MC6 Motion Controller

Maximum flexibility for industrial automation with integrated CODESYS programming environment

CODESYS

STÖBER

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

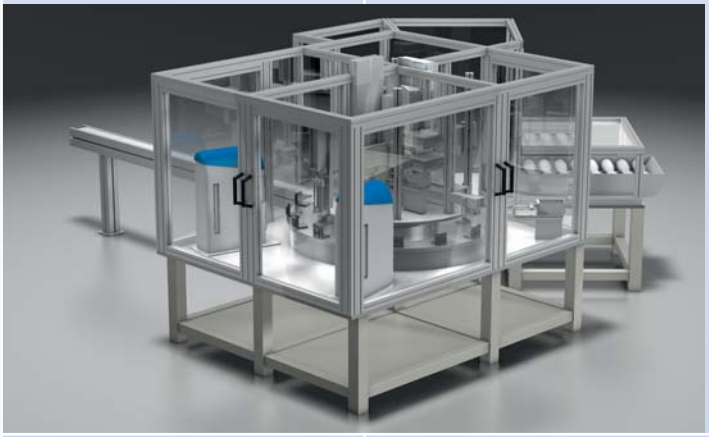
For drive engineering systems these constantly growing requirements mean that the motion sequences keep getting faster and must be very precisely coordinated.

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).

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 development of the new MC6 motion controller, STOBER is adding to its product range and can now offer fully independent drive and control architecture from one source.



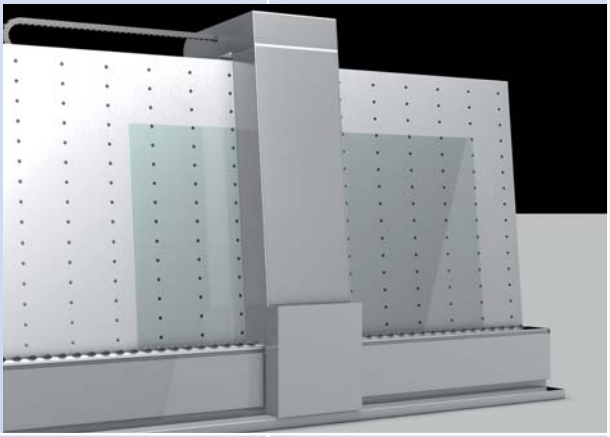
With STOBER the control architecture, software and hardware come from one source

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

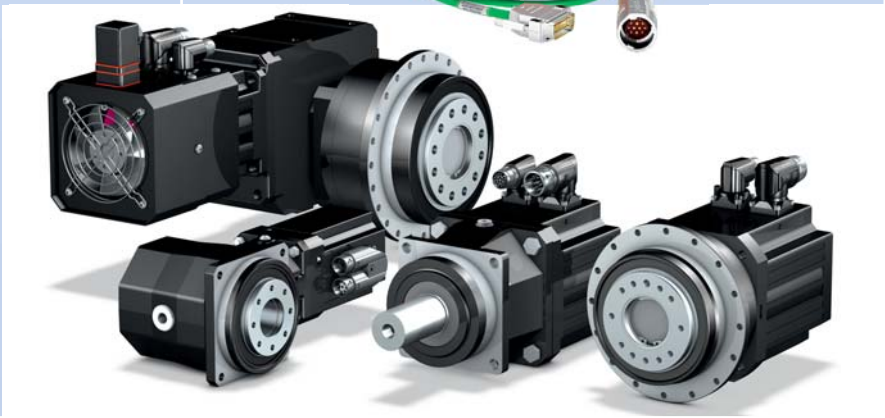
The market standard for control programming under IEC 61131-3

MC6 motion controller, cabinet PC version

EtherCAT® cable

SD6 drive controller Size 0

Power and encoder cables



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

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

Machinery and automation manufacturers have the best sales arguments if they can present a convincing complete control and drive engineering solution for challenging tasks.

Due to the development of the new MC6 motion controller and its integration in the STOBER product portfolio, suitable, very user friendly engineering solutions can be offered for drive engineering systems from a single source.

STOBER solutions have the added advantage of experience in optimum design of each individual axis.

CODESYS – this widely used programming software allows open motion control system concepts

CODESYS – from 3S-Smart Software Solutions – is a hardware independent programming software or complete programming system for the international standard PLC programming language IEC 61131-3.

Due to its popularity, this Windows software tool represents a de facto market standard for hardware independent development systems.

This is especially true of the automation industry.

So it is generally possible to integrate many different peripheral modules in the control concept.

The new MC6 motion controller from STOBER is already equipped with the new CODESYS V3 version.

Detailed information on page 8 and at www.codesys.com

Also suitable for PLC solutions

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

A separate human-machine interface (HMI) is not needed in the MC6 motion controller version with touch screen panel

Motion control makes tasks easier and many things possible

The centralization of all the control engineering drive functions in one program makes programming of several axes easier in many cases.

