rexroth
A Bosch Company

Release Notes

ctrlX DRIVE

Runtime AXS-V-03RS

Edition 03

Liability

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Table of contents

1 Overview

1.1 Releases

In the type codes of the drive controllers and supply units, the firmware is referred to as Runtime. In this documentation, the term "firmware" is used.

Table 1: Record of revisions of firmware FWA-XD1-AXS-V-03RSN-NN

Firmware designation	Release date	Change of version
FWA-XD1-AXS-V-0306N-NN.02	2021-12-17	AXS-V-0306.02
FWA-XD1-AXS-V-0306N-NN	2021-12-10	AXS-V-0306
FWA-XD1-AXS-V-0304N-NN.06	2021-11-24	AXS-V-0304.06
FWA-XD1-AXS-V-0304N-NN	2021-07-21	AXS-V-0304
FWA-XD1-AXS-V-0302N-NN	2021-03-22	AXS-V-0302

A patch is based on a full version of the firmware. A patch typically fixes one or multiple major restrictions.

1.2 Compatibility

1.2.1 AXS-V-0306

New functions in AXS-V-0306

- Generation 2 + ctrlX DRIVE control section with EC option

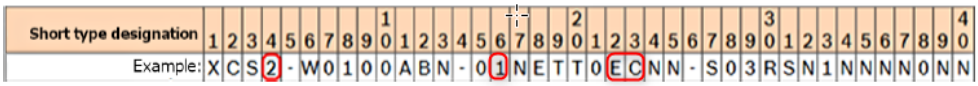

Fig. 1: Type designation
2 Generation 2
1 ctrlX DRIVE control section
EC EC option

1.2.2 AXS-V-0302

AXS-V-0302

First edition of Release Notes AXS-V-03.

1.2.3 AXS-V-03RS

AXS-V-03RS

Releases of version AXS-V-03RS only run on generation 2 devices.

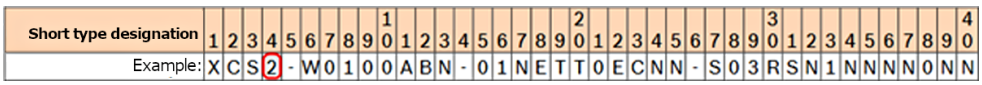

Fig. 2: Type designation

1.3 System overview

„The table shows which firmware release/patch contains certified SafeMotion and which devices, encoder protocols and field bus protocols are supported. Safe encoder protocols in SafeMotion are highlighted in yellow.“

	ctrlX DRIVE								Multi-Encoder							Multi-Ethernet		
	XMV	XVR	XVE	XCS	XCD	XMS	XMD	Certified SafeMotion used in AXS	ACUROlink	ctrlX SENSE^{motor}	HIPERFACE	EnDat2.2	Resolver	SSI	EtherCAT	Sercos	ProfiNet IO
AXS-V-0302	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no
AXS-V-0304	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no
AXS-V-0304.06	yes	yes	yes	yes	yes	yes	yes	SMB-V-0306.02	yes	yes	yes	yes	yes	yes	yes	yes	no
AXS-V-0306	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no
AXS-V-0306.02	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no

1.4 Related documentations

- ctrlX DRIVE Runtime AXS-V-03 Functions; R911410073
- ctrlX DRIVE Parameters of Runtime AXS; ➦R911409808
- ctrlX DRIVE Diagnostic Messages of Runtime AXS; ➦R911409763
- ctrlX DRIVE Drive Systems Project Planning Manual; ➦R911386579
- See also ➦SafeMotion documentation
- See also ➦Technology Function, First Steps documentation

2 Firmware replacement

2.1 General information

2.1.1 Explanation of terms

Firmware version:

A new firmware version comprises basic changes in the scope of functions compared to the previous version. The scope of functions may also contain incompatible changes. The firmware version is encoded in the type code at the "VS" position in AXS–V–**VS**RS.

Firmware release:

A new firmware release makes available compatible functional enhancements or firmware bugs were fixed in the release. The firmware release is encoded in the type code at the "RS" position in AXS–V–VS**RS**.

Different firmware replacement types:

- **Release update**
  An old firmware release contained in the device (e.g., AXS–V–03**04**) is replaced by a new firmware release (e.g., AXS–V–03**06**).
- **Version upgrade**
  The old firmware version contained in the device is replaced by a new firmware version (example: AXS–V–**03**06 is replaced by AXS–V–**04**04).
- **Release downgrade**
  A new firmware release contained in the device (e.g., AXS–V–03**06**), is replaced by an old firmware release (e.g., AXS–V–03**04**).
- **Version downgrade**
  The new firmware version contained in the device is replaced by an old firmware version (example: AXS–V–**04**04 is replaced by AXS–V–**03**06).

