rexroth
A Bosch Company

Application Manual

DRIVE Connect App

Access Parameters and Functions of Drives Connected to ctrlX CORE

R911417369, Edition 02

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1 About this documentation

Editions of this documentation

Edition	Release date	Note
01	2022-09	First edition Version DCA-V-0114
02	2022-11	Version DCA-V-0118

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 its 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 DRIVE Connect App

4.1 App dependencies

To access EtherCAT SoE drives, **EtherCAT master app** (version 1.16.0 and above) must be installed on the CORE.

4.2 Introduction

4.2.1 About ctrlX DRIVE Connect App

ctrlX DRIVE Connect App is a powerful, functional extension of the ctrlX CORE for use cases with Bosch Rexroth drives. It **scans all interfaces of the controller for connected drives** (ctrlX DRIVE and IndraDrive). The **devices found are automatically connected to the Data Layer of the ctrlX CORE** and the associated data structures are mapped. This makes the connected drives data available to any Data Layer client.

In combination with ctrlX DRIVE Engineering it becomes possible to commission drives, to diagnose faults and to carry out service use cases.

4.2.2 Terms and abbreviations

Abbr.	Meaning
DCA	ctrlX DRIVE Connect App
SIP	Sercos over IP
ECAT	EtherCAT communication
SoE	Servo drive profile over EtherCAT – Adapted Sercos II profile for servo drives (mailbox)
EoE	Ethernet over EtherCAT – Ethernet communication, e.g., TCP/IP (mailbox)
FoE	File transfer over EtherCAT – File transfer protocols, e.g., FTP, TFTP

4.2.3 Functionalities

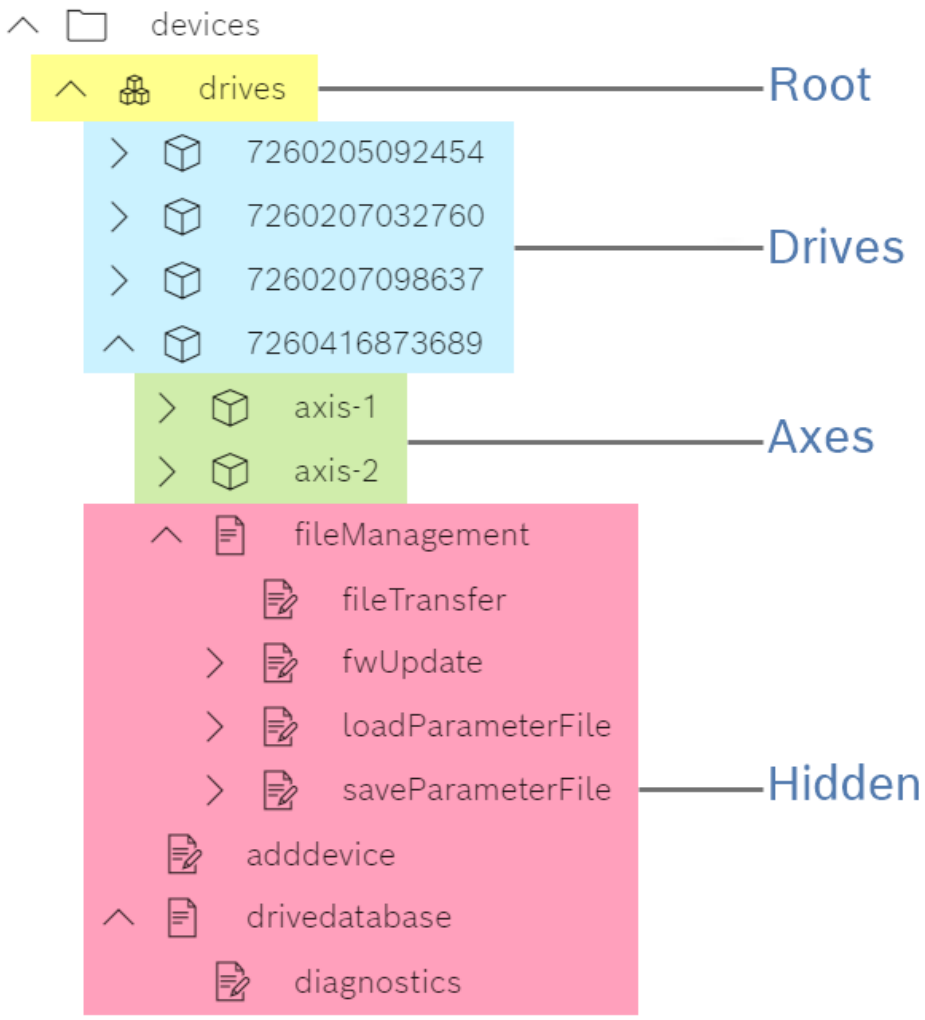
- Scan network interfaces and dynamic update of connected drives on the Data Layer
- Read / write drive parameters – protocols supported: SIP and SoE
- Update drive firmware
- Load a parameter file to the drive
- Save a parameter file from drive
- Mirror drive's diagnosis logbook in the CORE
- Access diagnostic information from database
- Add device manually with an IP address

4.2.4 Limitations

- Maximum number of drives that can be connected: 20
- Supported language: English
- Firmware download is not supported for XMQ drives (4-axis) and local axes of CORE integrated drives (M3)

4.3 Node structure on the data layer

The following image shows the node structure of DCA on the ctrlX CORE's data layer.



4.4 Feature – Drives and axes

4.4.1 Browse drives

A data layer browse request, on the node '/devices/drives/' will provide information on all the drives connected to DCA. The response type is an 'arstring' containing the list of connected drives. Each drive represented by its serial number.

Node structure	Related nodes	
devices drives 7260205092454 7260207032760 7260207098637 7260416873689	URL	**/devices/drives/**
	Class	Collection
	On Browse	Returns list of drives
	Visible	Yes
	Type	arstring

Response

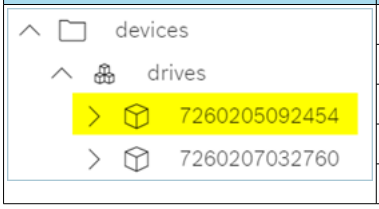
Request URL: https://192.168.1.71/automation/api/v1.0/devices/drives?type=browse
Request Method: GET
Response Time: 0.03 seconds
Response Status: 200 - OK

