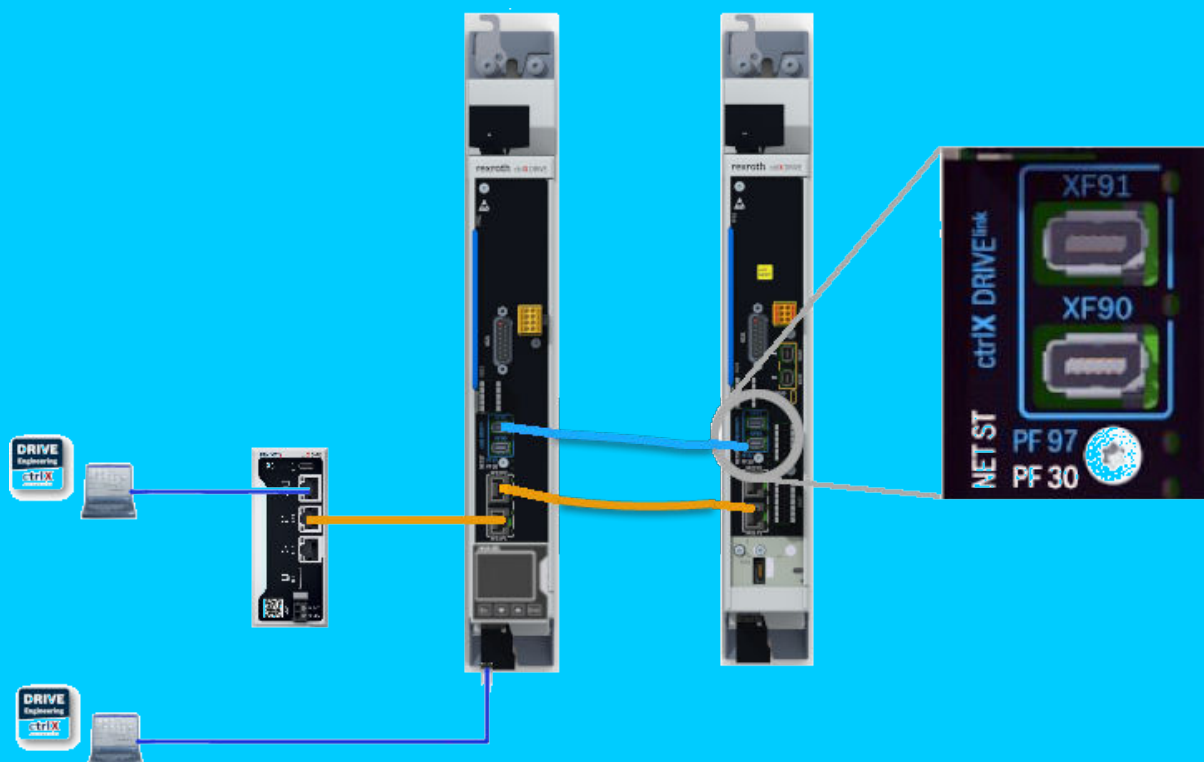


# ctrlX DRIVE Technology App

Axis Coupling, Basic



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DOK-XDRV\*\*-TECAPP\*ACB\*-AP01-EN-P

DC-AE/ESW4 (zah1lo), DC-AE/EPI5 (sa), DC-AE/EPI4 (bb)

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# 1 About this documentation

This documentation describes the ctrlX DRIVE Technology App (short: Technology App) "Axis Coupling, Basic".

With the function implemented in "Axis Coupling, Basic", it is possible to operate coupled axes in such a way that the same command values are input for the coupled axes. One axis is the master and provides command values, at least one slave axis follows the command values.

Torque/force command value coupling, velocity command value coupling and position command value coupling are possible.

## Editions of this documentation

Edition	Release date	Comment
01	2023-08-22	First edition



## Feedback on this documentation

Your experience is an important part of the product and documentation improvement process.

In case of any errors or if you want to suggest changes to this documentation, please do not hesitate to contact us.

Please send your feedback to [➔ dokusupport@boschrexroth.de](mailto:dokusupport@boschrexroth.de).

## 2 Required components

### 2.1 Drive controller

Each power section of the ctrlX DRIVEplus product range with TF1 license is suited for using the technology functions.

Axis Coupling, Basic can be used in a double-axis controller or in single-axis controllers with ctrlX DRIVElink.



It is recommended to use the same power section for Axis Coupling, Basic in the master and slave.

### 2.2 Motors and encoder systems

The different types of coupling make varying demands on the encoder system:

- For torque/force command value coupling and velocity command value coupling, a single-turn encoder at the slave axis is sufficient.
- Position command value coupling requires an absolute encoder at the axes (master and slaves) to avoid homing procedure and synchronization motion after every switch-on.
- It is recommended to use the same motor types for master and slave for all types of coupling.

### 2.3 Drive firmware

The Technology Apps have been implemented on the basis of the ctrlX DRIVE Technology Function. Therefore, the additional function ctrlX DRIVE Technology Function, that needs to be enabled, is required in addition to the drive firmware (AXS-V-0316 or higher). The devices have to be ordered with a firmware with TF1 license so that enabling is possible. A TF1 license can also be purchased and loaded later on if a device had been purchased without a license.

In addition, the additional function ctrlX DRIVElink must have been enabled.



If the suitable license is available, functional packages can be enabled in ctrlX DRIVE Engineering via the submenu "Commissioning → Enable firmware functions".

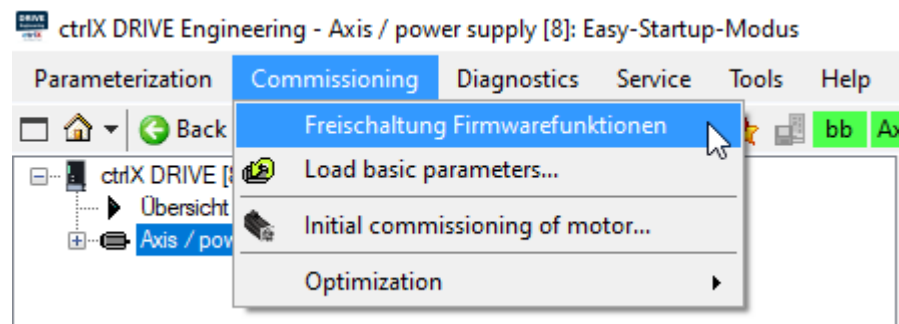


Fig. 1: Enabling firmware functions

For Axis Coupling, Basic, the "ctrlX DRIVElink" function is required in addition to the function "ctrlX DRIVE Technology Function". The ctrlX DRIVE Technology Function and ctrlX DRIVElink must have been enabled in all axes:

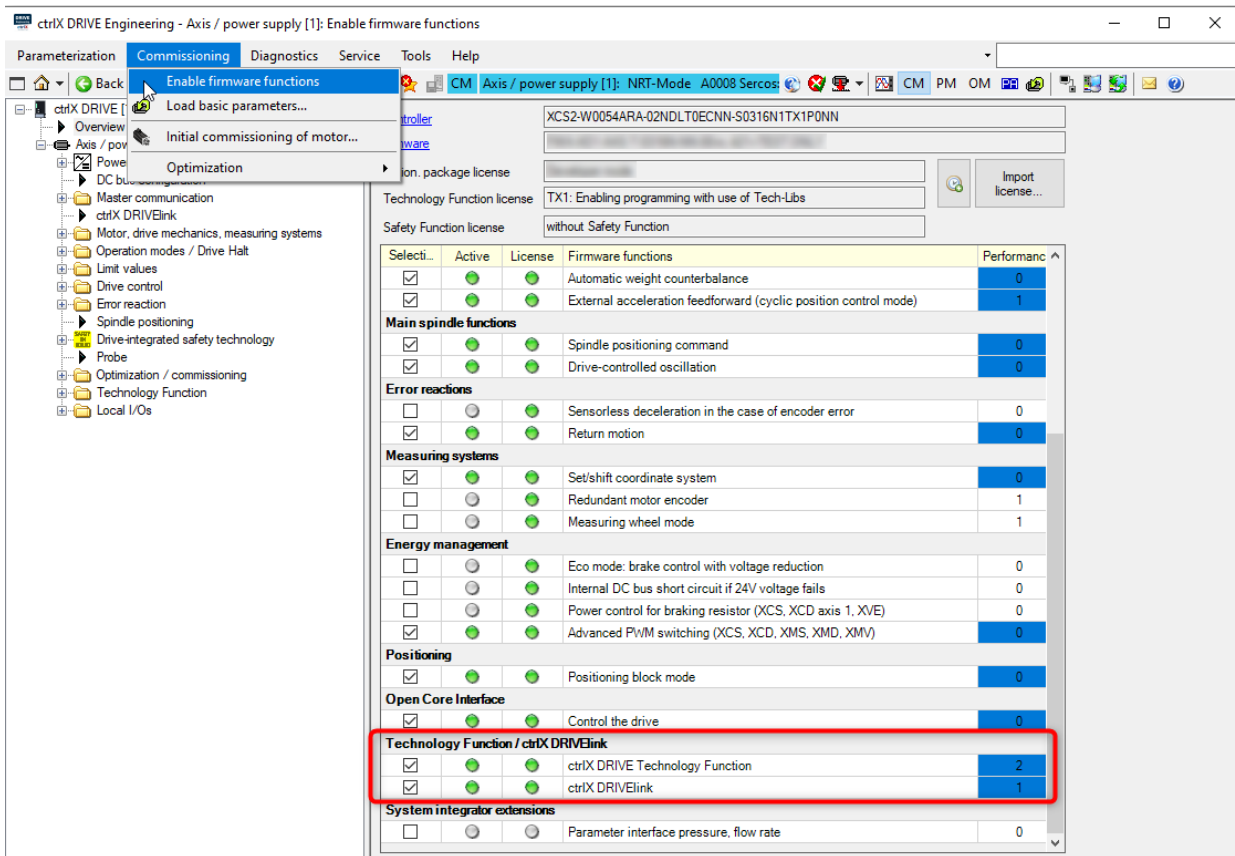
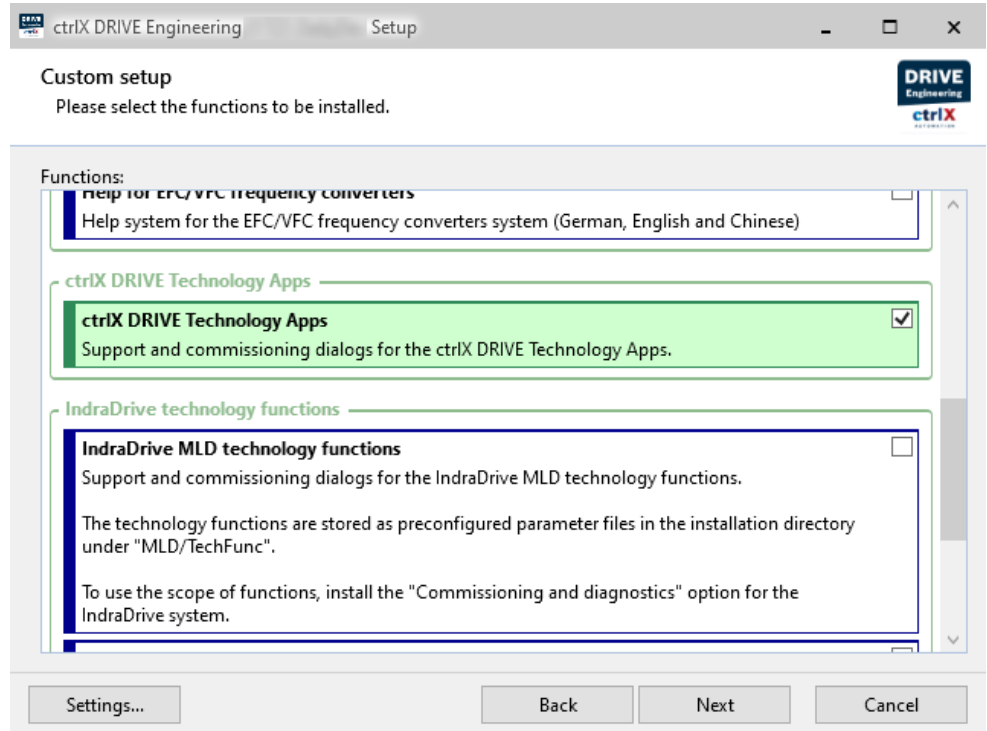


Fig. 2: Firmware functions that have to be activated for Axis Coupling, Basic (red frame)

## 2.4 Commissioning software

The Technology App Axis Coupling, Basic can be configured and operated in ctrlX DRIVE Engineering via parameters or an operation and commissioning dialog (with ctrlX DRIVE Engineering 01V26 and above).

**Note:** When installing ctrlX DRIVE Engineering, select the support of ctrlX DRIVE Technology App. The installation can be subsequently changed via *“Help → Change installation...”*.



Required components





## 3 Implementing the functions in the drive

### 3.1 Making available the Technology App

The Technology App is implemented in the drive by means of the ctrlX DRIVE Technology Function.

