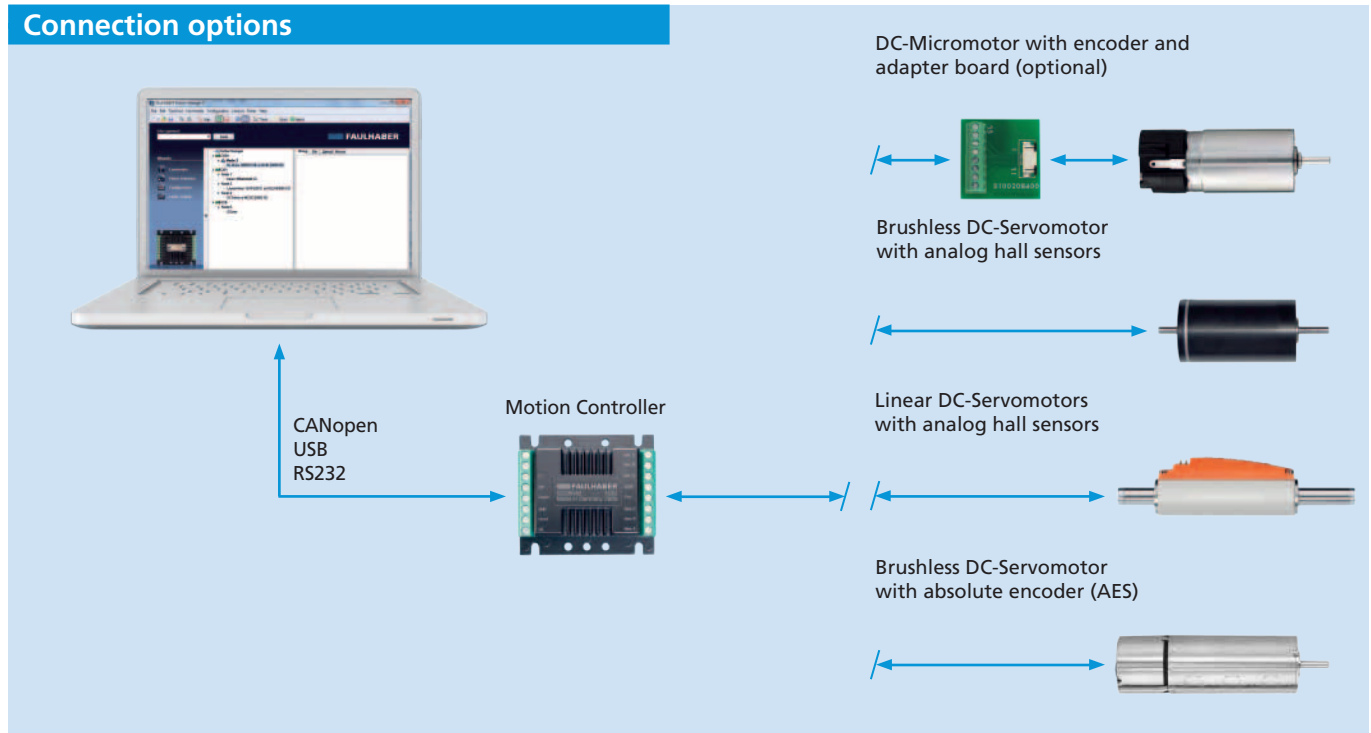


Motion Controller

Technical Information

Connection options



Features

FAULHABER Motion Controllers are highly dynamic positioning systems tailored specifically to the requirements of micromotor operations.

In addition to being deployed as a positioning system, they can also operate as speed or current controllers.

The Motion Controllers are available as separate controllers for:

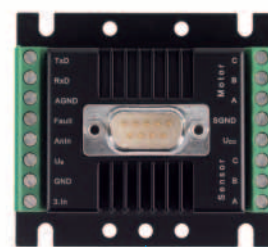
- DC-Micromotors (MCDC)
- Brushless DC-Servomotors (MCBL)
- Linear DC-Servomotors (MCLM)

Motion Control Systems – highly dynamic, low-maintenance BLDC servomotors with integrated motion controls – deliver the ultimate in slimline design. The integrated systems require less space, as well as making installation much simpler thanks to their reduced wiring.