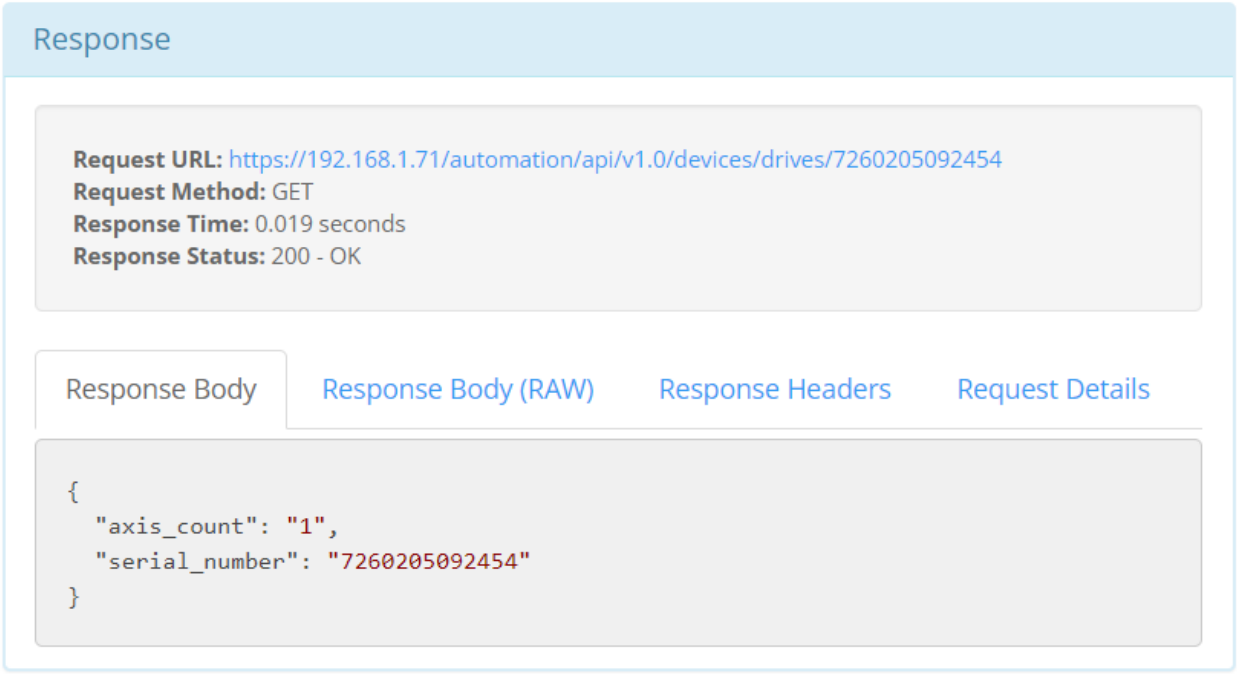
Response Body | Response Body (RAW) | Response Headers | Request Details


```
{
  "type": "arstring",
  "value": [
    "7260205092454",
    "7260207032760",
    "7260207098637",
    "7260416873689"
  ]
}
```

4.4.2 Read drive information

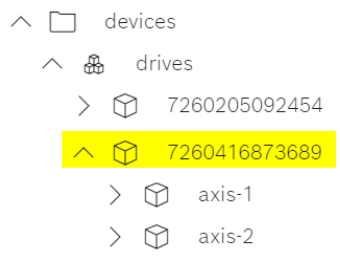
A data layer read request, on a drive node '/devices/drives/drive_SNo/' will provide information about the drive. The response type is a FlatBuffer (schema available in table below) containing the number of axes in the drive and the drive serial number.

Node structure	Related nodes	
	URL	**/devices/drives/drive_SNo/**
	Class	Resource
	On Read	Returns axis count and serial number
	Visible	Yes
	Type	driveSchema.fbs



4.4.3 Browse axes

A data layer browse request, on the node '/devices/drives/drive_SNo/' will provide information on all the axes available in the drive. The response type is an 'arstring' containing the list of the available axes.

Node structure	Related nodes	
	URL	**/devices/drives/drive_SNo/**
	Class	Resource
	On Browse	Returns list of axes under drive
	Visible	Yes
	Type	arstring

Response

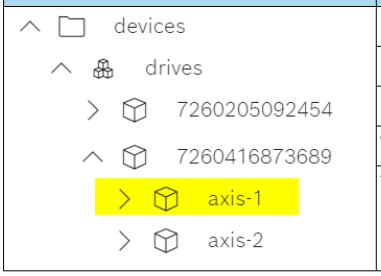
Request URL: https://192.168.1.71/automation/api/v1.0/devices/drives/7260416873689?type=browse
Request Method: GET
Response Time: 0.015 seconds
Response Status: 200 - OK

Response Body | Response Body (RAW) | Response Headers | Request Details


```
{
  "type": "arstring",
  "value": [
    "axis-1",
    "axis-2"
  ]
}
```

4.4.4 Read axis information

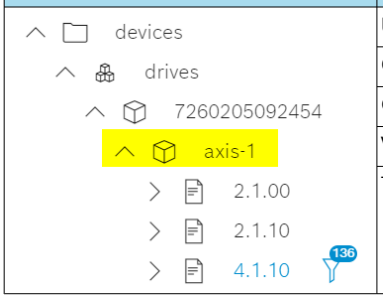
A data layer read request, on a drive node '/devices/drives/drive_SNo/axis_No/' will provide information about the axis. The response type is a FlatBuffer containing the axis number and name.

Node structure	Related nodes	
	URL	**/devices/drives/drive_SNo/axis_No/**
	Class	Resource
	On Read	Returns axis number and name
	Visible	Yes
	Type	axisSchema.fbs

4.5 Feature – Parameter access

4.5.1 Browse parameter groups under an axis

A data layer browse request, on the node '/devices/drives/drive_SNo/axis_No/' will provide information on all the parameter groups available in the axis. The response type is an 'arstring' containing the list of parameter groups under the axis.

Node structure	Related nodes	
	URL	**/devices/drives/drive_SNo/axis_No/**
	Class	Resource
	On Browse	Returns list of axes under drive
	Visible	Yes
	Type	arstring

Response

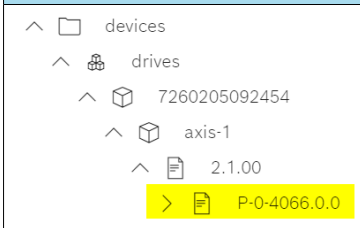
Request URL: https://192.168.1.71/automation/api/v1.0/devices/drives/7260205092454/axis-1?type=browse
Request Method: GET
Response Time: 0.036 seconds
Response Status: 200 - OK

Response Body | Response Body (RAW) | Response Headers | Request Details


```
{
  "type": "arstring",
  "value": [
    "2.1.00",
    "2.1.10",
    "6.2.30",
    "6.2.40",
    "6.3.40",
    "6.3.50",
    "8.1.10",
    "8.1.20",
    "parameters"
  ]
}
```

4.5.2 Read parameter under a parameter group

A data layer read request, on a parameter node under a parameter group, will return information about the parameter such as Name, Unit, Attribute, Min/Max values and Data. The response type is a FlatBuffer containing the parameter information.

