

ctrlX WORKS

Basic System 02VRS

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Table of contents

1	About this documentation	5
1.1	ctrlX WORKS – Licensing information	6
2	Important directions on use	6
2.1	Intended use	6
2.1.1	Introduction	6
2.1.2	Areas of use and application	7
2.2	Unintended use	7
3	Safety instructions	8
4	Introduction and overview	8
4.1	ctrlX WORKS	8
4.1.1	ctrlX WORKS – Basics	8
4.2	Installation	9
4.2.1	ctrlX WORKS – Installation	9
4.2.2	ctrlX WORKS – Installation options	10
4.2.3	ctrlX WORKS - – multiple setups at once	11
4.2.4	ctrlX WORKS - Create – source for setups	12
4.3	Licenses	13
4.3.1	ctrlX WORKS – Licenses	13
5	Working with ctrlX WORKS	13
5.1	Device overview	13
5.1.1	Devices	13
5.1.2	ctrlX CORE Virtual	14
5.1.3	ctrlX OS	15
5.2	Diagnostics	16
5.2.1	Creating the system report in ctrlX WORKS	16
6	ctrlX UI – Elements	16
6.1	Navigation	16
6.1.1	Side navigation – Overview	16
6.2	Windows	17
6.2.1	Window– Overview	17
6.2.2	Window – “Devices”	17
6.2.3	Window – “Engineering Tools”	19
6.2.4	Window – “App Build Environments”	19
6.2.5	Window – “Settings”	21
6.2.6	Window – “General”	22
6.2.7	Window – “Devices (Settings)”	22
6.2.8	Window – “Licenses”	23
6.2.9	Window – “Setup ctrlX WORKS”	25
6.2.10	Window – “Setup Engineering Tools”	26
6.2.11	Window – “About”	28
6.2.12	Window – “Open Source Components”	28
6.2.13	Window – “API reference”	30

6.3	Dialogs	31
6.3.1	Dialog – “Add a ctrlX OS device”	31
6.3.2	Dialog – “Add ctrlX CORE App Build Environment” Adding the	32
6.3.3	Dialog – “Setup Settings”	32
6.4	Sidebars	33
6.4.1	Sidebar – “Devices <Control name>”	33
6.4.2	Sidebar – “App Build Environments <Build environment name>” ..	36
7	Related documentation	37
7.1	Overview	37
7.2	ctrlX AUTOMATION	37
7.3	ctrlX WORKS	38
7.4	ctrlX OS	38
7.5	ctrlX OS apps	39
8	Service and support	43
9	Index	45

1 About this documentation

The PC-based engineering tool ctrlX WORKS allows to centrally access the automation environment of ctrlX AUTOMATION.

- The purpose of this document is to get familiar with the PC-based engineering tool ctrlX WORKS
- The content is intended for users configuring, commissioning and operating functionally secure products

Editions of this documentation

Edition	Release date	Note
01<<<	2023-12	First edition ctrlX WORKS Version WRK-V-0202
02	2024-03	Edition ctrlX WORKS Version WRK-V-0204 Revised contents: <ul style="list-style-type: none"> • ➔ ctrlX WORKS – Basics • ➔ ctrlX WORKS – Installation • ➔ ctrlX WORKS – Licenses • ➔ Devices • ➔ ctrlX CORE Virtual • ➔ ctrlX OS • ➔ Window– Overview • ➔ Window – “Devices” • ➔ Window – “Engineering Tools” • ➔ Window – “App Build Environments” • ➔ Window – “Settings” – Tile “Setup Engineering Tools” added • ➔ Dialog – “Add a ctrlX OS device” – Tile “Setup Engineering Tools” added • ➔ Sidebar – “Devices <Control name>” • ➔ Sidebar – “App Build Environments <Build environment name>”

Edition	Release date	Note
03	2024-05	<p>Edition ctrlX WORKS Version WRK-V-0206</p> <p>New contents:</p> <ul style="list-style-type: none"> ➔ Window – “General” ➔ Window – “Devices (Settings)” ➔ Window – “Licenses” ➔ Window – “Setup ctrlX WORKS” ➔ Window – “Setup Engineering Tools” ➔ Dialog – “Setup Settings” <p>Revised contents:</p> <ul style="list-style-type: none"> ➔ ctrlX WORKS – Basics ➔ ctrlX WORKS – Installation options ➔ ctrlX CORE Virtual ➔ Creating the system report in ctrlX WORKS ➔ Window – “Settings” ➔ Dialog – “Add a ctrlX OS device” ➔ Sidebar – “Devices <Control name>” ➔ Sidebar – “App Build Environments <Build environment name>”
04	2024-07	<p>Edition ctrlX WORKS Version WRK-V-0206.2</p> <p>New contents:</p> <ul style="list-style-type: none"> ➔ ctrlX WORKS - – multiple setups at once ➔ ctrlX WORKS - Create – source for setups <p>Revised contents:</p> <ul style="list-style-type: none"> ➔ ctrlX WORKS – Installation options

1.1 ctrlX WORKS – Licensing information

Open Source Components

A list of open source components used is available in ctrlX WORKS and in the ctrlX CORE interface in the side navigation in the menu item “About” below the button “Open Source Components”, see ➔ [Chapter 6.2.11 Window – “About” on page 28](#) or ➔ [Chapter 6.2.12 Window – “Open Source Components” on page 28](#).

2 Important directions on use

2.1 Intended use

2.1.1 Introduction

Rexroth products are developed and manufactured to the state-of-the-art.

The products are tested prior to delivery to ensure operational safety and reliability.

⚠ WARNING

Personal injury and damage to property due to incorrect use of products!

The products may only be used as intended.

Failure to use the products as intended may cause situations resulting in property damage and personal injury.

NOTICE**Damages resulting from unintended use**

Rexroth As the manufacturer does not assume any warranty, liability or compensatory claims for damages resulting from unintended use of the products. The user alone shall bear the risks of an unintended use of the products.

Before using Rexroth products, make sure that all the prerequisites for an intended use of the products are met:

- Personnel that in any way, shape or form uses Rexroth products must first read and understand the relevant safety instructions and be familiar with their intended use
- Leave hardware products in their original state, i.e., do not make any structural modifications. It is not permitted to decompile software products or alter source codes
- Do not install damaged or defective products or commission them
- It has to be ensured that the products have been installed as described in the relevant documentation

2.1.2 Areas of use and application

Products of the ctrlX series are suitable for Motion/Logic applications.

NOTICE

Products of the ctrlX series may only be used with the accessories, mounting parts, and other components specified in this documentation. Components that are not expressly mentioned must neither be attached nor connected. The same applies to cables and lines.

Only to be operated with the hardware component configurations and combinations expressly specified and with the software and firmware specified in the corresponding documentations and functional descriptions.

Products of the ctrlX series are suitable for single-axis as well as for multi-axis drive and control tasks. Device types with different equipment and interfaces are available for using the system in specific applications.

Typical areas of application:

- Building automation
- IoT and Security Gateway or Device
- Handling & Robotic

Controls of the ctrlX CORE series may only be operated under the mounting and installation conditions, in the position of normal use and under the ambient conditions (temperature, degree of protection, humidity, EMC, etc.) specified in the related documentations.

2.2 Unintended use

"Unintended use" refers to using the ctrlX products outside of the above-mentioned areas of application or under operating conditions and technical data other than described and specified in the documentation.

ctrlX products must not be used if they are exposed to following conditions:

- Operating conditions that do not meet the specified ambient conditions. Operation under water, under extreme temperature fluctuations or under extreme maximum temperatures is prohibited
- Applications that have not been expressly authorized by Rexroth




3 Safety instructions

The Safety instructions contained in the available application documentation feature specific signal words (DANGER, WARNING, CAUTION or NOTICE) and, where required, a safety alert symbol (in accordance with ANSI Z535.6-2006).

The signal word is meant to draw the reader's attention to the safety instruction and identifies the hazard severity.

The safety alert symbol (a triangle with an exclamation point), which precedes the signal words DANGER, WARNING and CAUTION, is used to alert the reader to personal injury hazards.

The Safety instructions in this documentation are designed as follows:

 DANGER	In case of non-compliance with this safety instruction, death or serious injury will occur.
 WARNING	In case of non-compliance with this safety instruction, death or serious injury could occur.
 CAUTION	In case of non-compliance with this safety instruction, minor or moderate injury could occur.
NOTICE	In case of non-compliance with this safety instruction, property damage could occur.