The Technology App is made available with a parameter file as a compiled PLC project (\*.par files). (The compiled PLC project makes available the Technology Apps similarly to a firmware function.) Using the Technology App made available as a compiled PLC project does not require any programming knowledge.

### 3.2 Integration in the diagnostic system

The additional diagnostics of the Technology App are automatically integrated in the standard diagnostic system of the drive. They can be used in a way identical to the standard diagnostics:

- Access via the master communication interface.
- The diagnostic message appears on the control panel display at the drive.
- The existing mechanisms are used, such as the operating hours counter and error memory of the drive.

### 3.3 Parameterization and operation

The entire function has to be operated directly via the individual standard parameters (PLC registers). There are the following options to do this:

- With the ctrlX DRIVE Engineering commissioning software
- With a separate diagnostic PC via Ethernet
- Via the higher-level control unit



See also [Chapter 7 Notes on commissioning and operation on page 21](#)



## 4 Loading the Technology App to the drive

Carry out the following steps once and one after the other for all axes [master and slave(s)] to transmit the Technology App Axis Coupling, Basic to the drives (in the form of a parameter file):

1. Switch the drive to the configuration mode (start command C0400).
2. Open the “*Technology Function → PLC settings*” dialog.
3. Use the “Load project...” button to select the Technology App (parameter file of Axis Coupling, Basic from hard disk or another storage medium) and transmit it to the drive.
  - ➔ The parameter values are transmitted to the drive.
4. Restart is required (command C6400); it is proposed via dialog and has to be carried out.
  - ➔ The transmitted Technology App is running and available as from now (also after repeated restart).
5. Switch the drive to the operating mode (start command C0200).

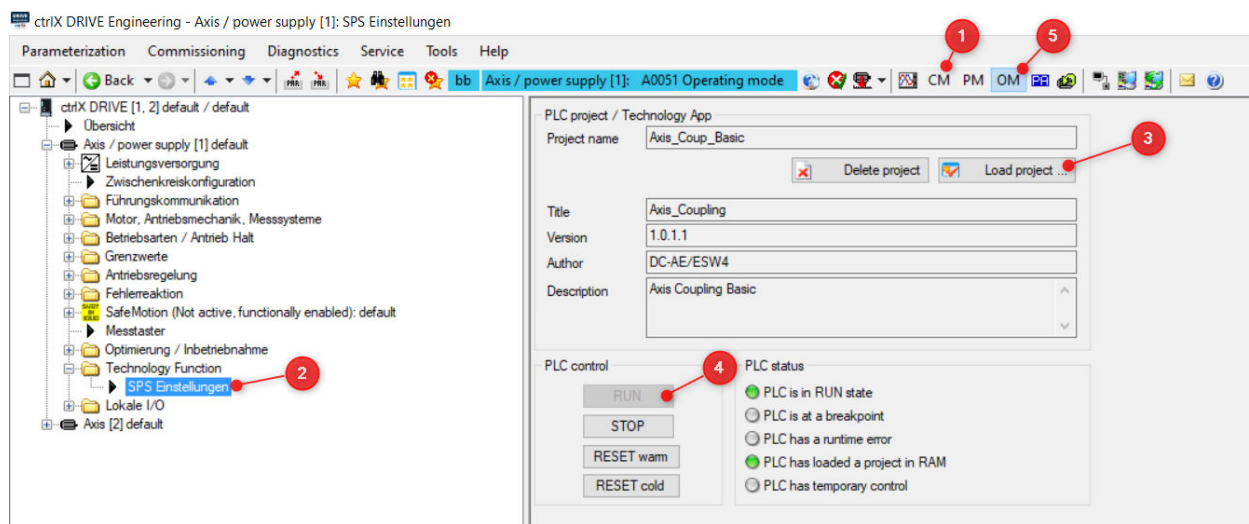


Fig. 3: Transmitting a Technology App to the drive



## 5 Brief description of the function

### Purpose of the function

With the Axis Coupling, Basic function, it is possible to operate coupled axes in such a way that the same command values are input. One axis is the master and provides command values, a slave axis follows the command values.

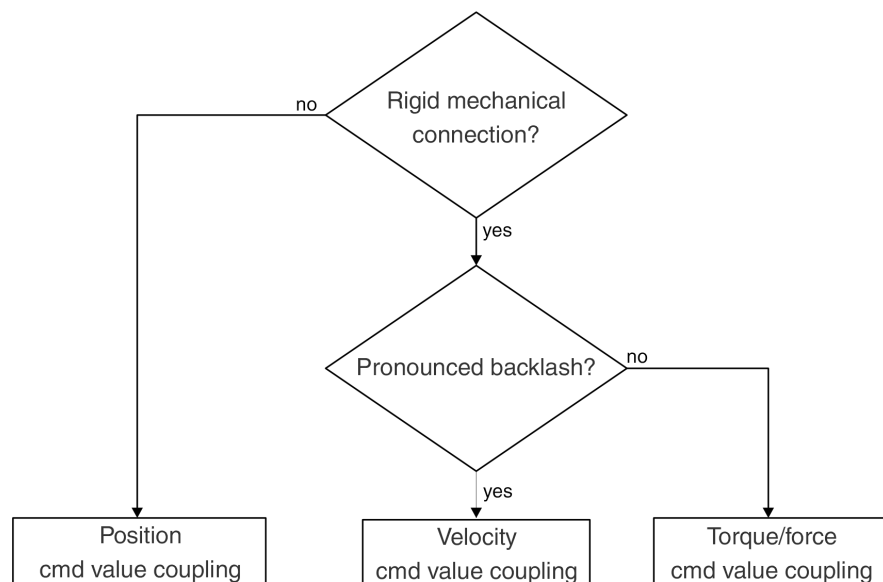
Torque/force command value coupling, velocity command value coupling and position command value coupling are possible.

### Fields of application

These are, for example, the fields of application of the function:

- Implementation of master-slave groups with torque/force command value coupling
- Anti backlash functionality by velocity command value coupling
- Gantry groups with position command value coupling

Select the type of coupling using the decision chart below:



Df001026\_v02.des

### Requirements of use

To use the Technology App, the necessary firmware and hardware requirements must have been fulfilled (see [↔ Chapter 2 Required components on page 5](#)). To use the function, the Technology App in addition must have been loaded and activated in the drive (see [↔ Chapter 4 Loading the Technology App to the drive on page 11](#)).

