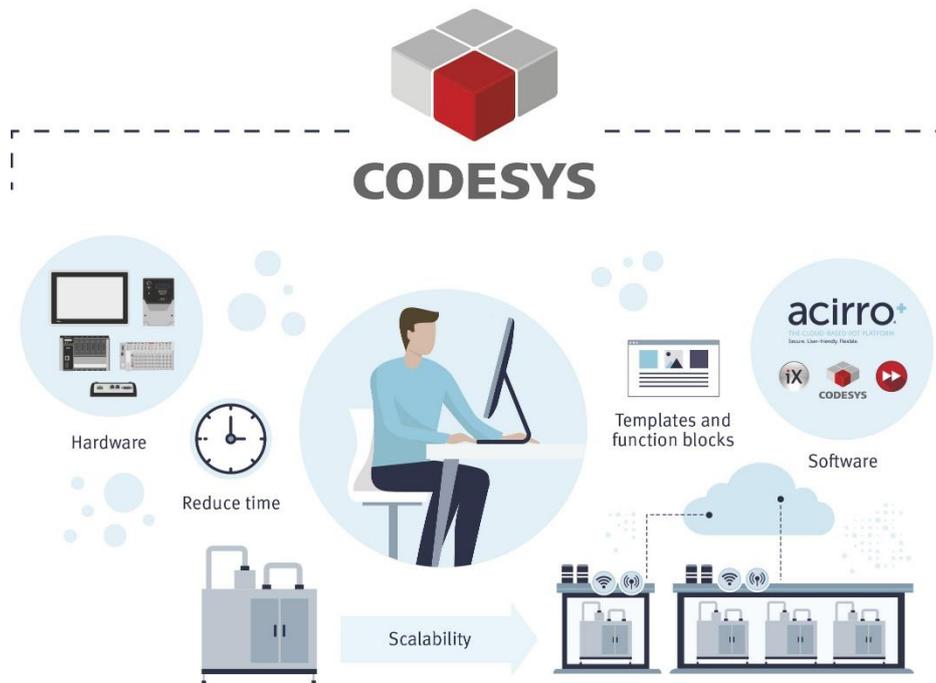


Quick start guide

SoftMotion helper functions

SER0022 - to enhance the CODESYS motion library



1 Function and area of use

This document provides guidelines when working with SER0022, which offers some commonly needed Motion helper functions

2 About this document

This quick start document should not be considered as a complete manual. It is an aid to be able to startup a normal application quickly and easily.

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Use the following hardware, software, drivers and utilities in order to obtain a stable application:

In this document we have used following software and hardware

- CODESYS 3.5 SP10 Patch 1
- BoX2 Pro Motion

For further information refer to

- https://www.beijerelectronics.se/sv-SE/Support/Help_online?docId=67541

This document and other quick start documents can be obtained from our homepage. Please use the address support.europe@beijerelectronics.com for feedback.

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4 Motion with CODESYS

The CODESYS motion library includes a myriad of motion functionality. The purpose of this library is to add functions that are commonly required.

These helper functions to enhance the CODESYS motion library of Box2 Pro Motion. Gives easy access to the drive's main inputs (POT, NOT, ARst, Home) via the PLC rather than the drive's CN1 connector.

Also provides a convenient bump-homing function for linear axes without home proximity switches.