Node structure	Node attributes	
	URL	**/devices/drives/drive_SNo/axis_No/parameter_Group/parameter**
	Class	Resource
	On Read	Returns parameter information
	Visible	Yes
	Type	parameterSchema.fbs

Response

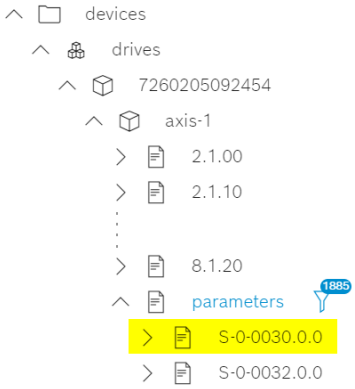
Request URL: https://192.168.1.71/automation/api/v1.0/devices/drives/7260205092454/axis-1/2.1.00/P-0-4066.0.0
Request Method: GET
Response Time: 0.174 seconds
Response Status: 200 - OK

Response Body | Response Body (RAW) | Response Headers | Request Details


```
{
  "datastate": 0,
  "name": "Card Identification Data",
  "unit": "--",
  "attribute": "0x70350001",
  "data": "0xFFFF 0xFFFF 0xFFFF 0xFFFF 0xFFFF 0xFFFF 0xFFFF 0xFFFF",
  "maxlistlength": "16",
  "min": "--",
  "max": "--"
}
```

4.5.3 Read parameter without parameter group

If the parameter group of a parameter is not known, it can still be accessed through a data layer read request under the parameters node directly. This will return information about the parameter such as Name, Unit, Attribute, Min/Max values and Data. The response type is a FlatBuffer containing the parameter information.

Node structure	Node attributes	
	URL	**/devices/drives/drive_SNo/axis_No/parameters/parameter**
	Class	Resource
	On Read	Returns parameter information
	Visible	Yes
	Type	parameterSchema.fbs

Response

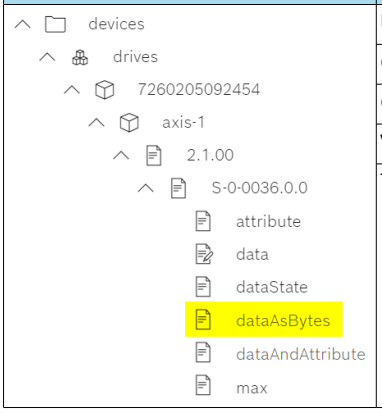
Request URL: https://192.168.1.71/automation/api/v1.0/devices/drives/7260205092454/axis-1/parameters/S-0-0030.0.0
Request Method: GET
Response Time: 0.024 seconds
Response Status: 200 - OK

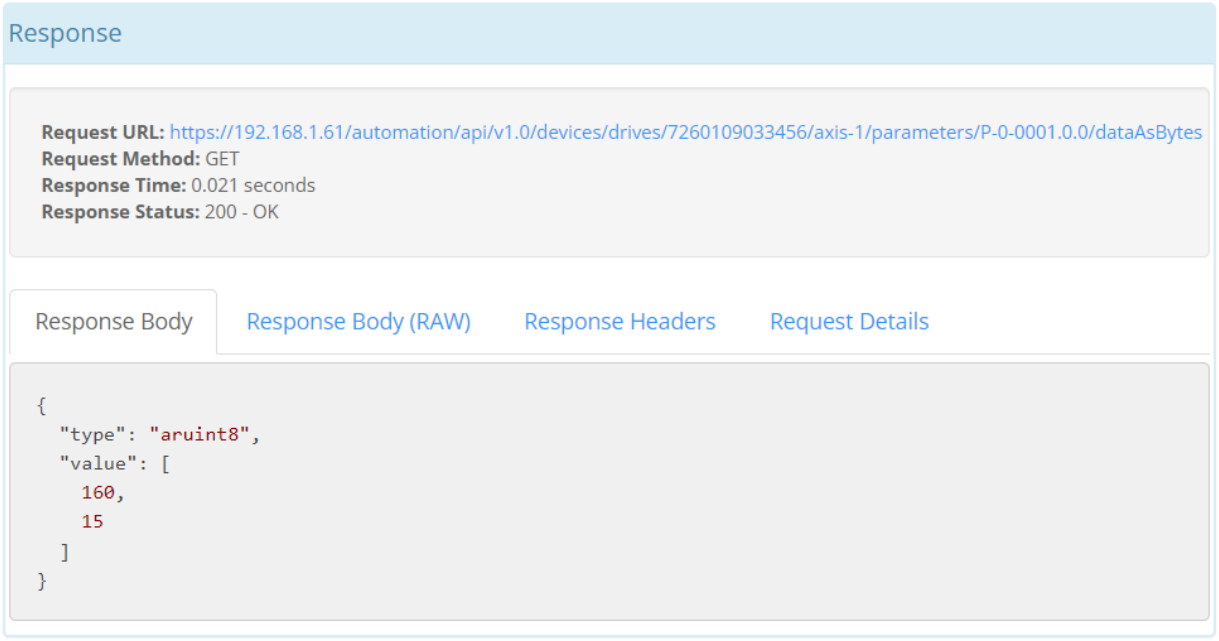
Response Body | Response Body (RAW) | Response Headers | Request Details


```
{
  "datastate": 0,
  "name": "Manufacturer version",
  "unit": "--",
  "attribute": "0x70440001",
  "data": "FWA-INDRV*-MPE-20V20-D5-1-NNN-NN",
  "maxlistlength": "32",
  "min": "--",
  "max": "--"
}
```

4.5.4 Read parameter data as byte array

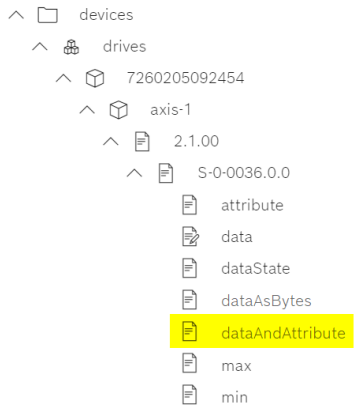
The operating data of a parameter can be read as a byte array instead of a string as found at the parameter node. This is useful when the raw data value is required to be used as a numerical value. The response type is an array of bytes.

