert (for power supply), 10... Plug inser (for control cables), 11... plug insert (for relay board - option)

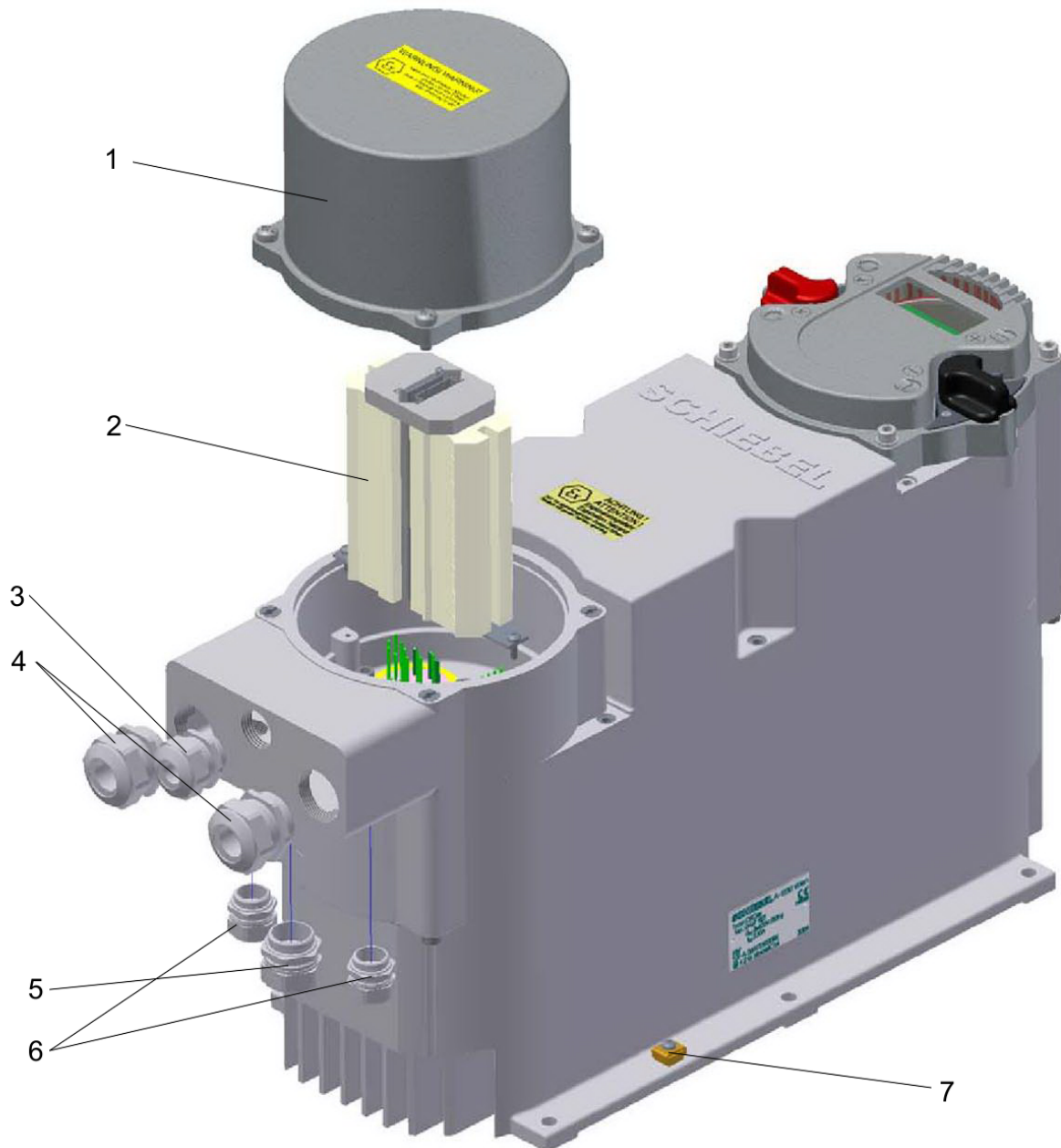


Figure 3: Connection Ex-version

1 ... connecting lid 2 ... metric screw for customer connection (are delivered with blind screws closed) M25x1.5, 3... M32x1.5, 4... metric screw for connection to the actuator M25x1.5, 5... M20x1.5, 6... external grounding