4 Introduction and overview

4.1 ctrlX WORKS

4.1.1 ctrlX WORKS – Basics

Functional scope

The PC-based engineering tool ctrlX WORKS allows to centrally access the automation environment of ctrlX AUTOMATION.

Device overview

- Managing ctrlX OS devices:
 - Find out which ctrlX OS devices are available in your network environment.
 - Pin your device in the ctrlX OS device in the device table. A control is provided in the overview even if it cannot be reached at the moment, as it is disabled for example
 - Add a new ctrlX CORE Virtual control

Engineering Tools

- Dashboard for opening ctrlX Engineering Tools installed on the Windows PC:
 - ctrlX Cam Designer*
Tool for configuring a field bus connection and I/O components
 - ctrlX DRIVE Engineering*
Tool to parameterize the ctrlX DRIVE
 - ctrlX PLC Engineering*
Tool to create the PLC application
 - ctrlX I/O Engineering*
Tool to configure a field bus connection and I/O components


ctrlX SAFETY Engineering


Editor for graphical configuration of ctrlX SAFETY controls

App Build Environments

- Option to automatically create Linux build environments on a Windows PC to develop ctrlX OS apps in the ctrlX AUTOMATION environment

After the installation, double-click on the desktop symbol to open the ctrlX WORKS start page. Already configured ctrlX CORE Virtual controls and ctrlX OS devices in the network are displayed, see [↗ Chapter 5.1.1 Devices on page 13](#). A ctrlX OS device or a ctrlX CORE Virtual control can be configured web-based in the browser.

Use the  interface to change the language.

Use the  interface to open the menu with more information, see [↗ Table on page 17](#).

Call the ctrlX WORKS help using the “Application manual” and “Current page help” interfaces.

Further information

- [↗ Chapter 5.1.1 Devices on page 13](#)
- [↗ Chapter 4.2.1 ctrlX WORKS – Installation on page 9](#)
- [↗ Chapter 4.3.1 ctrlX WORKS – Licenses on page 13](#)
- [↗ Chapter 5.1.2 ctrlX CORE Virtual on page 14](#)
- [↗ Chapter 5.1.3 ctrlX OS on page 15](#)
- [↗ Chapter 6.2.2 Window – “Devices” on page 17](#)
- [↗ Chapter 6.2.3 Window – “Engineering Tools” on page 19](#)
- [↗ Chapter 6.2.4 Window – “App Build Environments” on page 19](#)
- [↗ Chapter 6.2.5 Window – “Settings” on page 21](#)
- [↗ Chapter 6.2.11 Window – “About” on page 28](#)

4.2 Installation

4.2.1 ctrlX WORKS – Installation

General notes on the software installation

Installing the software ctrlX WORKS and the respective software options requires knowledge of PCs, the operating system and admin rights on the respective PC.

For the operation of ctrlX WORKS requires at least a Windows 10 64-bit operating system.

An internet access is required for the installation using the “ctrlx-works-xxxx.exe” file. Software packages of the Rexroth provision platform can only be downloaded online. Optionally, the respective setup files can be downloaded first and then installed via a local network.

Multiple ctrlX WORKS installations can be operated simultaneously on one computer. The data for the various functions, such as ctrlX CORE Virtual or ctrlX OS app build environments, can be edited in every installation. The data is not removed by uninstalling the app.

Before each installation, it is checked whether a ctrlX WORKS installation is already available on the PC. In this case, a query is displayed, asking whether the existing installation should be changed or if a parallel installation should be executed.

ctrlX WORKS Initial installation

Proceed as follows when installing the ctrlX WORKS software for the first time:

1. ➤ To start the installation, execute the ctrlX WORKS setup file “ctrlx-works-xxxx.exe” (admin rights required).
2. ➤ In the User account control window, use “Yes” to confirm that the Package Manager can implement changes on your device.
➔ The ctrlX WORKS setup wizard is started.
3. ➤ Select the installation language before continuing the installation with “Next”. Use the “Settings” to change the product URL, if required.
4. ➤ Select between “Reinstall” (installs ctrlX WORKS on the computer. Existing installations are not changed) or “Change installation” (changes an existing installation. Select the installation to be changed).
5. ➤ After selecting “Reinstall”, confirm “Next” and check the terms of use of the Bosch Rexroth AG before continuing the installation with “Accept”.
➔ The dialog to select the installation directory is shown.
6. ➤ Enter the directory for the ctrlX WORKS installation and confirm the dialog with “Next”.
➔ The dialog to select the functions.
7. ➤ Select the functions to be installed on the PC with ctrlX WORKS from the list.
For more information about the function, refer to → [Chapter 4.2.2 ctrlX WORKS – Installation options on page 10](#).
Confirm your selection with “Next”.
8. ➤ Start the installation with “Install”.
➔ The installation can take some minutes and is shown visually.
The installation result is shown at the end.
9. ➤ To close the installation, select “Done”.

Further information

- → [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

4.2.2 ctrlX WORKS – Installation options**User-defined installation**

In the ctrlX WORKS installation setup, select the functions and tools to be installed. Functions and tools can also be added to the installation at a later date.



The installation options available in the setup can be added or removed to/from the existing installation at a later point.

ctrlX WORKS installation options

Option	Function
ctrlX WORKS	ctrlX WORKS is the basic installation and cannot be deselected
ctrlX CORE Virtual	ctrlX WORKS option to emulate the ctrlX CORE control hardware. Note: The ctrlX CORE Virtual emulation is not allowed for real-machine operations!

Option	Function
ctrlX OS App Build Environment	Linux build environment for creating ctrlX OS apps with the SDK for ctrlX AUTOMATION

ctrlX WORKS Installation of engineering tools

The ctrlX WORKS Engineering Tools are installed via independent setups. After installing ctrlX WORKS, these are offered for installation on the "Settings → Setup Engineering Tools" page. The source for the storage location of the setups, the "Product information url", can be changed via the "Setup settings" dialog.

Further information

- ➔ [Chapter 4.2.1 ctrlX WORKS – Installation on page 9](#)
- ➔ [Chapter 4.3.1 ctrlX WORKS – Licenses on page 13](#)

4.2.3 ctrlX WORKS - – multiple setups at once

One setup for multiple applications

To install or update on one PC ctrlX WORKS to install or update several engineering tools at once, the installation directory of an installation contains the ctrlX WORKS Installation there is the utility program "ctrlx-works-setup.exe". This utility installs several configured engineering tools at the same time.



Make sure that no ctrlX application is open during the installation.

Use of the "ctrlx-works-setup.exe" utility program:

The tools to be installed are defined in a "ctrlx-works-setup.json" file.

To install the tools, place them next to ctrlx-works-setup.exe. Then start the utility program.

Using the "ctrlx-works-setup.exe" utility program

The tools to be installed are defined in a "ctrlx-works-setup.json" file.

To install the tools, place the "ctrlx-works-setup.json" next to the ctrlx-works-setup.exe. Then start the utility program.

Example content of a "ctrlx-works-setup.json"

```
{
  „product-info-url“: „https://packages.boschrexroth.com/“
  "Produkte": [
    {
      „setup“: „ctrlx-works“,
      „Version“: „2.6.1“,
    },
    {
      „setup“: „ctrlx-cam-designer“,
      „Version“: „2.6.1“
    },
    {
      „setup“: „ctrlx-plc-engineering“,
      „Version“: „2.6.1“
    },
    {
      „setup“: „ctrlx-io-engineering“,
      „Version“: „2.6.1“
    },
  ],
}
```

```

    {
      „setup“: „ctrlx-drive-engineering“,
      „Version“: „1.28.1“
    }
  ]
}

```

Options within "ctrlx-works-setup.json":

- *product-info-url*: URL to the product information [required]
- *products*: List of products to be installed [required]
- *setup*: Name of the setup [required]
- *version*: Version of the setup [required]
- *--path*: Path to the installation folder [optional]
- *mode*: [optional]
 - *InstallFull*: Installs the product with all functions
 - *Install*: Installs the product with standard functions or the functions specified in the "functions" parameter
 - *Update*: Updates an existing installation (path required)
 - *Repair*: Repairs an existing installation (path required)
 - *Uninstall*: Removes an existing installation (path required)
- *functions*: Comma-separated list of function IDs [optional]
 To obtain the IDs, execute the setup with */? function* as a parameter

Optional command line parameters

ctrlx-works-setup.exe */?* shows the help

ctrlx-works-setup.exe */silent* executes the installation without user interaction

Further information

- ➔ [Chapter 4.2.1 ctrlX WORKS – Installation on page 9](#)
- ➔ [Chapter 4.3.1 ctrlX WORKS – Licenses on page 13](#)

4.2.4 ctrlX WORKS - Create – source for setups

Create offline setup repository

To create a user-defined, offline-accessible source for Engineering Tool Setups, there is the utility program "ctrlx-works-offline-setup-util.exe" in the installation directory of a ctrlX WORKS installation.