2.1.2 Tools for firmware replacement

Firmware for ctrlX DRIVE and ctrlX DRIVEplus can be replaced using the following hardware and software:

- Computer with "ctrlX DRIVE Engineering" software or
- Device with ctrlX DRIVE Panel or
- Computer with TFTP client

The firmware replacement using the "ctrlX DRIVE Engineering" software is described under ➦ Commissioning.

For the description of the "Firmware replacement using a TFTP client" variant please see ➦ Additional information and details.

For the description of the "Device with ctrlX DRIVE Panel" variant please see "ctrlX DRIVE Panel".

2.2 Commissioning

2.2.1 Preparations and conditions of firmware replacement

General information on how to proceed

Comply with the following points when replacing the firmware:

- Ethernet communication with the device has to be ensured when replacing the firmware via ctrlX DRIVE Engineering (see Application Manual "TCP/IP communication").
- Do not switch off the 24V control voltage while replacing the firmware.
- Always complete the firmware replacement.

Preparing the firmware replacement

Firmware replacement requirements:

- The device has to be in the configuration mode (CM).
- It is recommended to save the backup parameters before replacing the firmware (see Application Manual "Loading, storing and saving parameters").

2.2.2 Firmware release update or firmware release downgrade

It is recommended to save the backup parameters of the device before a firmware release update or a firmware release downgrade (see Application Manual "Loading, storing and saving parameters").

If the firmware is replaced for a device with active SafeMotion, this procedure has to be recorded in the machine logbook, together with the axis identifier (P-0-3235.0.1), configuration type data (P-0-3234.0.1) and parameterization type data (P-0-3234.0.4).

If a device with optional safety technology module "M5" is used, the system checks whether firmware and parameter set are compatible. This prevents the safety technology from being operated with an incompatible parameter set (the diagnostic messages "C8213 SMO: Incorrect parameterization" or "C8214 SMO: Incorrect configuration" will be generated). Incompatible parameter sets are caused by SafeMotion functions being used that are no longer available in the currently loaded firmware (old firmware release).

In the case of an incompatibility between firmware and parameter set, there are two options:

- Either continue with the existing parameterization by reloading the originally available firmware, or
- perform the complete initial commissioning with the new firmware, including the loading of the basic parameters for SMO.

To carry out a firmware release update or a firmware release downgrade, proceed as follows:

Replacing firmware with ctrlX DRIVE Engineering

1. Connect the device to the computer,
2. - Start "ctrlX DRIVE Engineering".
   - Load project for the corresponding device or create new project. To do this, address the device via Ethernet.
   - Switch project "online".
   - Select/highlight device and open "Firmware update" in the context menu.

     ⇒A new window opens and the firmware currently available in the device is displayed (see "Firmware update" dialog in "ctrlX DRIVE Engineering")
   - Select new firmware (*.fwa file) in the upper part of the dialog and start firmware replacement via the "Update" button.

     ⇒The firmware is automatically replaced. All required firmware components are loaded to the device.
   - After the firmware replacement has been completed, close the "Firmware update" window.

3. Restart the device.

   At the end of the firmware replacement, "ctrlX DRIVE Engineering" provides the option to restart the device via the reboot command S-0-1350. As an alternative, the device can be restarted by resetting the control voltage.

4. Put the machine back into ready-for-operation state according to machine manufacturer's instructions.

5. Check device functions.

6. **For drive controllers with active SafeMotion:** Record the firmware replacement in the machine logbook, together with the axis identifier (P-0-3235.0.1), configuration type data (P-0-3234.0.1) and parameterization type data (P-0-3234.0.4).