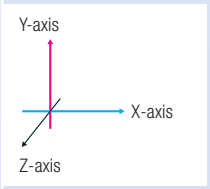
The use of one or more motion controllers is a necessary pre-condition for complex interlocking functions with high positioning and setting accuracy requirements.

The motion control architecture also facilitates commissioning and any service required for malfunctions, particularly for complex functions.

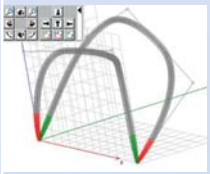
Program maintenance can be carried out centrally on the motion controller.

Path travel and robotic function

In addition to the properties described, motion controllers are capable of interpolating the paths of several axes and performing robotic functions.



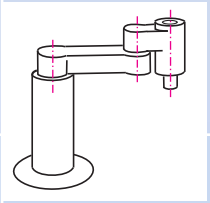
Path with interpolation of several axes



CNC function

Simple creation of 3D trajectories

The robotic function relates to coordinate transformations which are necessary if the motor axes do not correspond to the spatial axes.



Scara robot

Coordinate transformation (spatial axes)

The new control system for highly dynamic precision axes

MC6 motion controller, cabinet PC version

This super compact, powerful motion controller is optimized for operation with the CODESYS V3 programming system.

Programming of the application is carried out on a PC (CODESYS programming level).

The technical features are impressive: With the efficient convection cooling, a fan is not required. A solid state drive (SSD) is used as the storage medium. With this hardware rotating parts could be completely eliminated.

No data loss in the event of a 24 V power failure.

The Windows interface can be used for customer software.

When service is required, the program can be quickly transferred via CFast (optional).

HMI panels from other manufacturers can be connected.

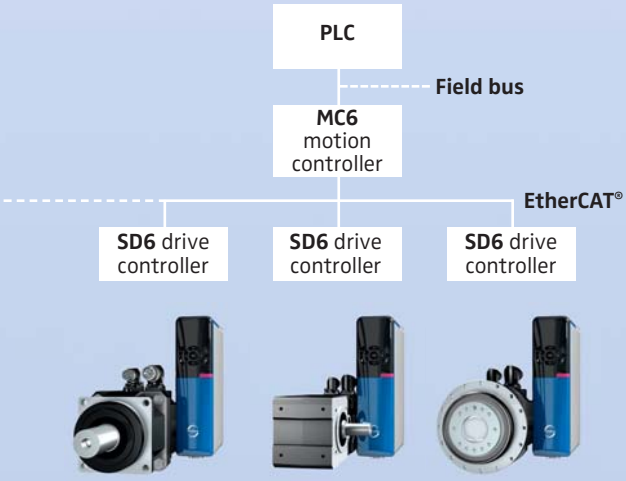
Simple DIN rail mounting.

MC6 motion controller in the cabinet PC version with simple DIN rail mounting

Communication interfaces:
EtherCAT®, CANopen®,
serial RS 232, TCP/IP, USB
Open for all other bus systems

Computing power:
Up to 10 axes
with complex robotic functions
(path control)

Up to 100 axes
for cyclic cams and automatic
functions to a certain extent



The STOBER complete motion control solution

MC6 motion controller with touch screen panel for installation in an enclosure

In the touch screen panel version the controller is ideal for use as master control but also as motion controller.

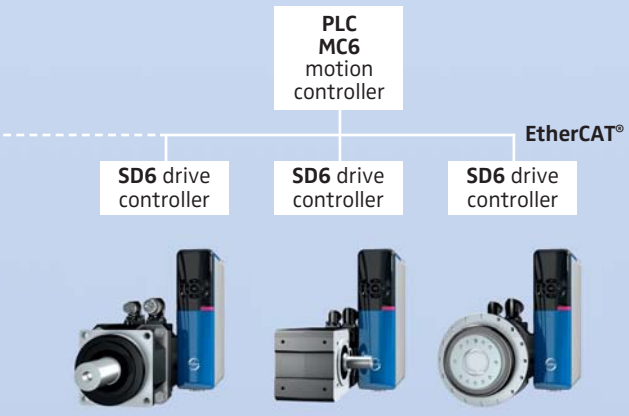
For applications with a parameterization requirement, the panel version is particularly suitable as a visual sensitive interface and represents a contemporary form of user-friendly interaction.

The other technical functions are the same as for the motion controller with DIN rail mounting.

