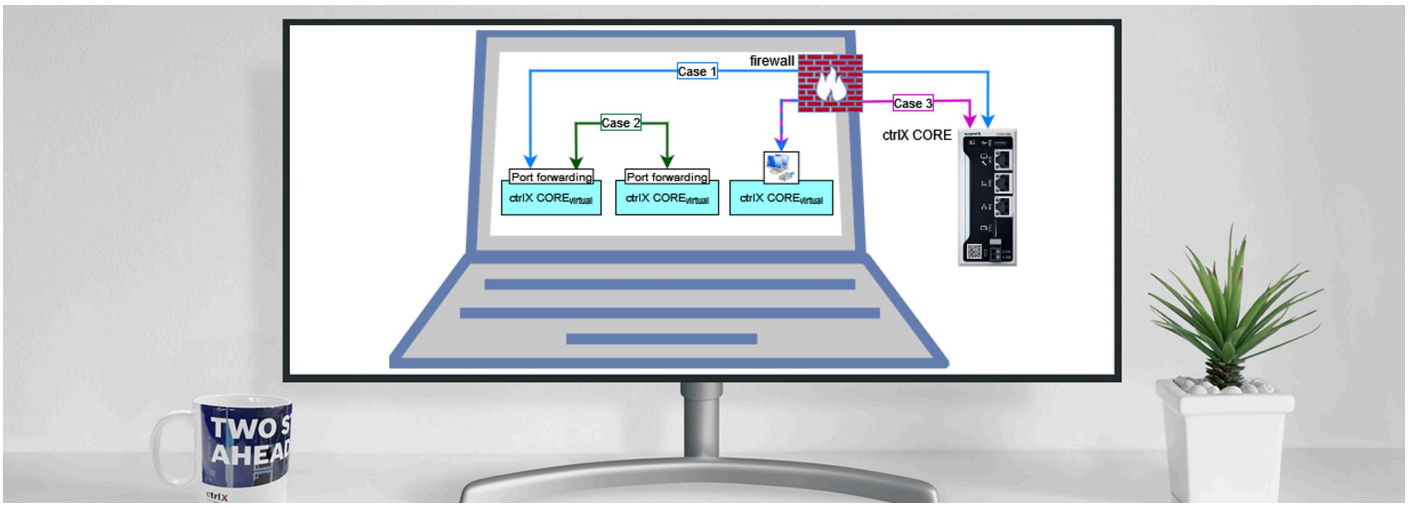
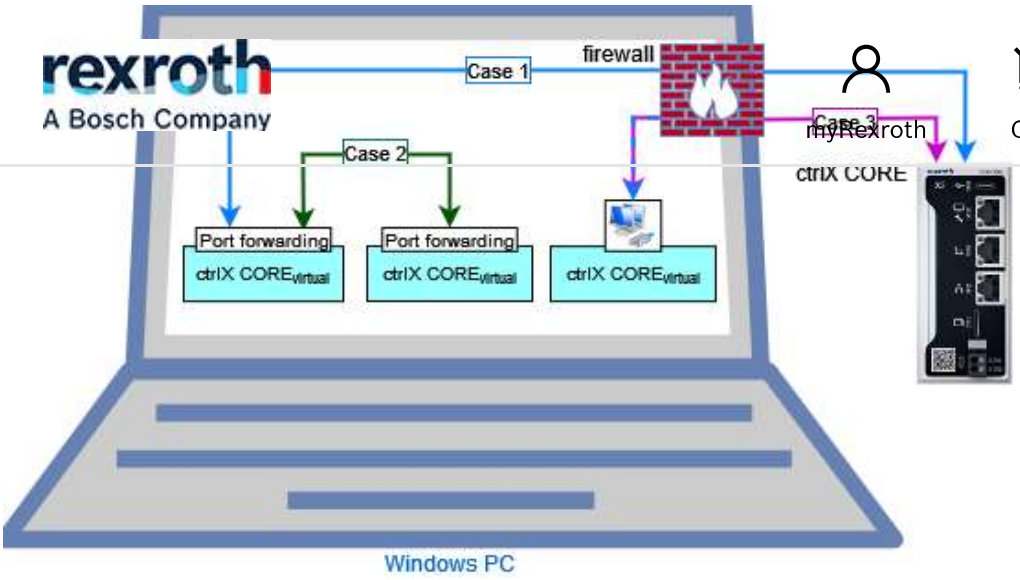


