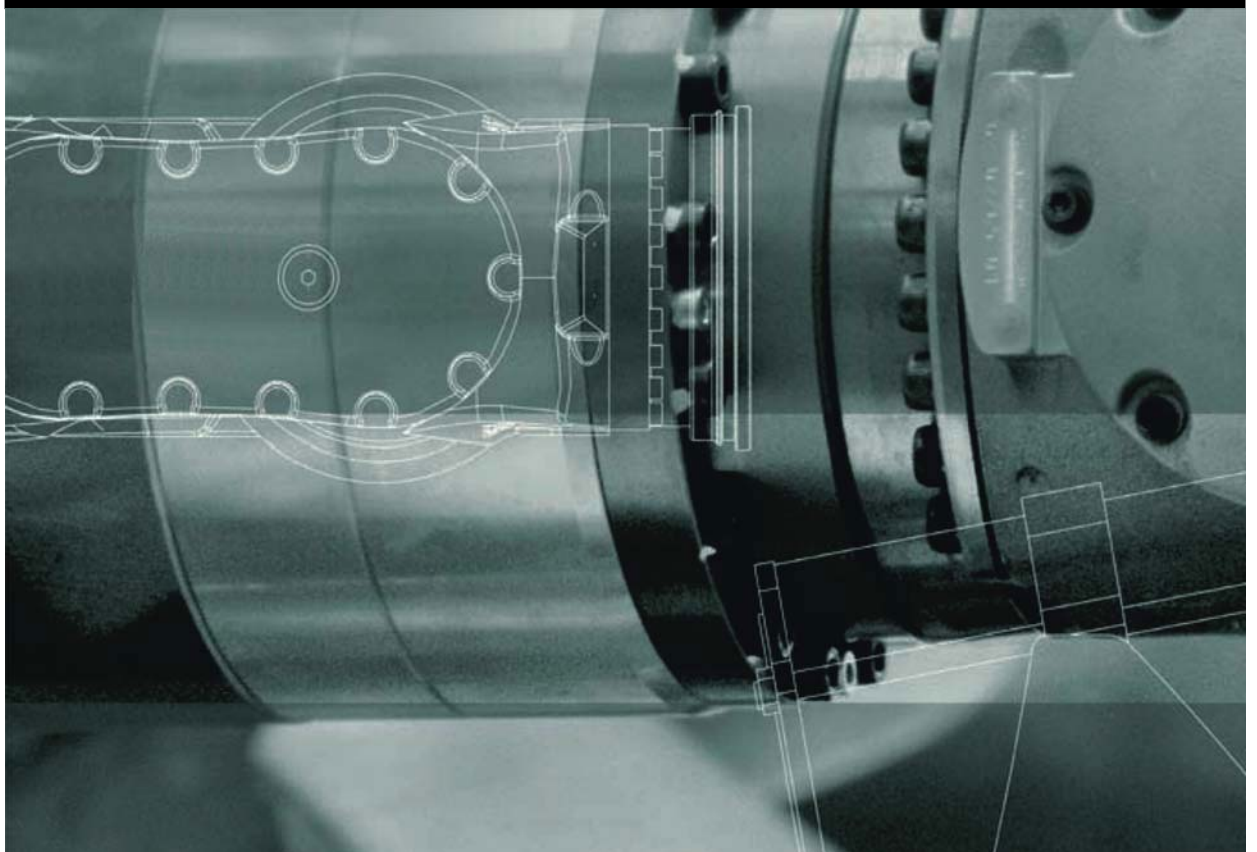


KUKA.VirtualRemotePendant 1.0

For KUKA System Software 8.2

For VW System Software 8.2



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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 Target group

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

- Knowledge of the robot controller system
- Basic knowledge of the Windows operating system
- Basic knowledge of network technology



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.

1.2 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.

1.3 Representation of warnings and notes

Safety

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



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



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



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



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:



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.