Depending on the order the following connection are possible:

- In standard design then connection of control signal and motor are made via plug (see Figure 2) with screw (In = 16A): The maximum conductor cross-section is 2,5mm²
- For (ex-design) or on sepcial order, the connection is made with terminals! (see Figure 3): The maximum conductor cross-section for the control signals is 2.5 mm and 4mm² for the power connection
On order (or if required due to high currents) also larger terminals are used for the motor connection.

Furthermore, make sure it comes to no electrostatic discharges during follow-up. Please connect the grounding screw first.

For controllers in explosion-proof design both the outer grounding (connection cross section 4 mm²) and the ground lying in the terminal box must be connected.

On request there are additional pre-assembled connecting cable to the actuator available.



When using options such as Profibus the additional guidelines must be observed.

3.1 Technical data, Fuses

Site, fuses and disconnect switches are required for short-circuit protection and for disconnecting the actuator.

According to the following tables, the following current values are valid and accordingly fuses must be dimensioned. The fuses must be of the type gG for installation according to IEC. Also the name plate data and the job documentation must be observed!



Power supply 1x 230V 50Hz

Type Frequency		PK37	PK55	PK75	P1K1	P1K5	P2K2
Typische shaft power	$P_{M,N}$ [kW]	0,37	0,55	0,75	1,1	1,5	2,2
Input current	$I_{L,N}$ [A]	2,9	4,4	5,5	7,7	10,4	14,4
	$I_{L,MAX}$ (60s) [A]	4,6	7,0	8,8	12,3	16,6	23,0
Max. Fuses	IEC Typ gG [A]	20	20	20	20	20	20

power supply 3x 400V 50Hz

Type Frequency		PK37	PK55	PK75	P1K1	P1K5
Typische shaft power	$P_{M,N}$ [kW]	0,55	0,75	1,1	2,2	4,0
Input current	$I_{L,N}$ [A]	1,2	1,7	2,2	3,0	3,7
	$I_{L,MAX}$ (60s) [A]	1,9	2,7	3,5	4,8	5,9
Max. Fuses	IEC Typ gG [A]	10	10	10	20	20

Type Frequency		P2K2	P3K0	P4K0	P5K5
Typische shaft power	$P_{M,N}$ [kW]	2,2	3	4	5,5
Input current	$I_{L,N}$ [A]	5,3	7,2	9,0	12
	$I_{L,MAX}$ (60s) [A]	8,5	11,5	14,4	19,2
Max. Fuses	IEC Typ gG [A]	20	25	25	25

4 Settings and parameters

The setting and parameters are set in the context of the actuator according to the operating instructions for actuators with SMARTCON control units.

5 Malfunctions

In case of a malfunction of the CSC FU or CSCex FU, please perform following checks:

Error Description	Action
smartcon supplied with main power: dark display	Check the main power supply. If supply voltage is OK, check fuse C606f
Smartcon supplied with 24V: dark display	Check the control voltage supply (terminal 1 (+) and 2 (-) on the control plug or control terminals if the 24V DC are present If OK check fuse C302b.
No binary outputs	Check the voltage (terminal 13 (+) and 14 (-) on the control plug or control terminals if the 24V DC are present If OK check fuse C302a.
No power to the heating resistor in the actuator	Check the fuse C408

fuses can be changed as follows:

Note section 3, page 2!

Perform work only when the power is off!



