



Data Sheet CODESYS SoftMotion SL

CODESYS SoftMotion is an additional option for SoftPLC systems and controllers that are compatible with CODESYS. CODESYS SoftMotion extends the range of functions from simple logic control to motion control for sophisticated movement with coordinated axes.

Product description

CODESYS SoftMotion supports the control of single-axis coordinated multi-axis movements on qualified control systems that are compatible with CODESYS, such as master/slave functions and cams.

Functionality:

- Project engineering of motion with blocks, bundled in extensive function libraries
- Configuration of actuated drives with fieldbus support integrated in the CODESYS Development System
- Decoupling of application creation from the applied hardware by the abstraction of drives with names in the device tree
- Motion planning with cam editor, when needed
- Processing of motion in the runtime system on the controller with the IEC 61131-3 logic application

Typical applications of CODESYS SoftMotion:

- As an additional option for powerful, CODESYS compatible control systems with strict real-time behavior (FPU recommended)
- Actuation of single-axis and multi-axis movements, for example with position and velocity definitions, drive functions, or phase actuation
- Implementation of cams or virtual master shafts

CODESYS SoftMotion extends the CODESYS Development System with the following elements:

- Extensive function library with blocks for axis actuation and help functions
- Constituent visualization templates for program blocks
- Integrated cam editor
- Axis and drive configuration inside the fieldbus configurators, as well as for stepper drives and encoders
- Convenient option for commissioning axes ("Online Configuration Mode") without any special IEC 61131-3 application code

Scope of the function library

- Certified function blocks according to PLCopen MotionControl, Part 1 (V1.1):
 - Absolute and relative positioning (MC_MoveAbsolute, MC_MoveRelative)
 - Superimposed positioning (MC_MoveSuperimposed)
 - Movement at constant velocity (MC_MoveVelocity)
 - Consistent support of jerk-limited profiles (continuous acceleration for any kind of interruption of the current motion)
 - Drive-guided homing (MC_Home)
 - Blocking stop (MC_Stop)
 - Control release (MC_Power)
 - Read and write parameters (MC_Read/WriteParameter)
 - Read actual position (MC_ReadActualPosition)
 - Position, velocity, and acceleration profiles (MC_*Profile)
- Function blocks according to PLCopen MotionControl, Part 2 (V1.0):
 - Probe (MC_TouchProbe, MC_AbortTrigger)
 - Set and move position (MC_SetPosition)
 - Read actual velocity and actual torque (MC_ReadActualVelocity, MC_ReadActualTorque)

- Cam switch (MC_DigitalCamSwitch)
 - Electronic gear with synchronization position (MC_GearInPos)
 - Full stop (MC_Halt)
 - Additional blocks
 - Control and query of the static deceleration
 - Monitoring of the drag error, a position window, or maximum values
 - Distance measurement (also of modulo axes)
 - External definition of position, velocity, and target value from the application
 - Management of errors in the function blocks
 - Controller-guided homing
 - Operation of cams and cam switches
 - Definition of the specified target torque
 - Commissioning the drive
 - Absolute and relative positioning with transitional velocity (SMC_MoveContinuousAbsolute and SMC_MoveContinuousRelative)
 - Setting control mode to position, velocity, or torque
- Visualization templates for the most important function blocks for fast commissioning with the visualization integrated in the CODESYS Development System
 - Documentation of the library functions in the online help

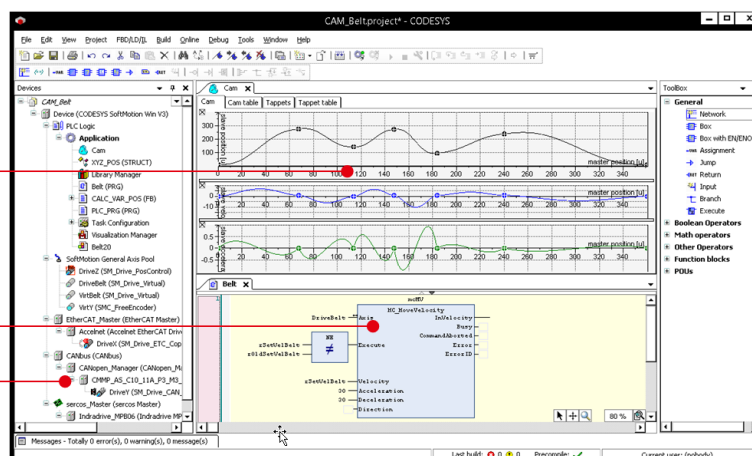
Range of functions for the cam editor

- Graphical and numerical planning for the cam using any base in representation of the distance, velocity, acceleration, and jerk
- Linear or polynomial interpolation (5th order polynomial)
- Configuration of tappets and their switching behavior in the cam
- Configuration of the cam regarding dimension, period, and continuity requirements

