

MC6 Motion Controller



Highest level of flexibility
for industrial automation
due to scalable
motion control system



Complex motion sequences, high dynamics and precision

Shorter cycle times and higher precision are permanent concerns where innovations in production technology and logistics are involved

For drive engineering systems these constantly growing requirements mean that the motion sequences keep getting faster and must be very precisely coordinated.

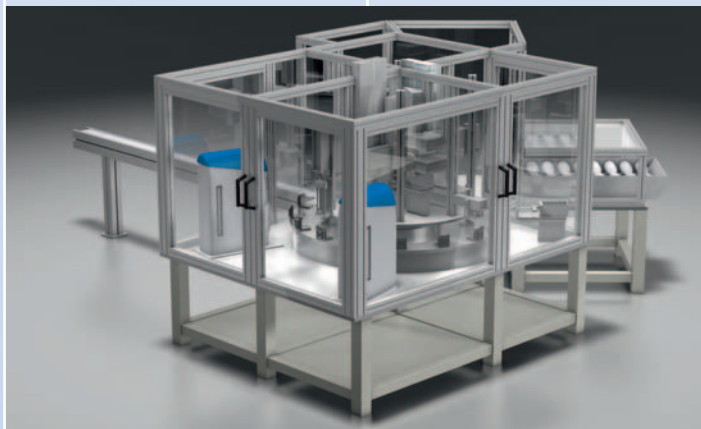
So the control system and drive mechatronics are central to the development towards more productivity and flexibility.

This means that for more and more applications it is no longer enough to provide motion control by pooling of the drive control intelligence (drive based).

The integration of PLC, HMI, Motion and CNC in one device results in effective synergy effects. The reduction of the necessary components reduces costs and significantly simplifies engineering.

If there is high complexity of functions or a number of challenging axes, a separate motion controller produces suitable conditions for a reliable coordinated motion and function sequence (controller based).

With the MC6 motion controller, STOBER is supplementing its production program and so can provide an independent drive and control system architecture from a single source.



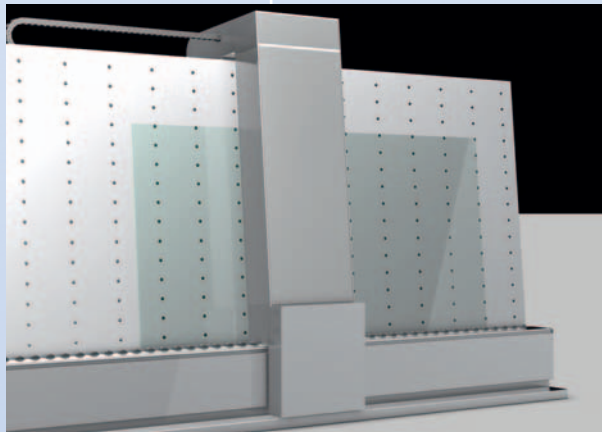
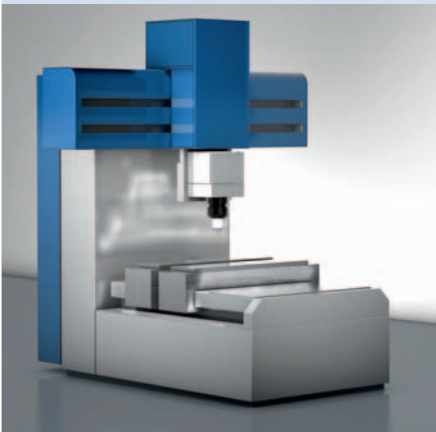
Control system architecture, software and hardware come from one source at STOBER

Collaborative commitment is the short path to the goal

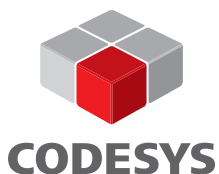
It is a long way from an idea, then concept and design, to successful commissioning of a machine or automation device. Control and drive engineering issues are nearly always the focus when seeking the solution.

As a system manufacturer STOBER has the comprehensive know-how and detailed drive engineering experience to understand these projects fully and provide targeted advice and support.

Creating concepts, agreeing feasibility, developing solutions, initial commissioning and global after-sales service are all included in the service package you can rely on from STOBER.



Synergy of functions, movements and power



The market standard for control programming under IEC 61131-3.



MC6 motion controller, cabinet PC version.

The joining of drive control and drive engineering systems generates high optimization potential

Machine and automation manufacturers have the best sales arguments when they can present an impressive complete solution with regard to controllers and drive technology.