5.1 Fuse replacement for standard version CSC FU

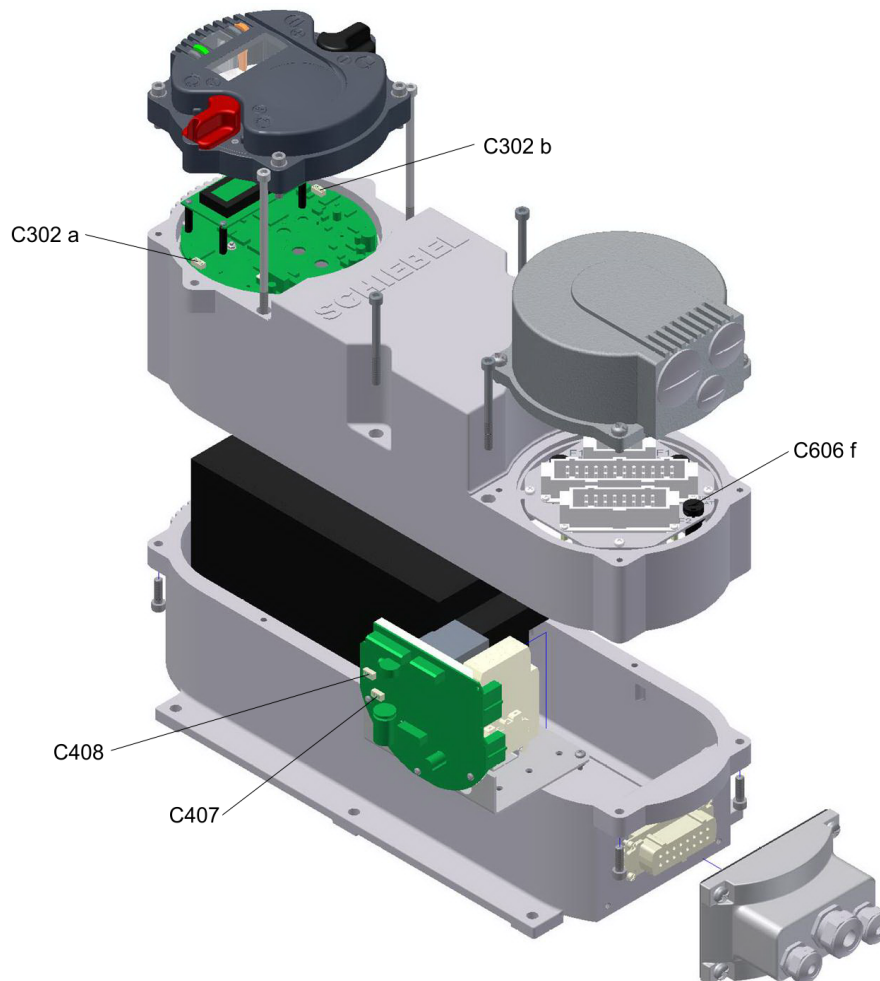


Figure 4: Insurance-standard version

Description	Position	application	Type	trigger value
C302 a	Logic	binary outputs	Subminiatur SMD-Sicherung Littelfuse	375 mAT
C302 b	Logic	24V customer care	Subminiatur SMD-Sicherung Littelfuse	500 mAT
C407	supply	safeguarding supply	Subminiatur SMD-SicherungLittelfuse	1 AT
C408	supply	safeguarding heating	Subminiatur SMD-SicherungLittelfuse	500 mAT
C606 f	connection compartment	tax insurance	finely insurance 6,3x32	125 mAT

For the access to the internal fuses (C407 and C408) the housing upper part must be removed. Therefore it is necessary to remove the actuator connector in order to access the underlying screw. Furthermore, it should be noted that between the upper and lower part there is a cable connection which must not be removed. For the work the upper part gently tilt to the side!

When refitting check seals and sealing surfaces. Seal the surfaces lightly with acid-free grease (eg Vaseline).
Replace cover and make sure that no wires are pinched.
Tighten screws evenly crosswise.

