

The right control system for each application:
Controlling movement with MOVI-PLC®

Libraries and application solutions



MOVI-PLC®: Universal, scalable and powerful

Electrical drive engineering components are playing an increasingly important role in the automation of a wide variety of machines. This is the case because drive solutions have an impact on the basic features of a machine, for example, the power, costs as well as the workload and expenditure for maintenance and startup.



Flexibility is required when designing a suitable drive solution regardless of whether operators are selecting the drives, drive electronics or the technology. However, control technology is also needed to support this flexibility by allowing optimum access to the drive functionality.

MOVI-PLC®, the controller series of SEW-EURODRIVE, offers control technology designed to suit specific drive solutions. The series combines motion and logic control to provide the complete drive functionality by means of user-friendly function modules in an environment that can be programmed in accordance with IEC 61131. In other words, the controller comes equipped with the drive functionality required for the drive solutions – you can't get more flexible than that.

Driving the world – with innovative drive solutions for all branches of industry and for every application. Products and systems from SEW-EURODRIVE for any application – worldwide. SEW-EURODRIVE products can be found in a variety of industries, e. g. automotive, building materials, food and beverage as well as metal-processing. The decision to use drive technology “made by SEW-EURODRIVE“ stands for safety regarding functionality and investment.





Universal

MOVI-PLC® is universal because it can be installed as an option card in MOVIDRIVE® B drive inverters and MOVITRAC® B frequency inverters. However, it can also be used in the master module of the modular MOVIAxis® multi-axis servo drives and in the MOVIFIT® decentralized

system. Or as a compact controller on a DIN rail. It is also considered a universal solution because all SEW-EURODRIVE inverters can be connected using the system bus. Furthermore, only one tool is required for the engineering of MOVI-PLC® and the inverters.

Scalable

MOVI-PLC® is scalable because it is available in two power classes. In the basic class for the middle power range with the integrated interfaces PROFIBUS, CAN und RS-485, it can con-

trol up to 12 axes synchronously via the system bus. The advanced class for the top power range offers CAN, RS-485 and ETHERNET interfaces and can control up to 64 axes synchronously.

Powerful

MOVI-PLC® is powerful because user-friendly function modules are available in comprehensive libraries for the different drive electronics components. These modules can be used to program drive functionality simply and quickly in

accordance with IEC 61131. The same applies to the technology functions, such as electronic cam and synchronous operation, right through to configurable application solutions, for example, for handling.



Automation solutions

MOVI-PLC® can be used whenever intelligent drive solutions are required, for example, if a number of drives have to interact perfectly, because MOVI-PLC® always provides the matching drive functionality. MOVI-PLC® can be used to control the interaction simply and flexibly. In this

way, the drive functionality of a module is combined decentrally. This factor in turn relieves the workload of the centralized PLC and reduces the response time. However, it also offers options to protect data and to eliminate time-consuming porting to other control solutions.