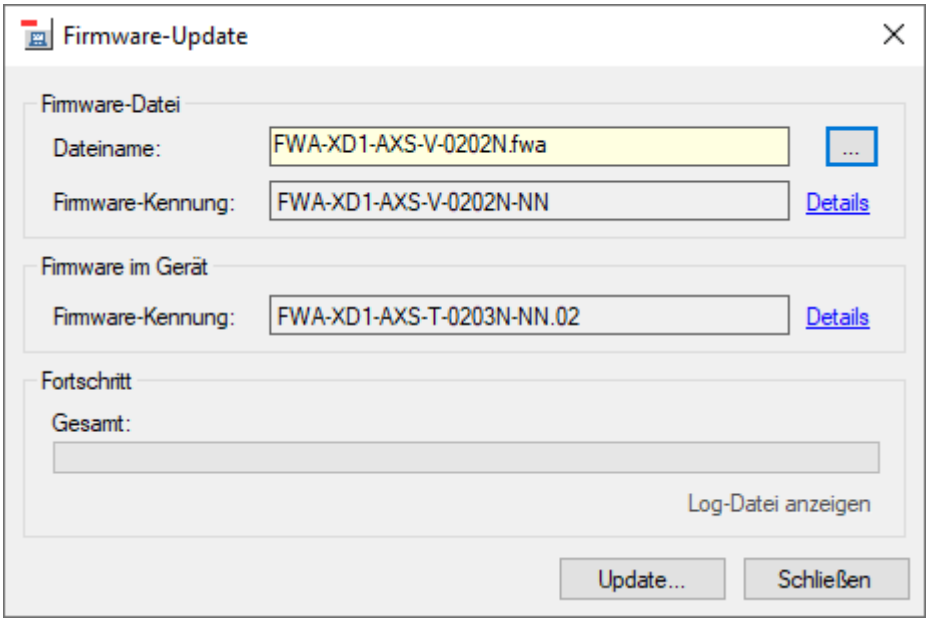

Fig. 3: "Firmware update" dialog in ctrlX DRIVE Engineering

2.3 Additional information and details

2.3.1 Replacing firmware with a TFTP client

To replace firmware with a TFTP client, proceed as follows:

1. Connect the device to the computer.

2. The firmware update service is made available via a TFTP server. The command for transmitting the firmware is the "put" command. The TFTP client has to transmit the file in the binary format.

   ℹ It is possible to execute a firmware replacement **without** ctrlX DRIVE Engineering using any TFTP client supporting the "put" command (e.g., Windows command prompt program "tftp.exe").:
   Example (with "Microsoft Windows console TFTP client"):

   To execute a firmware replacement, only a "put" request is transmitted. Leave the optional alternative file name (<destination>) on the target blank. Specify the IP address of the device as target (<host>) (the default IP address of the device is 192.168.0.1): `tftp -i 192.168.0.1 put FWA-XD1-AXS-V-0306N.fwa`. (The parameter "-i" indicates that the file is to be transmitted as a binary file.)

3. Restart the device. There are the following options:
   - Restart the device by resetting the control voltage.
   - Restart the device by executing the reboot command S-0-1350.
4. Put the machine back into ready-for-operation state according to machine manufacturer's instructions.
5. Check device functions.
6. **For drive controllers with active SafeMotion:** Record the firmware replacement in the machine logbook, together with the axis identifier (P-0-3235.0.1), configuration type data (P-0-3234.0.1) and parameterization type data (P-0-3234.0.4).

2.3.2 Possible issues during firmware replacement

After an incomplete firmware replacement, the device possibly is no longer operable.

The firmware replacement is carried out incompletely, if one of the following situations occurs while the firmware is replaced:

- 24V supply of control section is switched off
- Connection to the device is interrupted (e.g., defective interface cable)
- Update software or computer crashes

In many cases it is possible to restart the firmware replacement. If this is not possible, reset the control voltage. The errors occurring after the restart (e.g., F8115) may be ignored.

Upon successful firmware replacement, restart the device.

3 ctrlX DRIVE Runtime AXS-V-03RS

3.1 Firmware release AXS-V-0306.02

3.1.1 Resolved restrictions

Safety technology

Incorrect Hiperface control

ID 415895

With the Hiperface encoder, the communication may be disturbed under unfavorable influences. Among other things, this shows by the fact that the error C0303 is sometimes output when the absolute position is set.

Bug fixing:

The receive path of the Hiperface encoder was stabilized by activating a pull-up resistor.

3.1.2 Restrictions

See: Firmware release AXS-V-0306

3.2 Firmware release AXS-V-0306

3.2.1 New functions

New AXS-V-0306 functions

Panel: Language update using FWS files

ID 306993

The panel firmware version PAN-V-0110 supports English, German, French, Italian and Spanish. Customers can order one or more FWS language files and update the panel language. If the panel firmware is updated to version PAN-V-0110, the language of the panel text also has to be switched, since new menus were added. Incompatible panel firmware and language generates the warning E2904 (Incompatible language version: Update the language).

eLION: Safe torque - actual value (B sample)

ID 127502

The safety function determines the torque applied at the motor shaft. It can be transmitted to the vehicle control system via the CAN bus.

eLION: Safe CAN protocol J1939-76 (B sample)

ID 127517

The inverter handles the J1939-76 protocol. Thus, a specified set of safety-relevant pieces of information can be safeguarded with regard to data integrity.

eLION: Monitoring for DC bus voltage shock protection (B sample)

ID 220179

The safety function provides a safe output signal. The signal shows whether the DC bus voltage is < 60V. With the aid of the IO mapper inputs, the status of the safety function can be made available to a higher-level safety control via the local safe output or via the safe communication (configurable predefined configuration).

eLION: Uninterrupted continuation of active motor phase short circuit (B sample)

ID 329373

Under certain circumstances, the drive controller can initiate a short circuit of the motor phases, to avoid overvoltages by re-induction. Safe Motion is now able to detect the short circuit and to continue the short circuit without interruption in case Safe Motion takes effect.

