



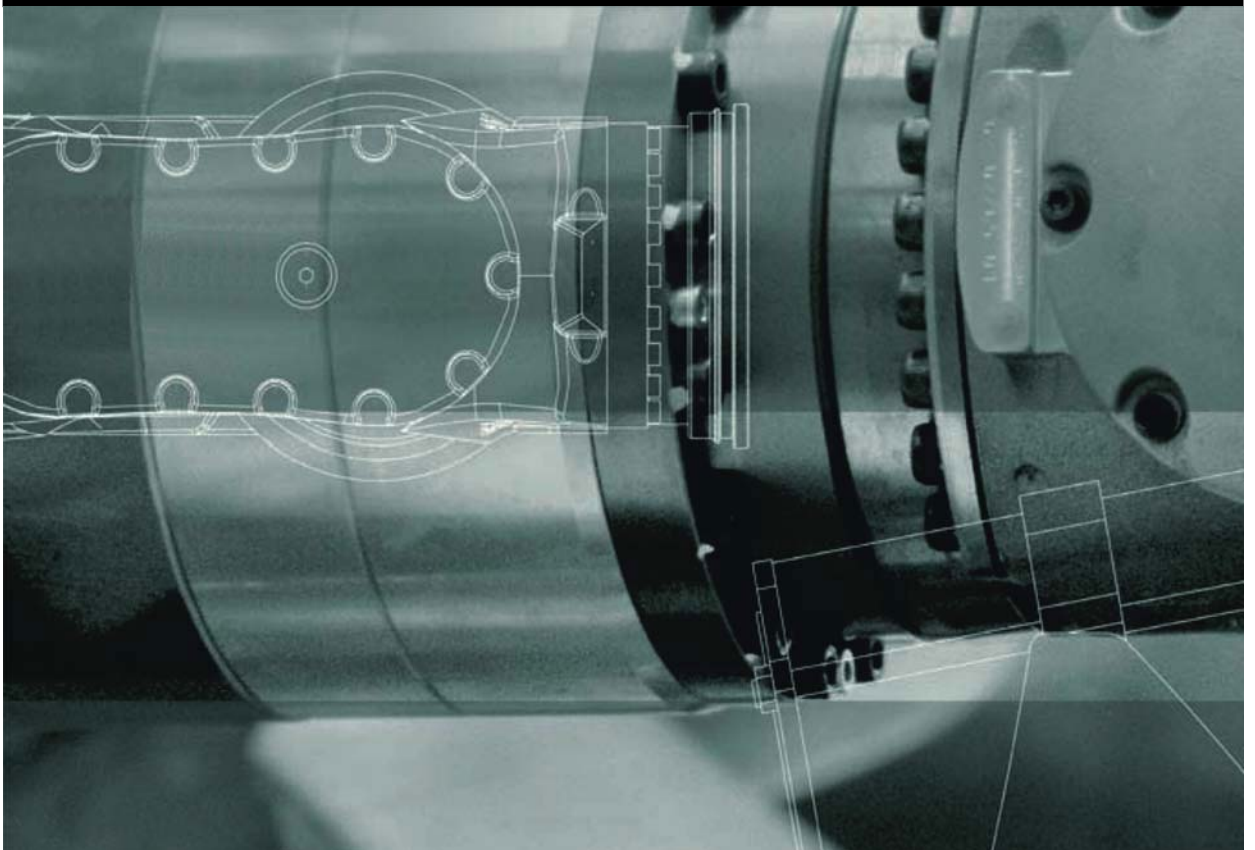
Controller Option

KUKA Roboter GmbH

Cooling Unit

For KR C4 extended

Assembly and Operating Instructions



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Other functions not described in this documentation may be operable in the controller. The user has no claims to these functions, however, in the case of a replacement or service work.

We have checked the content of this documentation for conformity with the hardware and software described. Nevertheless, discrepancies cannot be precluded, for which reason we are not able to guarantee total conformity. The information in this documentation is checked on a regular basis, however, and necessary corrections will be incorporated in the subsequent edition.

Subject to technical alterations without an effect on the function.

Translation of the original documentation

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1 Introduction

1.1 Industrial robot documentation

The industrial robot documentation consists of the following parts:


- Documentation for the manipulator
- Documentation for the robot controller
- Operating and programming instructions for the KUKA System Software
- Documentation relating to options and accessories
- Parts catalog on storage medium


Each of these sets of instructions is a separate document.


1.2 Representation of warnings and notes


Safety


These warnings are relevant to safety and **must** be observed.

 **DANGER** These warnings mean that it is certain or highly probable that death or severe injuries **will** occur, if no precautions are taken.