The utility extracts offline setup ZIP files downloaded from the Rexroth Collaboration Room into a directory. This directory can be set in ctrlX WORKS as the source of available engineering tool setups and updates. It can be used both locally and via a file server or web server.

Examples of product information url settings:

- file:///C:/temp/ctrlx-products/
- file:///file-server/ctrl-products/
- https://packages.boschrexroth.com/

Using the "ctrlx-works-offline-setup-util.exe" utility program

ctrlx-works-offline-setup-util.exe arg1 arg2

Note: Enclose each argument with quotation marks if it contains spaces. The tool supports the use of an existing target directory (update).

arg1: Source directory → All offline setup files (ctrlx*.zip) are searched recursively.

arg2: Target directory → All offline setups are extracted to this directory.
Product information files are created.
The target directory contains a "Readme.txt" file with further information.

Options

Remove an entry from the list of available engineering tools in ctrlX WORKS by deleting the entry for the tool version in the ".\ctrlxworks\available-tools.json" file.

To add update information for a specific tool, enter the version and the version text in the corresponding version info file.

Example ".\ctrlxcamdesigner\2.6.0.json":

```
{
  "created": "2024-03-01, 09:39:29",
  "setupfile": "{home}ctrlxcamdesigner/setups/ctrlx-cam-designer-2.6.0.exe",
  "versiontext": "CAM-V-0206",
  "updates": [
    {
      "version": "2.6.1",
      "versiontext": "CAM-V-0206.1"
    }
  ]
}
```

Further information

- [↪ Chapter 4.2.1 ctrlX WORKS – Installation on page 9](#)
- [↪ Chapter 4.3.1 ctrlX WORKS – Licenses on page 13](#)

4.3 Licenses

4.3.1 ctrlX WORKS – Licenses

Currently, no separate licenses are required for the software components included in the ctrlX setup.

Further information

- [↪ Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

5 Working with ctrlX WORKS

5.1 Device overview

5.1.1 Devices

The table “Devices” lists all accessible and pinned devices in the network ctrlX OS devices and the configured ctrlX CORE Virtual controls in the network.

The automatic device detection in the network detects devices from the same subnet. This includes an automatic configuration of the network interface of the device. Common standards such as DHCP, UPNP or mDNS allow the device detection in the network without user configuration.

For each device listed, the “Name”, the “State”, the “Type”, the “IP addresses”, and the available actions are displayed. To open the start page of the control, click on the name of the device or its IP address.

To change the status of the ctrlX CORE Virtual controls (online/offline) or to delete the control if it is in online state, go to the action panel. Select the stylus button to open the configuration window of the ctrlX CORE Virtual control.

ctrlX OS devices can be pinned so that they are still visible in the table even when they are switched off.

Further information

- ➔ [Chapter 6.2.2 Window – “Devices” on page 17](#)
- ➔ [Chapter 6.4.1 Sidebar – “Devices <Control name>” on page 33](#)
- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

5.1.2 ctrlX CORE Virtual

Provision of virtual controls on the desktop PC as option for the ctrlX WORKS installation of the offline project planning.

General information

To test functions and configurations without control hardware on a PC, ctrlX WORKS provides the ctrlX CORE Virtual. It emulates the ctrlX CORE control in a Linux environment on a Windows PC.

Note the following when using the ctrlX CORE Virtual:

- System requirements:
 - Minimum requirement: Windows 10 64 bit
 - 8 GB RAM
 - Processor with support of the virtualization technology (Intel®VT or AMD-V)
 - Activated Windows feature Windows Hypervisor Platform to accelerate emulation
 - Processor supports Second-Level-Address-Translation (SLAT)
 - "Hardware Virtualization in Firmware" is activated in the BIOS
- No field bus connection available
- Once a ctrlX CORE Virtual is started, the configuration and operation is analogous to a ctrlX OS device



The ctrlX CORE Virtual is operated in a virtualization environment. When installing ctrlX WORKS on a virtual machine (e.g. Oracle VM VirtualBox) and when executing ctrlX CORE Virtual, considerable performance restrictions can occur. Check the settings regarding the supported of nested virtualization for the virtual machine.



Due to licensing reasons, operation of the ctrlX CORE Virtual is terminated after a runtime of four hours. Subsequently, restart the control.

Prerequisites

The ctrlX WORKS installation always includes a current base image for the ctrlX CORE Virtual. To create a ctrlX CORE Virtual on the engineering PC, install ctrlX WORKS with the respective installation option “Virtual Controls”, see ➔ [Chapter 4.2.1 ctrlX WORKS – Installation on page 9](#).

Description

Virtual controls can be created and managed in the ctrlX WORKS engineering interface. The control is also started and stopped in the engineering interface and the ctrlX OS web browser is accessed to further configure, program and to use project planning.

For the ctrlX CORE Virtual control, the complete Linux operating system is emulated on the engineering PC. Thus, starting the ctrlX CORE Virtual takes a bit longer. The “Booting” display in the status field shows the start.

The “Online” status shows a successful ctrlX CORE Virtual startup. To access the control via the web browser, enter the name or IP address. To open the website of the control in the default browser, click on the respective link.

In the “Online” state, a ctrlX CORE Virtual control (with an active network adapter setting) is also displayed as a device in the Windows network environment, provided this option is enabled in Windows (show network devices) and the virtual control (settings/network detection/UPNP).



Note that the active ctrlX CORE Virtual controls continue running when ending ctrlX WORKS. To shut down a ctrlX CORE Virtual, select the ☐ in the device overview of ctrlX WORKS.

Settings

In the ctrlX WORKS settings, select whether or not to display the emulation process window. This setting is only evaluated when starting a control.

Further information

- [↪ Chapter 5.1.1 Devices on page 13](#)
- [↪ Chapter 5.1.3 ctrlX OS on page 15](#)
- [↪ Chapter 6.2.2 Window – “Devices” on page 17](#)
- [↪ Chapter 6.2.5 Window – “Settings” on page 21](#)
- [↪ Chapter 6.4.1 Sidebar – “Devices <Control name>” on page 33](#)

5.1.3

ctrlX OS

Configuring a ctrlX OS device using ctrlX WORKS.

Prerequisites

ctrlX WORKS installation available on the engineering PC, see [↪ Chapter 4.2.1 ctrlX WORKS – Installation on page 9](#).

Description

A ctrlX OS device or a ctrlX CORE Virtual is used in the table “Devices” as soon as it has been identified via the integrated search mechanism in the connected network.

If the connection to the control is disconnected, the control is removed from the overview. The list entry remains in the overview even when the control is offline using the “Pinning” action.



If a ctrlX OS device in the network is not automatically displayed due to firewall or router settings, a link to this control can be inserted via the button .

Further information

- [↪ Chapter 5.1.1 Devices on page 13](#)
- [↪ Chapter 5.1.2 ctrlX CORE Virtual on page 14](#)
- [↪ Chapter 6.2.2 Window – “Devices” on page 17](#)
- [↪ Chapter 6.2.5 Window – “Settings” on page 21](#)
- [↪ Chapter 6.4.1 Sidebar – “Devices <Control name>” on page 33](#)

5.2 Diagnostics

5.2.1 Creating the system report in ctrlX WORKS

Function:

Creating a system report to supplement an error description.

If an error occurs in ctrlX WORKS, employees in service and development need precise knowledge of which versions of the individual software packages are installed in order to process the error further. The ctrlX WORKS user can quickly and easily determine and download the information as a ZIP file in the form of a system report.