See also:

[↔ Chapter 9 Descriptions of the parameters on page 29](#)

[↔ Chapter 8 Diagnostic and status messages on page 27](#)



## 6 Functional description

### 6.1 Topology

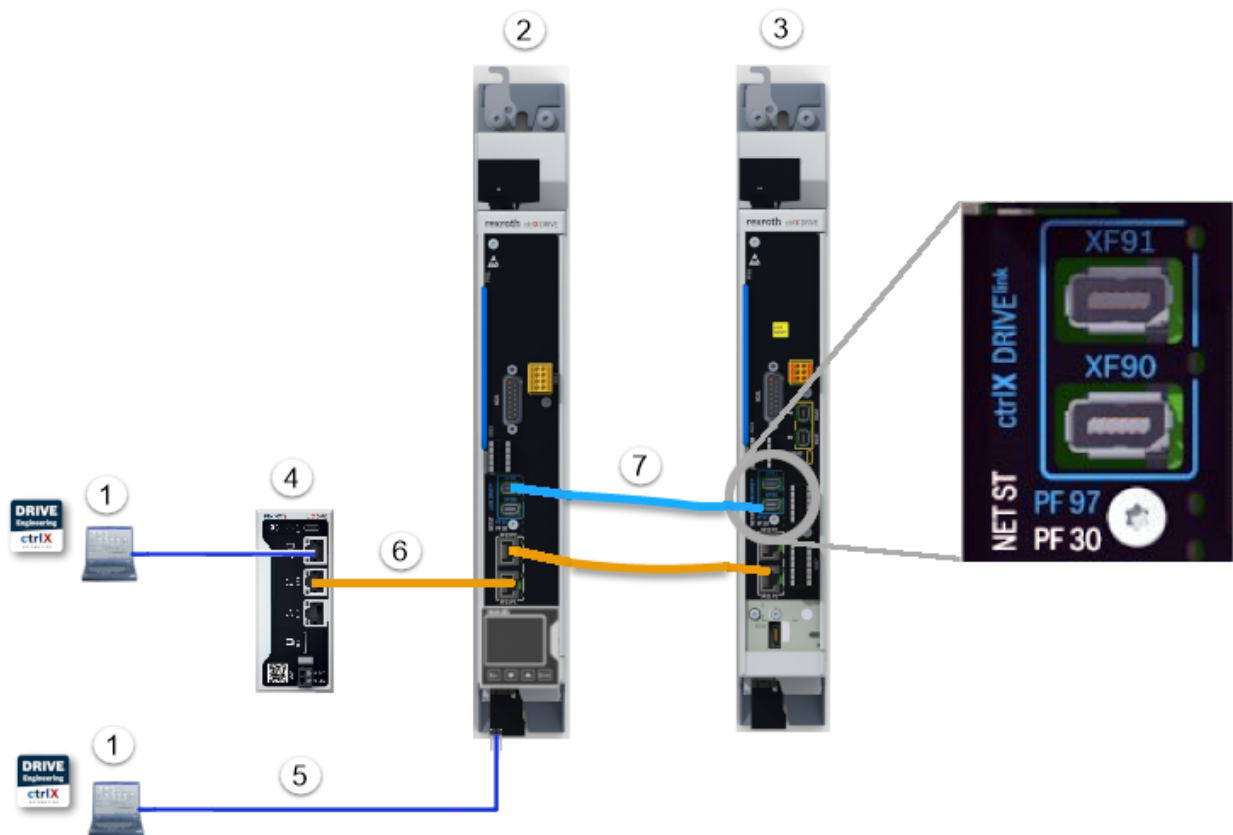


Fig. 4: Topology - ctrlX DRIVElink

- |                                   |                   |
|-----------------------------------|-------------------|
| 1 PC with ctrlX DRIVE Engineering | 5 TCP/IP          |
| 2 ctrlX DRIVE master              | 6 Field bus       |
| 3 ctrlX DRIVE slave               | 7 ctrlX DRIVElink |
| 4 ctrlX CORE (optional)           |                   |

### 6.2 Functionality

#### 6.2.1 Torque/force command value coupling

##### Use

Torque/force command value coupling is appropriate wherever there is a rigid mechanical connection between both axes, and no backlash or a low degree of backlash is present in the axes.

##### Principle

The higher-level control only supplies the master axis with command values (target position, position command value, speed command value), and the effective torque/force command value of the master axis is transmitted as the command value to the slave. Any operation mode may be selected for the master axis. The slave axis always is in the "torque/force control" mode.

The control can take status information on master and slave from the respective status words of master communication, e.g., S-0-0135.

S-0-0824, bit 0="1" is used to check whether the slave follows the master.



- For torque/force command value coupling, dead time compensation is not required and therefore not taken into account.
- The minimum DRIVELink cycle time [P-0-1846 (Producer) and P-0-1856 (Consumer)] is 250 µs.

**Overview of the configuration**

In the case of torque/force command value coupling, the effective torque/force command value (P-0-0049) of the master axis is copied to the torque/force command value (S-0-0080) in the slave axis.

Table 1: Configuring the command values between master and slave in DRIVELink with torque/force command value coupling

Producer connection ctrlX DRIVELink master (P-0-1843.0.0)	Consumer connection ctrlX DRIVELink slave (P-0-1853.0.0)	Number of bytes
P-0-0049, Effective torque/force command value	S-0-0080, Torque/force command value	2

**Slave operation mode:** With torque/force command value coupling, the slave axis is operated in the "torque/force control" mode. This is set as the primary operation mode by the Technology App and may not be changed.

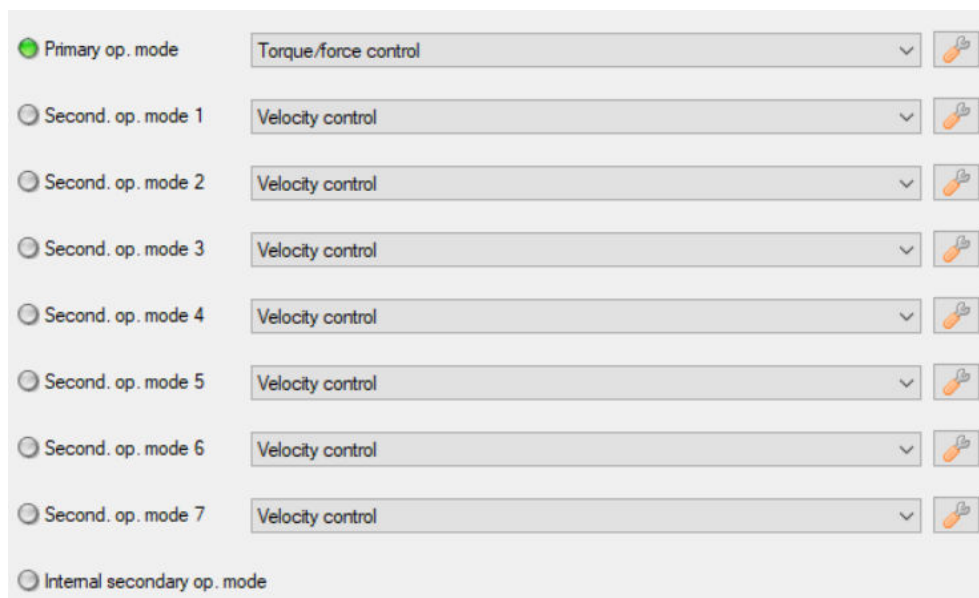


Fig. 5: Dialog for setting the operation mode of the slave axis

**6.2.2 Velocity command value coupling**

**Use**

Velocity command value coupling is appropriate wherever there is a rigid mechanical connection between both axes and pronounced backlash is present in the axes.