1.4 Terms used

Term	Description
KUKA smartHMI	User interface of the KUKA System Software (KUKA smart Human-Machine Interface)
KUKA smartPAD	Teach pendant for the industrial robot
KRL	KUKA Robot Language
KLI	KUKA Line Interface. Connection to higher-level control infrastructure (PLC, archiving)
KSS	KUKA System Software
VSS	VW System Software
VRP	Virtual Remote Pendant

1.5 Trademarks

Windows is a trademark of Microsoft Corporation.

2 Product description

KUKA.VirtualRemotePendant is a virtual KUKA smartPad which can be used to access any robot controller that has a network connection via the KLI.

Functions

KUKA.VirtualRemotePendant has the same functions as a real KUKA smart-Pad. Jogging the robot does not require enabling with the enabling switch, however.

Constraints

- If the robot controller is operated in T1, T2 or AUT mode before the VRP is connected, the robot cannot be operated with the VRP. AUT mode is not relevant for the VSS.
- It is not possible to switch to CRR (Controlled Robot Retraction) mode.
- The test operating modes T1 and T2 that can be selected using the VRP do not correspond to the operating modes in the standard EN ISO 10218-1, but are equivalent in terms of the safety level.
- It is not possible to archive data from robot controllers to the PC/laptop on which KUKA.VirtualRemotePendant is installed.

The following operating sequences are only possible with the safety gate closed and acknowledged:

- Moving the robot (manually or under program control)
- Manual manipulation of digital or analog outputs

3 Safety

This documentation contains safety instructions which refer specifically to the software described here.

The fundamental safety information for the industrial robot can be found in the “Safety” chapter of the Operating and Programming Instructions for System Integrators or the Operating and Programming Instructions for End Users.



The “Safety” chapter in the operating and programming instructions must be observed. Death to persons, severe injuries or considerable damage to property may otherwise result.



WARNING The safety measures for the KUKA smartPad, described in the “Safety” chapter of the Operating and Programming Instructions, also apply for KUKA.VirtualRemotePendant and must be observed accordingly. Death to persons, severe injuries or considerable damage to property may otherwise result.

4 Planning

4.1 EMERGENCY STOP device

The system integrator is responsible for ensuring that an EMERGENCY STOP device is installed at each remote operating station. This EMERGENCY STOP device must act on the EMERGENCY STOP circuits whose robots and robot systems can be operated from the respective remote operating stations. A remote operating station is a laptop or PC on which KUKA.VirtualRemotePendant is installed and which is connected to robot controllers via KLI.

5 Installation

5.1 System requirements

Robot controller**Hardware:**

- KR C4

Software:

- KUKA System Software 8.2
- Or VW System Software 8.2

Laptop/PC

- Windows XP (32-bit) or Windows 7 (32-bit / 64-bit)
- Graphics card with a resolution of at least 1024 x 768 pixels

5.2 Installing KUKA.VirtualRemotePendant



KUKA.VirtualRemotePendant must not be installed on a robot controller, Office PC or OfficeLite virtual machine.

Precondition

- Local administrator rights

Procedure

1. Start the program **Setup.exe** from the CD-ROM.
2. Select the desired language and click on **Next >**.
3. The installation wizard opens. Click on **Next >**.
4. Accept the license agreement and click on **Next >**.
5. Read and accept the safety instruction and click on **Next >**.
6. Select the directory and click on **Next >**.
7. Click on **Install**. KUKA.VirtualRemotePendant is installed.
8. Once installation is completed, click on **Finish** to close the installation wizard.

6 Graphical user interface

6.1 KUKA.VirtualRemotePendant user interface

The KUKA.VirtualRemotePendant user interface largely corresponds to the KUKA smartHMI. Only those parts of the user interface that are specific to KUKA.VirtualRemotePendant are described here.

If a touch screen is used, the user interface can also be operated with a finger or stylus.


 Information about KUKA smartHMI is contained in the documentation of the KUKA System Software or VW System Software.