Node structure	Node attributes	
	URL	**/devices/drives/drive_sNo/axis_No/parameter_Group/idn/dataAsBytes**
	Class	Variable
	On Read	Returns the data (as bytes) of the parameter
	Visible	No
	Type	byte array



4.5.5 Read parameter data and attribute

The operating data of a parameter and its attribute can be read from the data layer. This is useful when the data value is required in its correct display format. The response type is a FlatBuffer containing the parameter data and attribute.

Node structure	Node attributes	
	URL	**/devices/drives/drive_sNo/axis_No/parameter_Group/idn/dataAndAtrribute**
	Class	Variable
	On Read	Returns the attribute (as unit) and data (as bytes) of the parameter
	Visible	No
	Type	read_onlydataSchema.fbs

Response

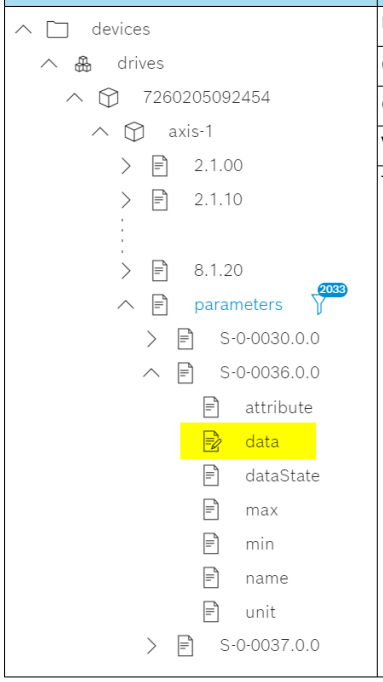
Request URL: https://192.168.1.61/automation/api/v1.0/devices/drives/7260109033456/axis-1/parameters/P-0-0001.0.0/dataAndAttribute
Request Method: GET
Response Time: 0.034 seconds
Response Status: 200 - OK

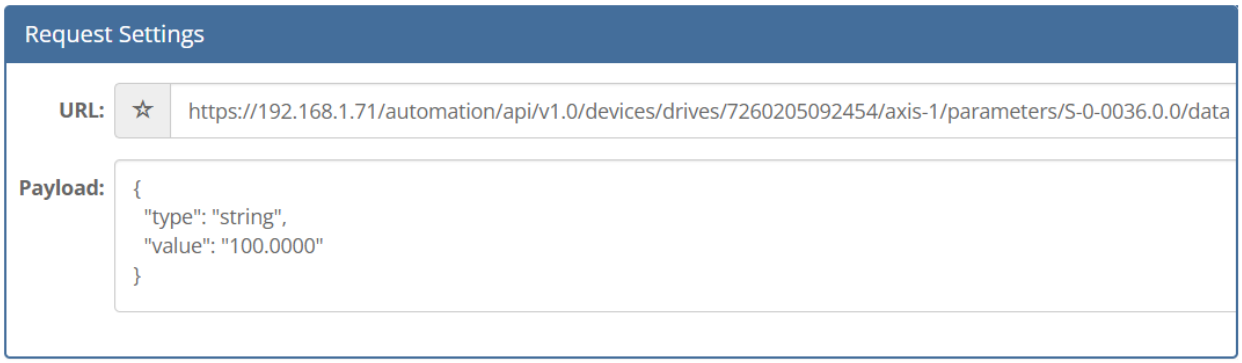
Response Body | Response Body (RAW) | Response Headers | Request Details

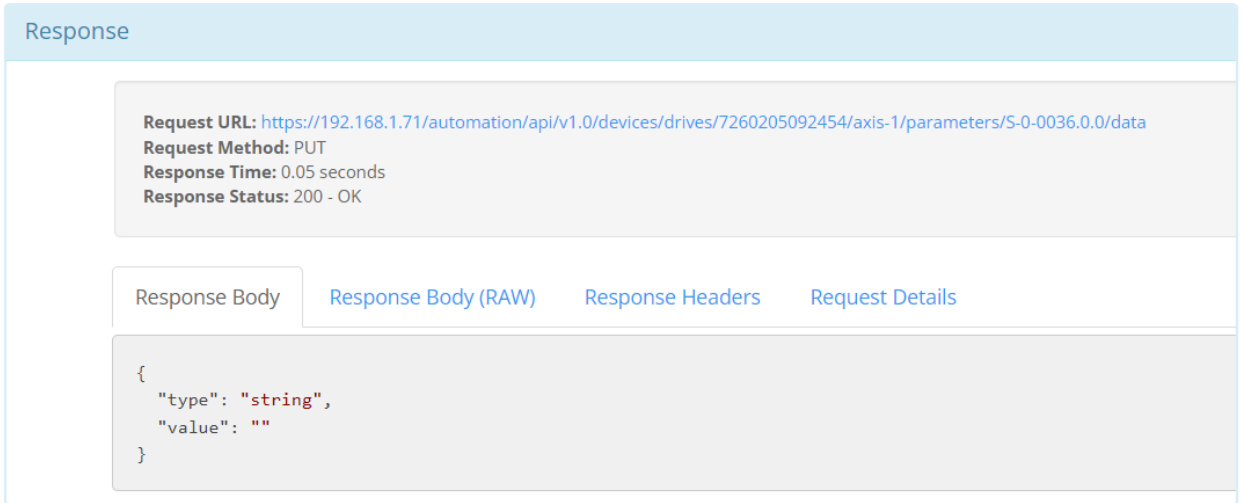
```
{
  "attribute": 1074855937,
  "data": [
    160,
    15
  ]
}
```

4.5.6 Write paramter data

The operating data of a parameter can be changed by performing a data layer write to the data node under a parameter node. The type for the data is string.

Node structure	Node attributes	
	URL	**/devices/drives/drive_SNo/axis_No/parameters/parameter/data**
	Class	Variable
	On Write	Writes the operating data of the parameter
	Visible	Yes
	Type	string



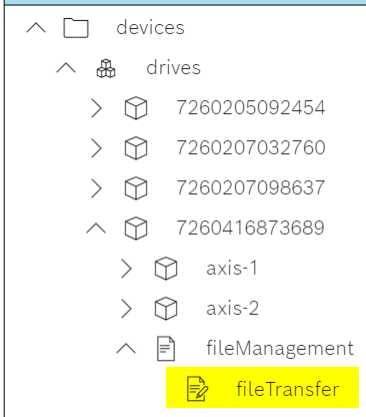


4.6 Feature – File management

File management enables clients to exchange files with DCA. Files can be of any type, but typically firmware files and parameter files. Direct access to DCA's file system is not available for the client, so the exchange happens over data layer with the file contents.

4.6.1 Transfer a file from client to DCA

To transfer a file to DCA, a data layer client should open and read the file in the client system, and then put the contents of the file to the node '/devices/drives/drive_SNo/fileManagement/fileTransfer' under DCA.