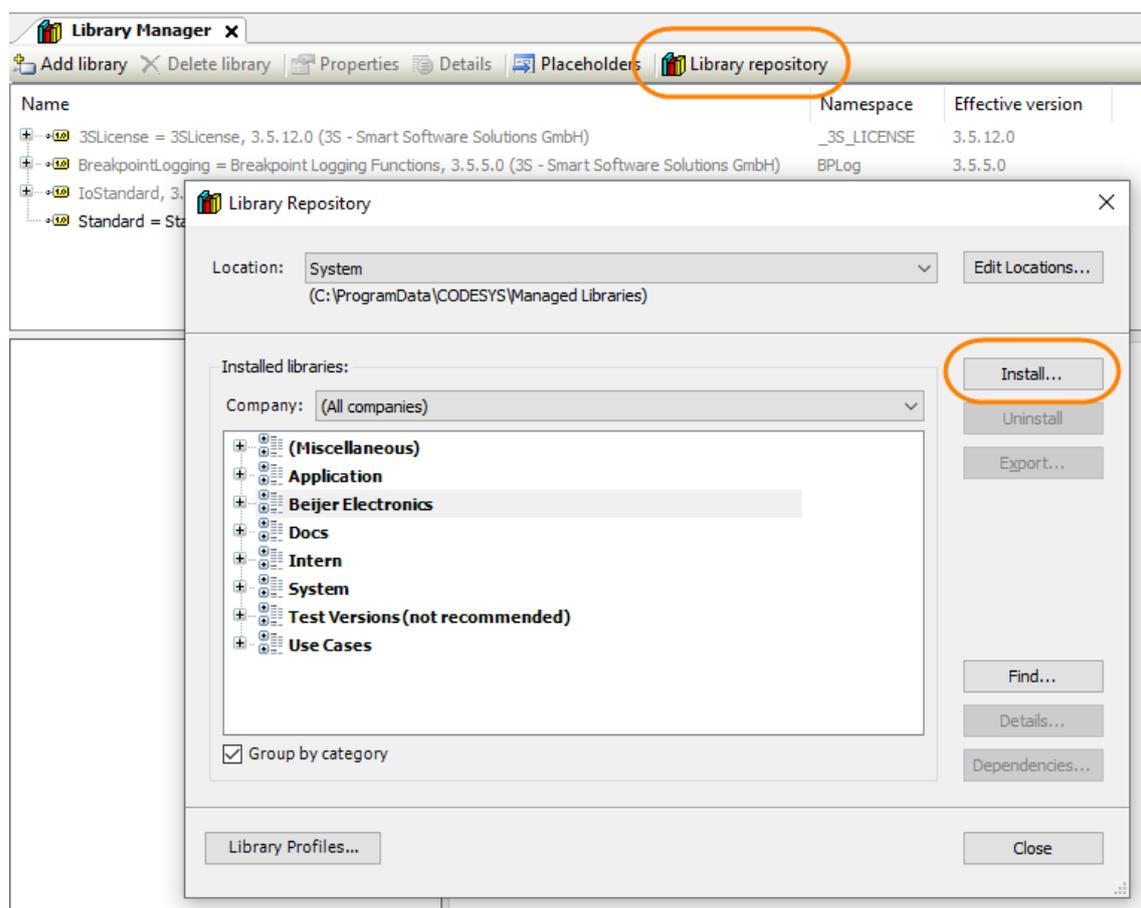
5 Preparing your editor

The following chapter describes important procedures and settings needed for a well functioning system.

5.1 Installation of the library to your editor

The *.compiled-library needs to be made available in your system so it can be included in projects. This is done by accessing the 'Library Manager' → 'Library Repository' then 'Install'

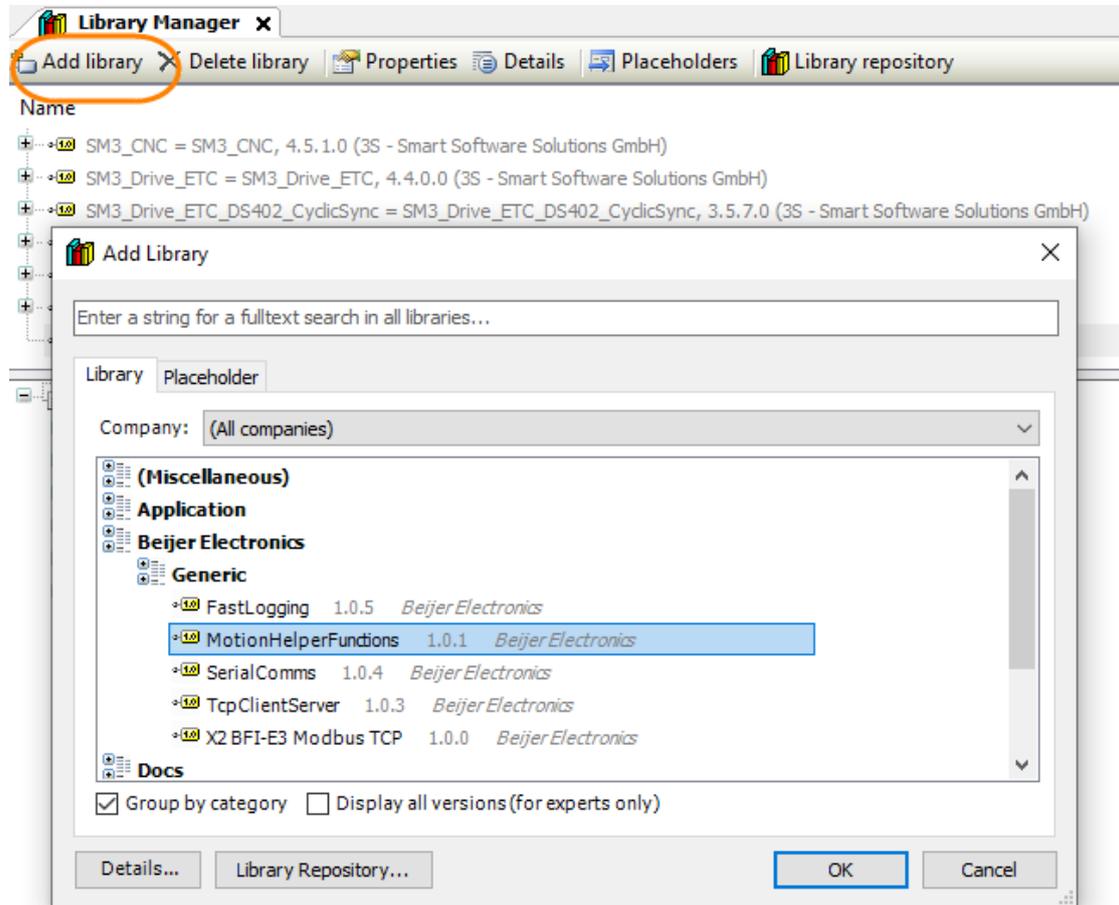
Navigate to the folder where you have put the *.compiled-library.
This procedure will need to be repeated if you use a new PC.