**Principle**

The control only supplies the master axis with command values (target position, position command value, speed command value), and the effective velocity command value of the master axis is transmitted as the command value to the slave. Any operation mode (except for torque/force control) may be selected for the master axis. The slave axis always is in the "velocity control" mode.





- For velocity coupling, dead time compensation is not required and therefore not taken into account.
- The control can take status information on master and slave from the respective status words of master communication, e.g., S-0-0135. More status information can be taken from "P-0-1210, Status word of velocity control mode". Thus, bit 0="1" is used to check whether the slave follows the master.
- The minimum DRIVELink cycle time [P-0-1846 (Producer) and P-0-1856 (Consumer)] is 250 µs.

### Overview of the configuration

In the case of velocity command value coupling, the effective velocity command value (P-0-0048) of the master axis is copied to the velocity command value (S-0-0036) of the slave axis.

Table 2: Configuring the command values between master and slave in DRIVELink with velocity command value coupling

Producer connection ctrlX DRIVELink master (P-0-1843.0.0)	Consumer connection ctrlX DRIVELink slave (P-0-1853.0.0)	Number of bytes
P-0-0048, Effective velocity command value	S-0-0036, Velocity command value	4

**Slave operation mode:** With velocity command value coupling, the slave axis is operated in the "velocity control" mode. This is set as the primary operation mode by the Technology App and may not be changed.

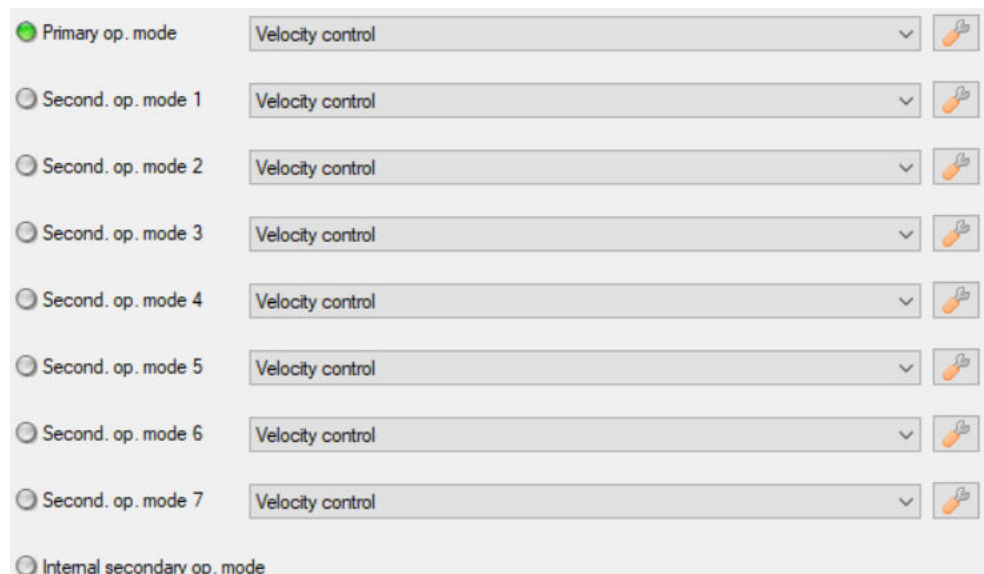


Fig. 6: Dialog for setting the operation mode of the slave axis

## 6.2.3 Position command value coupling

### Use

Position command value coupling is appropriate wherever there is no rigid mechanical connection between both axes, and no backlash or a low degree of backlash is present in the axes.

### Principle

The control only supplies the master axis with command values (target position, position command value), and the position command value generator P-0-0457 of the master axis is transmitted as the command value to the slave.

Any position-controlled operation mode may be selected for the master axis. The slave axis always is in the operation mode "position control drive-controlled".



- In the case of position command value coupling, the position command value delay of the firmware is used as dead time compensation. (If the DRIVElink cycle times are changed, P-0-0456 also has to be adjusted.)
- The control can take status information on master and slave from the respective status words of master communication, e.g., S-0-0135. P-0-0152, bit 0 = 1 in the slave shows that the slave has been synchronized (coupled) and that the slave can follow the master.
- In the case of position command value coupling, make sure that lagless operation or operation with lag error has been set in both axes, since otherwise the profile might be traveled differently. This possible position feedback value difference may damage the axis group mechanically!
- Use identical motors with absolute value encoder for position command value coupling, since the homing of such an axis group is difficult and position command value jumps may not occur at the master and slave.
- The minimum DRIVElink cycle time [P-0-1846 (Producer) and P-0-1856 (Consumer)] is 250 µs.
- Position command value coupling cannot be used in the easy startup mode or with command value generator.

### Overview of the configuration

In the case of position command value coupling, the position command value generator (P-0-0457) of the master axis is copied to the position command value (S-0-0047) in the slave axis.

Table 3: Configuring the command values between master and slave in DRIVElink with position command value coupling

Producer connection ctrlX DRIVElink master (P-0-1843.0.0)	Consumer connection ctrlX DRIVElink slave (P-0-1853.0.0)	Number of bytes
P-0-0457, Position command value generator	S-0-0047, Position command value	4

**Slave operation mode:** In the case of position command value coupling, the slave axis has to be operated in the operation mode "position control, drive controlled". This is set as the primary operation mode by the Technology App and may not be changed, since it is required for the synchronization motion.