Node structure	Node attributes	
	URL	**/devices/drives/drive_SNo/fileManagement/fileTransfer**
	Class	Variable
	On Write	Creates a file in DCA's file system with the given file name and contents
	Visible	No
	Type	fileUploadSchema.fbs

Limitations

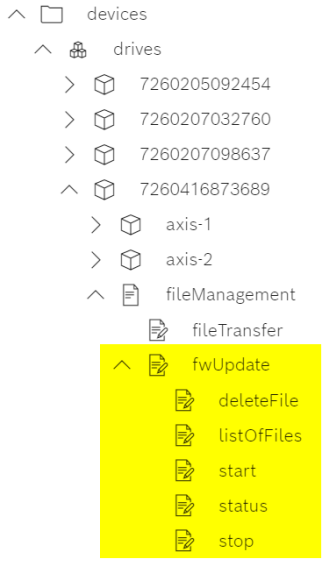
- Concurrent file transfers from client to DCA are not supported; only one file at a time
- If a file with same name already exists, currently it will be overwritten; client should ensure that file names are unique

4.6.2 Transfer a file from DCA to client

This is not supported in a generic way as of now.

4.7 Feature – Firmware update

The firmware of Rexroth servo drives (connected to ctrlX CORE) can be updated using DCA. ctrlX DRIVE and IndraDrive are supported. The client should first transfer the firmware file to DCA's file system and then initiate the firmware update to drive.

Node structure	Node attributes	
	URL	**/devices/drives/drive_SNo/fileManagement/fwUpdate/deleteFile**
	Class	Variable
	On Write	
	Visible	No
	Type and value	string, value is firmware filename
	URL	**/devices/drives/drive_SNo/fileManagement/fwUpdate/listOfFiles**
	Class	Variable
	On Read	
	Visible	No
	Type	listOfFilesSchema.fbs
	URL	**/devices/drives/drive_SNo/fileManagement/fwUpdate/start**
	Class	Variable
	On Write	
	Visible	No
	Type and value	string, value is firmware filename
	URL	**/devices/drives/drive_SNo/fileManagement/fwUpdate/status**
	Class	Variable
	On Read	
	Visible	No
	Type	tftpStatusSchema.fbs
	URL	**/devices/drives/drive_SNo/fileManagement/fwUpdate/stop**
	Class	Variable
	On Write	Cancels an active ongoing firmware update
	Visible	No
	Type and value	bool, value set to TRUE will stop current operation

Possible values of 'tftpStatusDetails.currentstatus' from the status node	
In Progress	Firmware download is in progress
Cancelled	Firmware download canceled
Completed	Firmware download completed
Error	Error during firmware download

Steps

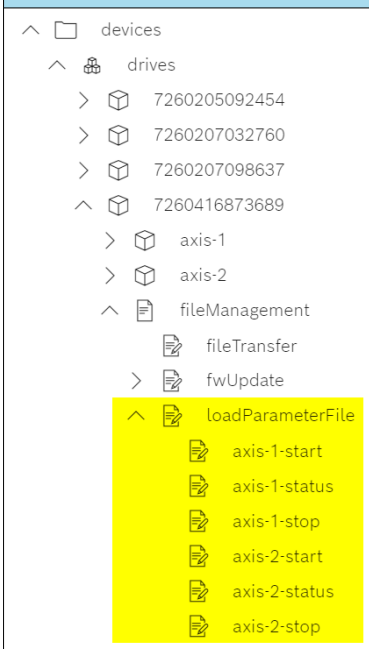
1. Transfer the firmware file to DCA
   ➦ Chapter 4.6.1 Transfer a file from client to DCA on page 23
2. Initiate the firmware update by writing the filename to the '/.../fwUpdate/start' node
3. Monitor the status of the ongoing update by reading the '/.../fwUpdate/status' node
4. The value of 'tftpStatusDetails.currentstatus' would be 'Completed' once the firmware update is successfully done

Limitations

- Only drives with a valid IP address are supported currently (SIP and EoE); FoE is not supported

4.8 Feature – Load parameter file

Parameter files can be written to Rexroth servo drives (connected to ctrlX CORE) using DCA. ctrlX DRIVE and IndraDrive are supported. In case of multi-axis drives, there is possibility to load the parameter file to an individual axis separately. The client should first transfer the parameter file to DCA's file system and then initiate the parameter load to drive.

Node structure	Node attributes	
	URL	**/devices/drives/drive_SNo/fileManagement/loadParameterFile**
	Class	Variable
	On Read	Indicates if parameter load to the drive is currently possible
	Visible	No
	Type and value	string, possible values are a) LOAD_PARAMS_POSSIBLE b) LOAD_PARAMS_NOT_POSSIBLE
	URL	**/devices/drives/drive_SNo/fileManagement/loadParameterFile /axis_No-start**
	Class	Variable
	On Write	Initiates loading parameter data in the file specified by filename (written value of the node)
	Visible	No
	Type and value	string, value is parameter filename to be loaded to the axis
	URL	**/devices/drives/drive_SNo/fileManagement/loadParameterFile /axis_No-status**
	Class	Variable
	On Read	Returns the current status of the load operation
	Visible	No
	Type	loadParamStatusSchema.fbs
	URL	**/devices/drives/drive_SNo/fileManagement/loadParameterFile /axis_No-stop**
	Class	Variable
	On Write	Cancels the ongoing load operation if TRUE is written
	Visible	No
	Type and value	Bool, value set to TRUE will stop current operation

Possible values of 'loadParamStatusSchema.currentState' from the Status node	
Not Started	Parameter load operation not active
Progress	Parameter load operation in progress
Completed	Parameter load operation is completed
Error! Invalid par file format	Parameter file format is invalid, load cannot start

Steps

1. Read the node '/.../loadParameterFile' to check if parameter restore is currently possible
2. Transfer the parameter file to DCA

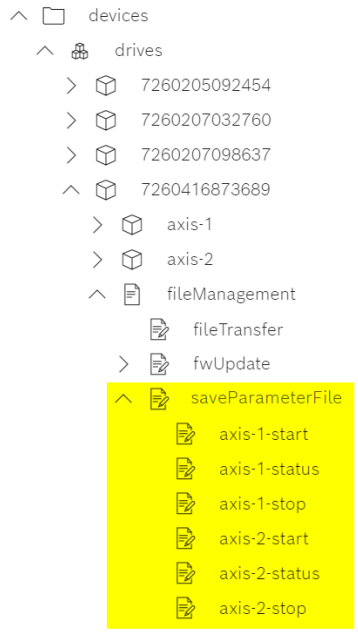
   ➦ Chapter 4.6.1 Transfer a file from client to DCA on page 23
3. Initiate the load operation by writing the filename to the '/.../loadParameterFile/axis_No-start' node
4. Monitor the status of the ongoing load operation by reading the '/.../loadParameterFile/axis_No-status' node
5. The value of 'loadParamStatusSchema.currentState' would be 'Completed' once the load operation is completed; the IDNs that could not be written are available in the 'loadParamStatusSchema.failedIDNList' as an array