Cam editor of distance, velocity, acceleration, and jerk

Call of the motion block within the logic program

Drive configuration



Picture 1: Using cam planning to create a motion project in the CODESYS Development System

Supported fieldbus systems and drive connections

- EtherCAT
- CAN/CANopen
- Sercos
- Virtual drives (for virtual axes and tests)
- Position control in the PLC by using PT control for velocity-controller axes with position feedback (for example, frequency converter with encoder feedback, hydraulic axes with proportional valve, and position feedback)
- Logical axes as copies of other axes with independent offset and on-demand dead-time compensation / actual value smoothing
- Configuration of encoder axes that form any analog signal (for example, as the master axis for cams)

Tested drivers for the following drives

- EtherCAT:
 - Beckhoff EL2521 / EL5101 / EL72x1 / EL7031
 - Bonfiglioli iBMD

- CMZ BD / LBD
- Control Techniques Digitax / Mentor / Unidrive
- Copley Accelnet
- Delta ASDA A2 / A3 / B3
- Festo CMMP EtherCAT
- Generic CiA 402 (also for multi-axis drives)
- Generic SoE (also for multi-axis drives)
- Hitachi ADV series
- Infranor XtrapulsPac
- JAT Ecovario
- KEB F5 / H6
- Kollmorgen AKD / AKD Servodrive
- Metronix ARS 2000 series
- Omron G5
- Panasonic MINAS A5B / A6B
- Parker compax3 / SBC / PSD
- Sanyo Denki RS2
- Schneider Electric Lexium32 / Lexium32i
- Servotronix CDHD
- Stäubli uniVAL
- Stöber Posidrive, SD6, SI6/SC6
- Yaskawa Sigma7 series

- CAN/CANopen
 - Bonfiglioli iBMD
 - CMZ BD / SD / LBD
 - Festo EMCA / CMMP
 - Generic CiA 402 (also for multi-axis drives)
 - Infranor cd1-k / XtrapulsPac
 - KEB F5 / Stepless Technology
 - Metronix ARS 2000 series
 - Nanotec PD4C
 - Schneider Electric Lexium05 / Lexium23 / Lexium28 / Lexium32 / Lexium32i / SD-3
 - JAT Ecovario

- Sercos
 - Bosch Rexroth IndraDrive C/M/Cs/ML/Mi

General information

Manufacturer:

3S-Smart Software Solutions GmbH
 Memminger Strasse 151
 87439 Kempten
 Germany

Support:

<https://support.codesys.com>

Item:

CODESYS SoftMotion SL

Item number:

2305000000

Sales:

CODESYS Store

<https://store.codesys.com>

Included in delivery:

- Extended device description for SoftSPS
- License key

System requirements and restrictions

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|-------------------------------------|--|
| Programming System | CODESYS Development System V3.5.9.50 or higher |
| Runtime System | CODESYS Control Version 3.5.5.0 or higher |
| Supported Platforms/ Devices | <p>All supported by CODESYS:</p> <ul style="list-style-type: none"> • Real-time capable operating system platforms • CPU platforms with available FPU (Floating Point Unit) • Devices with integrated fieldbus (EtherCAT, CAN/CANopen, or Sercos) <p>Note: Use the project "Device Reader" to find out the supported features of your device. "Device Reader" is available for free in the CODESYS Store.</p> |
| Additional Requirements | WIBU Codemeter Support |
| Restrictions | - |
| Licensing | License activation optional on CODESYS Key or Soft Key (Soft Key: free of charge component of CODESYS Controls) |
| Required Accessories | Optional: CODESYS Key |

Note: Not all CODESYS features are available in all territories. For more information on geographic restrictions, please contact sales@codesys.com.

Note: Technical specifications are subject to change. Errors and omissions excepted. The content of the current online version of this document applies.