5.2 Fuse replacement for explosion-proof CSCex FU

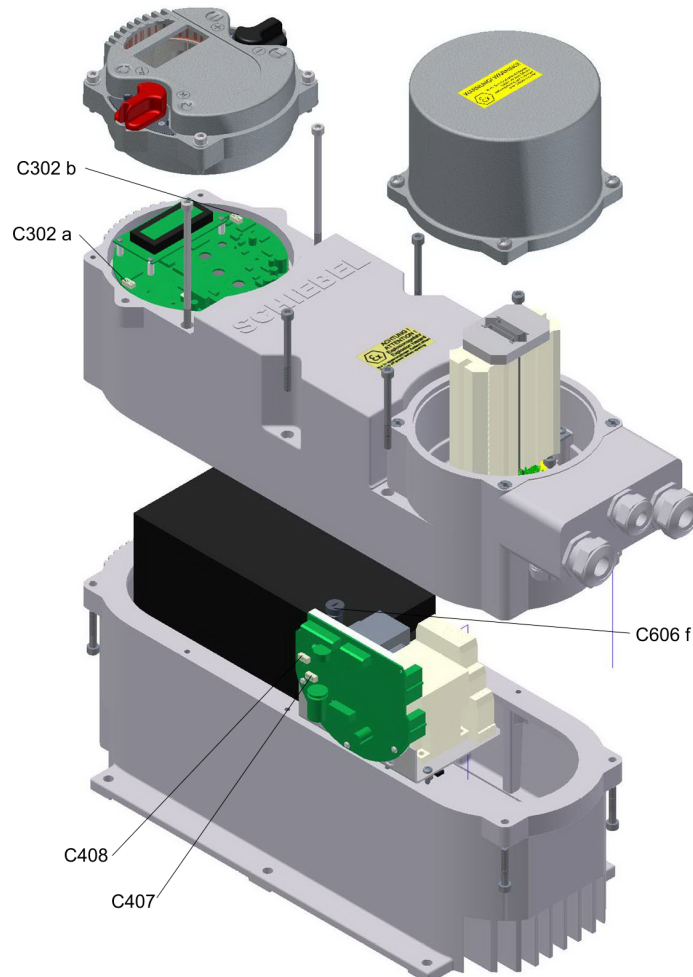


Figure 5: Fuse Ex-Version

Attention:

- **Druckfeste Kapselung! Vor dem Öffnen Gas- und Spannungsfreiheit prüfen.**
- **Hinweisschilder am Gerät beachten!**
- **Deckel und Gehäuseteile sorgfältig behandeln.**
- **Spaltflächen dürfen keine Beschädigungen oder Verunreinigungen aufweisen.**
- **Deckel bei der Montage nicht verkanten.**



For the access to the internal fuses (C407 and C408 and C606f) the housing upper part must be removed. Furthermore, it should be noted that between the upper and lower part there is a cable connection which must not be removed. For the work the upper part gently tilt to the side!

When refitting check seals and sealing surfaces. Seal the surfaces lightly with acid-free grease (eg Vaseline).
Replace cover and make sure that no wires are pinched.
Tighten screws evenly crosswise.

5.3 Maintenance

Generally the unit is maintenance-free.

Should be opened in the course of repair work cover the sealing surfaces and seals for damage or condition to check and if necessary replace.

It is recommended to annually conduct a visual inspection of the unit for mechanical damage that could affect the degree of protection.

Specifically, the cable entries must be checked for tightness of the cable and condition of the seals.

At least every 5 years to check the seal of the connection cover on condition.

5.4 Technical data

Product	CSC FU	CSCex FU
Housing and cover	Aluminium, painted	
Weight	max. 18 kg	max. 22 kg
Supply voltage (range)	3phasig 380-440VAC +/-10%; 50, 60Hz	
.....	-1phasig: 220-240VAC +/-10%; 50, 60Hz	
Rated power (typical wave power)	0,37 - 5,5 kW (1,5kW 1phasig)	
frequency range (Output)	5-50Hz (Speed ratio 1:10)	
Binary In/Outputs	see instructions for actuators with SMARTCON control	
Analog In/Outputs	see instructions for actuators with SMARTCON control	
Auxiliary voltage input	see instructions for actuators with SMARTCON control	
Protection (EN 60529)	IP67	IP65 (IP67)
ambient temperature	- 10° to + 60°C	- 10° to + 40°C
Type of protection	-	Ex II2G EX de IIBT4
certificate number	-	TÜV-A 08ATEX0006