

ctrlX DRIVE/IndraDrive Drive Components

Safety Instructions and Directions for Use

R911339259
Edition 04

Documentations and General Information

This Documentation

This documentation contains safety instructions and directions for use for the following electrical components of the Rexroth drive system:

- ▶ HMV, HMU, XVE, XVR Supply Units
- ▶ FCS, HCS, HCT, HCQ, HMD, HMS, HMU, XCD, XCS, XMD, XMQ, XMS Drive Controllers
- ▶ Motor-Integrated Servo Drive KSM
- ▶ Near Motor Servo Drive KMS
- ▶ Drive Connection Box KCU

In this documentation, these components are called "drive components".

Keep this documentation in a safe place.

Operating Instructions

Improper use of drive components and non-compliance with safety instructions can cause personal injury. Only commission the drive components when the following requirements have been fulfilled:

- ▶ You have the Operating Instructions of the drive components at hand.
- ▶ You have checked that the Operating Instructions at hand comply with the supplied types of the drive components.
- ▶ You have taken the contents of the Operating Instructions into account.

| Operating Instructions | | | | | |
|------------------------|-----------------|--------------------------------------|-----------------|-----------------|-----------------|
| Drive component | Material number | Drive component | Material number | Drive component | Material number |
| FCS01 | R911339118 | HCT02 | R911339044 | KCU01 | R911339082 |
| HCQ02 | R911339038 | HMD01 | R911339064 | KCU02 | R911339100 |
| HCS01 | R911339012 | HMS01 | R911339056 | KMS01 | R911339094 |
| HCS02 | R911339018 | HMS02 | R911339076 | KMS02 | R911339112 |
| HCS03 | R911339024 | HMV01 | R911339050 | KSM01 | R911339088 |
| HCS04 | R911339032 | HMV02 | R911339070 | KSM02 | R911339106 |
| HMU05 | R911347937 | XCD, XCS, XMD, XMQ, XMS, XVE, XVR | R911392532 | | |

You can order the Operating Instructions with our Rexroth sales representative or download them from the Internet (<http://www.BoschRexroth.com/MediaDirectory>). In the case of problems with the download, please contact dokusupport@boschrexroth.de.

Signal Words of the Safety Instructions

The signal words of the safety instructions in this documentation have the following significances:

⚠ WARNING

In case of non-compliance with a safety instruction containing the signal word "WARNING", death or serious injury could occur.

⚠ CAUTION

In case of non-compliance with a safety instruction containing the signal word "CAUTION", minor or moderate injury could occur.

General Safety Instructions and Directions for Use

⚠ WARNING

Danger to life in case of non-compliance with the below-mentioned safety instructions!

Serious personal injury in the case of improper conduct!

- ▶ Do not attempt to put the drive components into operation until you have read and observed the safety instructions.
- ▶ Only qualified staff or competent persons are allowed to mount, electrically connect and commission the drive components. A competent person knows the relevant standards and regulations. A competent person must be able to judge the delegated work and identify potential hazards.
- ▶ Observe all instructions to be found on the drive components and in the Operating Instructions, as well as the standards and regulations applicable to your drive system.

The drive components can cause hazards.

Protect yourself from the following hazards:

- ▶ Improper transport and mounting
- ▶ Magnetic and electromagnetic fields
- ▶ Electrical voltage
- ▶ High temperatures of the drive components
- ▶ Improper handling of batteries

If you do not understand an instruction in this documentation or in the Operating Instructions, or if you have any questions, please contact the Rexroth service, before you start working (tel.: +49 9352 405060, e-mail: service.svc@boschrexroth.de or www.boschrexroth.com/electrics).

Appropriate Use

Drive components made by Rexroth are designed to control electrical motors and monitor their operation.

It is the prerequisite for the intended use and the safe handling of the drive components that you proceed appropriately and correctly in the case of the following activities:

- ▶ Transport
- ▶ Storage
- ▶ Mounting
- ▶ Installation (electrical connection system)
- ▶ Commissioning
- ▶ Operation
- ▶ Dismounting
- ▶ Disposal

The drive components are exclusively designed for commercial and industrial use. Only operate the drive components under the specified conditions (see index entries "Data", "Dimensions", "Instructions for use" and "EMC" in the Operating Instructions). Using drive components in potentially explosive areas is forbidden.

Transport and Storage

⚠ WARNING

Risk of injury during transport by improper handling!

- ▶ Only use suitable and sufficiently sized lifting gear and means of transport.
- ▶ Secure eyebolts before using them and check them for tight fit.
- ▶ Never be under hanging loads.
- ▶ Use suitable personal protective equipment (e.g. safety shoes).

Store the drive components in their original packages, in a dry, dust-free, vibration-free place, and protect them from light and direct solar radiation.