eLION: Safely-monitored torque reduction (B sample)

ID 347883

In the case of the drive-controlled error reaction and transition to the special mode with „torque reset with ramp or AKS“, the safety function "Safely-monitored torque reduction" monitors via two channels whether the torque command value reset was carried out by the drive within a parameterized time, that is to say whether drive enable was removed.

ctrlX DRIVE: 250 µs cycle time supported

ID 56579

The firmware supports the bus cycle time and the process data exchange with a cycle time of 250 µs. Up to 50 bytes of functional input and output data each are supported. In addition, Safety data can be exchanged according to the SMO configuration.

ctrlX DRIVE: Control section type ctrlX DRIVE with EC option supported in devices of second generation

ID 183100

In addition to control section type ctrlX DRIVEPLUS, the control section type ctrlX DRIVE with EC option (multi-encoder interface) now is also supported (see type code in ➦chapter 1.2 Compatibility).

The EC option supports the following encoder types:

- Hiperface
- EnDat2.2
- Sin/cos encoder (1Vpp) --> see Restriction
- Resolver --> see Restriction
- SSI

ctrlX DRIVE and eLION: System time supported independent of master communication that was set

ID 214728

The devices support a system time independent of the master communication. It can be set both via mechanisms specific to master communication and via the Engineering.

ctrlX DRIVE and eLION: Reboot command (C6400) supported

ID 254834

The reboot command (C6400) is supported by all devices (XVR, XVE, XCS, XCD, XMD, XMS, XMV, EDS). The command allows the device to be rebooted without switching the control voltage off and back on.

ctrlX DRIVE: Firmware extended to support histogram function

ID 255653

With AXS-V-0306, the firmware supports a histogram function and thereby provides the data set for the graphical representation of diagnostic motor data, such as speed, torque and temperature. The histograms are displayed with ctrlX DRIVE Engineering.

ctrlX DRIVE: HW option "I/O extension digital/analog" (DA option) supported

ID 275925

The hardware option "I/O extension digital/analog" (DA option) is supported. Thereby, additional analog and digital inputs/outputs are available.

ctrlX DRIVE and eLION: Task runtime measurement and ensured computing time

ID 280140

The task runtimes can be measured with the MX_IECTaskGetLoad function block. The parameter P-0-1366 shows the maximum load of all tasks.

The ensured computing time is a defined part of the "PLC-Slice" time available for the PLC. It remains the same over the product life cycle due to the management of a computing time reserve. If PLC tasks take more than their ensured computing time, the MX_IECTaskGetLoad measuring function block shows a load > 100%.

ctrlX DRIVE and eLION: PositionLoop event with 250 µsec cycle time

ID 280957

To process IEC code in higher clock rates, there is the PositionLoop Event. When activated, a registered function is called cyclically in a clock of 250 µsec, at the end of the XV interrupt.

This cyclic function allows simple PLC functions to be executed in the fastest possible clock. However, there are specific restrictions and rules that have to be observed for application.

Please contact our Application Support to get advice on how to use the PositionLoop Event.

eLION: DM01 standard (J1939) supported

ID 333831

The Diagnostic Message Object 01 (DM01) according to J1939 is supported.

ctrlX DRIVE and eLION: Loading customer-specific factory default values

ID 336064

Using the command C0750, the default values of the non-volatile parameters are loaded to the drive.

This command was extended to allow customer-specific factory default values to be loaded. That is to say the customer-specific condition as supplied is restored.

eLION: MobileX – complete inverter devices supported (B samples)

ID 357667

MobileX – complete inverter devices are supported (B samples).

ctrlX DRIVE and eLION: S-0-0038 and S-0-0039 removed as monitoring threshold for F8079

ID 363636

With AXS-V-0306, the parameters "S-0-0038, Positive velocity limit value" and "S-0-0039, Negative velocity limit value" are no longer used as monitoring threshold of the velocity feedback value for generating the diagnostic message "F8079 Velocity limit value exceeded".

The parameters still take effect as limit values for the velocity command value.

3.2.2 Resolved restrictions

Communication

ctrlX DRIVE and eLION: F8100 when booting up

ID 355124

In very rare cases an exception occurred in ctrlX DRIVE with certain applications. When booting up, the error F8100 was then signaled with the detailed diagnostics 0x016E0D07.

ctrlX DRIVE: Restricting the supported minimum master communication cycle time to 1 ms

ID 184174

With Sercos and EtherCAT, only a minimum communication cycle time of 1 ms is supported in AXS-V-0302.

Device and parameter management

ctrlX DRIVE and eLION: Resolving rare and sporadically occurring exception

ID 298960

Rare and sporadically occurring exception within the diagnostic system and loss of retain data associated with it. This is due to internally caused overload of the internal prioritized diagnostic chain.

