SCHALTBAU
Connect Contact Control

3

Contactors

C295 series

Double pole
NO contactors

Installation and maintenance
instructions

Manual B295-M.en

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1. Important basic information

1.1 Legal notes

Without prior written consent of Schaltbau GmbH, this manual is not allowed to be electronically or mechanically reproduced – as a whole or in parts – be distributed, changed, transmitted, translated into another language or used in any other way.
Schaltbau GmbH cannot be held liable for damage caused by not observing (or only partly observing) the manual.

1.2 Conventions for this manual

This manual describes the installation and maintenance of the contactors.
Cross references are presented in bold italics.
To highlight particularly important safety instructions and other information, the following symbols are used in this instructions:

DANGER

Indicates a hazardous situation with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazardous situation with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation with a low level of risk which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates a hazardous situation which, if not avoided, may result in property damage, such as service interruption or damage to equipment or other materials.

Refers to technical features and methods aimed at facilitating work or to particularly important information.

This manual refers to double pole NO contactors of the C295 series
This manual describes only stock items of the above mentioned contactor types. If you need a special variant feel free to contact us.

2. General and security information

The contactors dealt with in this document are intended for use with electrical systems for special installations. They are designed and tested in compliance with the generally recognised state of the art. However, improper use, operation, handling, maintenance of or tampering with electric equipment can cause serious or fatal injury to the user or others, and the appliance or other property can be damaged.
The operation, maintenance and installation instructions for the contactors must therefore be strictly followed.
Any uncertainties must be clari ed and all queries must include details of the type of device and the serial number.
Only authorized and trained personnel are allowed to plan and carry out all mechanical and electrical installations, transport, commissioning, as well as maintenance and repair work.
This applies to the observation of the general installation and safety regulations for work on electrical systems as well as the proper use of tools approved for this purpose.
Electrical equipment requires protection from moisture and dust during installation, operation or storage.

2.1 Observing the instructions

- All sta must read and understand the instructions in this manual and adhere to them when working with the device.
- Always carefully observe all safety warnings!

2.2 User obligations

- Observe all applicable national provisions, all safety, accident prevention and environmental regulations as well as the recognized technical rules for safe and proper working.
- Carry out regular inspections of all protection and safety devices to see if they work properly.
- Work on electric equipment may only be performed by an expert or trained personnel working under the direction and supervision of an expert according to the applicable rules of electrical engineering.
- An expert is a person who can judge and recognise the possible dangers of the jobs assigned to him based on his training, knowledge and experience and by knowledge of the appropriate regulations.
- Work on the contactors must only be carried out by sta who meets the requirements set out in this manual.
- Sta must be informed clearly about who is responsible for the maintenance of the contactors.
- After each installation work and/or after any other modi cations, alterations or maintenance works, always perform complete checks according to these standards:
  - EN/IEC 60077-2
  - EN/IEC 60947-4-1

2.3 Intended use

- The contactors have been designed and tested according to national and international standards. Due to their unique features they can also be used in a variety of applications.
- The contactors must only be used under operating conditions according to the technical speci cation and the instructions in this manual.
- None of the operating conditions de ned in the corresponding data sheets and in our catalogue B295 in section “Speci cations“, such as voltages, currents, ambient conditions, etc. may be changed. The catalogue is available under: https://www.schaltbau.com/en/media-library/
- The contactors may only be used when all protective devices are present, have been installed properly and are fully operational.
- The contactors must not be contaminated with aggressive media.
- Contactors may not be used without further protective measures in potentially explosive atmospheres.
- The contactor meets the requirements of basic insulation. Make sure the frame or plate onto which the drive of the contactor is mounted is earthed in a shock and vibration resistant way.
- Coil suppression for reducing surges when the coil is switched o is optimally attuned to the contactor‘s switching behaviour. The existing opening characteristic must not be negatively in uenced by parallel connection with an external diode.
- The contactor has unprotected live parts
- The required clearance of live parts to earth 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.
- Improper handling of the contactors, e.g. when hitting the oor with some impact, can result in breakage, cracks and deformation. Always handle the contactors with care.
- Use the contactor only according to its intended use. Replace or repair damaged parts exclusively with original parts. Any other usage of or tampering with the contactors is considered contrary to its intended use. No liability is assumed for damages and accidents caused due to non-compliance with the instructions in this manual or improper use of the contactors.

2.4 Ambient conditions

NOTICE

The contactors are constructed for speci c ambient conditions.