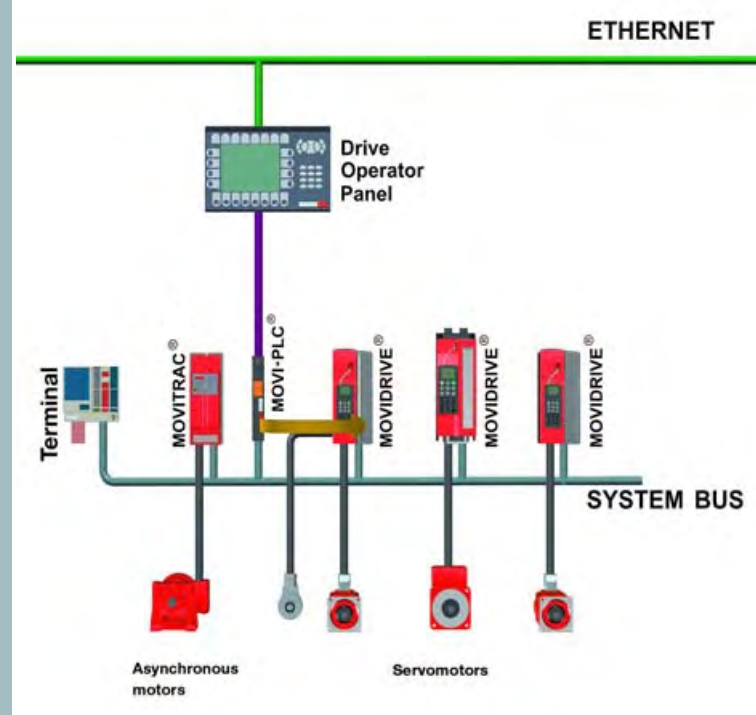
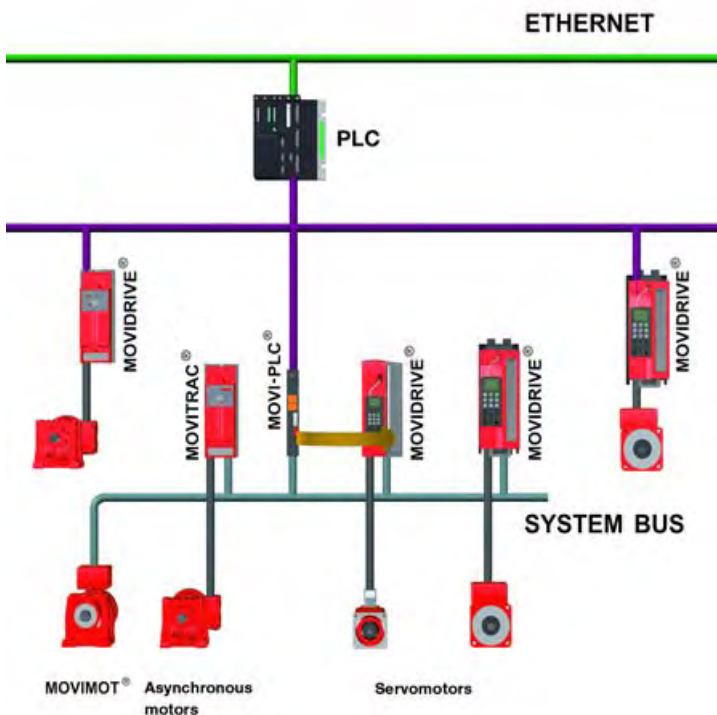
SEW-EURODRIVE combines MOVI-PLC®, drive operator panels, drive electronics and drives to offer a universal system for complete automation solutions, for which the drive functionality can be programmed simply in accordance with IEC 61131.

Modular:

- Decentralized automation of an axis system
- Coordination of the motion sequence in the axis system
- Connection to the higher-level PLC via fieldbus

Stand-alone:

- No need for a higher-level PLC – MOVI-PLC® takes on all control tasks
- Drive and actuator control
- Evaluation of decentralized I/Os
- Data exchange with the drive operator panel



MOVITOOLS® MotionStudio

MOVITOOLS® MotionStudio from SEW-EURODRIVE is characterized by being convenient, user-friendly and universally applicable. All tools for

- drive engineering startup and diagnostics
- as well as for programming the controller,