The MC6 motion controller and its integration in the STOBER product portfolio represents an appropriate engineering solution with a high ease of operation for drive technology from one source.

STOBER also has experience with the optimum design of every individual axis.



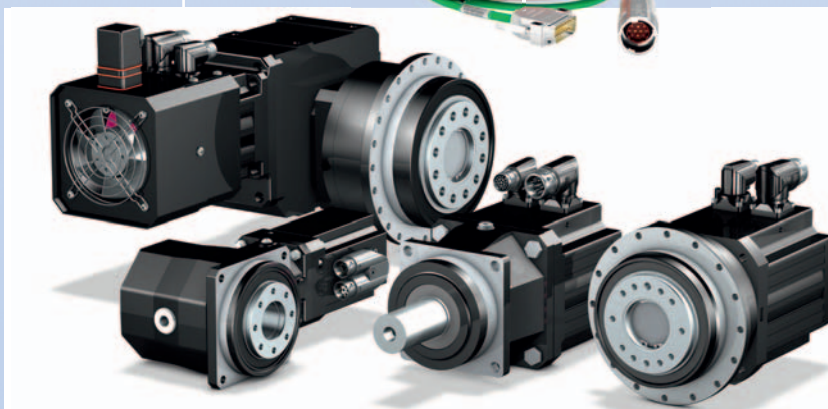
EtherCAT® cable



SD6 drive controller.



Power and encoder cables.



STOBER synchronous servo geared motors PHK, KS, P, PH.

AS6 AutomationControl-Suite

The standard in the field of programming software supplemented with system and motion control functions from STOBER

The AS6 AutomationControlSuite is a complete programming system based on CODESYS V3.

CODESYS represents a de facto market standard due to its widespread distribution. With the product-specific additions to the MC6 and the drives, STOBER has created a tool that is simple to use and oriented towards the workflow of machine commissioning.

The open system allows the integration of different components in the control concept.

All MC6 motion controllers are equipped with the CODESYS RTE V3 runtime environment.

Detailed information is also available at www.codesys.com

Also suitable for PLC solutions

The MC6 motion controller is also suitable for use as a programmable logic controller (PLC).



No special user interface (HMI) is required in the MC6 motion controller version with touch panel.

Motion control makes some things much simpler and a lot possible

All control-related drive functions are grouped together centrally in a program sequence. This makes it easier to program multiple axes in many cases.

However the use of a motion controller not only makes sense for interpolating axes but also to reach the complete system via an access point.

Especially with complex functions, the motion control architecture makes commissioning easier as well as service, if problems occur.

Machine programs such as PLC programming, the visualization interface, motion control and the drive parameterization can be maintained centrally.

Track travel and robot function

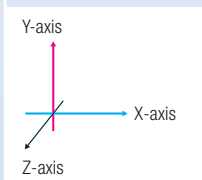
The MC6 can execute G-code and in the process interpolate up to 11 axes per axis group.

The G-code can be transferred to the controller in different ways and can then also be considered there at the runtime in 3D view.

The necessary transformations for handling or workpiece processing are already available as standard.

Creating G-code in the motion controller is also as easy as teaching in a workpiece or executing existing G-code. There are very many possibilities.

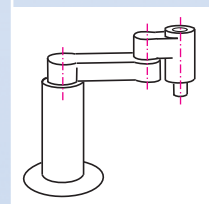
It is often necessary for the PLC program to influence CNC code (variable positions, feeds) or for the CNC code to influence the variables in the PLC program. This can be used to generate a linking of the CNC files or control text outputs in the visualization directly from the G-code.



Path with interpolation of several axes.



CNC function Simple creation of 3D trajectories.



Scara robot Coordinate transformation (spatial axes).

For most practical requirements, there are many kinematic transformations as standard. The open system also allows for self-developed transformations.

The new control system for highly dynamic precision axes

MC6 motion controller in the switch cabinet PC design

This super compact and powerful motion controller is optimized for operation with the AS6 Automation-ControlSuite programming system.

The application is programmed on a PC.

The technical features are impressive: no fan is required thanks to efficient convection cooling. A quick exchangeable CFast card with extremely fast read and write speeds is used.

No data loss for failure of the 24 vdc power supply.

The Windows operating system enables the installation of internally produced software.

The connection of HMI solutions from third party manufacturers is always possible but minimal effort only arises for visualization integrated in the system.

Communication interfaces

MC6 is fitted with connections for communication via EtherCAT® or CANopen® and has USB and RS-232 interfaces for the connection of external systems.