HOW-TO CODESHEPHERD JUN 14, 2023 SIDEBAR ✓

How to communicate between a ctrlX COREvirtual and other applications

Content

This **expert** guide shows how to configure the ctrlX COREvirtual and your network to communicate to external applications via TCP using Node-RED. This can be adapted to different IP based protocols.



communicate with ctrlX COREvirtual

Requirements

- Know how about network architecture and communication
- ctrlX WORKS (1.18.1) installed on host PC
- ctrlX CORE - Node-RED app (1.18.0) installed on control
- No active VPN on host operating system

Use cases

ctrlX COREvirtual in port forwarding mode communicating to

1. a device on the network

   ctrlX COREvirtual in port forwarding mode
   communicating to ctrlX COREvirtual in network adapter

   a. mode

Two ctrlX COREvirtual in port forwarding mode

2. communicating to each other

ctrlX COREvirtual network adapter mode communicating with

3. network device

   Two ctrlX CORE in network adapter mode communicating

   a. to each other

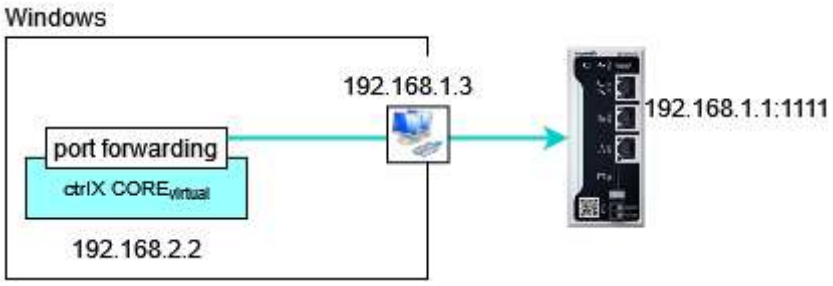
   Two external Network devices communicating to each

   b. other

Explanation

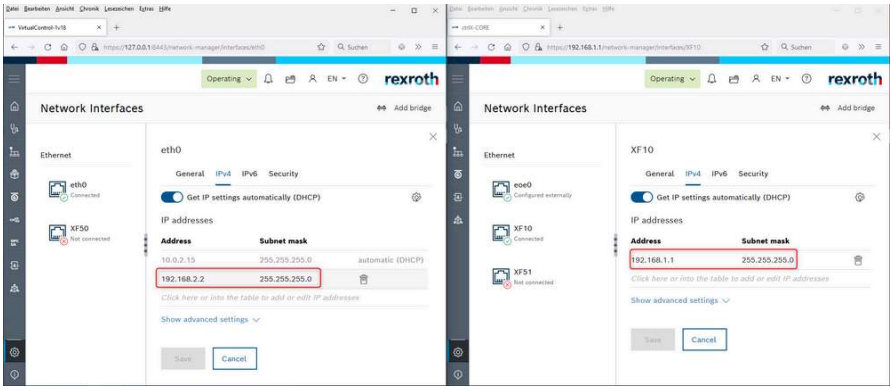
1 ctrlX COREvirtual in port forwarding mode communicating to a device on the network

- For sending a request from ctrlX COREvirtual to a server on a network device



communicating ctrlX COREvirtual to external device

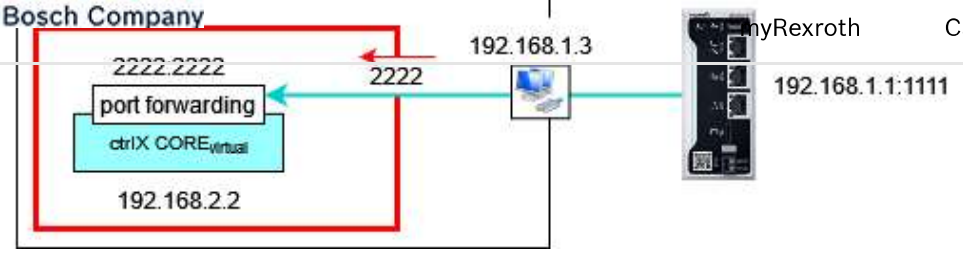
  - start ctrlX COREvirtual in port forwarding mode and set IP (e.g. 192.168.2.2) to a different subnet as the real network device e.g. ctrlX CORE (e.g. 192.168.1.1) connected to your PC, so data is routed correctly via the standard gateway in ctrlX COREvirtual