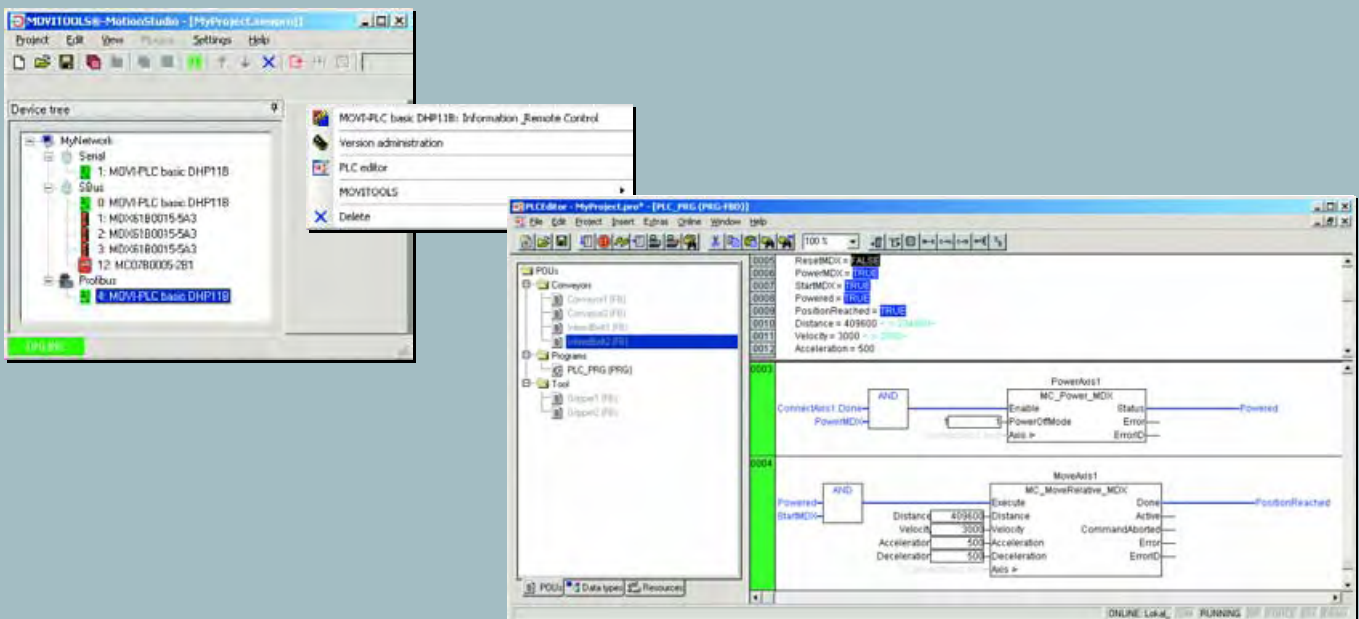
are integrated in a modular software system and can be used for all units. Whether you use them individually or combined, the tools are essential for quick and effective automation.

MOVITOOLS® MotionStudio detects all devices connected to the configured interfaces automatically and displays them as nodes in a device tree. The required tools can be selected and started quickly and easily in the context menu of each node.

Remote maintenance

Engineering access is also possible via remote maintenance. Depending on the system topology, SEW-EURODRIVE offers a variety of solutions. In the most simple scenario, an analog telephone connection is sufficient. The RS-485 interface of

the MOVI-PLC® can be addressed directly via modem. It is also possible to communicate with the MOVI-PLC® by means of a master controller, e.g. via PROFIBUS.



IEC 61131-3 Libraries for sophisticated technologies

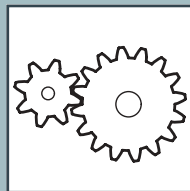
Efficient programming demands user-friendly function modules that enable fast and approved solutions. MOVI-PLC® provides a comprehensive range of function modules for a wide variety of tasks, arranged in hierarchical libraries according to functionality.

In addition to a library for standard IEC functions, there is also a library for each drive electronics component, in which modules provide the corresponding drive functionality. The libraries also contain the familiar PLCopen-certified motion blocks.

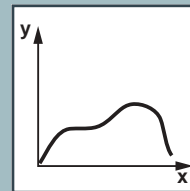
Furthermore, there are also libraries for technology functions, such as synchronous operation, electronic cam, virtual lead axis and cam controller, right through to ready-to-use application solutions, such as handling. These function modules can be combined easily to create individual, tailor-made solutions.