Call:

ctrlX WORKS ⓘ *"ctrlX WORKS system report"*

Procedure to create a system report in ctrlX WORKS:

- Click on the ⓘ button to open a menu with more information
- Click on the ⓘ "ctrlX WORKS system report" button
- Downloading .zip file

Content of a system report in ctrlX WORKS:

The system report (i.e. the zip file) contains the following product information:

- ctrlX WORKS product version
- List of all installed software packages including their versions
- List of all ctrlX licenses on this PC
- Log files of the %LOCALAPPDATA%\Rexroth\ctrlX WORKS\<ID> directory
- If available, more entries of installed software packages

This information is contained in the archive in the files "VersionInfo.json", "Licenses.txt" and the subdirectory "Logs".

Automated evaluation

To read out and evaluate the system report contents, e.g. the ZIP file, automatically, the names and contents of the contained files contained are predefined. Log files and entries of installed software packages can be an exception to this.

Further information



- ➔ [Chapter 6.2.1 Window– Overview on page 17](#)

6 ctrlX UI – Elements

6.1 Navigation

6.1.1 Side navigation – Overview

Function:

For the available functions, go to side navigation. Select  in the right upper corner of the side navigation to minimize it and select  to maximize it.

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

6.2 Windows


6.2.1 Window– Overview


Call:








Select the window via ctrlX WORKS side navigation.

Settings:

In the selected window, the window name is displayed on the left page.

Use the  interface to change the language.

Use the button  to open the menu with more information:

GUI element	Description
 Application manual	Open the help about the ctrlX WORKS basic system in the browser
 Current page help	Open the help to the currently shown window in the browser
 How-tos	Open app zone and how to in the browser. Find information about ctrlX AUTOMATION FAQs, examples, tech notes and how tos here
 Forum	Open ctrlX AUTOMATION Forum in the browser
 API reference	Opens the interface descriptions, see ↗ Chapter 6.2.13 Window – “API reference” on page 30
 GitHub	Open the GitHub platform in the browser
 ctrlX WORKS system report	Creating a ctrlX WORKS system report, see ↗ Chapter 5.2.1 Creating the system report in ctrlX WORKS on page 16

Further information

- [↗ Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- [↗ Chapter 6.2.5 Window – “Settings” on page 21](#)
- [↗ Chapter 5.2.1 Creating the system report in ctrlX WORKS on page 16](#)

6.2.2 Window – “Devices”


Function:








The window “Devices” is the ctrlX WORKS start page. In the table, you can find the provision of the ctrlX CORE Virtual controls as an option of the ctrlX WORKS installation for offline configuration and the ctrlX OS devices.

Call:

ctrlX WORKS side navigation “Devices”

Elements of the “Devices” window

GUI element	Description
Command bar “Devices”	“[x] item(s)” Number of listed ctrlX OS devices and ctrlX CORE Virtual controls
	 Open device settings page

GUI element	Description
	 Refresh current page
	 Adding a ctrlX CORE Virtual or link to existing ctrlX OS devices in the table of available ctrlX OS devices. The dialog “Add a ctrlX OS device” opens, see ↗ Chapter 6.3.1 Dialog – “Add a ctrlX OS device” on page 31
Table “Devices”	“Name”: Control name
	“State” Operating state of the control. A ctrlX CORE Virtual can assume four operating states: <ul style="list-style-type: none"> • “Offline”: The control is not running • “Booting”: The control was started and the control web server does not yet respond • “Online”: The control was started successfully and the control web server responds • “Shutdown”: The control was stopped and the system shuts down
	“Type” Control type (ctrlX OS or ctrlX CORE Virtual)
	“IP addresses” IP address of the control. In the operating state “Online”, the name and the IP addresses become hyperlinks. Click on the links to open the website of the control in the standard browser
	“Actions” Includes buttons to edit or delete a control. This is only possible in stopped state.  or  Starting or ending the ctrlX CORE Virtual on the device  Editing a ctrlX CORE Virtual. This is only possible in the stopped state, refer to ↗ Chapter 6.4.1 Sidebar – “Devices <Control name>” on page 33  Deleting a ctrlX CORE Virtual  Pin the table entry of the ctrlX OS device, so that it is retained even if the control is “offline”

Further information

- [↗ Chapter 5.1.1 Devices on page 13](#)
- [↗ Chapter 6.4.1 Sidebar – “Devices <Control name>” on page 33](#)
- [↗ Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

6.2.3 Window – “Engineering Tools”

Function

The “Engineering Tools” window provides an overview of all standalone Windows applications in the ctrlX AUTOMATION environment, which are managed via the ctrlX WORKS installation. Each of these applications is represented by a tile. It contains a brief description of the function and the version of the respective application. The applications are started by clicking on the tile.

If several versions of an application are installed on the PC, the version to be started can be selected via a drop-down menu. This selected version determines which version of an application is started by default via an engineering link on a ctrlX OS control (exception: project with a different version information is available or the application version is determined by the app version).

The various installations are listed under “Settings” → “Setup Engineering Tools”, see ➔ [Chapter 6.2.10 Window – “Setup Engineering Tools” on page 26](#).

Call:

ctrlX WORKS side navigation “*Engineering Tools*”

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- ➔ [Chapter 6.2.5 Window – “Settings” on page 21](#)
- ➔ [Chapter 6.2.10 Window – “Setup Engineering Tools” on page 26](#)

6.2.4 Window – “App Build Environments”

Function

The window “App Build Environments” provides the option to automatically create Linux build environments on a Windows PC to develop ctrlX OS apps in the ctrlX AUTOMATION environment.

By adding an *app build environment*, a directory with the different batch files is created.

Upon the first start of a build environment, a current Linux system image is downloaded and all software packages required for app development are automatically installed on this operating system. This operation can take up to 15 minutes, depending on the internet connection.

If the initialization of the build environment is successful, the build environment can be started as emulation. The build environment can be contacted via the set SSH port.

Visual Studio Code → <https://code.visualstudio.com/> is recommended as source code editor.

Install a remote SSH extension in Visual Studio Code to connect to the build environment and to develop and build apps.



Further information to create apps with the ctrlX Automation SDK can be found on GitHub: <https://boschrexroth.github.io/ctrlx-automation-sdk/>





If no ctrlX OS app build environment has been created on the control, the window displays the ⊕ “Add a ctrlX OS App Build Environment” window. After adding a configuration, command bars and the table including the entry of the connection are displayed on the page.

Call:

ctrlX WORKS side navigation “*App Build Environments*”

Elements of the “App Build Environments” window

GUI element	Description
Command bar	“[x] item(s)”
	Number of listed ctrlX OS app build environments
	 Refresh current page
	 Add a ctrlX OS App Build Environment is added to the table. The dialog “Add ctrlX CORE App Build Environment” opens, see Chapter 6.3.2 Dialog – “Add ctrlX CORE App Build Environment” Adding the on page 32
Table	“Name”: Build environment name
	“State” Operating state of the build environment. A build environment can assume four operating states: <ul style="list-style-type: none"> • “Offline”: The build environment is not running • “Initializing”: Build environment was downloaded and is installed • “Booting”: Build environment was started but could it was not possible to establish a connection via SSH • “Online”: Build environment was started successfully and a connection can be established via SSH • “Shutdown”: The build environment was stopped and the system shuts down • “Shutdown”: The build environment was stopped and the system shuts down
	“Type” Process architecture of the build environment
	“SSH” SSH address of the control. In the operating state “Online”, the name and the SSH address become hyperlinks. Click on the links to open the Windows SSH Client

GUI element	Description
	<p>“Actions”</p> <p>Includes buttons to start/stop, edit and delete the build environment. Deleting and editing is only possible in stopped state.</p> <p> or </p> <p>Starting and stopping the ctrlX OS app build environment</p> <p></p> <p>Editing the properties of this ctrlX OS app build environment. This is only possible in the stopped state, refer to ↗ Chapter 6.4.2 Sidebar – “App Build Environments <Build environment name>” on page 36</p> <p></p> <p>Deleting a ctrlX OS app build environment</p>

Further information

- [↗ Chapter 6.3.2 Dialog – “Add ctrlX CORE App Build Environment” Adding the on page 32](#)
- [↗ Chapter 6.4.2 Sidebar – “App Build Environments <Build environment name>” on page 36](#)
- [↗ Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

6.2.5 Window – “Settings”

Function:

The Settings window includes configuration editors and general tools for ctrlX WORKS.