Limitations

- Concurrent load operations to multiple axes of the same drive are currently not supported; the other axes status would be 'LOAD_PARAMS_NOT_POSSIBLE'

4.9 Feature – Save parameter as file

Parameter files can be saved from Rexroth servo drives (connected to ctrlX CORE) using DCA. ctrlX DRIVE and IndraDrive are supported. In case of multi-axis drives, there is possibility to save the parameter file individually from an axis. The client should provide the file name and type of parameter backup file to be created. Currently three types of backups are supported – all parameters, backup parameters and modified parameters.

Node structure	Node attributes	
	URL	**/devices/drives/drive_SNo/fileManagement/saveParameterFile /axis_No-start**
	Class	Variable
	On Write	Initiates save parameter operation with the specified filename and parameter backup type
	Visible	No
	Type	saveParamStartSchema.fbs
	URL	**/devices/drives/drive_SNo/fileManagement/saveParameterFile /axis_No-status**
	Class	Variable
	On Read	Returns the current status of the save operation
	Visible	No
	Type	loadParamStatusSchema.fbs (same as load params status schema)
	URL	**/devices/drives/drive_SNo/fileManagement/saveParameterFile /axis_No-stop**
	Class	Variable
	On Write	Cancels the ongoing save operation if TRUE is written
	Visible	No
	Type	Bool, value set to TRUE will stop current operation
	URL	**/devices/drives/drive_SNo/fileManagement/saveParameterFile /filename**
	Class	Variable
	On Read	Returns the saved parameter file contents as a byte array
	Visible	No
	Type	fileDownloadSchema.fbs

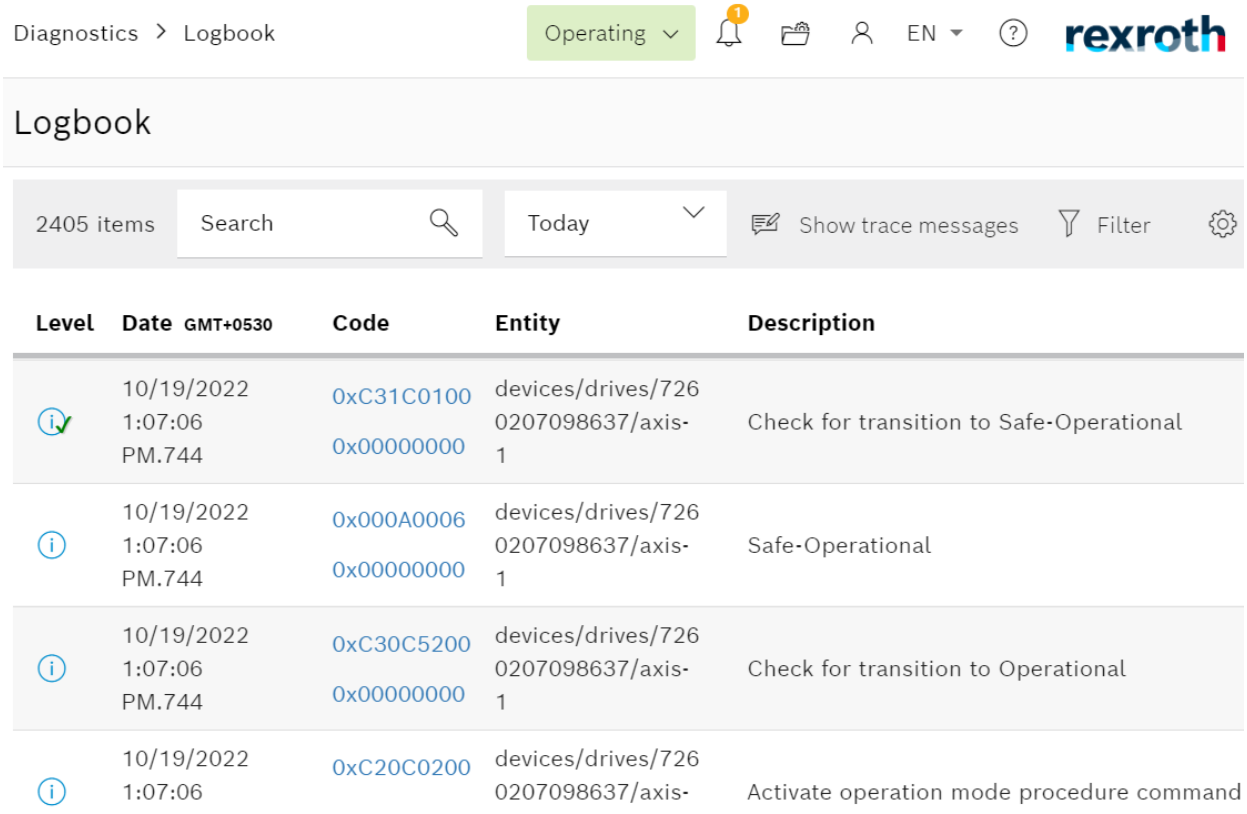
Steps

1. Initiate the save parameter operation by writing the filename and backup type to the '/.../saveParameterFile/axis_No-start' node
2. Monitor the status of the ongoing save operation by reading the '/.../saveParameterFile/axis_No-status' node
3. The value of 'loadParamStatusSchema.currentState' would be 'Completed' once the save operation is completed; the IDNs that could not be written are available in the 'loadParamStatusSchema.failedIDNList' as an array
4. On completion, get the parameter file data by reading the '/.../saveParameterFile/filename' node (filename – 'allParams.par' defined by the user) and create the file on the client filesystem with the received filecontent

4.10 Feature – Drive diagnostics

4.10.1 Access drive diagnostic trace information from CORE logbook

The diagnostic trace from the connected Rexroth drives is mirrored to the ctrlX CORE logbook automatically. They can be viewed under Diagnostics > Logbook from the home page of the ctrlX CORE.

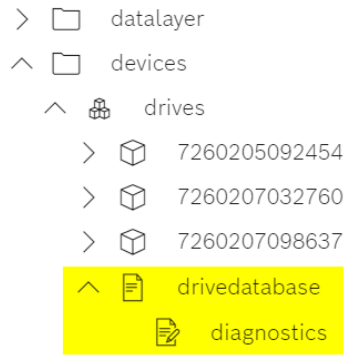


4.11 Feature – Drive database access

DCA provides access to certain portions of the drive database for the end user. Currently diagnostic number look-up for certain languages is possible.