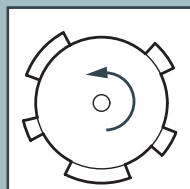
Synchronous operation



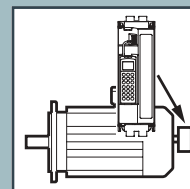
Electronic cam



Cam controller



Virtual encoder



MOVI-PLC® technology version T1 supports the libraries**MPLCTecGearMotion**

- Electronic gear unit (synchronous operation)
- Various engaging type modes and trigger sources
- Master source can be switched
- Offset processing

MPLCTecCamMotion

- Electronic cam
- Numerous trigger and master sources
- Can be switched between several curves
- Curve calculation online

MPLCTecVirtualEncoder

- Virtual encoder with jerk-limited travel profile
- Can be operated like a real drive in different modes
- Two separate virtual encoders possible
- As master value for synchronous operation and cam disc

MPLCTecCamSwitch

- Cam control
- Three tracks with 4 cams each
- Encoder source can be selected
- Sample interval 1 ms with delay time feedforward with 100 μ sec resolution

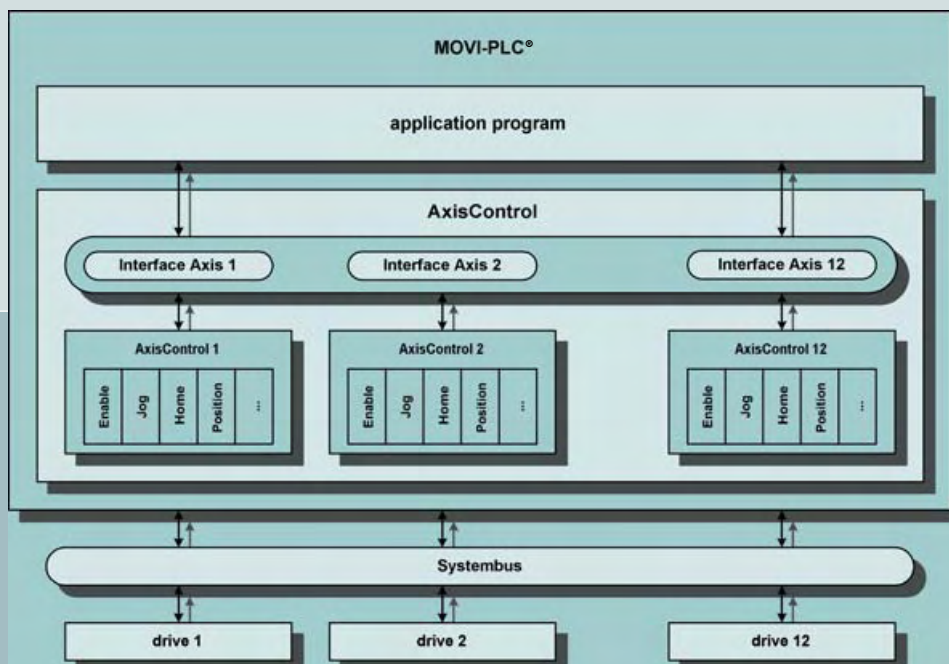


AxisControl: The platform for universal drive functionality

Due to user-friendly function modules, MOVI-PLC® is characterized by straightforward programming of drive functions. This includes enabling the drive, specifying the speed, positioning and referencing as well as reading and writing parameters. There is a user-friendly module available for each drive function, which can be integrated in the program without any problems. Perfectly matched function modules are combined to an optimum application solution.

The program AxisControl for MOVI-PLC® now goes one step further: All function modules for a wide range of drive functions are already integrated in AxisControl. Jog, referencing or positioning: For addressing the function, the user no longer has to call up the relevant module. Instead,

a global interface is addressed for starting the function and exchanging the parameters. AxisControl is thus a platform for universal drive functionality, on which an application program can easily be implemented.