Fig. 6-1: KUKA.VirtualRemotePendant user interface

1 Session Manager

2 Virtual KUKA smartPad

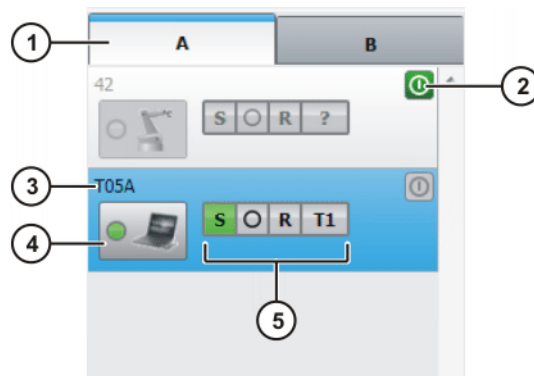











Fig. 6-2: Session Manager

Item	Description
1	Group
2	On button
3	Robot name or IP address

Item	Description
4	Connect button
5	Status indicator (corresponds to the display on the KUKA smartHMI)

Button	Description
	The VRP is connected to the controller.
	The VRP is establishing a connection to the controller.
	An error occurred while establishing a connection.
	A KUKA smartPad is connected to the controller.
	The controller is switched off or cannot be accessed.
	No KUKA smartPad is connected to the controller. The VRP can be connected to the controller.
	The controller is switched off or cannot be accessed.
	The controller has been shut down, but not switched off at the main switch. The button can be used to switch the controller on.
	The controller is switched on or cannot be accessed.

7 Operation

7.1 Starting VirtualRemotePendant

- Procedure**
1. Double-click on the KUKA Virtual Remote Pendant icon on the desktop.
 2. The first time the program is started, the **Select controllers** window is opened. One or more controllers must be selected here.
(>>> 7.2 "Selecting a controller" Page 17)

7.2 Selecting a controller

- Precondition**
- Robot controllers are connected to the company network via KLI.
 - Laptop or PC is connected to the desired robot controller via the network.

- Procedure**
1. Select the menu sequence **Edit > Select controllers**. The **Select Devices** window is opened.
All controllers present in the network are automatically displayed in the **Discovery** tab.
 2. To display suitable controllers only, activate the **Show only suitable devices** check box. A suitable controller is one on which KSS 8.2 or VSS 8.2 is installed.
 3. Select the desired controller and click on the **Right arrow** button.
 4. The selected controller is displayed in the right-hand window. Click on **OK**.
The controller is displayed in the Session Manager.

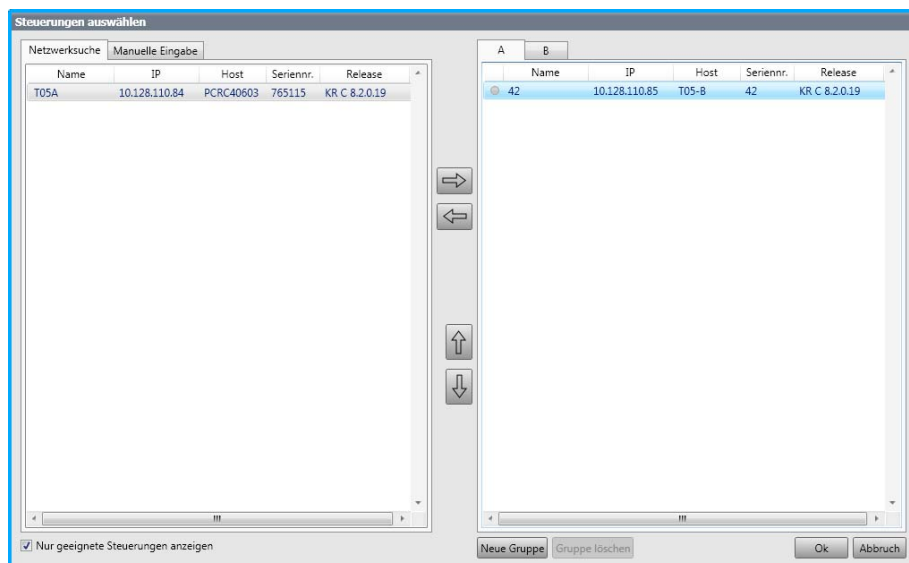


Fig. 7-1: "Select controllers" window

7.2.1 Selecting a controller with manual entry

- Procedure**
1. Select the menu sequence **Edit > Select controllers**. The **Select controllers** window is opened.
 2. On the **Manual entry** tab, enter the IP address or name of the controller in the input box.
 3. Click on the **Right arrow** button.
 4. The selected controller is displayed in the right-hand window. Click on **OK**.
The controller is displayed in the Session Manager.