Mounting

Before mounting the drive components, observe the following instructions:

- ▶ The drive components are designed for control cabinet mounting.
This excludes drive components with a degree of protection of at least IP65 in accordance with IEC 60529 (e.g., KSM and KMS).
- ▶ Depending on the site of installation, the control cabinet must provide sufficient protection against penetration of foreign objects and ingress of liquids. The degree of protection must be at least IP54 in accordance with IEC 60529.
- ▶ Ensure a safe location for the control cabinet.
- ▶ For installation and mounting, observe the additional conditions (see index entries "Data", "Dimensions" and "Installation" in the Operating Instructions).

⚠ WARNING

**Personal injury during mounting work!
Danger by falling drive components.**

- ▶ Use personal protective equipment (e.g. safety gloves, safety shoes) and suitable mounting devices.
- ▶ When mounting drive components of a machine:
Before starting to work, secure the machine against movements and unauthorized operation.
- ▶ Before unfastening mechanical connections, secure the drive components against falling.

Electrical Connection

For information on the electrical connection of the drive components, see the Operating Instructions (see index entries "Connection points" and "Equipment grounding conductor").

⚠ WARNING

**High electrical voltage!
Danger to life, risk of injury by electric shock.**

- ▶ Disconnect the mains power supply before accessing the drive components and secure the mains power supply from reconnection.
- ▶ Before accessing the drive components, wait for the drive components to discharge.
- ▶ Always operate drive components with a permanently installed equipment grounding conductor (= protective grounding conductor).

In addition, observe the following instructions:

- ▶ The leakage current of the drive components is greater than 3.5 mA. Therefore, observe the requirements on the minimum cross section of the equipment grounding conductor (see "Equipment grounding conductor" in the Operating Instructions).
- ▶ Observe the data on the type plate of the drive component and the connection diagram in the Operating Instructions.
- ▶ Observe the data for the mains connection lines with regard to the minimum cross section, installation method, ambient temperature and insulation material (see Operating Instructions).
- ▶ Establish permanently safe electrical connections.
- ▶ Keep the control cabinets free from dust, dirt and moisture.
- ▶ Only use original connection accessories by Rexroth.

Commissioning

⚠ WARNING

**High electrical voltage!
Danger to life, risk of injury by electric shock.**

- ▶ Always operate drive components with a permanently installed equipment grounding conductor.
- ▶ Do not open protective coverings or protective housings when drive components conduct voltage.
- ▶ Do not connect or disconnect electrical connections when the electrical connections conduct voltage. For this purpose, first disconnect the mains power supply and secure the mains power supply from reconnection. Before accessing a drive component, allow the component to discharge within the time specified on the component.

Before commissioning, the following requirements must have been fulfilled:

- ▶ The drive components are undamaged and free of dirt.
- ▶ The equipment grounding conductor has been permanently connected at all drive components (see "Equipment grounding conductor" in the Operating Instructions).
- ▶ All electrical connections of the drive components were checked (see index entry "Connection points" in the Operating Instructions).
- ▶ Fuses have been correctly installed and the Bb relay contacts have been wired.

- ▶ Monitoring systems (e.g. diagnostic messages and error messages) of the drive components do not display any errors.
- ▶ Cooling water connections are tight.

⚠ WARNING

Electromagnetic and magnetic fields!

Danger to persons with active medical implants (e.g. heart pacemakers) or passive metallic implants (e.g. hip implants).

- ▶ Persons with active medical implants or passive metallic implants risk danger by electromagnetic and magnetic fields in the immediate vicinity of drive components and the associated current-carrying conductors. Entering these areas can cause danger to these persons.
- ▶ Before entering areas with magnetic and electromagnetic fields, persons with active medical implants or passive metallic implants should seek advice from their physician.

Operation

During operation:

- ▶ Observe the allowed ambient and operating conditions of the drive components (see index entries "Data", "Dimensions" and "Installation" in the Operating Instructions).
- ▶ In the case of any deviations from normal operation (e.g., increased temperatures, exceptional noise, increased vibrations):
 1. Switch off the drive component and allow the component to discharge within the time specified on the component.
 2. Determine the cause of the deviation and restore the normal operation.
 3. Contact Rexroth if you are unable to restore the normal operation.

⚠ CAUTION

Hot surfaces (> 60 °C)! Risk of burns!

- ▶ Do not touch hot surfaces (e.g. heat sinks).
- ▶ Wait for the time required to allow the drive components to cool down (at least 15 minutes).

⚠ CAUTION

Improper handling of batteries! Risk of injury!

- ▶ Do not attempt to reactivate or recharge low batteries (risk of explosion and cauterization).
- ▶ Do not dismantle or damage batteries.
- ▶ Do not throw batteries into open flames.

IT security

The operation of installations, systems and machines requires the implementation of an integral concept for state-of-the-art IT security. Bosch Rexroth products are part of this integral concept. Bosch Rexroth product characteristics have to be taken into consideration in an integral IT security concept. The relevant characteristics are documented in the IT security guideline ([R911342562](#)).

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