MC6 motion controller with touch screen function for installation in the operator station

User interface (touch screen HMI)

- Large selection of ready-made visualization elements
- Generation of graphical user screens in the IEC 61131-3 tool with integrated visualization editor
- Reuse of complete graphical user screens as an individual visualization element
- Portraying of complex visualization elements through interface for parameter transfer
- Multilingualism of the visualization through integrated editor for text lists
- Access is possible via http to display with web visualization



The open industry standard for PLC and motion control

Technical specifications – CODESYS programming system

Standard
Programming in IEC 61131-3 (standard for Programmable Logic Controllers)

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

Extensive simulation options are possible at programming level on the PC.

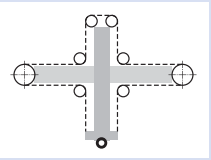
The CODESYS programming environment is available free of charge.

SoftMotion
Motion programming with PLCopen compliant modules

- 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
13 coordinate transformations available for common mechanics

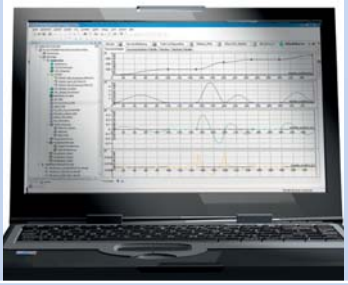
- 6 different gantry cutters
- H gantry (endless belt)
- T gantry (endless belt)



Function: T gantry with 2 drive axes

- Scara, double articulated
- Scara, triple articulated
- Bipod
- 2 different tripods
- 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 control system and axis functions on PC



Commissioning of control system and drives on PC

Parameterization directly on the machine (MC6 motion controller with touch screen panel)

Programming and commissioning

Complete solution with tailor-made services

STOBER offers you support and services specially designed for 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).

… or build specific CODESYS skills with STOBER seminars

STOBER offers a multistage program of seminars which focusses mainly on application programming of the MC6 motion controller and the SD6 drive controller.

The courses take place at the STOBER seminar centre but can also be held locally for specific projects.

After attending the basic and advanced courses, you will be able to utilise the potential of the MC6 motion controller to the full and carry out commissioning efficiently.

Seminar Basic PLC

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.

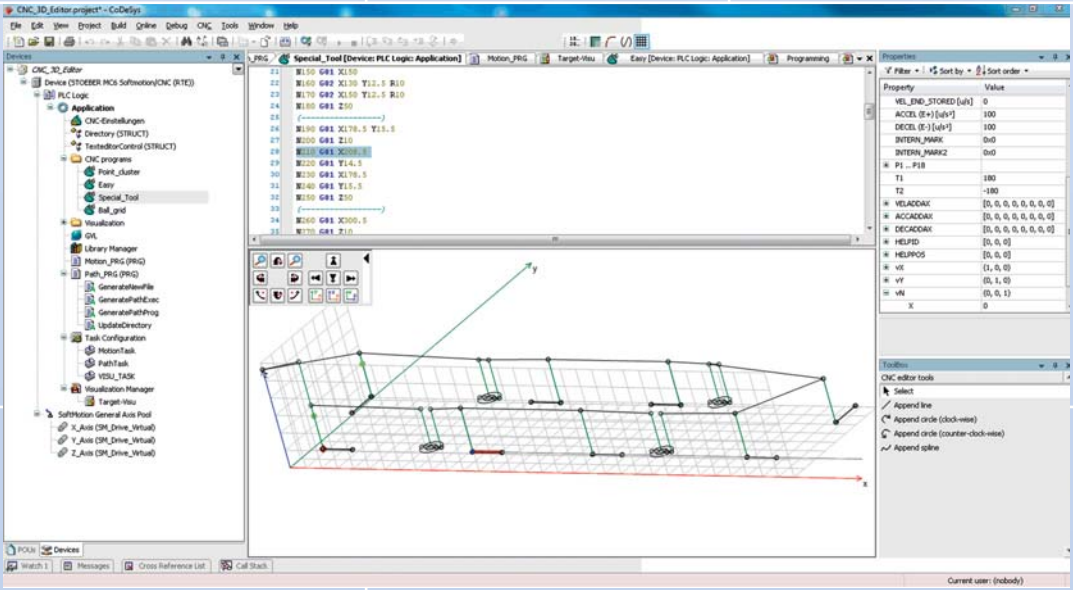
Seminar SoftMotion

- 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

Seminar CNC

- 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 hardware facts

MC6 motion controller – Technical data

Model	MC6x0	MC6x1
		With panel
1.6 GHz Intel® Atom™ (Z530 series) FSB 533 MHz, L2 cache 512 KB	●	●
1 GB DDR2	●	●
Internal SSD with 4 GB	●	●
Internal cFAST socket for SATA based SSD module	●	●
1 x 10/100/1000 Mbit/s Ethernet	●	●
1 x 10/100 Mbit/s Ethernet	●	●
3 x USB 2.0 interface (480 Mbit/s), with 500 mA current rating	●	●
2 x freely programmable LEDs	●	●
128 KB nvSRAM (no battery backup necessary)	●	●
Battery-powered realtime clock	●	●
Internal watchdog	●	●
Internal temperature control	●	●
Video controller (Intel GMA 500) with up to 256 MB video memory use	●	●
DVI-D monitor connection	●	●
Internal LVDS monitor interface	●	●
Internal expansion bus (iX bus)	●	●
System power supply 9 to 32 VDC	●	●
Reset button and power LED	●	●
2 x 9 pin D-sub connectors (male), 1 x RS232, 1 x CANopen	●	●
15" touch panel		●
Operating temperatures 0° C to 45° C		
Storage temperatures -20° C to 80° C		
Atmospheric humidity 10 to 90 % at 25° C		