Power supply

ctrlX DRIVE: Delayed power off is only applied after clear error

ID 391606

If the parameter S-0-1720.0.3 Delayed power off is changed in the drive, the change only takes effect after an error was cleared once. The value entered before remains effective.

Motor control

ctrlX DRIVE and eLION: Currently active thermal motor model not apparent

ID 384121

ctrlX DRIVE supports two motor temperature models that can be configured via the parameters P-0-4034, P-0-4035 and P-0-4037 (MSK model) or P-0-3060.0.10 (MS2 model). When a motor is replaced, for example a Rexroth motor with encoder data memory by a third-party motor, it is not apparent which of the two thermal motor models is active.

ctrlX DRIVE: Going to parameter mode causes limit value violation

ID 390742

If a motor with"S8" encoder (e.g., MAD100) is operated at the EC option and the drive goes from the configuration mode to the parameter mode, a limit value violation occurs in the parameter "P-0-4042, Characteristic of motor magnetizing inductance".

Encoder and mechanics

ctrlX DRIVE: ctrlX SENSE encoder cannot be switched to PM in the case of communication error in CM

ID 297583

In the case of a communication error in CM, a ctrlX SENSE encoder cannot be switched to PM. In the CM/PM switching process, the connection to the encoder is not checked again, and no attempt to establish the connection, depending thereof, is initiated.

Temporary solution:

In the CM/PM switching process, the status of the connection to the encoder is checked. In the case of an error, there is an attempt to reestablish the connection. This is possible if the communication to the encoder had already been running during the current session. The prerequisite is an error-free booting process with connected encoder.

Axis control

ctrlX DRIVE: No position control during the "Drive on" delay time

ID 371770

During the "Drive on" delay time, e.g. in the time for releasing the brake, the position controller is not active, even with operation modes in position control. Thereby, the axis, in the delay time, may slightly drift in relation to the start value, for example in the case of vertical axes.

3.2.3 Restrictions

Encoder and mechanics

ctrlX DRIVE and eLION: Resolver encoder, 1Vpp encoder and encoder gearbox cannot be activated

ID 406790

The resolver and 1Vpp encoder types, as well as the encoder gearbox, cannot be activated with firmware AXS-V-0306, and thus cannot be operated. With the resolver and 1Vpp encoder types it is impossible to switch to PM. In this case, the Safe Encoder option signals an error (severe exception: internal sequential control disturbed). The encoder gearbox has been set with 1:1 and cannot be changed. P-0-0121/0122 for encoder-1 and P-0-0124/0125 for encoder-2 have the minimum and maximum values 1.

If an encoder gearbox unequal 1:1 had been set before the firmware update, the parameters are displayed as invalid. The extreme value check happens at the latest during CM/PM phase switch.

ctrlX DRIVE: F8035 and F8131 if SSI encoder not connected

ID 380593

The drive generates F8035 and F8031, if an SSI encoder has been configured but not connected.

Device and parameter management

ctrlX DRIVE and eLION: The reboot command cannot be executed in PM and OM

ID 403832

The reboot command (C64) is currently only possible in CM. The command cannot be executed in PM and OM.

Safety technology

eLION: F8131 or F8122 with SafeDC and Safe Torque switched on

ID 401872

When the Safe DC bus (SafeDC) or Safe Torque functions have been switched on, errors may occur since the eLION B1.2 sample hardware not yet supports the functions completely. It is not allowed to use the functions on B1.2 samples.

Temporary solution:

On eLION B1.2 samples, Safe Torque (P-0-3247.0.1) and Safe DC Voltage Level Monitor (P-0-3310.0.1) are only supported to a limited extent. Before having the device automatically progress to OM, check whether this is possible without exception for the respective function. If this is not possible, set the configuration parameters for the respective function to 0.

ctrlX DRIVE: Command C2000 triggers error in Safety evaluation

ID 378475

With active SBC, the command C2000 can be started without error message in the SMES or PM states. The command triggers an error in the Safety evaluation.

ctrlX DRIVE: Self-releasing brake, main spindle brake and no brake can be parameterized with SBC

ID 376043

According to SMO user manual, it is not allowed to use self-releasing or main spindle brake in conjunction with the SBC safety function. The configuration is not checked within the scope of CM --> PM switching.

Temporary solution:

Comply with the specifications of the safety technology system configuration.

Motor control

ctrlX DRIVE and eLION: Faulty command 3700 Encoder validation check

ID 367469

The command 3700 Encoder validation check determines incorrect results and moves the drive further than allowed.This may cause collision in the case of limited mechanics.

ctrlX DRIVE and eLION: F8078 with 3-pole-paired resolver and 5-pole-paired motor at position overflow threshold

ID 361443

If a resolver is used as a motor control encoder with a non integer ratio of number of motor pole pairs and number of resolver pole pairs (e.g., 5:3), and the drive moves beyond the position overflow threshold (e.g., S-0-0601.10.22), the motor might have a "runaway effect". This causes the error F8078 Speed loop error.