- Operate the contactors only according to the ambient conditions, like temperature ranges, pollution degree, etc., as de ned in the corresponding data sheets and in our catalogue B295. The catalogue is available under: https://www.schaltbau.com/en/media-library/

3. Dangers and security measures

3.1 Electrical dangers

DANGER

The contactors are used to switch voltage. The touching of electrically conducting parts may result in serious injuries or even death!
Energized parts are all metal parts belonging directly to one of the circuits or wires leading there. All other visible metal parts and wires may also be energized in the case of a failure.
Before beginning any work on the contactors, always observe the following safety regulations:

- Disconnect on all sides
- Ensure that it is not possible to reconnect unintentionally
- Clearly mark your work area
- Make sure that there is no voltage present
- Earth and short circuit the installation; this also includes the discharging of any capacitors in the main circuit
- Besides the main electric circuit, also disconnect additional and auxiliary circuits
- Cover or insulate adjacent energized parts
- Only an electrically skilled person may determine if there is no voltage present
- When the work has been concluded, proceed the other way round.

3.2 Other dangers

WARNING

Exclusively use the contactors for purposes as indicated in the specications and data sheets.
A wrong application can cause accidents and severe damages to persons!

- The manufacturer doesn‘t take the responsibility for accidents which were caused by improper use of the product.

CAUTION

During continuous operation the contactors may become hot. Risk of burns!

- Before beginning any checks or maintenance work on the contactors make sure that the heated components have cooled down.

CAUTION

The contactors contain sharp-edged parts. Risk of injury!

- Use appropriate tools for installation and maintenance works on the contactors.
- Wear protective gloves when working with sharp-edged components.

3.3 Measures for avoiding damages and malfunctions

NOTICE

Aggressive uids may damage the contactors.

- Make sure that the contactors are not exposed to aggressive uids.

NOTICE

Improper handling of the contactors, e.g. when hitting the oor with some impact, can result in breakage, cracks and deformation.

- Make sure that the contactors are always used properly.
- Do not throw the contactors to the oor.
- Regularly sight-check the contactors for potential damages.
- Immediately replace damaged components.

NOTICE

Depending on the product type, contactors can contain strong (permanent) magnets. These magnets can attract ferromagnetic particles and may damage the contactors.

- Make sure that the contactors are installed at a location, where no ferromagnetic particles can be attracted.

NOTICE

Depending on the product type, contactors can contain strong (permanent) magnets. These magnets can de stroy data on credit cards or similar cards.

- Keep credit cards or similar cards away from the contactors..

NOTICE

During the switching o , strong electromagnetic elds are generated in the surroundings of the contactors. These may in uence other components close to the contactors.

- Make sure that the contactors are installed at a location, where no other components can be a ected.

NOTICE

In the case of damage, wear and tear and/or soiling of the contactor components - in the form of a partial break, sharp edges and discoloured surfaces - the functional safety of the contactors is no longer guaranteed.

- Carry out regular visual checks to detect wear and tear and dirt.
- Immediately replace damaged parts.
- Immediately remove dirt without leaving any residues.
- Immediately replace parts with stubborn dirt.

NOTICE

Detent-edged rings and detent-edged washers have a limited life time. After 3 times opening of screws secured with detent-edged rings or detent-edged washers, the rings or washers must be replaced by new ones.

- Record the frequency of screw opening in the work log.
- After 3 times opening of screws, replace detent-edged rings or detent-edged washers by new ones..

4. Product information

4.1 Double pole NO contactor, C295 series

Compact double-pole high-voltage NO contactor for DC and AC

With its compact size and efficient arc chute our C295 Series contactor allows the handling of voltages up to 1,500 V and currents of 120 A max.
Switching high amperage even at significant inductance can be achieved by series connection of the main contacts, whereas parallel connection results in longer contact life.

4.2 Features

- Compact in size
- Double-break contacts
- With magnetic blowout for DC arc quenching
- Switching of high inductive loads by means of main contacts connected in series
- Parallel connection: Longer life of main contacts

4.3 Applications

Typical applications are to be found in traffic engineering equipment, particularly in heating circuits, air conditioning equipment and conversion engineering of complex power supplies.