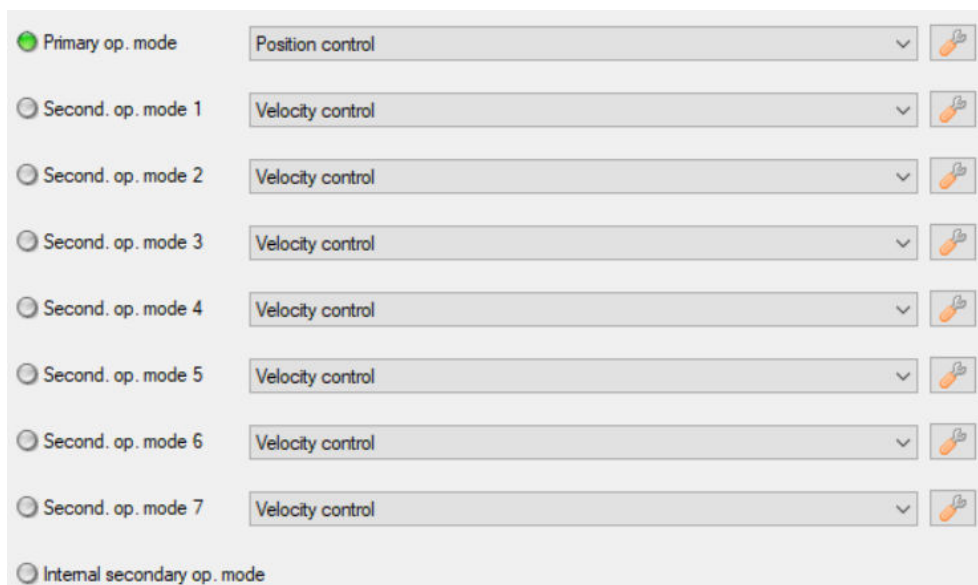


Fig. 7: Dialog for setting the operation mode of the slave axis

**Dead time compensation:** In the case of position command value coupling, the position command value delay of the firmware is used as dead time compensation in the master. For this purpose, the position command value preset on the control side takes effect with a delay of "P-0-0456, Position command value delay" = 2 position cycle times in "P-0-0434, Position command value of controller" of the master. "P-0-0457, Position command value generator" is without any delay and preset for the slave as the command value. The master receives the delayed command value, the slave receives the command value without delay. By way of dead time compensation, the dead time due to coupling is compensated.

The settings are specified by the Technology App; it is not required to make any settings for dead time compensation.

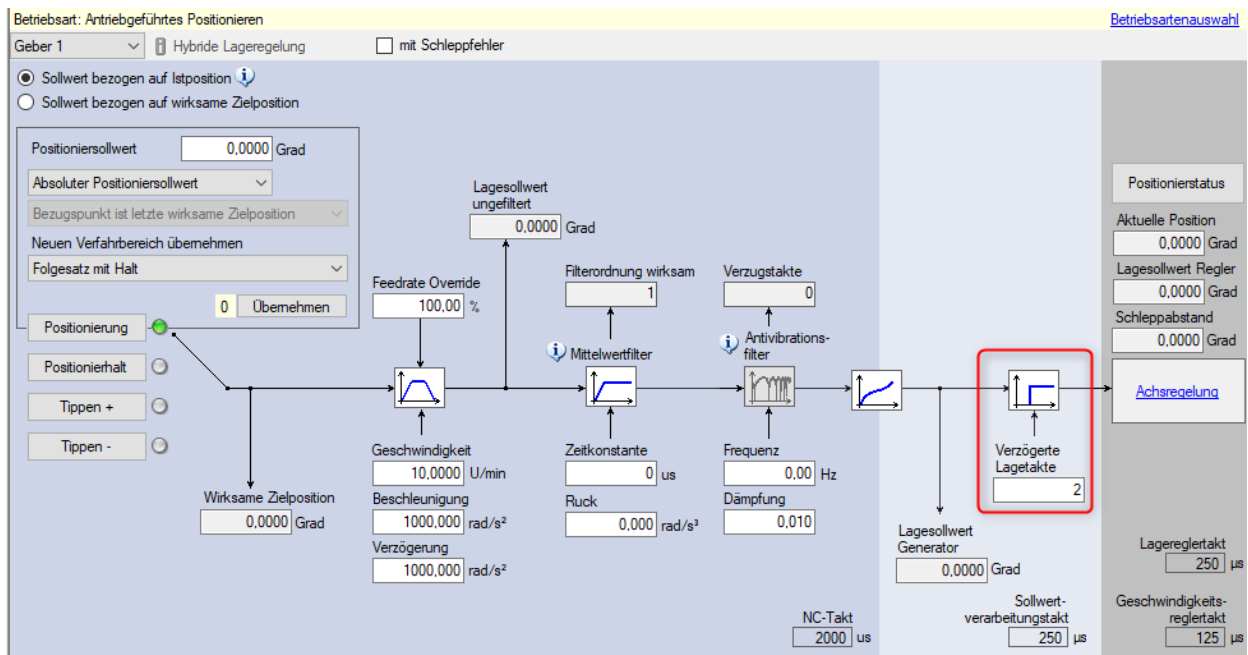


Fig. 8: Dead time compensation by way of command value delay in the DRIVelink master



## 7 Notes on commissioning and operation

### 7.1 General notes on parameterization and application

Use ctrlX DRIVE Engineering to parameterize the axes. For this purpose, the connection to all axes is established via the ctrlX DRIVELink master. After the ctrlX DRIVELink communication has been set in the master, all slaves can be parameterized from the master. The Engineering port of the master axis can be used for this purpose.

Observe the following points regarding the parameterization in the master and slave:

- Same control loop settings for the same dynamics
- The scalings have to be made in the master and slave axis and have to be identical. Mechanical damage may occur in the case of incorrect parameterization.
- The setting of the error reaction has to be adjusted to the existent mechanics (see also → [Chapter 7.4 Configuring the axis error reaction on page 22](#)).
- In the case of position command value coupling, the master has to be operated in a position-controlled operation mode; regarding the lag distance, the same settings are required in master and slave (cf. S-0-0520).
- Drive-controlled homing is not possible if multiple motors have to be controlled in a coordinated way when moving an axis, since the axes are rigidly connected via the axis mechanics. In this case, it is best to establish the position data reference of the axis using the "set absolute position" procedure, because it does not require axis motion. Therefore, implement the motor encoders (encoder 1) as encoders to be evaluated in absolute form!
- In the case of torque/force command value coupling and velocity command value coupling, possibly required synchronization motions have to be carried out by the external control. In the case of position command value coupling, a synchronization motion of the slave is automatically carried out through its operation mode "position control, drive controlled" that has been set.



Via the setting in P-0-1370, the settings required for axis coupling are made.

### 7.2 Configuring and operating via parameters

Axis Coupling, Basic is made available as a loadable Technology App in the form of a parameter file. The Technology App has to be loaded in master and slave(s) and has to be active. The Technology App takes over the configuration of ctrlX DRIVELink in master and slave required for axis coupling, as well as of the primary operation mode in the slave.