If an encoder gearbox has been mounted between resolver and motor, which also implicates a non integer ratio, the same behaviour may occur.

3.3 Firmware release AXS-V-0304.06

3.3.1 New functions

New AXS-V-0304.06 functions

ctrlX Safety (Safe Motion M5)

ID 213431

Certified hardware and firmware (C samples) with the following scope of functions:

- Safe Encoder Acuro@link
- Selection & Acknowledge via SAFETYlink & SAFEX-C.12/SAFEX-C.15
- Selection & Acknowledge via FSoE
- Safety functions STO, SS1-t, SS1-r, SOS, SS2-r, SBC, SLS, SDI, SLI and SSM according to EN61800-5-2
- Safety functions SMS, SMD and SMD-E
- 16 Specical Modes SMMx

3.3.2 Resolved restrictions

Encoder and mechanics

Endat 2.2 encoder with battery

ID 372429

Endat 2.2 encoders with battery are not supported in ctrlX DRIVE. This causes an error message in the CM->PM transition command.

Bug fixing:

If an Endat 2.2 encoder with battery is detected, this no longer causes an error message in the transition command.

⚠ CAUTION	The firmware does not monitor the battery status. If the battery fails, a position jump occurs.

3.3.3 Restrictions

See: Firmware release AXS-V-0304

3.4 Firmware release AXS-V-0304

3.4.1 New functions

New functions AXS-V-0304

Firmware update support via EtherCAT FoE

ID 26728

The user can upload a firmware update via EtherCAT FoE (File Transfer over EtherCAT) to ctrlX DRIVE. ctrlX DRIVE is switched to the bus state Bootstrap and the new firmware is loaded via the EtherCat master. Manually restart ctrlX DRIVE after the firmware update. An automatic restart is not triggered.

Automatic detection and resolution of IP address conflicts

ID 134047

Mechanisms are implemented that can detect an IP address conflict between panel and master communication and resolve the IP address conflict during an activated DHCP on the panel network pages.

Feeding supply unit XVE

ID 166673

Feeding supply units XVE are supported.

Redundant motor encoder

ID 211881

The function "Redundant motor encoder" is available.

Deactivation of panel Engineering ports for devices with CORE

ID 242639

Due to safety reasons, the additionally available communication ports are disabled in CORE devices. Within this framework, Engineering is deactivated via the optional panel. The implementation uses corresponding parameters to facilitate temporary panel access if required (manufacturing).

3.4.2 Resolved restrictions

Communication

ctrlX CORE control does not start up correctly

ID 247923

If the IP address of the panel in parameter S-0-1020.10.1 was assigned the value 192.168.0.1, the control did sporadically not start up correctly or not at all. Reason: an address conflict in the communication with the local axis.

Temporary solution:

To fix the problem, configure S-0-1020.10.1 to the address 192.168.222.x. Configuration of the parameter is possible directly at the panel or via EoE communication.

Menu item "USB port settings" not available in the panel

ID 301852

The menu item “USB port settings” is not provided if the panel was repeatedly plugged in a ctrlX CORE. The communication is now established in ctrlX DRIVE.

Multicast connection for double axis cannot be used

ID 310469

The two double axis slaves cannot consume the same connection.

Temporary solution:

Individual master connection for each slave.

Device and parameter management

Command change bit remains set.

ID 286358

If a command was started and deleted again immediately, the command change bit (5) in S-0-1045 "S-DEV" was set and was retained.

Troubleshooting:

If a command is stopped before it has been completed, this is noted and the command change bit is not set at the end of the command (as it is already stopped). Furthermore, the stop in the command status is taken into consideration. With the stop at the end of the command, it is directly set to “Inactive”.

Signal status word or I/O assignment cannot be used in the configuration of S-0-0011 and S-0-0012

ID 295625

S-0-0011 and S-0-0012, state class 1/2 could be configured in the signal status word or assigned to an I/O. However, the functionality could not be ensured.

Cyclic process data are not always reset during master communication failure

ID 300526

There are some parameters that can be configured as cyclic command value and which should be reset in case of a master communication error or a return (e.g. P-0-0313). Parameters were not always “reset” in the described scenario.

Parameters configured cyclically in the master communication cannot be written acyclically.

ID 314462

Parameters configured cyclically in the master communication cannot be written acyclically if the decoupled operation is enabled, the master communication was switched to PreOP and the subdevice state machine is still in OP.

Troubleshooting:

The writeability is controlled depending on the state of the assigned state machine.