7.3 Creating and deleting groups

For the purposes of clarity, or to view all the robot controllers in a cell at a glance, groups can be created.

Procedure

1. Select the menu sequence **Edit > Select controllers**. The **Select controllers** window is opened.
Group **A** is already created by default.
2. Click on **New group**.
A new tab is created in the right-hand window. A maximum of 5 groups can be created.
3. The order of the controllers in the group can be changed by means of Drag&Drop or using the **Arrow up** and **Arrow down** buttons.
4. To delete a group, select the group and click on **Delete group**.

7.4 Connecting VirtualRemotePendant to a controller

Precondition

- The robot controller is switched on and accessible via the network.
- The robot controller is selected and is displayed in the Session Manager.
- Safety gate is closed.
- AUT EXT mode



In T1, T2 and AUT modes, a connection is only possible if no KUKA smartPad has logged onto the robot controller. The robot cannot be moved in these operating modes. Operator actions that do not require motion enabling can be executed, however. AUT mode is not relevant for the VSS.

Procedure

1. Click on the **Connect** button.
2. To terminate the connection, click on the **Connect** button again or exit VirtualRemotePendant.

7.5 Exiting VirtualRemotePendant

Procedure

- Select the menu sequence **File > Exit**.
If the VRP is connected to a controller, the connection is terminated.



If the robot controller is in T1, T2 or AUT mode and VirtualRemotePendant is exited, the PLC can no longer control the robot. It is advisable to switch to AUT EXT mode before exiting VirtualRemotePendant. AUT mode is not relevant for the VSS.

8 Troubleshooting

Fault	Reason	Remedy
The robot cannot be moved although the safety gate is closed and acknowledged.	Before the connection to the VRP was established, the robot controller was in T1, T2 or AUT mode. AUT mode is not relevant for the VSS.	<ol style="list-style-type: none"> 1. Terminate VRP connection 2. Set the operating mode to AUT EXT on the robot controller. 3. Re-establish the VRP connection.
After VRP has been exited, the robot can no longer be controlled by the PLC. The following message is displayed: "Virtual KCP was not disconnected in EXT mode."	Before VRP was exited, the operating mode was set to T1, T2 or AUT. AUT mode is not relevant for the VSS.	<ol style="list-style-type: none"> 1. Connect VRP or KUKA smartPad to the robot controller. 2. Acknowledge the message. 3. Set the operating mode to AUT EXT.
VRP connection was terminated automatically.	A KUKA smartPad was connected to the robot controller.	<ul style="list-style-type: none"> ■ The controller is in AUT EXT mode: re-establish the connection. ■ The controller is in a different operating mode: re-connection is not possible as long as the KUKA smartPad is connected.
	A different VRP has been connected to the robot controller.	Re-establish the connection.
	The maximum number of connections has been exceeded; the connection was the oldest connection.	Re-establish the connection. Note: If the maximum number of connections is exceeded again by the re-established connection, the oldest connection is terminated.
	The robot controller has been switched off.	Switch the robot controller back on.

8.1 Outputting the LOG file

Information about the status of the application and any errors that have occurred is saved in the LOG file of KUKA.VirtualRemotePendant. In the case of an error, the user can send the LOG file to KUKA Service.

Procedure

1. Select the menu sequence ? > **Error treatment**.
2. Select the directory and click on **Save**.

If the application no longer responds, the file VirtualRemotePendant.log can be copied from the directory %APPDATA%\KUKA\VRP.

9 KUKA Service

9.1 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 robot
- 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

For KUKA System Software V8: instead of a conventional archive, generate the special data package for fault analysis (via **KrcDiag**).
- Application used
- Any external axes used
- Description of the problem, duration and frequency of the fault

9.2 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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