Call:

ctrlX WORKS side navigation “*Settings*”

The Settings window contains the following submenus:

- **General**
Settings such as the start page and the help URL, see [↗ Documentation](#)
- **Devices**
Settings of the device side, management of ctrlX COREvirtual images, see [↗ Documentation](#)
- **Licenses**
Manage licenses for engineering tools on this PC, see [↗ Documentation](#)
- **Setup ctrlX WORKS**
To manage this ctrlX WORKS installation, add, remove or update features, see [↗ Documentation](#)
- **Setup Engineering Tools**
For the installation of available engineering tools and management of all installed engineering tools, see [↗ Documentation](#)

Further information

- [↗ Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

6.2.6 Window – “General”

Function:

In the window “General” find the settings for ctrlX WORKS.

Call:

ctrlX WORKS side navigation *“Settings → General”*

“General”

Start page

Via the “Start page”, it is specified which page is displayed upon the start of ctrlX WORKS. The initialization value is “Devices”.

Help

To change the jump target to the Content Delivery Portal, go to the address field “Help url”. Select which help is called via the ⓘ interface. The “Reset” interface resets the help jump target to the default value. The “Use Offline Help” interface is active if the ctrlX offline help is installed on the PC. Via this interface, this jump target is set to the installed offline help.

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- ➔ [Chapter 4.2.2 ctrlX WORKS – Installation options on page 10](#)
- ➔ [Chapter 6.2.5 Window – “Settings” on page 21](#)

6.2.7 Window – “Devices (Settings)”

Function:

Use the Devices window to manage the settings for ctrlX CORE Virtual devices.

Call:

ctrlX WORKS side navigation *“Settings → Devices”*

“Devices”

“ctrlX CORE Virtual”

Virtual control emulation

Select whether to show the window of the emulation process for a running ctrlX CORE Virtual instance via a switch.

“Hardware acceleration”

Display of the currently available hardware acceleration for emulating virtual controls.

Use the “Details” interface to display a dialog with information on hardware acceleration. If no acceleration is available, the dialog provides support for activating the Windows Hypervisor Platform.

“Storage location for virtual controls”



“Directory *”:

In this directory, all data concerning the virtual controls of the device are stored. When switching between different directories, the data is retained.

The “Reset” interface resets the directory to the default path.

Virtual control images

Images are used to emulate virtual controls. Each control is based on a common base image with pre-installed system apps. A user image is used for the changes within a virtual control. The table lists all base images, the associated user images and their file sizes.

GUI element	Description
Command bar	"[x] item(s)"
"Virtual control images"	Number of listed images
	 Adding a new image . An "Open dialog" opens to select an image package file. The following formats are supported: *.xiwp and *.zip. After adding a new image, the version can be selected when creating a new virtual control
Table "Virtual control images"	"Image version"
	The version of the base image
	"Image size"
	The size of the base image file in kilobytes
	"User image size"
	The sum of the user image files in kilobytes
	"Actions"
	Contains interfaces to delete an image; this is only possible if this base image is no longer used.
	 Deleting an "image"

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics](#) on page 8
- ➔ [Chapter 6.2.5 Window – "Settings"](#) on page 21
- ➔ [Chapter 5.1.1 Devices](#) on page 13
- ➔ [Chapter 6.2.2 Window – "Devices"](#) on page 17

6.2.8 Window – "Licenses"

Function:

The Licenses window contains functions for managing licenses.

Call:

ctrlX WORKS side navigation *"Settings → Licenses"*

"Licenses"

The "Licenses" window is used to manage licenses for software requiring a license on the Engineering PC.

In addition, licenses for a ctrlX CORE can be transferred to a ctrlX dongle connected to the PC.

To manage licenses for the PC, the dongle has to be removed and ctrlX WORKS has to be restarted.



Windows-based ctrlX WORKS Engineering tools do not yet support licensing via dongle.

Assigning purchased licenses

After you have purchased ctrlX PC licenses (e.g. ctrlX Cam Designer) , they are delivered digitally to your licensing center account. Licenses have to be assigned to your PC for them to work. Open Settings → Licenses in ctrlX WORKS.

1. ➤ Register your PC.

The Licensing Center is opened. To gain access, open an "ADD USER ticket".

The individual UUID of your PC is transferred and you can assign a name to the PC.

2. ➤ Assign licenses to the created device (PC) as usual and download the "Capability Response File".

3. ➤ Load the "Capability Response File" in ctrlX WORKS.

4. ➤ Use the engineering tool that requires the license.




Functions in the window

License overview

The license overview lists all licenses that are on the PC or on a dongle.

Additionally, license information and information about the expiry date is contained.

Table 1: Elements of the "Licenses" window

GUI element	Description
Tab "Licenses"	"[x] items": Shows the number of listed licenses
	"Info: License dongle is plugged in" is displayed when a license dongle is detected on the PC
	 Button "Register this PC (Device)" Link to the license portal. Register the Engineering PC in the licensing center
	 Button "ctrlX CORE Apps & Licenses" Link to the license portal. In the licensing center, previously purchased licenses can be assigned to the target device and the license file can be downloaded to the engineering PC
	 Button "Upload license file (Capability Response)" Opens the File Explorer to load the assigned license file from the Engineering PC to the target device

GUI element	Description
Table licenses	<u>Column entries</u> <ul style="list-style-type: none"> • Product License type designation • Quantity Number of licenses • App Name of the licensed application • Description License description • Source Source of the license (PC or dongle) • Expires (UTC) Expiry of the license validity. Contains only a value (if it is not a permanent license) as mm-dd-yyyy hh:mm:ss
Tab “Sources”	“[x] items”: Shows the number of listed license sources
Table of license sources	<u>Column entries</u> <ul style="list-style-type: none"> • Type Source type: Device or dongle • ID UUID of the PC or serial number of the dongle • Available Shows if the source is currently available

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- ➔ [Chapter 6.2.5 Window – “Settings” on page 21](#)
- ➔ [Licenses - Overview](#)
- ➔ [Licenses in the ctrlX Store](#)

6.2.9 Window – “Setup ctrlX WORKS”**Function:**

In the window “Setup ctrlX WORKS” the functions relevant for ctrlX WORKS are managed.

Call:

ctrlX WORKS side navigation “*Settings* → *Setup ctrlX WORKS*”

Window description**“Installed version”**

The currently installed ctrlX WORKS version is shown.

By clicking on “Add or remove features”, select which functions or tools are installed in the “Custom setup” window of ctrlX WORKS, see ➔ [Chapter 4.2.2 ctrlX WORKS – Installation options on page 10](#).



The setups of the individual engineering tools are managed via the settings page “Setup Engineering Tools”, see ➔ [Chapter 6.2.10 Window – “Setup Engineering Tools” on page 26](#).

“Available updates(s)”

Available ctrlX WORKS updated are displayed here.

By clicking on the button for the new version, you can perform an update in the "Custom setup" window of ctrlX WORKS, see [➔ Chapter 4.2.2 ctrlX WORKS – Installation options on page 10](#).

Further information

- [➔ Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- [➔ Chapter 6.2.5 Window – “Settings” on page 21](#)
- [➔ Chapter 4.2.2 ctrlX WORKS – Installation options on page 10](#)
- [➔ Chapter 6.2.10 Window – “Setup Engineering Tools” on page 26](#)

6.2.10 Window – “Setup Engineering Tools”

Function:

The window “Setup Engineering Tools” is used to provide an overview and for managing ctrlX WORKS Engineering tools on the Windows PC. Here you can install new tools on the PC, update installed tools, repair or uninstall tools.

The tool overview of the window provides support during these actions. The tool overview shows all tools that are installed on the PC and are available for installation via the product information URL.