The configuration is only possible in CM and is carried out automatically when the drive is booted up, depending on the content of P-0-1370. In P-0-1370, the type of coupling and the axis type (master/slave) have to be set so that the suitable configuration can be carried out. Any changes in P-0-1370 will only be applied in CM. If changes to P-0-1370 are made outside of CM, the warning E2215 is output (changes in configuration only possible in CM). In addition, this is displayed in the status parameter P-0-1411, bit 0. In this case, either the content of P-0-1370 has to be corrected again or the axis has to be switched to CM so that the Technology App can make the specified configuration change to DRIVELink.

During the transition from PM to OM, the configuration of the axes (DRIVELink configuration, operation mode) is compared to the input in P-0-1370. If the settings in P-0-1370 do not match the configuration, the error F2215 is output. In addition, this is displayed in the status parameter P-0-1411, bit 1. The cause

might be that the drive had been in CM for too short a time and the configuration could not be completed or the user manually changed the DRIVElink/operation modes configuration. To get a valid configuration again, either the content in P-0-1370 has to be adjusted or the configuration has to be repeated (switch to CM and apply a positive edge to P-0-1391, bit 0).

For the details of the configurations please see the respective types of coupling in [Chapter 6 Functional description on page 15](#).

Due to the settings of the user in P-0-1370 in each axis, the ctrlX DRIVElink configuration is carried out automatically in the respective axis by the Technology App. For this purpose, the axis has to be in CM. Depending on whether the axis is to be master or slave, P-0-1862 is then written. The Technology App automatically takes into account whether there is a single-axis device (with external ctrlX DRIVElink) or a double-axis device (with internal ctrlX DRIVElink). Depending on the input in P-0-1370, bit 1/0, the following configuration in P-0-1862 is written by the Technology App in the respective axis:

Axis Coupling configuration (P-0-1370.0.0) bit 1/0	Significance for ctrlX DRIVElink configuration of axis	Resulting configuration in P-0-1862 for single axis	Resulting configuration in P-0-1862 for double axis
01	Master	2	1 (ctrlX DRIVElink internal)
10	Slave	3	1 (ctrlX DRIVElink internal)
00	deactivate	0	0

### 7.3 Configuring and operating by means of ctrlX DRIVE Engineering

The configuration and operation of the function by means of individual operation and commissioning dialogs is supported in ctrlX DRIVE Engineering with version 01V26 and above.

In ctrlX DRIVE Engineering, the dialog can be called via the function tree.

### 7.4 Configuring the axis error reaction

The higher-level control takes over the coordination of the error reactions; an automatic configuration by the axis coupling does not take place. The standard error reactions of the drive are used. For this purpose, the control has to evaluate the error bit in the status word of master communication (e.g. S-0-0135) of master and slave respectively, as well as the diagnostic message number in S-0-0390, and the error-free axis has to be commanded accordingly.

The following default error reactions are recommended for master and slave.



The settings described here are to be understood as examples and have to be adjusted to the application requirements.

Preferred solution in the case of error in the master

Table 4: Error in ctrlX DRIVElink master (command value producer) - deceleration controlled by control

Error category	Behavior in ctrlX DRIVElink master (command value producer)	Behavior in ctrlX DRIVElink slave (command value consumer)	Remark
F2 and F3 errors	Drive or control reaction (continuing positioning via control reaction is possible)	Slave remains in drive enable (AF) and follows the master	-
F4 errors	Drive reaction		Control reaction time for F4, F6 and F7 errors is parameterized with P-0-0117.0.2
F6 and F7 errors	(continuing positioning via control reaction is only possible with restrictions)		
F8 errors	Drive reaction (torque disable or motor phase short circuit)	Drive enable (AF) switched off	<b>The type of reaction of the slave has to be decided with regard to the specific application!</b> <i>Assessment/recommendation:</i> Suited for rigid mechanical connection with all types of coupling
		Slave remains in drive enable (AF) and follows the master	<b>The type of reaction of the slave has to be decided with regard to the specific application!</b> <i>Assessment/recommendation:</i> Suited for loose mechanical connection with velocity and position command value coupling

### Alternative solution in the case of error in the master

Table 5: Error in ctrlX DRIVElink master (command value producer) - drive-controlled deceleration

Error category	Behavior in ctrlX DRIVElink master (command value producer)	Behavior in ctrlX DRIVElink slave (command value consumer)	Remark
F2 and F3 errors	Drive reaction after the control reaction time expired (control reaction time has to be set to the time how long it takes for the slave to react to removing of drive enable)	Drive enable (AF) switched off	Set the same control reaction time for F2 and F3 errors (P-0-0117.0.1) and F4, F6 and F7 errors (P-0-0117.0.2), thus the same reaction in the case of F2, F3, F4, F6 and F7 errors
F4 errors			
F6 and F7 errors			
F8 errors	Drive reaction (torque disable or motor phase short circuit)	Drive enable (AF) switched off	<b>The type of reaction of the slave has to be decided with regard to the specific application!</b> <i>Assessment/recommendation:</i> Suited for rigid mechanical connection with all types of coupling
		Slave remains in drive enable (AF) and follows the master	<b>The type of reaction of the slave has to be decided with regard to the specific application!</b> <i>Assessment/recommendation:</i> Suited for loose mechanical connection with velocity and position command value coupling

### Preferred solution in the case of error in the slave

Table 6: Error in ctrlX DRIVElink slave (command value consumer) - drive-controlled deceleration

Error category	Behavior in ctrlX DRIVElink master (command value producer)	Behavior in ctrlX DRIVElink slave (command value consumer)	Remark
F2 and F3 errors	Drive enable (AF) switched off	Drive reaction after the control reaction time expired (control reaction time has to be set to the time how long it takes for the master to react to removing of drive enable)	Set the same control reaction time for F2 and F3 errors (P-0-0117.0.1) and F4, F6 and F7 errors (P-0-0117.0.2), thus the same reaction in the case of F2, F3, F4, F6 and F7 errors
F4 errors			
F6 and F7 errors			
F8 errors	Drive enable (AF) switched off	Drive reaction (torque disable or motor phase short circuit)	<b>The type of reaction of the master has to be decided with regard to the specific application!</b>
	Torque disable or motor phase short circuit		



### Alternative solution in the case of error in the slave

Table 7: Error in ctrlX DRIVElink slave (command value consumer) - deceleration controlled by control

Error category	Behavior in ctrlX DRIVElink master (command value producer)	Behavior in ctrlX DRIVElink slave (command value consumer)	Remark
F2 and F3 errors	Drive enable (AF) switched off Master axis can still be positioned by the control	Slave follows the master via control reaction	-
F4, F6 and F7 errors	Drive enable (AF) switched off	Drive reaction after the control reaction time expired (control reaction time has to be set to the time how long it takes for the master to react to removing of drive enable)	Control reaction time for F4, F6 and F7 errors is parameterized with P-0-0117.0.2
F8 errors	Drive enable (AF) switched off Slave remains in drive enable (AF) and follows the master	Drive reaction (torque disable or motor phase short circuit)	<b>The type of reaction of the slave has to be decided with regard to the specific application!</b>



## 8 Diagnostic and status messages

When the Technology App is used, the following diagnostic/status messages may occur:

### F2215 Axis coupling configuration error

F2215 displays a configuration error of ctrlX DRIVElink as compared to the setting in P-0-1370.