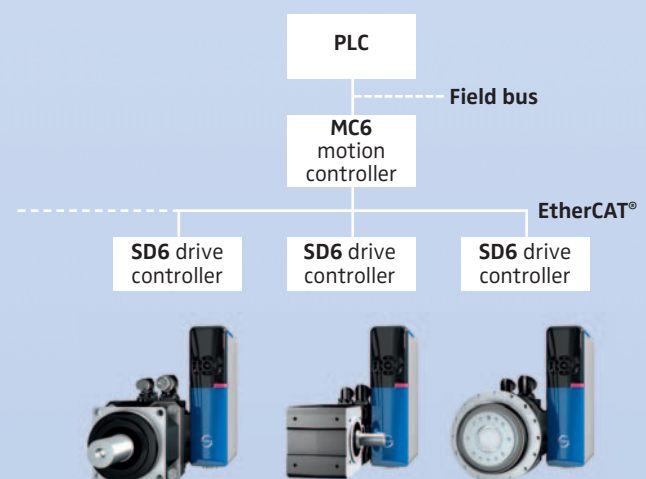
MC6 motion controller in the switch cabinet PC design with option for easy top-hat rail mounting.

Computing power

Due to the scalable performance, the MC6 can cover everything from simple machines with small visualization to machines with complex transformations and CNC interpolation.

Production machines with up to 100 synchronous axes can be realized. The power can be distributed between the visualization, PLC and motion control as desired.

Due to the Dual Core processor, a processing load distribution that is optimized for the runtime is ensured.



The STOBER complete motion control solution

MC6 motion controller with touch panel for installation in an enclosure

The controller can ideally be used in the touch panel PC design as a master controller as well as the motion controller.

For applications with a parameterization requirement, the panel version is particularly suitable as a visual sensitive interface and represents a contemporary form of user-friendly interaction.

The special technical functions comply with the design as a control cabinet PC.

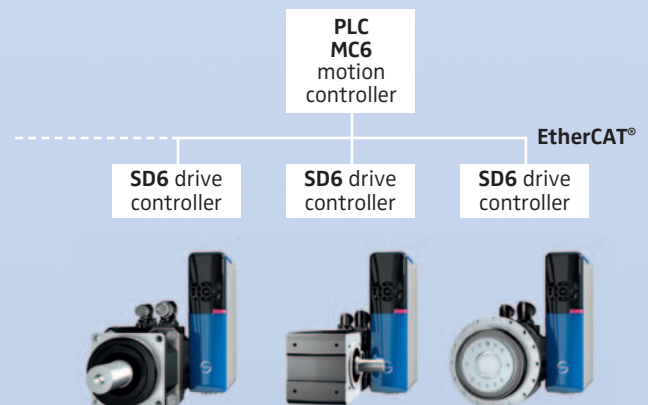


Powerful MC6 motion controller based on Intel® Core™ i3 with touch screen function for installation in the operating area.

User interface (touch screen HMI)

- Large selection of ready-made visualization elements.
- Control masks can be generated in the IEC-61131-3 tool with integrated visualization editor.
- A complete control mask can be reused as an individual visualization element.
- Complex visualization elements can be instantiated by an interface for the parameter transfer.
- Multi-lingual visualization capability with integrated editor for text lists.
- Access via a web frontend (e.g. mobile phone or browser) to the visualization of the machine is possible.

This function can be switched off or can occur with verification.



The open industry standard for PLC and motion control



Technical specifications of CODESYS RTE runtime system

Control (without motion)

Programming in IEC61131-3 (Standard for programmable logic controllers).

- Very high flexibility even in the standard design.
- Structured text (ST)
- Sequential function chart (SFC)
- Continuous function chart (CFC)
- Function block diagram (FBD)
- Ladder diagram (LD)
- Instruction list (IL)

Extensive simulation options in the PC programming system.

The CODESYS programming environment is available free of charge.

SoftMotion

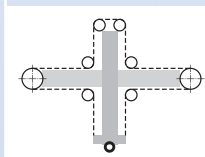
Motion programming with PLCopen®-compliant blocks.

- Integrated motion designer (online/offline).
- Cams can be connected directly to cam discs.
- Any coupling between different types of axis (virtual, real).
- Cam change while operational is possible.
- Curve data are part of the project.

SoftMotion CNC

Numerous coordinate transformation for common mechanics available.

- 6 different gantry cutters
- H gantry (endless belt)
- T gantry (endless belt)



Function: T gantry with 2 drive axes.