ctrlX CORE WebUI IPv4 settings

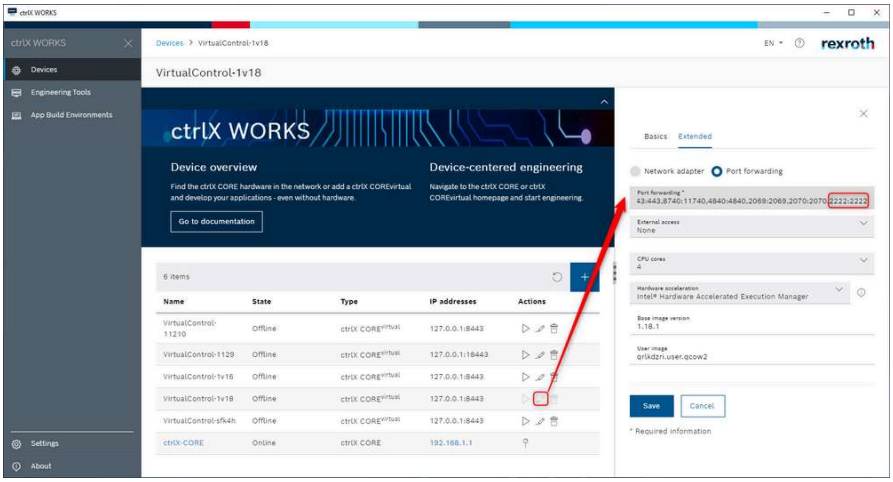
  - Choose a port you like to communicate over e.g. 1111 and use IP of your network device e.g. 192.168.1.1

- For sending a request from a network device to a server ctrlX COREvirtual



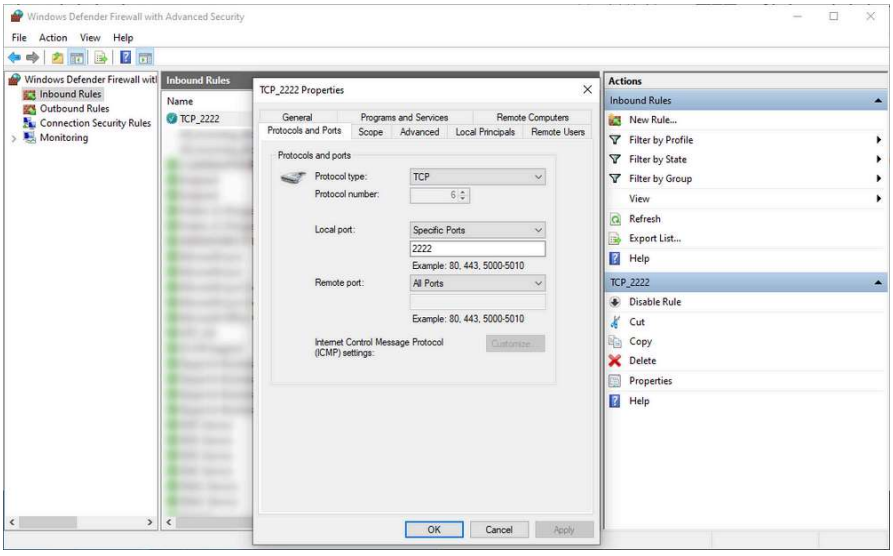
communicating external device to ctrlX COREvirtual

- enter in ctrlX WORKS in the ctrlX COREvirtual port forwarding settings one additional port you like to communicate over e.g. "8022:22,8443:443,8740:11740,4840:4840,**2222:2222**"



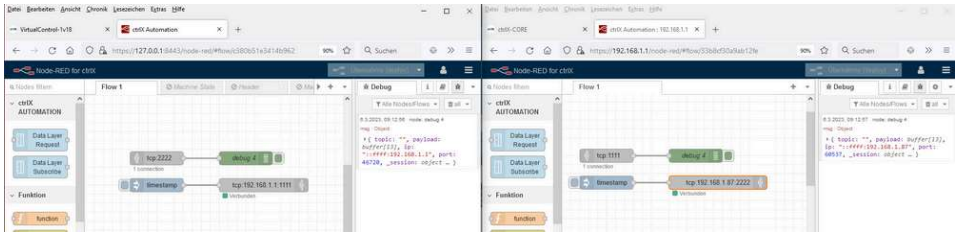
ctrlX WORKS ctrlX COREvirtual port forwarding settings