For an overview on the available tools, refer to [➔ ctrlX WORKS](#)

Possible actions in the window

- Installing the Engineering tool
- Updating the Engineering tool
- Repairing the Engineering tool
- Uninstalling the Engineering tool

Call:

ctrlX WORKS side navigation “*Settings* → *Setup Engineering Tools*”


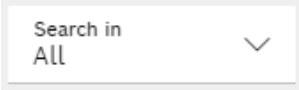


Window description

The window “Setup Engineering Tools” is divided into two sections:

- **command bar** (below the status bar)
- **Tool overview** (below the command bar)

command bar

The command bar provides the following functions and commands to use the engineering tools:

GUI element	Description
	Search field for keyword search in the tool overview. Useful if multiple tools are shown, e.g. if no display filter was set and tools from all sources are shown in the overview (installed tools, available tools).
	Display filter with the following options <ul style="list-style-type: none">• “All”: All available engineering tools are shown in this setting (installed tools, saved tools, tools in the ctrlX Store)• “Installed engineering tools”: Only engineering tools installed on the ctrlX device are shown.• “Available engineering tools”: Only engineering tools saved in the app storage on the ctrlX device are shown (not yet installed).
	The button opens the ctrlX Automation Store in the browser
 Settings	The button opens the “Setup Settings” dialog in which options for the installation of tools can be configured, see Chapter 6.3.3 Dialog – “Setup Settings” on page 32

Tool overview

The tool overview is divided into two categories:

- **Installed Engineering Tools**
Shows all tools already installed on the PC
- **Available Engineering Tools**
Shows tools provided to the PC for installation. The source for this information is the product information URL of the “Setup Settings” dialog

Engineering tools representation

Tools are represented as tiles in the tool overview including additional information and interactive buttons:

- Name
- Version
- Brief description
- Interactive buttons with standard actions (depending on the status):
 - “Install”
Installing the Engineering tool
 - “Update”
Updating the Engineering tool
 - “Repair”
Repairing the Engineering tool
 - “Uninstall”
Uninstalling the Engineering tool

Click on the tile to open the detail page of the engineering tool. All tool actions are available there.

The actions “Update”, “Repair” and “Uninstall” are executed in the background depending on the “Setup setting”.

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- ➔ [Chapter 4.2.2 ctrlX WORKS – Installation options on page 10](#)
- ➔ [Chapter 6.2.5 Window – “Settings” on page 21](#)

6.2.11 Window – “About”

Function:

The window “About” provides product information on the present ctrlX WORKS software instance:

- Software and version
- Software publisher (copyright)
- Open source components, see
➔ [Chapter 6.2.12 Window – “Open Source Components” on page 28](#)
- General conditions of use

Call:

ctrlX WORKS side navigation “About”

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- ➔ [Chapter 6.2.12 Window – “Open Source Components” on page 28](#)
- ➔ [Chapter 6.2.5 Window – “Settings” on page 21](#)

6.2.12 Window – “Open Source Components”

Function:

The window “Open Source Components” provides information on open source components implemented into the ctrlX WORKS software instance. The components are shown in a table.

Following the table, the “Written offer for source code” is displayed.

Call:

ctrlX WORKS side navigation “About” → “Open Source Components”

Elements of the “Open Source Components” window

GUI element	Description
Table	“Name” Name of the open source component
	“Version” Version of the open source component
	“License(s)” License type
“Written offer for source code”	Information on the reference of the implemented source code

Button “Written offer for source code”

License information

This product contains software components that are licensed as "Free software" or "Open source software" under one or several of the below-mentioned licenses and which thus require that the source code is made available. The source code of these software components is not provided together with this product. Instead, Bosch Rexroth provides the licenses upon request. To obtain the source code, email a request to ➔ open.source@boschrexroth.de or post it to the following address:

Bosch Rexroth AG
Open Source Office
Zum Eisengießer 1
97816 Lohr am Main
Germany

a.

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- Please provide the product information (e.g. product ID, serial number) containing the software components to help us find the correct corresponding source code.

Further information

- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- ➔ [Chapter 6.2.5 Window – “Settings” on page 21](#)


6.2.13 Window – “API reference”

Function:

The API for ctrlX WORKS enables creating and editing of devices and licenses in ctrlX WORKS based on REST (**RE**presentational **State** Transfer).

Alternatively, a client API can be generated for the OpenAPI specification in various programming languages. This enables automated creation of virtual controls for testing purposes.

Call:

ctrlX WORKS button  → API reference

Start parameter for use of interface:

By default, the software tool "ctrlX WORKS" opens in an integrated browser. In this mode, ctrlX WORKS is not automatable. To use functions of the interface, you have to assign a fixed port to the API.

For this purpose, please start the software with an additional parameter --port=<port number>

- **Via the Windows input panel** <storage location>\ctrlx-works.exe --port=4242
- **Via a link** <storage location>\ctrlx-works.exe --port=4242
- **Via the "Run" application** rexrothstudio://wrk/?hostname=localhost&--port=4242



Please note that a blank space is entered between the storage location path and the parameter.

The selected port number is required for starting a web server and therefore must not be occupied by another application.

API use:

If the software tool "ctrlX WORKS" is started with a 'port parameter', subsequently, it opens in "server mode" and an icon appears in the SysTray (notification panel) of Windows. The icon can be used to open the interactive OpenAPI documentation, as well as ctrlX WORKS in the standard browser.

In this mode, the interface is ready to accept REST requests and execute various ctrlX WORKS functions.

Alternatively, a client API can be generated for the OpenAPI specification in various programming languages. This enables automated creation of virtual controls for testing purposes.



Further information

- [↪ Chapter 6.2.1 Window– Overview on page 17](#)

6.3 Dialogs

6.3.1 Dialog – “Add a ctrlX OS device”

Function:

Using the dialog “Add a ctrlX OS device”, you can create a ctrlX CORE Virtual or a link to an existing device ctrlX OS device in the table of the available ctrlX OS devices. Use the button  to open the help for the currently displayed dialog. The dialog can be closed via the button .

Call:

ctrlX WORKS side navigation “Devices” → button 

Dialog elements

	Function
“Create a new ctrlX CORE Virtual”	Creating a new ctrlX CORE Virtual. The default name of a new ctrlX CORE Virtual is VirtualControl-x and can be changed in the input field “Name”. In the “image version” drop-down list, the highest available version is selected as the default version. Depending on the selection of the image version, other system app versions are preinstalled in the new virtual control. Available image versions can be managed on the device settings page ↪ Chapter 6.2.5 Window – “Settings” on page 21
“Add a link to an existing device ctrlX OS device”	Add a link to an existing ctrlX OS device. An existing ctrlX OS device is created by entering an IP address in the input field. If a device is detected under the IP address ctrlX OS device is detected, the ctrlX OS device name is displayed
“OK”	Command to confirm the dialog and to create the ctrlX CORE Virtual or ctrlX OS device
Cancel	Command to cancel the dialog

Further information

- [↪ Chapter 6.2.2 Window – “Devices” on page 17](#)
- [↪ Chapter 5.1.1 Devices on page 13](#)

6.3.2 Dialog – “Add ctrlX CORE App Build Environment” Adding the

Function:

To add a build environment app to the table via the dialog “Add ctrlX CORE App Build Environment”.

Call:

ctrlX WORKS side navigation “*App Build Environments*” → button 

“Add ctrlX CORE App Build Environment”

The following input is required to add a build environment:

Dialog elements

GUI element	Function
“Name”	The name of a build environment is created as sub-folder for the files in the storage location
“Storage location”	Directory in which the build environment is to be saved
Port Forwarding	Port forwarding of the build environment to the local PC can be defined here. Forwarding for port 22 (SSH) of the build environment is required
<input type="checkbox"/> : Disabled <input checked="" type="checkbox"/> : Enabled “Use HTTP and HTTPS proxy on localhost:3128”	If an HTTP proxy is running on port 3128 on a PC, the proxy can be referenced in the build environment for internet access.

Further information

- ➔ [Chapter 6.2.4 Window – “App Build Environments” on page 19](#)
- ➔ [Chapter 6.4.2 Sidebar – “App Build Environments <Build environment name>” on page 36](#)
- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

6.3.3 Dialog – “Setup Settings”

Function:

Select the general settings of the Engineering tool setup via dialog “Setup Settings”.





Call:

ctrlX WORKS side navigation “*Settings → Setup Engineering Tools*” → button



Settings

Dialog elements

GUI element	Function
“Product info url *”	Address for storing information and setups for the engineering tools. Either: <ul style="list-style-type: none">• Server address in the format http://, 'https://' terminated by '/'• File storage with format 'file:////' terminated by '/' A storage structure can be generated from the installation directory using the "ctrlx-works-offline-setup-util.exe" tool. If the tool is called without parameters, a help text is displayed. This field is the default for "https://packages.boschrexroth.com/"
 : Disabled  : Enabled “Run setups in the background”	This option is enabled by default and ensures that only the query for "Administrator mode" needs to be confirmed when executing a setup. All other actions are carried out in the background. If this option is deactivated, the tool setup interface appears with every update. This option does not apply to the initial installation of a tool. An installation directory has to be selected here
 : Disabled  : Enabled “Allow installation from unknown source”	This option is disabled by default. Only setups from known sources approved by Bosch Rexroth are installed. You can change this setting at your own risk

To save the change, select . Use  to reset the changes to default values. Select  to return to the window “Setup Engineering Tools”.