 **WARNING** These warnings mean that death or severe injuries **may** occur, if no precautions are taken.

 **CAUTION** These warnings mean that minor injuries **may** occur, if no precautions are taken.

 **NOTICE** These warnings mean that damage to property **may** occur, if no precautions are taken.


 These warnings contain references to safety-relevant information or general safety measures.
These warnings do not refer to individual hazards or individual precautionary measures.

This warning draws attention to procedures which serve to prevent or remedy emergencies or malfunctions:

 **SAFETY INSTRUCTIONS** Procedures marked with this warning **must** be followed exactly.

Notes

These hints serve to make your work easier or contain references to further information.

 Tip to make your work easier or reference to further information.

2 Purpose

2.1 Target group

This documentation is aimed at users with the following knowledge and skills:

- Advanced knowledge of electrical and electronic systems
- Advanced knowledge of the robot controller
- Advanced knowledge of the Windows operating system



For optimal use of our products, we recommend that our customers take part in a course of training at KUKA College. Information about the training program can be found at www.kuka.com or can be obtained directly from our subsidiaries.

2.2 Intended use

Use The cooling unit is used to cool the interior of the KR C4 extended robot controller with outside temperatures between +20 ... 50 °C.

Misuse Any use or application deviating from the intended use is deemed to be impermissible misuse. This includes e.g.:

- Operation outside the permissible operating parameters
- Use in potentially explosive environments

3 Product description

3.1 Overview of the industrial robot

The industrial robot consists of the following components:

- Manipulator
- Robot controller
- Cooling unit
- Teach pendant
- Connecting cables
- Software
- Options, accessories

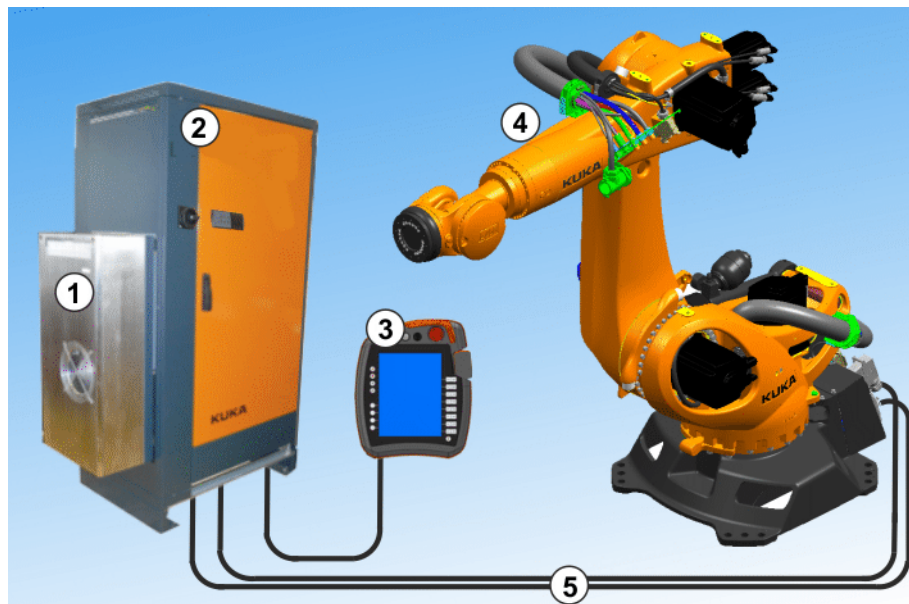


Fig. 3-1: Overview of the industrial robot

- | | | | |
|---|------------------|---|-------------------|
| 1 | Cooling unit | 4 | Manipulator |
| 2 | Robot controller | 5 | Connecting cables |
| 3 | Teach pendant | | |

3.2 Cooling unit

Description

The cooling unit is installed on the mounting surface of the heat exchanger. If the main switch of the robot controller is switched on, the cooling unit is in operation. A failure of the cooling unit is detected indirectly by the temperature sensors of the robot controller.

The factory-set temperature setting in the robot controller is +35 °C.

The cooling unit consists of the following components:

- Power circuit-breaker Q8
- Cooling unit

Overview

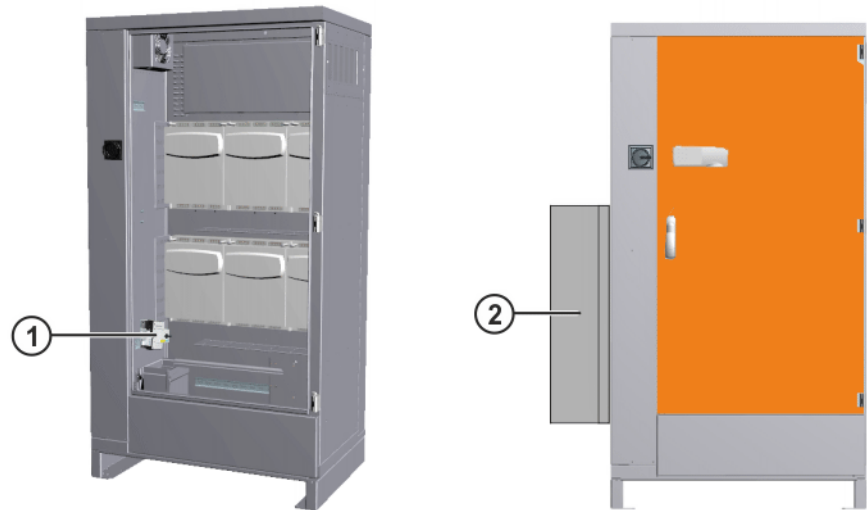


Fig. 3-2

- 1 Power circuit-breaker Q8
- 2 Cooling unit

4 Technical data

4.1 Basic data of cooling unit

Cooling unit type	HÄWA KF 700S
Color	Stainless steel V2A
Supply voltage	400 V
Connected load	640 W
Mains frequency	49...61 Hz
Cooling power	700 W
Ambient temperature during operation with cooling unit	+20 ... 50 °C
Weight	35 kg
Protection rating	IP54

4.2 Dimensions

KR C4 extended The dimensions of the KR C4 extended robot controller with cooling unit are indicated in the diagram.

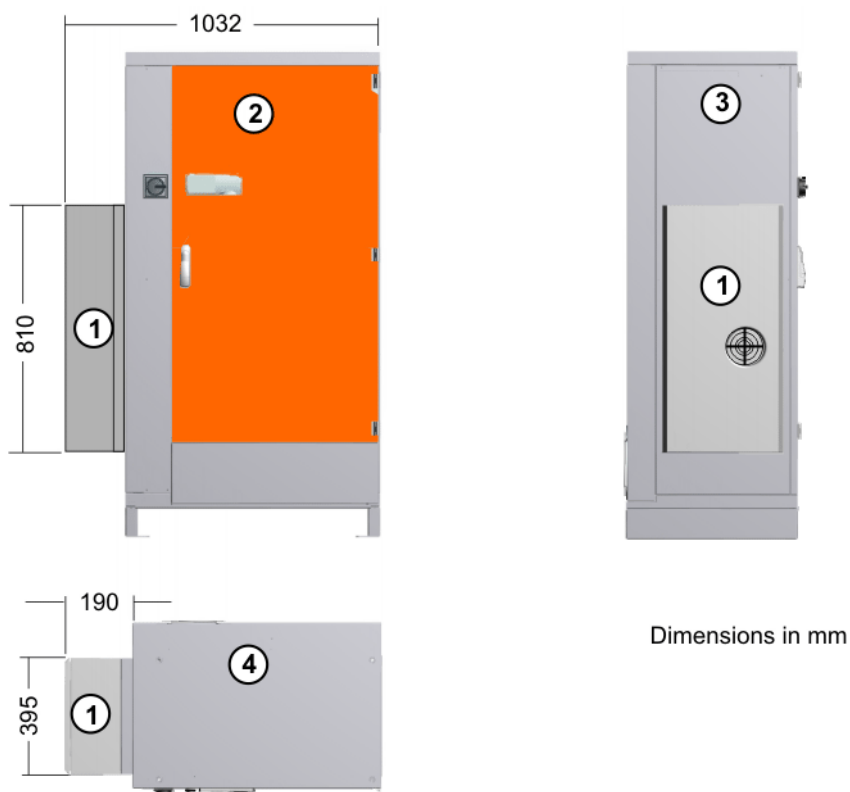


Fig. 4-1: Dimensions of KR C4 extended with cooling unit

- | | | | |
|---|--------------|---|-----------|
| 1 | Cooling unit | 3 | Side view |
| 2 | Front view | 4 | Top view |

4.3 Minimum clearances, robot controller

The minimum clearances that must be maintained for the robot controller with cooling unit are indicated in the diagram (>>> Fig. 4-2).