AxisControl at a glance:

Available in the following versions:

1. AxisControl Single Axis

Contains drive functions for single axis movements, such as

- Jog
- Referencing
- Positioning

2. AxisControl Technology

Additional functions for

- Synchronous operation
- Cam disc
- And virtual encoder

For both versions, control of up to 12 axes is in preparation. A graphical interface with monitor for observation and control simplifies startup and enables straightforward testing of the drive functions and the virtual encoder. The AxisControl package consists of the program and the monitor. It is an integral part of each MOVITOOLS® MotionStudio version with PLC Editor.

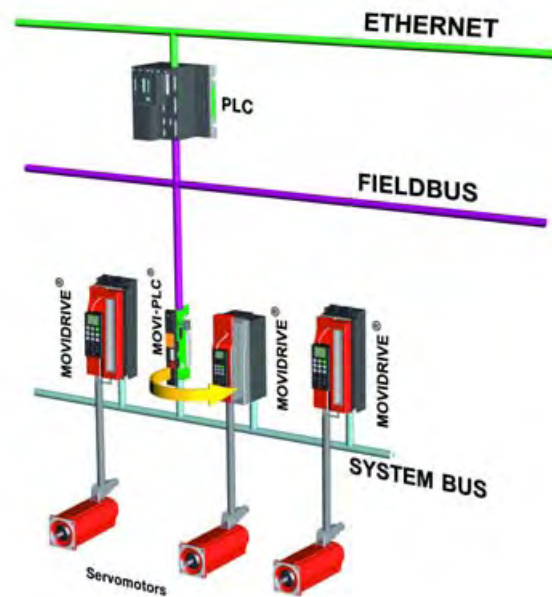
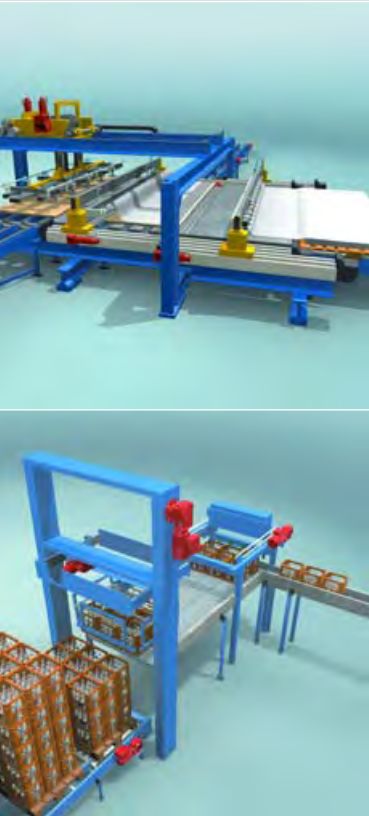
Requirements:

- MOVI-PLC® T0 for AxisControl Single Axis
- MOVI-PLC® T1 for AxisControl Technology
- MOVITOOLS® MotionStudio



Product announcement Application solution "Handling"

Short cycle times and movements that wear the materials as little as possible are essential requirements for applications in handling technology, such as palletizers, packaging machines or transfer units. To meet these requirements, several axes have to be perfectly coordinated. A task for which MOVI-PLC® is ideally suited.



The application solution "Handling" for MOVI-PLC® is a powerful tool that can coordinate motion sequences of up to four axes. Curve points can be pieced together to form paths by means of a graphical interface. The curve points are either entered directly or via "teach-in", or they are specified by a master controller. One path is