5.2 Add the library into your project

The library is now available for you to include in your specific project.

Note, the first time you need to go 'Advanced' menu below to find the library, and the next time you don't need to. Because previously used libraries are available immediately from the Add library dialog.

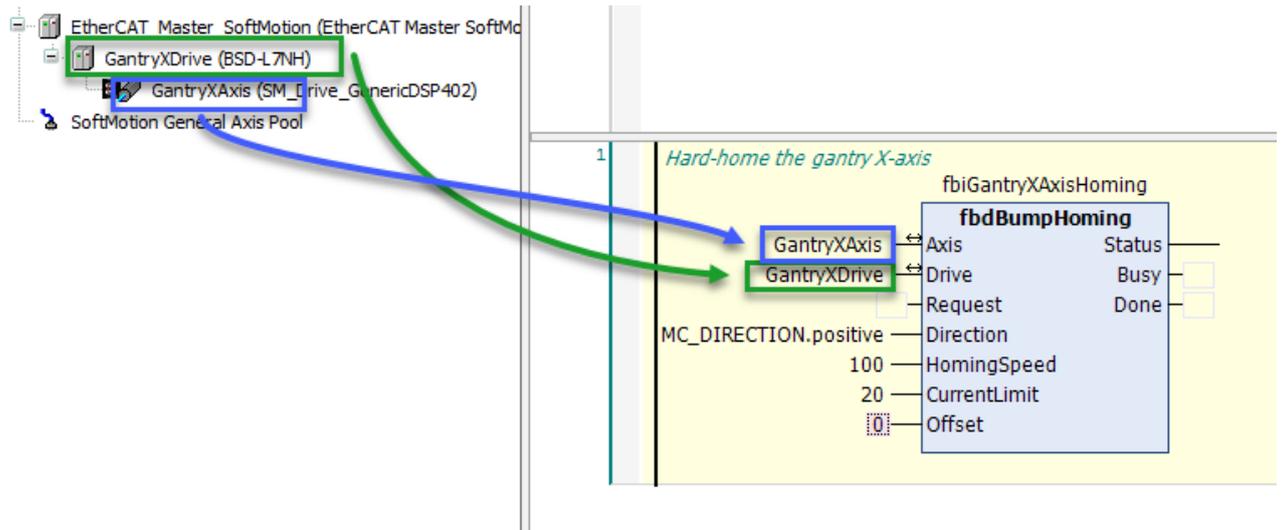


6 Function Blocks

6.1 fbdBumpHoming

This function block extends the native axis homing methods, which need some external sensor to home.

Some axes are suitable to be bump-homed, which involves moving an axis at a speed-based, torque-limited move until it encounters something solid. This position is then defined as the axis' home position. Optionally, the axis can be jogged away from this point to define a home position away from the hard-stop.