- Scara, double articulated
- Scara, triple articulated
- Bipod
- 2 different tripods
- 4-axis palletizer, 6-axis robot
- Customer transformations are possible.
- 3D CNC editor DIN 66025 (G code, dynamic).
- Curve and CNC data are part of the project.
- Easy creation of complex 3D trajectories.
- Dynamic influencing of the CNC trajectory by the PLC program during runtime.
- Trajectories can be created independently of the mechanics.
- Acceptance of CNC data from 3D design programs is possible.



Programming of the motion controller and the axis functions with the AS6 Automation-ControlSuite software.



Commissioning of control system and drives on PC.



Numerous examples from STOPER make it easier for you to get started with programming.

Programming and commissioning

Complete solution with tailor-made services

STOBER offers you consultation and services that are specially matched to your requirement.

You can also use the STOBER technology support for troubleshooting or optimization of an existing system.

With the design and programming of a *tailor-made application* by STOBER, you are given uncompromising, optimized solutions as a complete package ready to run.

The benefit for CODESYS users: Everything is familiar

Anyone familiar with CODESYS can go ahead and program an application for the MC6 motion controller.

When programming standard applications, users are supported effectively by the consistent object orientation of the modules.

For experts

Experienced users can go to the graphically editable configuration level (CFC) to configure their own applications.

Sequence chains are created quickly and economically with SFC. High-level language programmers get their bearings quickly with ST – as do Step7™ programmers (LD, FBD and IL).

Selectively set up CODESYS expertise with STOBER training

STOBER offers a multi-level training program that focuses essentially on application programming of the MC6 motion controller and SD6 drive controller.

The courses take place at the STOBER training center but can also be held on site related to the project.

After taking part, you will be able to use the STOBER product program efficiently and be able to start up the system dependably.

Basic Training

Program creation for a programmable logic controller (PLC) according to IEC 61131-3. Explanation of the programming environment and the programming languages available, illustrated by practical examples.

Seminar SoftMotion

- Integration and parameterization of drives in the CODESYS programming environment.
- Using real and virtual axes.
- PLCopen® state diagram.
- Creating motion control applications with PLCopen® modules.
- Creating motion control applications with SoftMotion modules from CODESYS.
- Using master/slave coupling.
- Creating disc cam applications.

Advanced Training

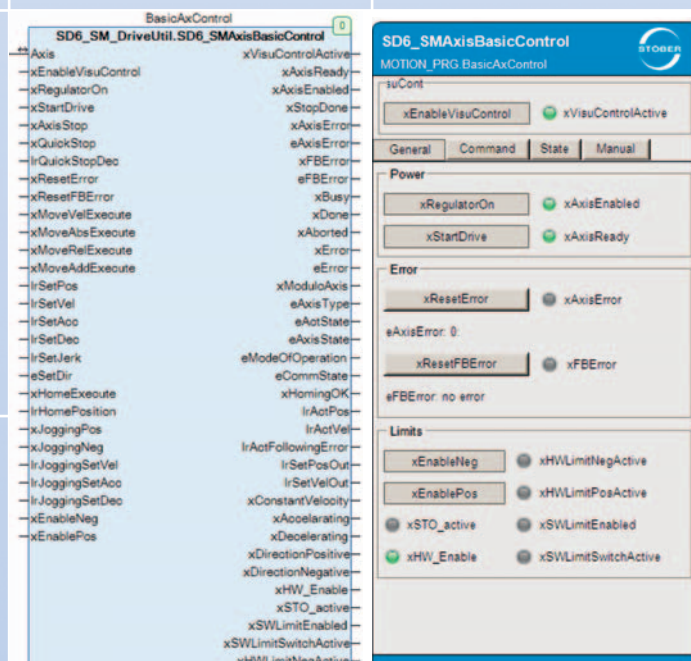
- CNC track control with CODESYS in general.
- Creating CNC programs in the editor according to DIN 66025 in G-code.
- Integrating the NC decoder module.
- Objects of the track pre-processing.
- Using interpolator modules.
- Transformation modules.
- CNC programs with variables.
- Switching function (H-functions).
- M-functions.

Further information and dates can be found on our website www.stober.com (Services).

The Drive&Motion libraries are optimally matched to the STOBER hardware dispensing with time-consuming routine programming work. For further simplification and to quickly get results, each block has a visualization interface.

In this way, machines can be programmed in a short time.

You can find further information in our brochure for the AS6 AutomationControl-Suite.