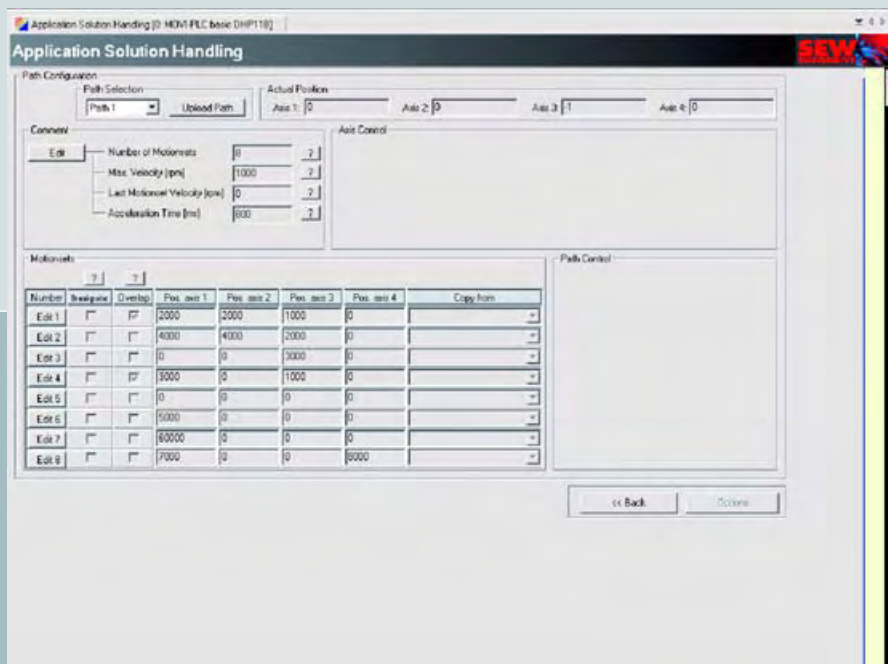
selected from a range of paths on request and traced with automatic overlap at the corner points. Specified paths can be easily tested without a master controller by means of an adjustable override and a monitor for control and observation integrated in the interface.

The package can be used as "plug-and-work" solution with the described basic functions and the defined interface for the master controller. To do so, the complete program merely has to be loaded into the controller and parameterized. No further programming is required.

As an alternative, the function modules of the package can be integrated in a separate program, e.g. for adapting the interface or for programming additional functions in the MOVI-PLC®.

Application module "Handling" at a glance:

- Coordination of up to four axes in gantry kinematics
 - Graphical interface for startup and parameterization with online help
 - Entering curve points directly, via "teach-in" or by means of master controller specifications
 - Comprehensive drive functionality for each axis (jog, referencing, single-axis positioning, multi-axis coordination)
 - Defined interface to master controller
 - Monitor for observation and control integrated in the interface
 - Automatic overlap
 - Breakpoints
 - Override
 - System positions
- Requirements:
- MOVI-PLC® basic T2
 - MOVIDRIVE® or MOVIAXIS®
 - Encoder feedback

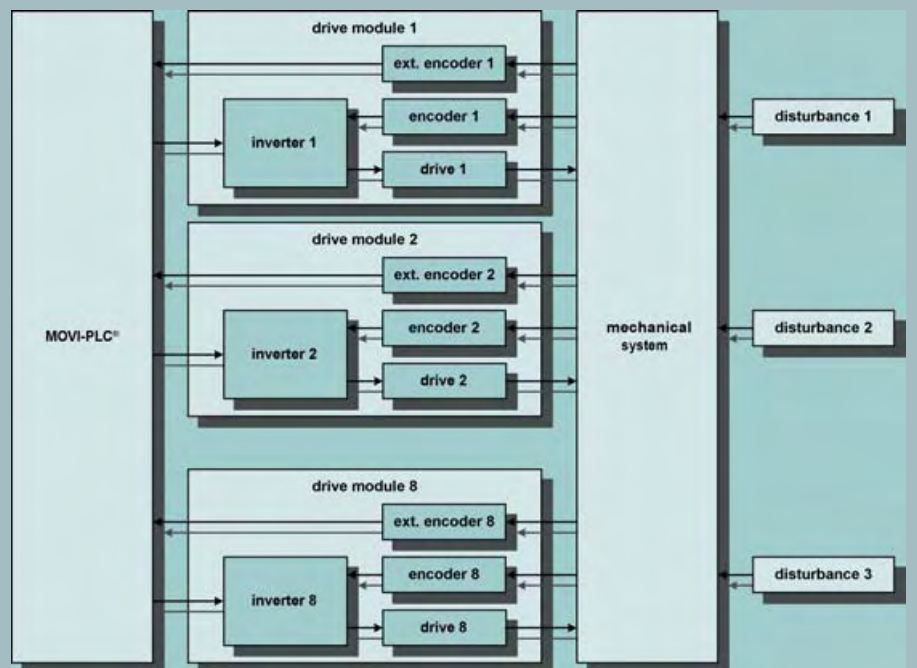


Product announcement Application solution "SyncCrane"