Type codes

MC	6	A	0	0	C	T

Visu software option

N	Not available
T	Targetvisu
W	Webvisu
A	Webvisu + Targetvisu

Motion software option

N	Not available
S	SoftMotion
C	SoftMotion CNC

Hardware version

0	Current
...	To follow

Model

0	MC6 motion controller
1	MC6 motion controller with touch screen panel

Software version

A	Windows, CODESYS runtime and licenses
...	To follow

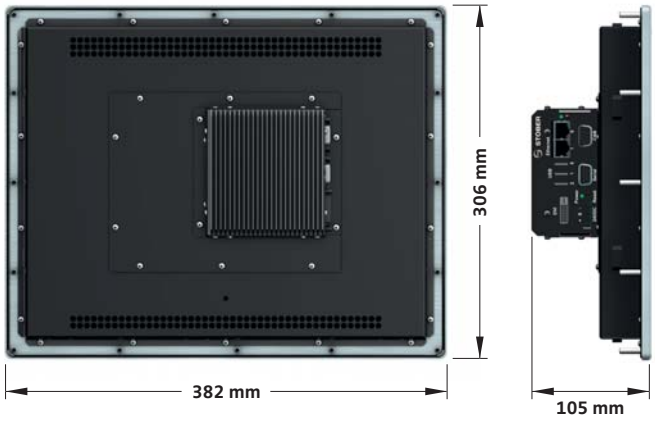
Generation

6	Current

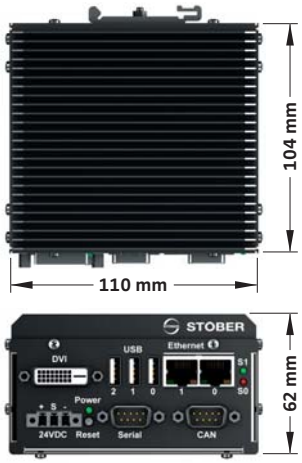
Type

MC	Motion controller

Unit and installation dimensions



MC6 motion controller with touch screen panel
For installation in operator station
Enclosure IP 65
Weight approx. 4.8 kg



MC6 motion controller
In the cabinet PC version
Weight approx. 0.8 kg

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

www.stober.com

STOBER offers consistent solutions

As a system supplier STOBER has a complete product range for digital drive technology. The MC6 motion controller uses the CODESYS programming software to keep up with the trend towards open systems in the world of automation.

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

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 SERVOsoft®.

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

Contact and advice:
applications@stoeber.de

Service

The STOBER service system comprises 38 expert partners in Germany and more than 80 companies in the STOBER SERVICE NETWORK worldwide.

This service concept guarantees local expertise and availability when needed.

In general, the service specialists can be reached at any time via a 24/7 service hotline.

When necessary, a problem can be addressed immediately.

24/7 service hotline
+49 180 5 786323

STOBER DRIVES LTD.
CANNOCK WS12 2HA
UNITED KINGDOM
sales@stober.co.uk

STOBER DRIVES, INC.
MAYSVILLE, KY 41056
USA
sales@stober.com

STÖBER ANTRIEBSTECHNIK GmbH
4663 LAAKIRCHEN
AUSTRIA
sales@stoeber.at

STOBER CHINA
BEIJING 100004
CHINA
sales@stoeber.cn

STOBER S.a.r.l.
69300 CALUIRE ET CUIRE
FRANCE
sales@stober.fr

STÖBER TRASMISSIONI S.r.l.
20017 RHO (MI)
ITALY
sales@stober.it

STOBER Japan K.K.
TOKYO
JAPAN
sales@stober.co.jp

STOBER Singapore Pte. Ltd.
SINGAPORE 787494
SINGAPORE
sales@stober.sg

STÖBER Schweiz AG
5453 REMETSCHWIL
SWITZERLAND
sales@stoeber.ch

STÖBER ANTRIEBSTECHNIK GmbH + Co. KG
Kieselbronner Str. 12
75177 PFORZHEIM
GERMANY
Phone +49 7231 582-0
Fax +49 7231 582-1000
sales@stoeber.de
www.stoeber.de

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