Temporary solution:

Also switch the subdevice to CM or PM.

P-0-2584 to P-0-2586 are not contained in S-0-0017, IDN list of all operating data

ID 351064

The following parameters are also required in the backup of all parameters due to compatibility reasons. However, they were not available there.

P-0-2584 = mirror parameters of "S-0-1300.0.12, Serial number"

P-0-2585 = mirror parameters of "S-0-1300.0.12, Serial number"

P-0-2586 = mirror parameters of "S-0-1300.0.12, Serial number"

Troubleshooting:

The previously mentioned parameters are also available in “Backup of all parameters” by listing them in "S-0-0017, IDN list of all operating data”.

Drive control and Motion control

Error F2037 when disabling the probe quick stop

ID 319526

During the probe quick stop, monitoring is active during the operating mode cyclic position control. A command value jump of the control when positioning to the actual position value sporadically results in an error.

Troubleshooting:

During the probe quick stop, monitoring is switched off during the operating mode cyclic position control.

Encoder and mechanics

S-0-0391 Monitoring window encoder 2 has an incorrect maximum value during modulo scaling

ID 281538

The maximum values of S-0-0391 are set to 2^30 instead of half a modulo (S-0-0103).

Troubleshooting:

Use ICALC_PosMaxAbsEncXMoniWindows as maximum value.

Test of bit input P-0-1153, S-0-0147, S-0-0208

ID 288151

Parameters P-0-1153, S-0-0147 and S-0-0208 can be written with undefined bit combinations.

Troubleshooting:

Activate Check Combine in DB and define it in the code.

Status A0052 when switching back from OM to PM

ID 288419

Status A0052 was reset when switching back from OM to PM.

Troubleshooting:

Status A0052 is not set anymore when switching back from OM to PM.

Do not reset wSIAS_STO_DiagState.

Command set zero point for the Endat2.2 encoder is not working

ID 294213

The command set zero point cannot be used for the Endat 2.2 encoder.

Applying the actual position value during Set absolute dimension and encoder error (F2036)

ID 297943

The monitoring difference encoder 1 - encoder 2 is active (S-0-0391 = 100).

Encoder 1 was set to 0 using Set absolute dimension.

Encoder 2 was set to 101 using Set absolute dimension.

Monitoring results in error F2036 during Set absolute dimension.

The encoder references were deleted (S-0-0403 = 0). In “Set absolute dimension Encoder 2”, the actual position value 1 was set to the value of the actual position value 2, as it did not have a reference anymore!

Troubleshooting:

If the reference is deleted due to an error during Set absolute dimension, the second encoder must not be set to the actual position value of the active encoder. The auxiliary encoder only applies the actual position value if it does not have a reference but the main encoder is referenced.

Hiperface encoder switching to PM/OM is not possible

ID 322274

Switching from PM or OM was not possible with Hiperface encoders with unconfigured data arrays and/or data arrays that were not configured as expected. Via the data arrays, the EEPROM is divided into blocks between 16 bytes and 128 bytes. If data arrays unequal to 128 bytes or inactive data arrays were detected, the data array were not reconfigured. The EEPROM is only required for third party motors and Hiperface encoders, e.g. for saving the absolute encoder offset.

Troubleshooting:

Data arrays are configured to 128 bytes per data array if data arrays are configured to blocks unequal to 128 bytes or data arrays are configured as “not used”. If data arrays are password-protected from reconfiguration, the EEPROM of the encoder cannot be used. Disable the EEPROM use for such encoders by setting bit 11 in S-0-0602.x.136.

Control word Set absolute dimension (S-0-0448) cannot be changed in U/f mode

ID 329691

The control word Set absolute dimension (S-0-0448) is locked in U/f mode. Encoder 2 cannot be selected.

Troubleshooting:

No special check S-0-0448 for U/f mode. For U/f mode of a motor “Set absolute dimension” is not possible for encoder 2!

AcuroLink, ctrlX SENSE: Increasing the tolerance against protocol failures

ID 299654

For AcuroLink and ctrlX SENSE encoders, the error tolerance against protocol failures is increased.

Axis control

Display average value filter uses incorrect filter function after switching from PM to OM.

ID 328991

If a channel with average value filter (also inactive) follows a channel with PT1 filter, an incorrect filter function was used for calculation of channel 1 after switching from PM to OM (filter type P-0-0398 = 0b1000).

Troubleshooting:

Filter type selection corrected during PM-OM switching.

Temporary solution:

1. After switching from PM to OM
2. Reset filter type
3. only set PT1 filter P-0-0398 = 0b0000

3.4.3 Restrictions

Axis control

F8131/F8035 during downgrade from AXS-V-0210/AXS-V-0304 to AXS-V-0208/AXS-V-0302

ID 354620

After loading the basic parameters on the basis AXS-V-0210/AXS-V-0304 and following a downgrade from AXS-V-0210/AXS-V-0304 to AXS-V-0208/AXS-V-0302, F8131 or F8035 occur.