Cranes and hoists are often moved by mechanical systems with two or more drives that are not rigidly connected. The position of the system cannot directly be determined from the position of the motor encoder due to slip or rope elongation, for example. Additional encoders detect the influence of these disturbances and enable their compensation.

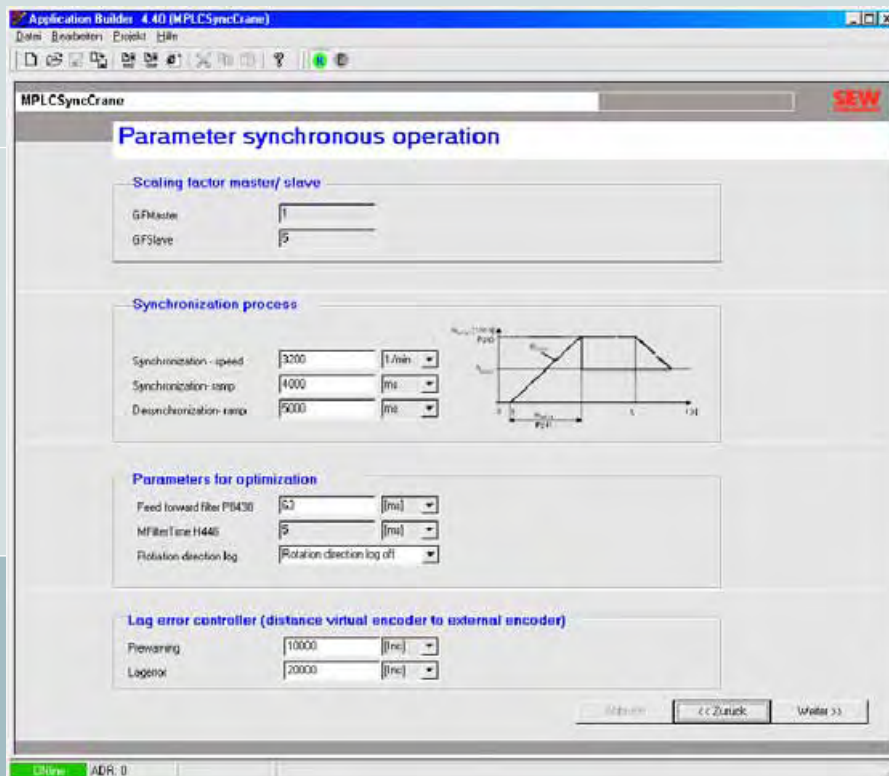
The application solution "SyncCrane" for MOVI-PLC® offers a complete modular package for these applications. Apart from the motor encoder, additional encoders are also evaluated. Indirect positioning enables a smooth travel profile while

correcting disturbances at the same time. The entire axis system can be run in synchronous operation with a virtual encoder without any problems. The cyclical processing of the additional encoder signals is freely adjustable for each axis.



The package can be used as configurable "plug-and-work" solution. The entire project can be loaded into the controller without making further programming necessary. As an alternative, the

function modules of the package can be used in a separate project in order to react flexibly to changing requirements.