Further information

- [↩ Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)
- [↩ Chapter 6.2.5 Window – “Settings” on page 21](#)
- [↩ Chapter 6.2.10 Window – “Setup Engineering Tools” on page 26](#)

6.4 Sidebars

6.4.1 Sidebar – “Devices <Control name>”

Function:

The properties of a ctrlX CORE Virtual can be edited in stopped state via the sidebar “Devices <Control name>”. If the control is running, the control properties are opened as read-only.

Call:

ctrlX WORKS side navigation “Devices” → button 

Elements of the sidebar “Devices <Control name>”

Tab bar “Basics”:

GUI element	Description
“Devices <Control name>”	<p>“Basics”:</p> <p>Changing the control name.</p> <p>The valid characters are displayed.</p> <p>The name can only be changed before the control is started for the first time. Subsequently, it can only be changed via the settings/system information on the control interface</p>

Tab bar “Extended”:

GUI element	Description
Option “Network Adapter”	<p>Via the selection, you can access the control via a preconfigured TAP Windows network adapter. The control can be reached via the respectively configured IP addresses. The IP addresses are set analogously to the ctrlX CORE using the settings of the control.</p> <p>The name of the network adapter is read-only and can change depending on the start time of the control emulation</p>
Option “Port Forwarding”	<p>If port forwarding is required (e.g. in a VPN environment), some communication ports of the ctrlX CORE Virtual control (e.g.: SSH 22, HTTPS 443, PLC 11740, OPC UA 4840) have to be redirected. These settings can be selected in the “Port forwarding” field.</p> <p>The numerical placeholders to be entered for the respective ports can be freely selected (www:22,xxx:443,yyy:11740,zzz:4840).</p> <p>Open the control website via https://localhost:xxx.</p> <p>The PLC communication can be set up in the ctrlX PLC Engineering via the address 127.0.0.1:yyy.</p> <p>The address localhost:www is used for an SFTP access to the control</p>
“External access”	<p>This option is only available if the “Port forwarding” selection is active. By selecting a network adapter, it is specified which network interface is used to publish the virtual control.</p> <p>The ports defined in “Port forwarding” are forwarded via the host IP. The controller can then be accessed from external devices via https://<Host-IP>:<Port>.</p> <p>Note: To allow external access, a rule has to be created for the affected ports in the firewall of the PC</p>
“CPU cores”	The number of processor cores to be emulated for the control can be set here (default: 4)
“RAM (GB)”	Main memory for the control to be emulated (standard: 2 GB)

GUI element	Description
"Hardware acceleration"	<p>The ctrlX CORE Virtual is operated in a Linux emulation. For an optimized operation, an additional hardware acceleration is required.</p> <p>This selection specifies which hardware acceleration is used for ctrlX CORE Virtual:</p> <ul style="list-style-type: none"> • None: Use Standard Tiny Code Generator (TCG) without hardware support • Windows Hypervisor Platform: Use of the Windows hypervisor platform to accelerate emulation. This option is the default value • Intel® Hardware Accelerated Execution Manager (HAXM): The Intel® Hardware Accelerated Execution Manager (Hypervisor) is no longer supported <p>The info icon next to the selection window provides detailed information on the status of hardware acceleration on the system. For an error-free operation, the following requirements have to be met:</p> <ul style="list-style-type: none"> • Processor with virtualization technology (Intel®VT or AMD-V) • Processor supports Second-Level-Address-Translation (SLAT) • "Hardware Virtualization in Firmware" is activated in the BIOS <p>The Windows hypervisor platform can be activated in two ways:</p> <ul style="list-style-type: none"> • Right-click on the Start menu and select "Run". Enter the following next to "Open" in the Execute window: <i>ms-settings:optionalfeatures</i> Activate the Windows Hypervisor Platform • Or execute the following command in a CMD window with administrator rights: <i>DISM /Online /Enable-Feature /All /Feature-Name:HypervisorPlatform</i> <p>CAUTION: The changes to the Windows features are only applied after a restart!</p>
"Base image version"	Version display of the current base image (cannot be edited)
"User image"	File name of the user image file used (cannot be edited). All changes in the file system of the ctrlX CORE Virtual control are saved in the respective user image file. A user image file can only be used with its respective base image file



To save the change, select . Select  to return to the window "Devices".

The operation of a ctrlX CORE Virtual in a virtual machine is currently very restricted as an emulation is executed in a virtual machine. The performance depends heavily on whether nested virtualizations are possible at all and whether the **WHPX** hardware acceleration can run in this environment.

Further information

- ➔ [Chapter 5.1.1 Devices on page 13](#)
- ➔ [Chapter 6.2.2 Window – “Devices” on page 17](#)

6.4.2 Sidebar – “App Build Environments <Build environment name>”**Function:**

The properties of a build environment can be edited in stopped state via the sidebar “App Build Environments <Build environment name> ” If the build environment is running, the properties are opened as read-only.

Call:

ctrlX WORKS side navigation “App Build Environments” → button 

“Edit build environment app”

The following input is required to add a build environment:

Elements of the dialog “App Build Environments <Build environment name>”

GUI element	Function
“Name *”	The name of a build environment can be changed. The storage location, however, does not change
Port Forwarding *	Port forwarding of the build environment to the local PC can be defined here. Forwarding for port 22 (SSH) of the build environment is required
CPU cores	The number of processor cores to be emulated for the build environment can be set (standard: 4). (Default: 4)
RAM (GB)	Main memory for the build environment (default: 4)
“Storage location (read-only)”	Directory in which the build environment is saved
“Hardware acceleration (read-only)”	The hardware acceleration used for the emulation is displayed. A dialog opens via the ⓘ dialog containing detailed information
<input type="checkbox"/> : Disabled <input checked="" type="checkbox"/> : Enabled “Use HTTP and HTTPS proxy on localhost:3128 (read-only) ”	Shows if the local HTTP Proxy is referenced in the build environment for internet access

To save the change, select . With  you can hide the sidebar “App Build Environments <Build environment name> ” again.

Further information

- ➔ [Chapter 6.2.4 Window – “App Build Environments” on page 19](#)
- ➔ [Chapter 6.3.2 Dialog – “Add ctrlX CORE App Build Environment” Adding the on page 32](#)
- ➔ [Chapter 4.1.1 ctrlX WORKS – Basics on page 8](#)