4.11.1 Access diagnostic number information drive database

The main description and detailed description for a given main diagnostic number and detailed diagnostic number can be looked up from DCA. The descriptions are available in English and German.

Node structure	Node attributes	
	URL	**/devices/drives/drivedatabase/diagnostics**
	Class	Variable
	On Write	Returns the main description and detailed description of the provided diagnostic number
	Visible	No
	Type	driveDiagnostics.fbs

Request Settings

URL: ☆ https://192.168.1.71/automation/api/v1.0/devices/drives/drivedatabase/diagnostics

Payload:


```
{
 "main_diagnostics_number": "C00E2051",
 "detailed_diagnostics_number": "00420670",
 "language": "DE",
 "main_description": "",
 "detailed_description": ""
}
```


Response

Request URL: https://192.168.1.71/automation/api/v1.0/devices/drives/drivedatabase/diagnostics
Request Method: PUT
Response Time: 0.082 seconds
Response Status: 200 - OK

Response Body | Response Body (RAW) | Response Headers | Request Details

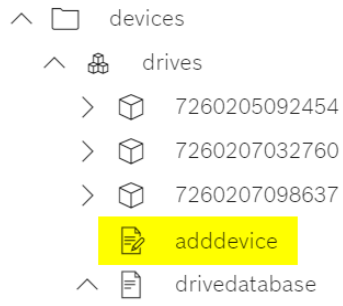

```
{
  "main_diagnostics_number": "C00E2051",
  "detailed_diagnostics_number": "00420670",
  "language": "DE",
  "main_description": "Motor Übertemp.-Vorwarnung",
  "detailed_description": "Warnschwelle der Motormessung erreicht (Sensor)"
}
```

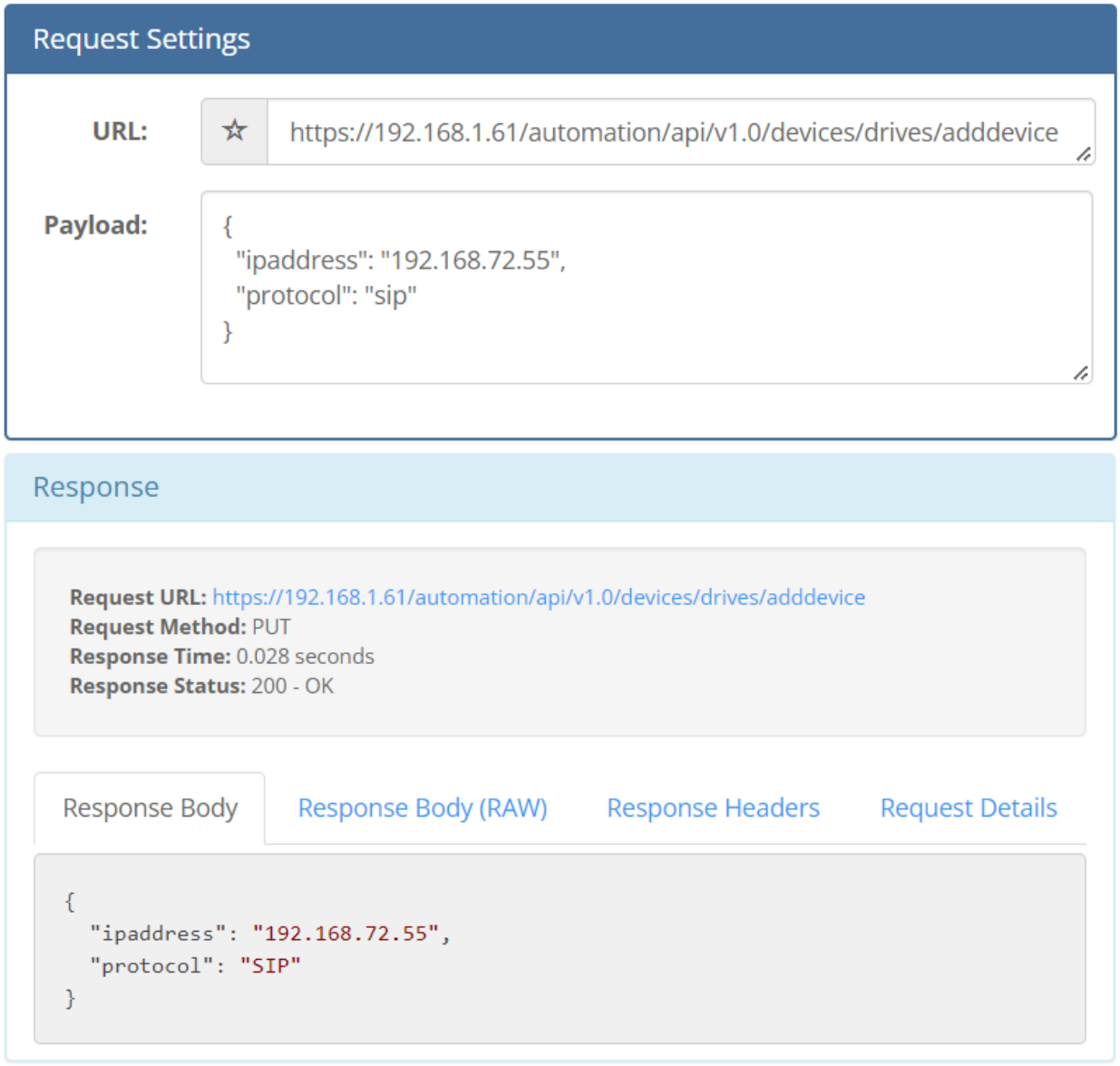
4.12 Feature – Devices from other networks

DCA makes it possible to connect to Rexroth drives which are not directly connected to the ctrlX CORE. These drives are not found automatically through regular identification methods. These could be drives that are behind a network router, entirely other networks, or under other industrial controls.