Temporary solution:

After a downgrade from AXS-V-0210/AXS-V-0304 to AXS-V-0208/AXS-V-0302, the encoder type (S-0-0602.2.1) of the encoder option must be set. This means, the encoder type either has to be set to value 0 if no encoder has been selected or to the value of the encoder.

ctrlX SENSE encoder cannot be detected by a scan

ID 345536

If the ctrlX SENSE encoder is connected but not selected (e.g. after loading the basic parameters), this is not detected by an encoder scan and switching to PM fails with the command error C1106.

Encoder and mechanics

SSI linear encoder: Parameter loss S-0-0602.2.14 during update to AXS-V-0208/ AXS-V-0302

ID 299847

SSI linear encoder: Parameter loss S-0-0602.2.14 during update to AXS-V-0208/ AXS-V-0302

Temporary solution:

After an update to AXS-V-0208/AXS-V-0302, reset the value of S-0-0602.2.14 (e.g. of parameter backup).

ctrlX SENSE encoder cannot be switched to PM in case of communication error in CM.

ID 297583

ctrlX SENSE encoder cannot be switched to PM in case of a communication error in CM. When switching from CM-PM, no new check of the connection to the encoder is required and no attempt to establish the connection is made.

Temporary solution:

When switching from CM-PM, the status of the connection to the encoder is checked. In case of an error, it is tried to re-establish the connection. This is possible if the communication to the encoder was already running during the current session. Requirement: successfully completed booting with connected encoder.

3.5 Firmware release AXS-V-0302

3.5.1 New functions

New AXS-V-0302 functions

ctrlX DRIVE Technology Function

ID 172271

Technology Function is an additional functionality of ctrlX DRIVE. It allows PLC functionality to be embedded in the ctrlX DRIVE drive controller.

3.5.2 Restrictions

Device and parameter management

The error bit (bit 13) is not correctly reset in P-0-0115

ID 289451

If an error (or warning) pending in Safe Motion is reset, the error bit (bit 13) remains set in P-0-0115. As a result, the diagnostic text is displayed with a red background in Engineering. The error bit is only reset by a second "clear error".

Communication

"USB port settings" menu item not available in panel

ID 301852

The "USB port settings" menu item is not provided when the panel is repeatedly plugged in a ctrlX CORE device. The communication is then permanently established with ctrlX DRIVE.

Temporary solution:

Is resolved with AXSV-0304 and PAN-V-0108.

Multicast connection for double-axis device does not work

ID 310469

The two slaves of the double-axis device cannot consume the same connection.

Temporary solution:

Individual master connection for each of the two slaves.

Restricting the supported minimum master communication cycle time to 1 ms

ID 184174

With Sercos and EtherCAT, only a minimum communication cycle time of 1 ms is supported in AXS-V-0302.

ctrlX CORE control does not run up correctly

ID 247923

If the IP address of the panel in parameter S-0-1020.10.1 has been pre-assigned with the value 192.168.0.1, the control sometimes does not run up correctly or not at all. Reason: an address conflict in the communication with the local axis.

Temporary solution:

To fix the problem, configure S-0-1020.10.1 to the address 192.168.222.x. The parameter can be configured directly at the panel or via EoE communication.

Device and parameter management

Changing the PWM frequency from 16kHz to 8 kHz is not possible in CM

ID 151925

Under the following conditions, the diagnostics F8834 or F8844 can occur, and the device can only be operated again after one power cycle:

- when the device is operated in PM or OM
- P-0-0001 has been set to 16 kHz
- the device is switched back to CM
- P-0-0001 is then changed to 8 kHz
- the device is switched back to PM or OM

Temporary solution:

Do not switch P-0-0001 directly from 16 kHz to 8 kHz, but via an intermediate step of 4 kHz:

PM/OM and P-0-0001 = 16 kHz -> CM -> P-0-0001 = 4 kHz -> PM -> CM -> P-0-0001 = 8 kHz

If the device has not been switched to PM/OM after power up and has always remained at CM, direct switching to 8 kHz is additionally possible.

Phase error is not recognized correctly

ID 238436

If only two instead of three mains phases had been applied at the time of the charging command, no mains phase error was signaled. The charging command was ignored instead.

Encoder and mechanics

Limitations: "Redundant motor control encoder" function cannot be used

ID 212914

The "redundant motor control encoder" function has not been released.

Hardware

Single-phase/two-phase operation function only available as B sample

ID 270520

The single-phase/two-phase operation function (P-0-0860, bit 3) has not been put through final tests and thus does not meet the quality standard of a C sample. Erratic behavior may occur when the function is used.

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
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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