Application solution "SyncCrane" at a glance:

- Up to eight axes
- Indirect positioning
- Graphical interface for startup and parameterization with online help
- Synchronous operation with virtual encoder
- Comprehensive drive functionality for each axis (jog, referencing, single-axis positioning, synchronous operation)
- Adjustable cyclical compensation of disturbances such as slip or rope elongation
- Defined interface to master controller
- Requirements:
- Monitor for observation and control integrated in the interface
- MOVI-PLC® basic T2
- Evaluation of external or SSI encoders
- MOVIDRIVE®
- Encoder feedback

Product announcement Application solution "Cam Positioning"

In many applications, e.g. in materials handling, movements are controlled by means of rapid/creep speed positioning. This solution is cost-effective and at the same time enables the correction of disturbances, such as slip that occurs when positioning a pallet on a roller conveyor. In addition, positions can easily be set by relocating a sensor.

The application solution "Cam Positioning" offers the functionality of rapid/creeps speed positioning in different variants, e.g. unidirectional for basic transport segments or bidirectional for rotating or lifting. It can be controlled via fieldbus (number of process data can be set) or simply

via terminals. The application solution "Cam Positioning" can be used with different platforms as well: decentralized with MOVIFIT® Technology (FC or MC) or centralized with MOVIDRIVE® or MOVITRAC®.



MOVIFIT® Technology with asynchronous motor or three MOVIMOT®



Application solution "Cam Positioning" at a glance:

- Graphical interface for startup and parameter setting with online help and monitor for control and observation
- Drive functions jog and rapid/creep speed positioning
- Control via fieldbus or terminal
- Decentralized with MOVIFIT® Technology (FC or MC) or centralized with MOVITRAC® or MOVIDRIVE®

Requirements:

- MOVIFIT® Technology (FC or MC), MOVITRAC® or MOVIDRIVE®





MOVI-PLC® controls at a glance

DHP11B-T.



MOVI-PLC® basic control card

- in unit versions T0, T1, T2
- for installation in MOVIDRIVE® B, MOVITRAC® B*, MOVIAXIS® master module*

Technical data:

- PROFIBUS slave DP-V1
- 2 CAN interfaces, 1 electrically isolated
- RS-485 interface
- 7 LEDs for PLC, PROFIBUS and CAN status display
- 8 digital I/Os, 5 of which are interruptible
- 512 kB program memory
- 128 kB data memory
- 16 kB retain variables
- 8 kB system variables (retain)
- up to 4000 IL lines / msec
- free-wheeling task
- cyclic tasks: 1 ms, 5 ms, 10 ms, 100 ms

OST11B



Extension for MOVI-PLC® basic DHP11B

- additional HMI/engineering/drive interface
- for installation in MOVIDRIVE® B, MOVIAXIS® master module*
optional in compact control

* can only be installed at the factory

MOVI-PLC® controls at a glance

DHx41B



MOVI-PLC® advanced control cards**

- DHE41B with Ethernet interface
- DHP41B with additional PROFIBUS slave interface
- for installation in MOVIDRIVE® B, MOVITRAC® B*, MOVIAXIS® master module*

Technical data:

- 2 x ETHERNET interfaces (10/100 BaseT)
- 2 x CAN interfaces, 1 electrically isolated
- 2 x RS-485 interfaces
- USB
- PROFIBUS slave DP-V1 (DHP41B)
- 8 digital I/O
- status display for PLC and fieldbus
- 8 MB program memory
- 4 MB data memory
- 32 kB retain variables
- 8 kB system variables (retain)
- free-wheeling task, 5 cyclic tasks (1 ms ... 10000 ms)
- PC-readable memory card for firmware and application program

OMH41B-T..



Memory cards for MOVI-PLC® advanced**

- activated for technology versions T0, T1, T2

* can only be installed at the factory, DHP41B not in MOVITRAC® B

** product announcement

MOVI-PLC® controls at a glance

DH../UOH..



MOVI-PLC® compact controls

- DHP11B-Tx/UOH11B
- DHP11B-Tx/OST11B/UOH21B
- DHE41B/UOH11B**
- DHP41B/UOH21B**

MT..



MOVIFIT® Technology function level**

- with integrated MOVI-PLC® basic
- for decentralized installation

** product announcement