4.4 Technical information and material specification

For technical information and material specifications, refer to the corresponding data sheets and to our catalogue B295. The catalogue is available under:
https://www.schaltbau.com/en/media-library/

4.5 Overview

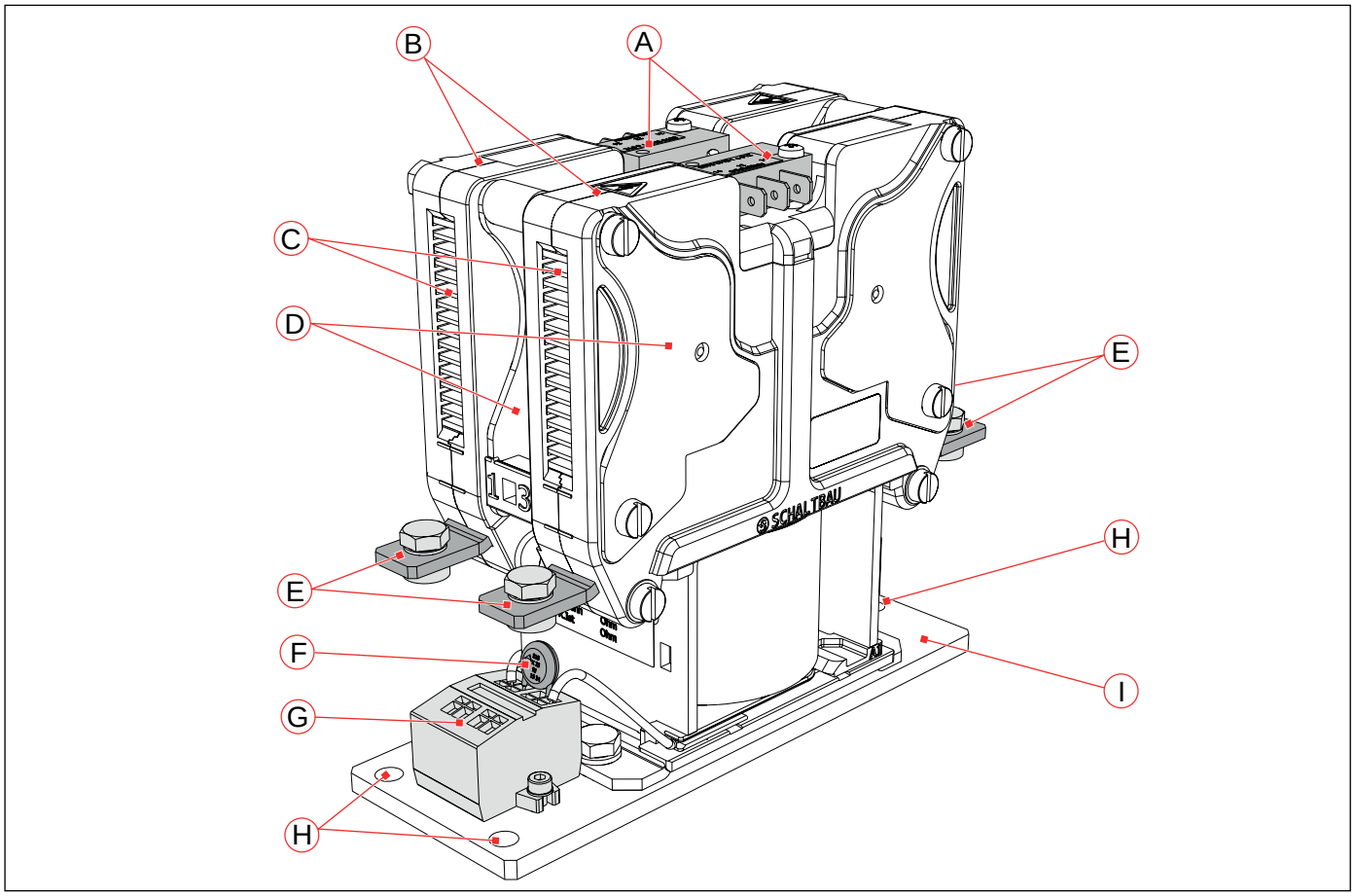

Fig. 1: Overview C295 series

A Auxiliary contacts (2x S870), Terminals: Flat tabs 6.3 x 0.8 mm
B Arc chambers
C Plasma exits
D Permanent magnets
E Main contacts, Terminals: M6, Tightening torque: 6 Nm max.
F Coil suppression: Varistor
G Coil terminals: Cage clamp
H Mounting holes for screws M6, Tightening torque depends on the property class (min. 8.8) of the screws/nuts used
I Base plate

5. Storage

NOTICE

Moisture and dust can damage the contactor. If the device is to be stored for a prolonged period of time,

- store it in its original packaging,
- store it in a dry and dust-free location.

Return shipments

Schaltbau recommends to keep the original packing box for any return shipments. If no original packing box is available care must be taken to pack the contactor in a way that prevents damage during shipment.

6. Unpacking

6.1 Unpack the device

- Before opening the packaging, perform a visual inspection for any signs that could indicate damage having occurred during transport (impacts, bumps, falling etc.).
- If any signs indicate that the contactor has been subject to excessive shock in uence do not install the contactor.

