

ctrlX I/O

Encoder Module XI613101

Copyright

© Bosch Rexroth AG 2025

All rights reserved, also regarding any disposal, exploitation, reproduction, editing, distribution, as well as in the event of applications for industrial property rights.

Disclaimer

The specified data only serves to describe the product. As our products are constantly being further developed, no statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. Please note that our products are subject to a natural process of wear and aging.

DC-AE/PAX (TaDo)

Table of contents

1	About this documentation	4
2	Important information	4
2.1	Product information	4
2.2	Firmware versioning	4
2.3	Firmware	4
2.4	Firmware update via FoE	5
2.4.1	ctrlX I/O Engineering	5
3	XI613101-V2.0.0	5
3.1	Note about the new functions	5
3.2	Resolved defects and modifications	6
3.2.1	Standardization of process data and CoE objects for all encoder modules	6
3.2.2	It is now possible to disable wire break diagnosis for Z signal . . .	6
3.2.3	Measurement of input signal frequency added	6
3.2.4	Bug 997666: Module status LED does not blink yellow on channel error	6
3.2.5	Bug 1020153: Incorrect serial number output when reading out the identity object or EEPROM content	6
4	Service and support	7
5	Index	9

1 About this documentation

Editions of this documentation

Edition	Release date	Notes
01	2025-07	ctrlX I/O, Encoder Module XI613101 Version XI613101-V2.0.0

Further information

- See ➔ [XI6 Encoder Modules](#)

2 Important information

2.1 Product information

For the latest information on our products, go to ➔ <https://www.boschrexroth.com>.

For current security advisories, please refer to ➔ <https://psirt.bosch.com/security-advisories/>

ctrlX I/O modules use the EtherCAT® technology.

EtherCAT® is a registered trademark and patented technology licensed by the Beckhoff Automation GmbH, Germany.

EtherCAT is an open, internationally standardized standard and developed further by the EtherCAT Technology Group (ETG).

2.2 Firmware versioning

The ctrlX I/O firmware is versioned according to the following naming structure:

MAJOR.MINOR.PATCH

- **MAJOR:**
Is increased in case of incompatible changes or function extensions. It is required to download a new version of the ESI device description file.
- **MINOR:**
Downward-compatible functional changes or bugfixes. It can be required to download a new version of the ESI device description file. Please check if this is necessary. The MINOR version number is always integer for released versions. Odd-numbered MINOR version numbers refer to test version which have not finally been released.
- **PATCH:**
Downward-compatible bugfixes. It can be required to download a new version of the ESI device description file. Please check if this is necessary.

2.3 Firmware

Table 1: Delivery status of the encoder modules

Index	Version	Remark
AA1	1.0.0	First edition
AC1	2.0.0	



Following a firmware update, the version ID deviates from the change ID.

2.4 Firmware update via FoE

⚠ WARNING

Risk of injury due to unsafe machine states

The machine has to be in a safe state before updating.

The firmware of the module can be updated via FoE. For new firmware files, go to ➔ www.boschrexroth.com/mediadirectory and search for the type code of the module.

A firmware module can be updated with all EtherCAT masters supporting the file download via FoE. The module has to be in the BOOTSTRAP state. Entering a password or a file name is not required.

If the update has been completed successfully, the module is restarted as soon as the module state changes from BOOTSTRAP to another state. The reloaded firmware is started.



Do not disconnect the voltage supply of the module during the file transfer.

Please note that the logic voltage supply is temporarily interrupted for the following modules when completing the firmware update of the bus coupler and a subsequent restart.



If switching to INIT is not possible, disconnect the ctrlX I/O from the power supply and connect it again.



The new firmware version might require an updated description file in the Engineering to use new functions. For details, refer to the release notes. Check whether the latest version of the description file is installed.

2.4.1 ctrlX I/O Engineering

Within the ctrlX I/O Engineering, the required user interface is only displayed for modules supporting a firmware update.

1. ➔ Switch the EtherCAT master of the ctrlX CORE to the "INIT" state.
2. ➔ First change to the active state in the ctrlX I/O Engineering by enabling "Show online data".
 - ➔ This is the requirement to update the firmware. The corresponding user interface tab is only displayed if the requirement is met.
3. ➔ To open the device editor, double-click on the module in the ctrlX I/O Engineering device tree and select the "FoE". tab.
4. ➔ In the "Download" section, select the firmware file (*.EFW) under "Local file name". Ensure that this is the correct file for the module to be updated.
5. ➔ Check that the option "Required state" is active under "Details" and that "BOOTSTRAP" is selected.
6. ➔ Use the "Download" button to start the firmware update.

3 XI613101-V2.0.0

3.1 Note about the new functions

NOTICE

To use the new features of this version, you must use the latest version of the device description file (revision 0000 0200(hex)).

Check and update the description file if necessary.

3.2 Resolved defects and modifications

3.2.1 Standardization of process data and CoE objects for all encoder modules

Description

To standardize the functions, names and layout of the objects for all encoder modules, several changes have been made:

- Object 8000:11(hex) "Referencing enable" has been removed, referencing will start when 7000:01(hex) "Set reference" bit changes from 0 to 1.
- Object 7000:01(hex) has been renamed from "Referencing point set" to "Set reference".
- The name of object 6000:05(hex) has been changed from "Reference state" to "In reference".
- The output process data 7000:02(hex) "Clear reference" has been added.
- The output process data 7000:04(hex) "Reference offset" has been added.
- The "Direction" object has been changed to two separate objects, 6000:04(hex) "Forward" and 6000:05(hex) "Backward".
- All objects in 8000(hex) have been aligned so that they are aligned across all encoder modules.

3.2.2 It is now possible to disable wire break diagnosis for Z signal

Description

CoE object "Wire break signal Z disable" 8000:0C(hex) added. Enabling this bit will disable the wire break detection for Z signal for encoders with A and B signals only.

3.2.3 Measurement of input signal frequency added

Description

Object "Frequency of input signal" 6000:08(hex) added to measure the input signal frequency independent of selected counter method.

3.2.4 Bug 997666: Module status LED does not blink yellow on channel error

Description

The module status LED did not blink yellow on channel error.

Bugfix

The module status LED now correctly reflects channel errors by blinking yellow.

3.2.5 Bug 1020153: Incorrect serial number output when reading out the identity object or EEPROM content

Description

The serial number was displayed incorrectly when reading the identity object and EEPROM content. This only affected the display, the serial number itself is correctly stored in the electrical type plate.

Bugfix

The serial number is now shown correctly.

4 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)

5 Index

A

About this documentation 4

B

Bug 997666 6

Bug 1020153 6

F

Firmware versioning 4

H

Helpdesk 7

Hotline 7

I

Important information 4

Incorrect serial number output when reading
out the identity object or EEPROM content . . 6

It is now possible to disable wire break
diagnosis for Z signal 6

M

Measurement of input signal frequency added 6

Module status LED does not blink yellow on
channel error 6

N

Note about the new functions 5

P

Product information 4

R

Resolved defects and modifications 6

S

Service hotline 7

Standardization of process data and CoE
objects for all encoder modules 6

Support 7

Bosch Rexroth AG
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr a.Main
Germany
Tel. +49 9352 18 0
Fax +49 9352 18 8400
www.boschrexroth.com/electrics