7 Related documentation

7.1 Overview

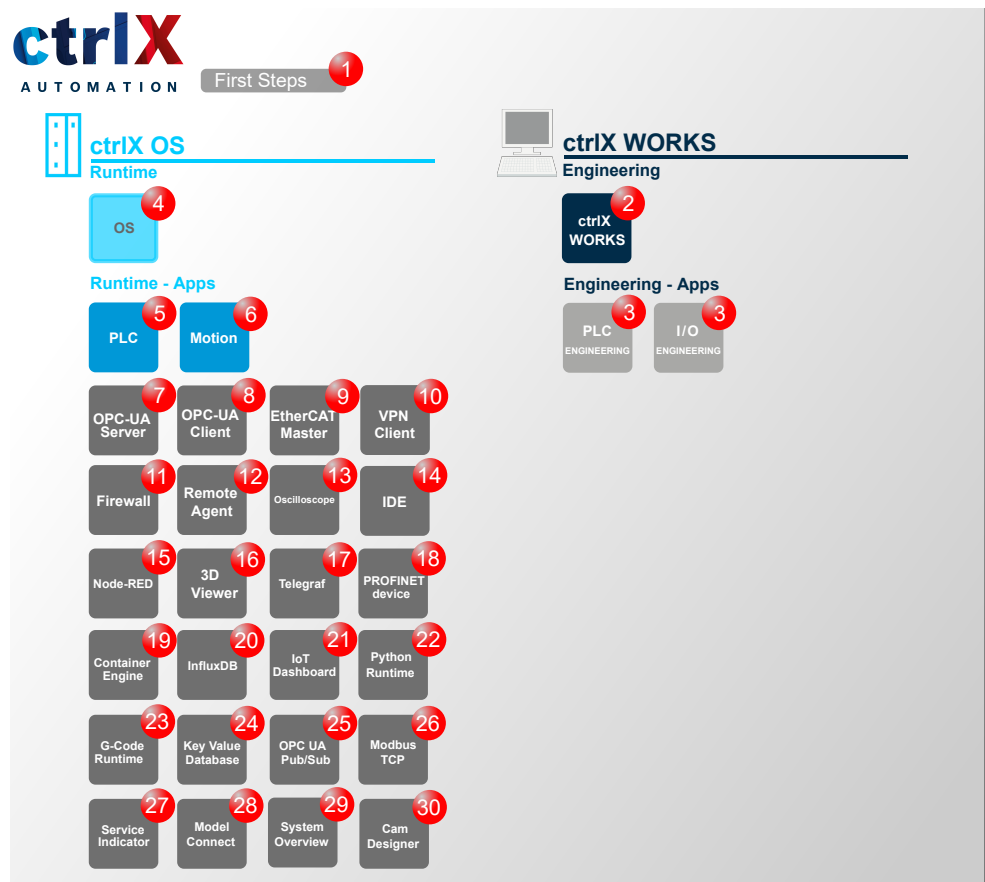


Fig. 1: Overview on further documentations

7.2 ctrlX AUTOMATION

No.	Documentation
1	<p>ctrlX WORKS First Steps 02VRS</p> <p>Quick Start Guide</p> <p>➔ Web documentation link</p> <p>Ordering information:</p> <ul style="list-style-type: none"> • DOK-XWORKS-F*STEP**V02-QURS-EN-P • R911421574

7.3 ctrlX WORKS

No.	Documentation
2	ctrlX WORKS Basic System 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XWORKS-WRK***V02**-APRS-EN-P • R911421576
3	ctrlX PLC Engineering - PLC Programming System 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XPLC**-ENG*****V02-APRS-EN-P • R911421578
3	ctrlX PLC Engineering - PLC Libraries 02VRS Reference Book ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XPLC**-LIB***V02**-RERS-EN-P • R911421580

7.4 ctrlX OS

No.	Documentation
4	ctrlX OS - Runtime 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-XCR***V02**-APRS-EN-P • R911421590
	ctrlX OS - Data Layer nodes 02VRS Reference Book ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-DL****V02**-RERS-EN-P • R911421592
	ctrlX OS - Diagnostics 02VRS Reference Book ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-DIAG**V02**-RERS-EN-P • R911421594

7.5 ctrlX OS apps

No.	Documentation
5	PLC App - PLC Runtime Environment for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-PLC***V02**-APRS-EN-P• R911421584
6	Motion App - Motion Runtime Environment for ctrlX CORE 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-MOT***V02**-APRS-EN-P• R911421610
7	OPC UA Server App - OPC UA Server for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-UAS***V02**-APRS-EN-P• R911421598
8	OPC UA Client App - OPC UA Client for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-UAC***V02**-APRS-EN-P• R911421600
9	EtherCAT Master App - EtherCAT master for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-ECM***V02**-APRS-EN-P• R911421604
10	VPN Client App - Remote Support Software for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-VPN***V02**-APRS-EN-P• R911421596
11	Firewall App - Security Functions for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-FRW***V02**-APRS-EN-P• R911421606

No.	Documentation
12	Remote Agent App - ctrlX Device Portal Connection for ctrlX OS Devices 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-RMA***V02**-APRS-EN-P • R911421608
13	Oscilloscope App - Oscilloscope Function for ctrlX OS Devices 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-OSC***V02**-APRS-EN-P • R911421587
14	IDE App - Integrated Development Environment 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-IEN***V02**-APRS-EN-P • R911421612
15	Node RED App - Graphic Programming for ctrlX OS 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-NOENRED*V02-APRS-EN-P • R911421582
16	3D Viewer App - Browser-based 3D Kinematic Simulation for ctrlX OS 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-3DV***V02**-APRS-EN-P • R911421615
17	Telegraf App - Server Agent for Collecting Data in the Data Layer 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-TSA***V02**-APRS-EN-P • R911421623
18	PROFINET Device App - PROFINET Device for ctrlX OS 02VRS Application Manual ↪ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-PROFINETV02-APRS-EN-P • R911421617

No.	Documentation
19	Container Engine App - Using Docker® Images on the ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-DOE***V02**-APRS-EN-P• R911421619
20	InfluxDB App - Influx Database Connection for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-IDB***V02**-APRS-EN-P• R911421625
21	IoT Dashboard App - Data Visualization in Dynamic, Interactive Dashboards 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-GDB***V02**-APRS-EN-P• R911421633
22	Python Runtime App - Python Runtime App Environment for ctrlX CORE 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-PYR***V02**-APRS-EN-P• R911421629
23	G-Code Runtime App - G-Code Interpreter for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-GCO***V02**-APRS-EN-P• R911421631
24	Key Value Database App - Data Layer Management 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-KVD*****V02-APRS-EN-P• R911418735
25	OPC UA Pub/Sub App - OPC UA Pub/Sub for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none">• DOK-XCORE*-UAP***V02**-APRS-EN-P• R911421602

No.	Documentation
26	Modbus TCP App - Modbus TCP Communication over ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-MOD*TCP*V02-APRS-EN-P • R911421621
27	Service Indicator App Service Indicator for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-SIN*****V02-APRS-EN-P • R911421627
28	Model Connect App Target for Model-based Development and Simulation for ctrlX OS 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-MOC***V02**-APRS-EN-P • R911421631
29	System Overview App - System Topology and System Information 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XCORE*-SOV***V02**-APRS-EN-P • R911424409
30	Cam Designer - Configuring ctrlX Motion Cams 02VRS Application Manual ↗ Web documentation link Ordering information: <ul style="list-style-type: none"> • DOK-XWORKS-CAM***V02**-APRS-EN-P • R911424390

8 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts provide you with advice and assistance. You can contact us **24/7**.

Service Germany

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

Phone: **+49 9352 40 5060**

Fax: **+49 9352 18 4941**

Email: [↗ service.svc@boschrexroth.de](mailto:service.svc@boschrexroth.de)

Internet: [↗ http://www.boschrexroth.com](http://www.boschrexroth.com)

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

9 Index

A

About.	28
Adding a new control	
Dialog Add a ctrlX OS device.	31
API reference.	30
App Build Environments.	19

C

ctrlX AUTOMATION	
Related documentation.	37
ctrlX CORE Virtual.	14
Settings.	15
ctrlX OS.	15
ctrlX OS app build environment	
Dialog Add ctrlX CORE App Build Environment.	32
ctrlX WORKS	
Create user-defined source for setups. ...	12
ctrlX CORE Virtual.	14
ctrlX OS.	15
Initial installation.	10
Installation options.	10
Installing.	9
Installing several setups at once.	11
Licensing.	13
Licensing information.	6
System requirements.	9

D

Devices.	13, 17, 33
Devices (Settings).	22
Dialog	
Add a ctrlX OS device.	31
Add ctrlX CORE App Build Environment. ...	32
Setup Settings.	32

E

Engineering Tools.	19
-------------------------	----

G

Generate report.	16
-----------------------	----

H

Help url.	22
Helpdesk.	43
Hotline.	43

I

Installation.	9
Intended use	
Areas of application.	7
Areas of use.	7
Introduction.	6

L

Licenses.	23
----------------	----

N

Notes on the ctrlX WORKS installation.	9
---	---

Q

Quick Start	
ctrlX WORKS Install.	9

S

Safety instructions.	8
Service hotline.	43
Settings.	21
Setup ctrlX WORKS.	25
Setup Engineering Tools.	26
Side navigation	
Overview.	16
Sidebar	
App Build Environments <Build environment name>.	36
Devices.	33
Specify home page.	22
Support.	43
System report.	16

U

Unintended use.	7
Consequences, disclaimer.	7

W

Window	
About.	28
API reference.	30
App Build Environments.	19
Devices.	17
Devices (Settings).	22
Engineering Tools.	19
General.	22
Licenses.	23
Open Source Components.	28
Overview.	17
Settings.	21
Setup ctrlX WORKS.	25
Setup Engineering Tools.	26
Written offer for source code.	28

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