6.2 Check parts for transport damage

NOTICE

If parts are damaged, the functional reliability of the contactor is no longer given.

- Before installing, check all parts for any possible transport damage.
- Do not install a damaged contactor.

7. Installation

7.1 Mechanical installation

7.1.1 Dimensions and further technical speci cations

The dimensions and further technical speci cations are given in the respective data sheets or in our catalogue. Refer to our catalogue B295.
The catalogue is available under:
https://www.schaltbau.com/en/media-library/

7.1.2 Preliminaries

- An appropriate mounting plate or mounting frame has to be provided for the fastening of the device. The mounting plate or frame must be solid enough to carry the weight of the device under the expected shock and vibration conditions.
- 3 mounting holes must be prepared on the mount ing plate or frame according to Fig. 2.

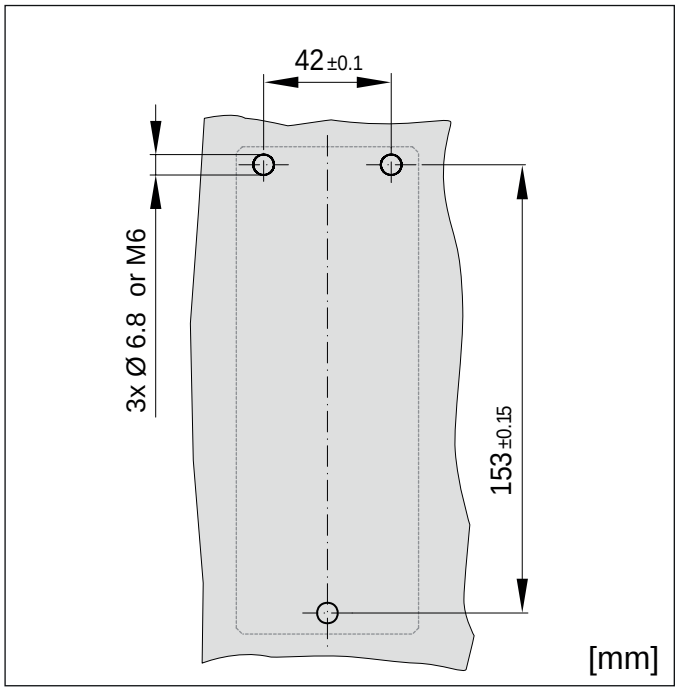

Fig. 2: Dimensions and arrangement of the mounting holes

- The mounting holes can be prepared in two ways:
  - either as threaded holes (for threaded screws)
  - or as through-holes (for threaded screws and nuts)
- The contactors are xed to the mounting plate or frame with 3 mounting screws M6.
  - The length of the xing screws has to be deter mined according to the constructional condi- tions.
  - In order to secure the mounting screws against self-loosening, appropriate screw locking ele ments have to be provided. Schaltbau strongly recommends Schnorr-Washers (or similar) to se cure the screws.
  - The tightening torque depends on the property class (min. 8.8) of the screws/nuts used.

7.1.3 Correct mounting positions

The contactors can be installed at the prepared mount ing plate or frame in almost any installation position. Examples of intended mounting positions are shown in Fig. 3.
Not permitted are hanging installation positions with the mounting plate/mounting frame facing upwards, as shown for example in Fig. 4.

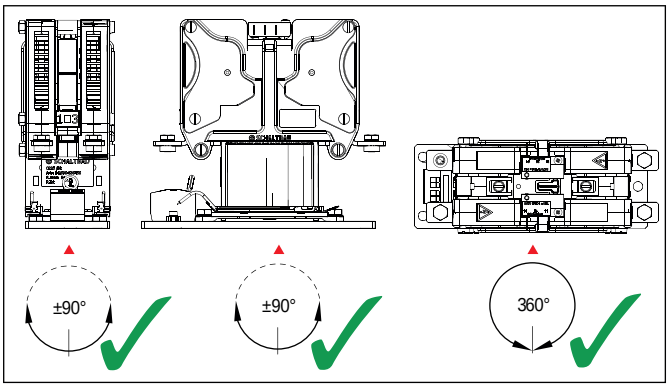
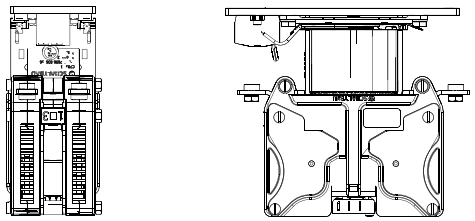
Fig. 3: Examples for intended mounting positions