This diagnostic message is also displayed in the status word (P-0-1411, bit 1).

Cause	Remedy
This error is generated if the Technology App, when switching from CM/PM to OM, detects an invalid configuration of ctrlX DRIVElink as compared to the setting in P-0-1370. That is to say, P-0-1862 and P-0-1843/P-0-1853 are not valid compared to the configuration of axis coupling in P-0-1370.	Adjust content in P-0-1370 – or – Switch drive to CM and by means of P-0-1391, bit 0, reload the configuration according to P-0-1370 <b>Note:</b> The error can only be cleared in CM.

### E2215 Axis coupling configuration only in CM



This diagnostic message is also displayed in the status word (P-0-1411, bit 0).

Cause	Remedy
Axis coupling can only be configured in CM. This warning is generated if axis coupling has not been configured (P-0-1370) in CM.	Undo change in configuration in P-0-1370 – or – Switch drive to CM and then change the configuration of axis coupling in P-0-1370



## 9 Descriptions of the parameters

### 9.1 P-0-1370, Axis Coupling configuration

The parameter P-0-1370 is used to configure the axis coupling.

The type of coupling and the axis type have to be set in P-0-1370.

The parameterization of P-0-1370 is only possible in CM, the actual configuration by the Technology App takes place automatically. The configuration is applied after the drive was rebooted.

Bit	Description/function	Comment
1/0	<b>Axis type</b> 00: ctrlX DRIVElink deactivated 01: Axis is master 10: Axis is slave	The settings for the configuration of ctrlX DRIVElink are made by the Technology App in P-0-1862.
2/3	Reserved	
4/5	<b>Type of coupling</b> 00: Coupling not active 01: Torque coupling 10: Velocity coupling 11: Position coupling	The settings of the cyclic data of coupling are made by the Technology App in P-0-1843 and P-0-1853.  The primary operation mode (S-0-0032) in the slave is carried out by the Technology App.
6-15	Reserved	

#### Attributes

Data length	4 byte
Min./max. value	0/-
Format	BIN
Unit	-
Default	0
Type	Input register
Decimal places	None
Buffered if control voltage fails	Yes
Editability of the operating data	CM

### 9.2 P-0-1391, Axis Coupling default configuration

To get a valid configuration again after the error F2215, either the content in P-0-1370 has to be adjusted or the configuration has to be repeated according to P-0-1370. This is initiated by P-0-1391.

To apply the configuration from P-0-1370, it is necessary to switch to CM, and a positive edge has to be applied to P-0-1391, bit 0.

Bit	Description/function	Comment
0	<b>Default configuration</b> "0"→"1": Default configuration of axis coupling is loaded	-

**Attributes**

Data length	4 byte
Min./max. value	0/-
Format	BIN
Unit	-
Default	0
Type	Input register
Decimal places	None
Buffered if control voltage fails	No
Editability of the operating data	CM

**9.3 P-0-1411, Axis Coupling status**

Via the parameter P-0-1411, it is possible to read out the configuration status of the axis.

During the transition from CM to OM, the actual configuration of the axes is compared to the input in P-0-1370. The error F2215 is output in case the configurations differ. The warning E2215 is activated if the drive is not in CM when P-0-1370 is changed.

Bit	Description/function	Comment
0	<b>Warning E2215</b> 0: Change to P-0-1370 made in CM 1: Change to P-0-1370 not made in CM	Change in configuration is not possible, since P-0-1370 was changed while the drive had not been in CM
1	<b>Error F2215</b> 0: No configuration error, DRIVElink configuration complies with input from P-0-1370 1: Configuration error is present, axis coupling not possible, DRIVElink configuration does not comply with input from P-0-1370	Configuration in P-0-1370 does not match the actual DRIVElink configuration.

**Attributes**

Data length	4 byte
Min./max. value	0/-
Format	BIN
Unit	-
Default	0
Type	Output register
Decimal places	None
Buffered if control voltage fails	No
Editability of the operating data	Cannot be edited

# 10 Glossary

## Component

A component is a combination of assembly parts with a specified function which are part of the equipment, the device or the system. Components of the electric drive and control system are e.g. supply units, drive control devices, mains choke, mains filter, motors, cables, etc.

## ctrlX CORE

ctrlX CORE is the product line of the compact control platform of ctrlX AUTOMATION.

ctrlX CORE is available in embedded form, drive-integrated form or in the IPC.

## ctrlX DRIVE

ctrlX DRIVE is the product line of the compact modular drive system of ctrlX AUTOMATION.

## ctrlX DRIVE Engineering

ctrlX DRIVE Engineering is the software used to configure and commission the ctrlX DRIVE drive system.

## ctrlX DRIVE Technology App

ctrlX DRIVE Technology App (in short: Technology App) is a ready-made technology function that can be loaded to ctrlX DRIVE Technology Function.

## ctrlX DRIVE Technology Function

ctrlX DRIVE Technology Function is the PLC firmware function that allows customized PLC programs or ready-made Technology Apps to be used in the axis processor of the ctrlX DRIVE drive system.

## ctrlX DRIVEplus

ctrlX DRIVE is the product line of the compact modular drive system of ctrlX AUTOMATION.

With ctrlX DRIVEplus, the drives can be extended by additional software functions and hardware.

## Device

A device is an end product with an individual function, intended for the user and put on the market as individual commodity.

## Drive

A drive (electric drive) consists of a drive controller with an electric motor.

## EnDat

EnDat® is a registered trademark of -Dr. Johannes Heidenhain GmbH.

## Installation

An installation consists of multiple devices or systems interconnected for a defined purpose and at a defined location. However, these devices or systems are not intended to be put on the market as a single functional unit.

## Package

A package is an installable artifact that contains one or more software artifacts (1..n) which can be used on a device.

A package can contain, for example, firmware artifacts, applications, templates and recipes. Packages are customized features a customer can buy and/or install.

## Product

Example of a product: Device, component, part, system, software, firmware, among other things.

## User

A user is a person installing, commissioning or using a product which has been placed on the market.

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](http://www.boschrexroth.com/electrics)



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