- Add an inbound rule to your Windows firewall for chosen port to let the data path through



Windows firewall inbound rule

- Use chosen port e.g. 2222 and IP address of the network of your PC the network device is connected to e.g. 192.168.1.87
- Start communication in both directions:

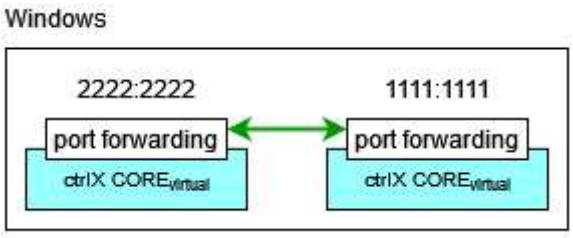


ctrlX COREvirtual connected via TCP in Node-RED

1.1 ctrlX COREvirtual in port forwarding mode communicating to ctrlX COREvirtual in network adapter mode

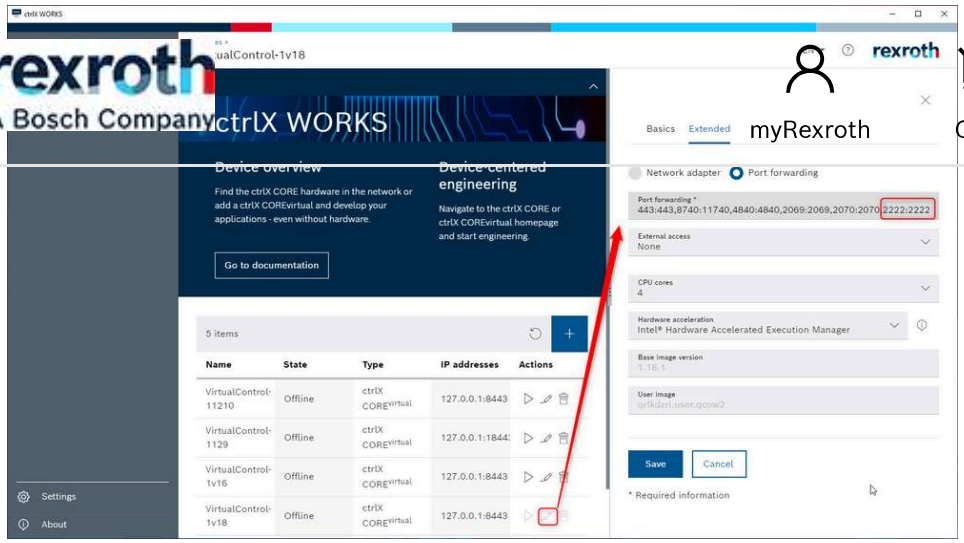
See use case 1 "
ctrlX COREvirtual in port forwarding mode communicating to a device on the network
"

2 Two ctrlX COREvirtual in port forwarding mode communicating to each other



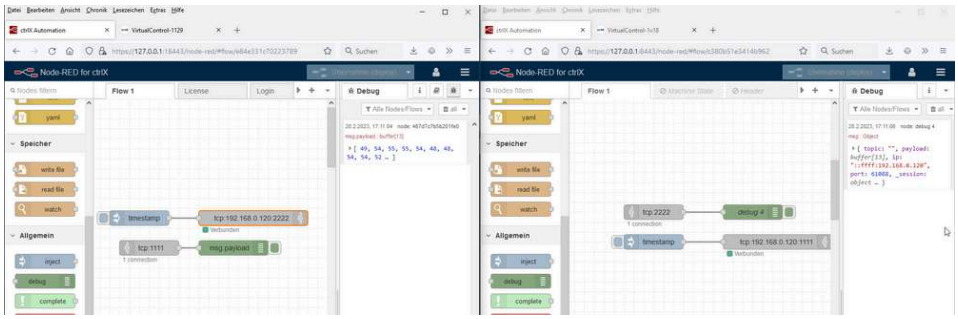
communicating using QEMU port forwarding

- Enter in ctrlX WORKS in one ctrlX COREvirtual port forwarding settings one additional port you like to communicate over e.g. "8022:22,8443:443,8740:11740,4840:4840,**2222:2222**"



ctrlX WORKS ctrlX COREvirtual port forwarding settings

- The other one needs completely different ports e.g. add a one in front of all standard ports and add one additional for communication e.g. "18022:22,18443:443,18740:11740,14840:4840,**1111:1111**"
- Use on both sides an IP of one of a active network adapter of your host operating system for communication e.g. 192.168.0.120, so the data is rooted via the standard gateway
- Start communication in both directions:

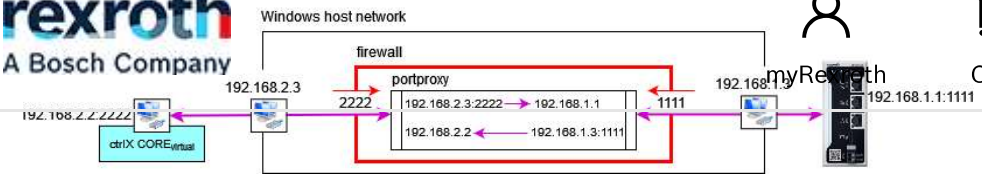


two ctrlX COREvirtual connected via TCP in Node-RED

3 ctrlX COREvirtual network adapter mode communicating with network device

At least two ways are possible:

A. Forwarding ports in Windows netsh portproxy:



communicating using Windows netsh portproxy

- start ctrlX COREvirtual in network adapter mode and set IP (e.g. 192.168.2.2) to a different subnet as the real network device e.g. ctrlX CORE (e.g. 192.168.1.1) connected to your PC. Beware that the IP of the Windows network adapter the ctrlX CORE is connected to needs to be adjusted accordingly e.g. 192.168.2.3, to be able to communicate again.
- Choose ports to communicate to virtual control e.g. 2222 and to real control e.g. 1111
- Use command line tool to setup host operating system (see example code batch file attached)
  - Add an inbound rule to your Windows firewall for chosen ports to let the data path through

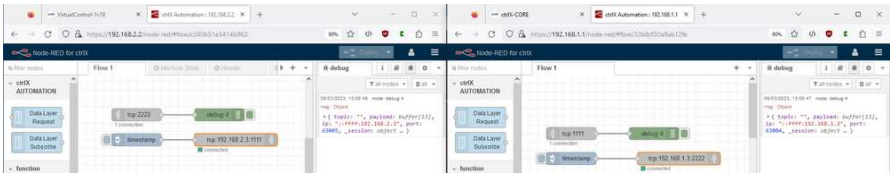
```
netsh advfirewall firewall add rule name=portproxy-22
22 dir=in action=allow protocol=TCP localport=2222
netsh advfirewall firewall add rule name=portproxy-11
11 dir=in action=allow protocol=TCP localport=1111
```

  - Add forwarding rule to Windows portproxy interface that gets all packages coming from the IP of the Windows network adapter the real ctrlX CORE is connected to and forward it to the ctrlX COREvituals IP

```
netsh interface portproxy add v4tov4 listenaddress=19
2.168.1.3 listenport=2222 connectaddress=192.168.2.2
connectport=2222
```

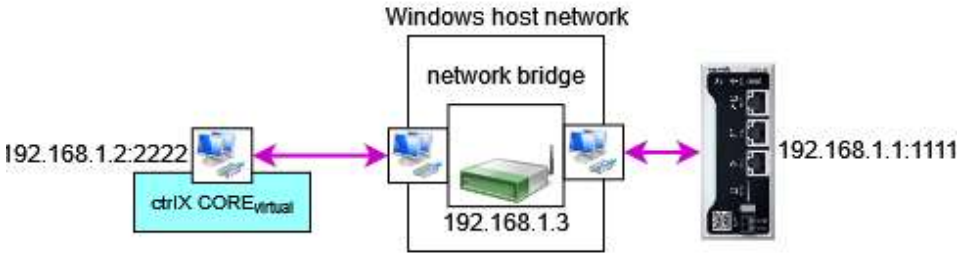
  - Add forwarding rule to Windows portproxy interface that gets all packages coming from the IP of the Windows network adapter the ctrlX COREvirtuals is connected to and forward it to the real ctrlX CORE IP

- Start communication in both directions:



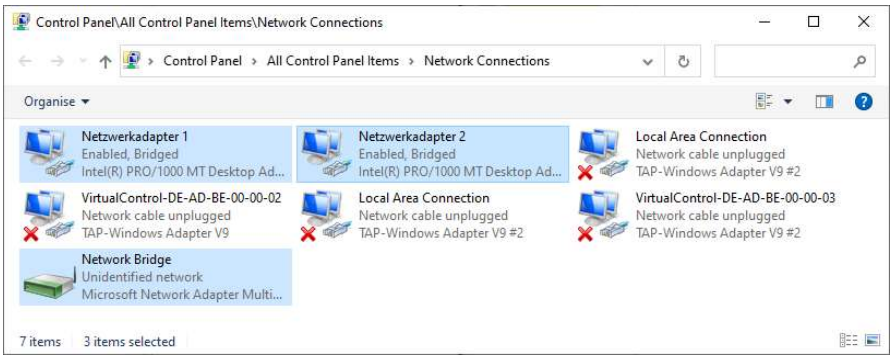
ctrlX COREvirtual and ctrlX CORE forwarded via TCP in Node-RED

B. Bridging Windows network adapters (could be restricted by network administrator):



communicating using network adapter bridge

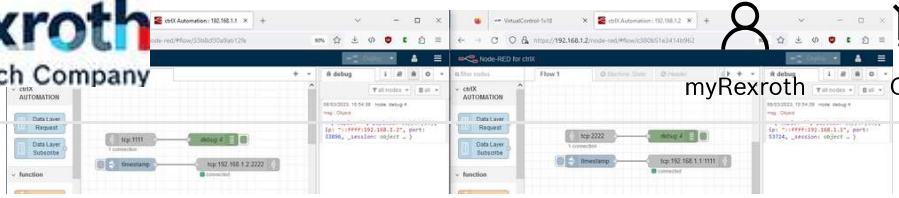
- Start ctrlX COREvirtual in network adapter mode and set IP (e.g. 192.168.1.2) to the same subnet as the real ctrlX CORE (e.g. 192.168.1.1) connected to your PC
- Bridge in your Windows network connections, the virtual network adapter with the real one, so data is routed between both correctly



Windows network connections bridged

- To get access to the devices again enter a IPv4 address to the network bridge in the same subnet as your devices e.g. 192.168.1.3

- Start communication in both directions:



ctrlX COREvirtual and ctrlX CORE connected via TCP in Node-RED

3.1 Two ctrlX CORE in network adapter mode communicating to each other

See use case 3 "
ctrlX COREvirtual network adapter mode communicating with network device
"

3.2 Two external Network devices communicating to each other

See use case 3 "
ctrlX COREvirtual network adapter mode communicating with network device
"

Related information

- For some general information about network functionality of the mechanism ctrlX COREvirtual is using in port forwarding mode see this external page https://wiki.qemu.org/.
- How to: Connect ctrlX COREvirtual to the internet

ctrlxcorevirtual

Example data Case 1.zip

Example data Case 2.zip

Example data Case 3 (forwarded).zip

Example data Case 3 (bridged).zip

CodeShepherd

Technical sales support from Bosch Rexroth

Back to Blog Back to How-to >

You must be a registered user to add a comment. If you've already registered, sign in. Otherwise, register and sign in.

Comment

MUST READ

SICK - Safe Portal
Enable efficient access monitoring and adaptive production processes with Safe Portal

Bosch Rexroth - ROKIT Locator
Laser-based localization software for mobile robots and manual forklifts

CODESYS - Professional Developer Edition
Professional add-ons to increase productivity

MGA - Voice Control
Command your machine by "Hey ctrlX DRIVE, speed up by 10 percent."

TABLE OF CONTENTS

Content

1 ctrlX COREvirtual in port forwarding mode communicating to a device on the network

1.1 ctrlX COREvirtual in port forwarding mode communicating to ctrlX COREvirtual in network adapter mode

2 Two ctrlX COREvirtual in port forwarding mode communicating to each other

3 ctrlX COREvirtual network adapter mode communicating with network device

3.1 Two ctrlX CORE in network adapter mode communicating to each other

3.2 Two external Network devices communicating to each other

Related information

TRENDING TOPICS

HOW-TO

Lithionics Battery® CAN bus

Messaging with Node-RED

HOW-TO

ctrlX Diagnostic System: Use your own diagnostic messages

HOW-TO

IXON - Setup a full machine remote access

HOW-TO

PostgreSQL on ctrlX CORE

LATEST ARTICLES

Comfortable data exchange of PLC and FlatBuffer variables

ctrlX Configurator - Release Notes version 1.2403.06

Lithionics Battery® CAN bus Message Processing with Node-RED

Get ctrlX SAFETY FSoE Diagnosis on ctrlX CORE