The hardware facts

Technical information about MC6 motion controller

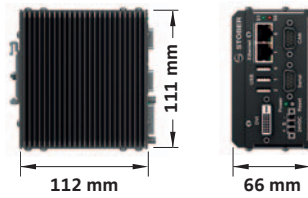
Design		
Control cabinet version	MC6x01	MC6x05
Intel® Atom™ Dual Core 1.33 GHz	●	
Intel® Core™ i3 Dual Core 2.4 GHz		●
2 GB DDR-RAM	●	●
Mass memory 8 GB CFast	●	●
1 x Gbit/s Ethernet / EtherCAT®	●	●
1 x 100 Mbit/s Ethernet	●	●
3 x USB 2	●	
4 x USB 3		●
128 kB nvRAM/MRAM	●	●
DVI monitor connection	●	●
1 x RS-232	●	●
1 x CANopen®	●	
2 x CANopen®		●
HMI version	MC6x11	MC6x15
15", 1024 x 768 pixels	●	●
Protection class IP65	●	●
Resistive touch screen	●	●
Operating temperatures 0° C to 45° C		
Storage temperatures -20° C to 80° C		
Atmospheric humidity 10 to 90% at 25° C		

Type designation

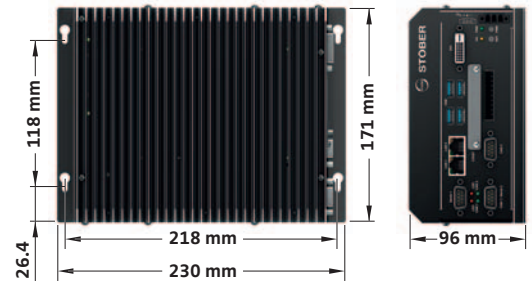
MC	6	A	0	0	C	T
Visualization software option						
					N	Not available
					T	Target visualization
					W	Web visualization
					A	Target and web visualization
Motion software option						
					N	Control
					S	SoftMotion
					C	SoftMotion CNC
Hardware version						
			0			Intel® Atom™ Single Core 1.6 GHz
			1			Intel® Atom™ Dual Core 1.33 GHz
			2			Reserved
			3			
			4			
			5			Intel® Core™ i3 Dual Core 2.4 GHz
Design						
			0			As control cabinet PC
			1			With touch panel
Software version						
		A				CODESYS V3.5.3.0, Windows® XP
		B				CODESYS V3.5.5.0, Windows® XP
		C				CODESYS V3.5.6.4, Windows® 7
Generation						
	6					6th generation
Series						
MC						Motion control

Unit and installation dimensions

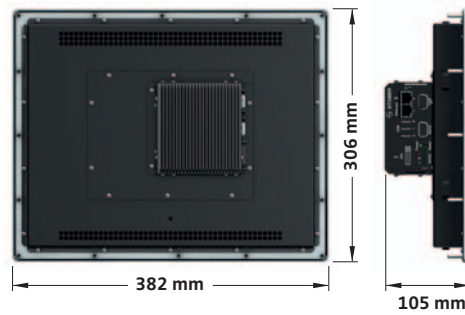
MC6x00 und MC6x01



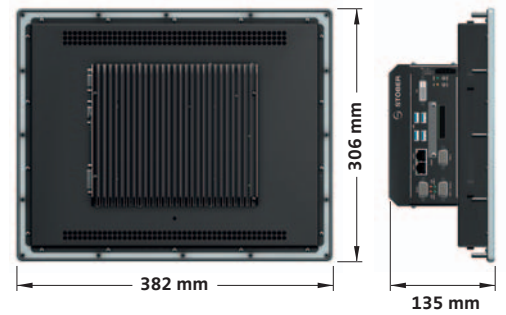
MC6x05



MC6x10 und MC6x11



MC6x15



STOBER system technology for uncompromising motion control solutions



With this wide and varied range of drive axes, very specific motion drive applications can be achieved.



STOBER offers consistent solutions

As a system supplier STOBER has a complete product range for digital drive technology. The MC6 motion controller uses the AS6 AutomationControlSuite development environment to serve the trend for open systems in the automation world.

In combination with digital servo axes, STOBER solutions can be used for small or more extensive drive applications.

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Note on the design of axes and drives

For optimum axis design, it makes sense to focus primarily on the gear units or geared motors. A useful aid is the design software SERVOfsoft®.

For an overall approach, use the specific expertise of the STOBER application consultants.

Contact and advice:
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The STOBER service system includes 38 skilled partners in Germany and more than 80 organizations worldwide in the STOBER SERVICE NETWORK.

STOBER service specialists can be reached 24/7 and can support you with expertise and assistance if service is required on-site or guide you through appropriate immediate measures on the telephone.

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