4.12.1 Add device with an IP address

A drive that is not directly connected to the CORE but is reachable by its IP address (via network routes) can be added to DCA. On successful connection, the drive is added under '/devices/drives'

Node structure	Node attributes	
	URL	**/devices/drives/adddevice**
	Class	Variable
	On Write	Adds a new device with an IP address to DCA
	Visible	No
	Type	addDevice.fbs



Limitations

- Only SIP protocol is supported currently
- Only one IP address can be added

5 Related documentation

5.1 Overview

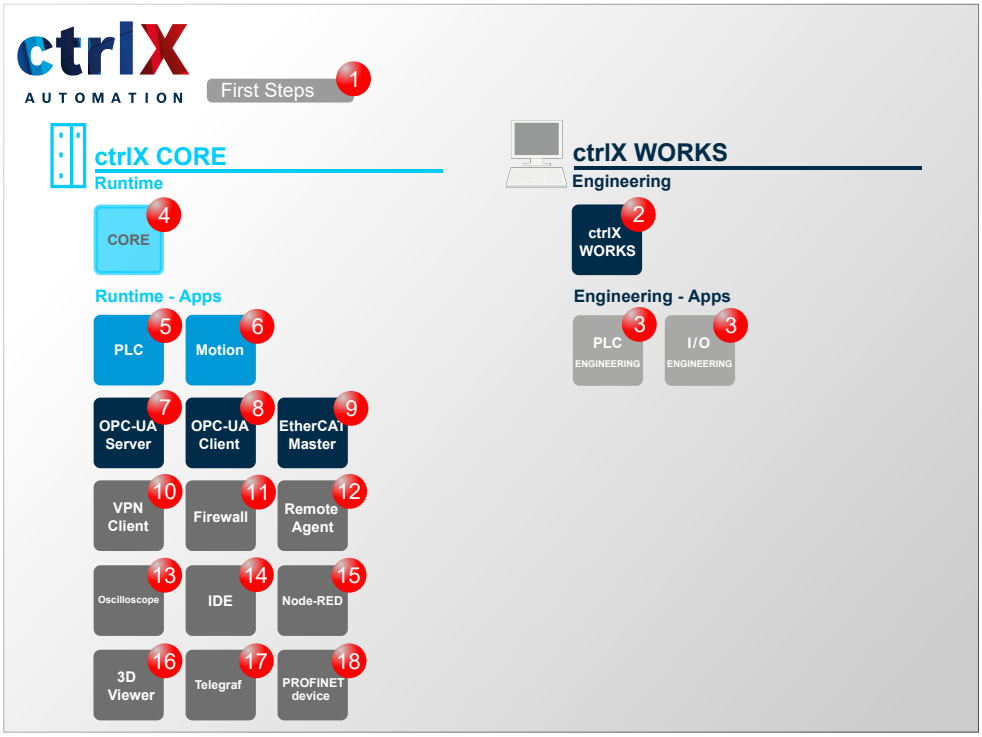


Fig. 1: Overview on further documentations

5.2 ctrlX AUTOMATION

No.	Documentation
1	**ctrlX WORKS First Steps** Quick Start Guide ➦ Web documentation link Ordering information: • DOK-XWORKS-F*STEP*****-QURS-EN-P • R911403760

5.3 ctrlX WORKS

No.	Documentation
2	**ctrlX WORKS Basic System** Application Manual ➥ Web documentation link Ordering information: • DOK-XWORKS-**********-APRS-EN-P • R911403761
3	**ctrlX PLC Engineering - PLC Programming System** Application Manual ➥ Web documentation link Ordering information: • DOK-XPLC**-ENGINEERING-APRS-EN-P • R911403764
3	**ctrlX PLC Engineering - PLC Libraries** Reference ➥ Web documentation link Ordering information: • DOK-XPLC**-LIBRARY****-RERS-EN-P • R911403766

5.4 ctrlX CORE

No.	Documentation
4	**ctrlX CORE - Runtime** Application Manual ➥ Web documentation link Ordering information: • DOK-XCORE*-BASE*******-APRS-EN-P • R911403768
	ctrlX CORE - Diagnostics Reference ➥ Web documentation link Ordering information: • DOK-XCORE*-DIAG*******-RERS-EN-P • R911403770

5.5 ctrlX CORE apps

No.	Documentation
5	**PLC App - PLC Runtime Environment for ctrlX CORE** Application Manual ➥ Web documentation link Ordering information: • DOK-XCORE*-PLC********-APRS-EN-P • R911403787

No.	Documentation
6	**Motion App - Motion Runtime Environment for ctrlX CORE** Application Manual ➦ Web documentation link Ordering information: • DOK-XCORE*-MOTION*****-APRS-EN-P • R911403791
7	**OPC UA Server App - OPC UA Server for ctrlX CORE** Application Manual ➦ Web documentation link Ordering information: • DOK-XCORE*-OPCUA*SERV*-APRS-EN-P • R911403778
8	**OPC UA Client App - OPC UA Client for ctrlX CORE** Application Manual ➦ Web documentation link Ordering information: • DOK-XCORE*-OPCUA*CLIEN-APRS-EN-P • R911403781
9	**EtherCAT Master App - EtherCAT master for ctrlX CORE** Application Manual ➦ Web documentation link Ordering information: • DOK-XCORE*-ETHERCAT***-APRS-EN-P • R911403773
10	**VPN Client App - Remote Support Software for ctrlX CORE** Application Manual ➦ Web documentation link Ordering information: • DOK-XCORE*-VPN********-APRS-EN-P • R911403775
11	**Firewall App - Security Functions for ctrlX CORE** Application Manual ➦ Web documentation link Ordering information: • DOK-XCORE*-FIREWALL***-APRS-EN-P • R911403783
12	**Remote Agent App - ctrlX Device Portal Connection for ctrlX Devices** Application Manual ➦ Web documentation link Ordering information: • DOK-XCORE*-REMOTE*AG**-APRS-EN-P • R911403785

No.	Documentation
13	**Oscilloscope App - Oscilloscope Function for ctrlX Devices** Application Manual ➥ Web documentation link Ordering information: • DOK-XCORE*-OSCI*******-APRS-EN-P • R911409806
14	**IDE App - Integrated Development Environment** Application Manual ➥ Web documentation link Ordering information: • DOK-XCORE*-IDE********-APRS-EN-P • R911410625
15	**Node RED App - Graphic Programming for ctrlX CORE** Application Manual ➥ Web documentation link Ordering information: • DOK-XCORE*-NODE*RED***-APRS-EN-P • R911403789
16	**3D Viewer App - Browser-based 3D Kinematic Simulation for ctrlX CORE** Application Manual ➥ Web documentation link Ordering information: • DOK-XCORE*-3D*VIEWER**-APRS-EN-P • R911416124
17	**Telegraf App - Server Agent for Collecting Data in the Data Layer** Application Manual ➥ Web documentation link Ordering information: • DOK-XCORE*-TELEGRAF***-AP01-EN-P • R911416836
18	**PROFINET device App - PROFINET device for ctrlX CORE** Application Manual ➥ Web documentation link Bestellinformationen: • DOK-XCORE*-PROFINET***-AP01-EN-P • R911417857

6 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
Internet:	➦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)

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