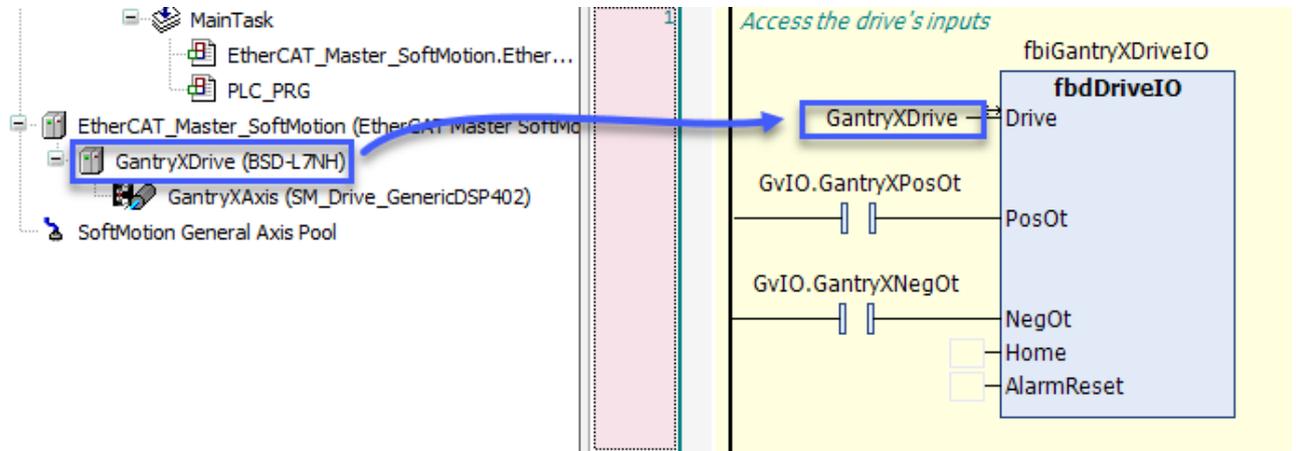
Name	Scope	Type	Description
Axis	VAR_IN_OUT	AXIS_REF_SM3	Enter the name given to the axis
Drive	VAR_IN_OUT	IoDrvEthercatLib.ETCSlave	Enter the name given to the drive
Request	VAR_IN	BOOL	Initiates homing on the rising edge
Direction	VAR_IN	MC_DIRECTION	Only positive and negative are legal. Anything other than these will be interpreted as positive
HomingSpeed	VAR_IN	REAL	In user-units
CurrentLimit	VAR_IN	REAL	Percentage of motor's maximum
Offset	VAR_IN	REAL	An optional move after hard-homing. A positive number will yield a move in the opposite direction to the homing.
Status	VAR_OUT	STRING	Plain text echo of blocks' status. See below.
Busy	VAR_OUT	BOOL	
Done	VAR_OUT	BOOL	High for at least one-scan upon completion

StatusText	Meaning
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Not available	Axis isn't enabled
Waiting request	Block (and axis) are ready to work
Writing drive parameters	Various parameters are written to the drive via SDO. Should be barely noticeable
Jogging	Axis moving and looking for the hard stop
Issuing halt; waiting for standstill	After encountering the stop, the axis is gracefully stopped. This state should be quick.
First homing	Setting the hard-stop as position 0
Restoring current limit	The drive's current limit was reduced for homing. It is now restored to its previous value
Moving offset	If the Offset parameter is non-zero, the axis moves to its new home position.
Second homing	Setting the offset position as 0
Done, request still high	The block has finished and the Request flag is still high

6.2 fbdDriveIO

To use the drive's inputs requires access the the CN1 connector, or alternatively a breakout board. This FB allows the user to write to the drive's inputs from normal PLC IO. This has advantages such as a reduction in wiring time and hardware, plus the ability to quickly change switches from NO to NC without accessing the drive's parameters



Name	Scope	Type	Description
Drive	VAR_IN_OUT	IoDrvEthercatLib.ETCSlave	Enter the name given to the drive
PosOt	VAR_IN	BOOL	User positive overtravel signal. Drive display will show 'Pot'
NegOt	VAR_IN		User negative overtravel signal. Drive display will show 'not'
Home	VAR_IN	BOOL	User home switch. Reaction time will be the servo's scan plus the IO scan
AlarmReset	VAR_IN	BOOL	Used to reset a drive error (not an axis error)

7 About Beijer Electronics

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