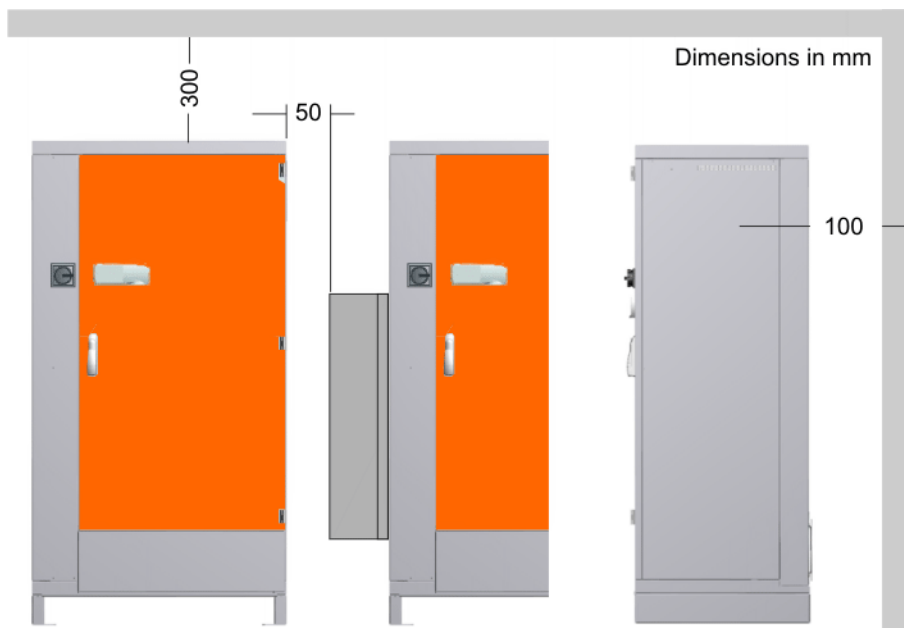


Fig. 4-2: Minimum clearances

NOTICE If the minimum clearances are not maintained, this can result in damage to the robot controller. The specified minimum clearances must always be observed.

i Certain maintenance and repair tasks on the robot controller (>>> 6 "Maintenance" Page 15) must be carried out from the side or from the rear. The robot controller must be accessible for this. If the side or rear panels are not accessible, it must be possible to move the robot controller into a position in which the work can be carried out.

4.4 Plates and labels

Overview

The following plates and labels are attached to the cooling unit:

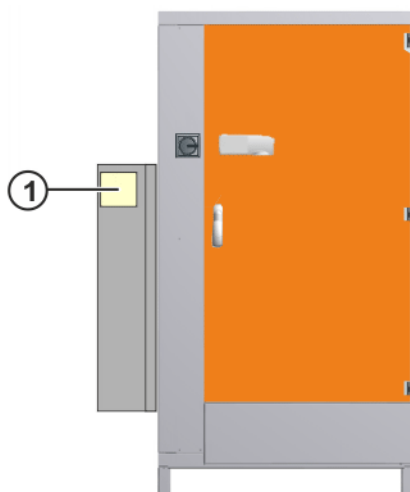



Fig. 4-3: Plates and labels

Plate no.	Designation
1	Identification plate

5 Safety

This documentation contains safety instructions which refer specifically to the product described here. The fundamental safety information for the industrial robot can be found in the “Safety” chapter of the operating or assembly instructions for the robot controller.

 WARNING	The “Safety” chapter in the operating instructions or assembly instructions of the robot controller must be observed. Death to persons, severe injuries or considerable damage to property may otherwise result.
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6 Maintenance

The cooling unit is filterless and maintenance-free.

7 Decommissioning, storage and disposal

7.1 Storage

Preconditions If the cooling unit is to be put into long-term storage, the following points must be observed:


- The place of storage must be as dry and dust-free as possible.
- Avoid temperature fluctuations.
- Avoid wind and drafts.
- Avoid condensation.
- Observe and comply with the permissible temperature ranges for storage.
- Select a storage location in which the packaging materials cannot be damaged.
- Only store the cooling unit indoors.

Procedure

1. The cooling unit must only be stored in a vertical position.
2. Clean the cooling unit. No dirt may remain on or in the cooling unit.
3. Inspect the cooling unit, both internally and externally, for damage.
4. Remove any foreign bodies.
5. Remove any corrosion expertly.
6. Cover the cooling unit with plastic film and seal it against dust.
If necessary, add a desiccant beneath the sheeting.

7.2 Disposal

When the cooling unit reaches the end of its useful life, it can be dismantled, and the materials can be disposed of properly by type.

	Dismantling and disposal must be carried out by a specialist company.
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8 KUKA Service

8.1 Requesting support

Introduction The KUKA Roboter GmbH documentation offers information on operation and provides assistance with troubleshooting. For further assistance, please contact your local KUKA subsidiary.

Information The following information is required for processing a support request:

- Model and serial number of the manipulator
- Model and serial number of the controller
- Model and serial number of the linear unit (if applicable)
- Model and serial number of the energy supply system (if applicable)
- Version of the KUKA System Software
- Optional software or modifications
- Archive of the software
- Application used
- Any external axes used (if applicable)
- Description of the problem, duration and frequency of the fault

8.2 KUKA Customer Support

Availability KUKA Customer Support is available in many countries. Please do not hesitate to contact us if you have any questions.

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