Benefits

- Compact construction
- Controlled via RS232 or CAN interface
- Minimal wiring
- Parametrization with „FAULHABER Motion Manager“ software and USB interface
- Extensive accessories

Product Code



MC	Motion Controller
BL	For Brushless DC-Motors
30	Max. supply voltage (30 V)
06	Max. continuous output current (6 A)
S	Housing with screw terminal
AES	Only for BLDC-Motors with absolute encoders
CF	CAN interface, FAULHABER CAN

MC BL 30 06 S AES CF

Motion Controller

Configuration, Networking, Interfaces

Operating Modes

Speed control

PI speed controls, even for demanding synchronization requirements

Positioning

For moving to defined positions with a high level of resolution. Using a PD Controller, the dynamic response can be adjusted to suit the application. Reference and limit switches are evaluated by means of various homing modes.

Speed profiles

Acceleration ramps, deceleration ramps and maximum velocity can also be defined for each section. As a result, even complex profiles can be implemented quickly and effectively.

Current control

Protects the drive by limiting the motor current to the set peak current. The current is limited to the continuous current by means of integrated I²t monitoring if required.

Protective features

- Protection against ESD
- Overload protection for electronics and motor
- Self-protection from overheating
- Overvoltage protection in generator mode

Extended operating modes

- Stepper motor mode
- Gearing mode
- Position control to analog set point
- Operation as servo amplifier in voltage adjuster mode
- Torque/force controller using variable set current input

Options

Separate supply of power to the motor and electronic actuator is optional (important for safety-critical applications). Third Input is not available with this option. Depending on the controller, additional programming adapters and connection aids are available. The modes and parameters can be specially pre-configured on request.

Interfaces - Discrete I/O

Setpoint input

Depending on the operating mode, setpoints can be input via the command interface, via an analog voltage value, a PWM signal or a quadrature signal.

Error output (Open Collector)

Configured as error output (factory setting). Also usable as digital input, free switch output, for speed control or signaling an achieved position.

Additional digital inputs

For evaluating reference switches.

Interfaces - Position Sensor

Depending on the model, one of the listed interfaces for the position and speed sensor is supported.

Analog Hall signals

Three analog Hall signals, offset by 120°, in Brushless DC-Motors and Linear DC-Servomotors.

Incremental encoders

In DC-Micromotors and as additional sensors for Brushless DC-Motors.

Absolute encoders

Serial SSI port, matching Brushless DC-Servomotors with AES encoders

Networking

FAULHABER Motion Controllers are available with three different interfaces.

RS: This indicates a system with an RS232 interface. It is ideal for applications that do not use a higher level controller. Operation is made simple through the use of a plain text command set which can be used to generate scripts and programs that can run autonomously on the controller itself.

CF: This indicates a system with a FAULHABER CAN interface. This version contains the CiA 402 commands and includes the RS232 interface commands which are translated into simple to use CAN commands. This version is intended as a user friendly, simple to use bridge into to the complex use of CAN communications. A CAN master is always required when using this version.

CO: This indicates a system with a CANopen interface. This version is ideal when integrating a FAULHABER motion controller into a system with a PLC, either directly or through the use of a gateway. All parameter settings are made via the object directory. Configuration is possible through the use of the FAULHABER Motion Manager 5.0 or better, or standard CAN configuration tools.

Motion Controller

Configuration, Networking, Interfaces

Interfaces – Bus Connection

Version with RS232

For coupling to a PC with a transfer rate of up to 115 kbaud. Multiple drives can be connected to a single controller using the RS232 interface. As regards the control computer, no special arrangements are necessary. The interface also offers the possibility of retrieving online operational data and values.

A comprehensive ASCII command set is available for programming and operation. This can be preset from the PC using the „FAULHABER Motion Manager“ software or from another control computer.

Additionally, there is the possibility of creating complex processes from these commands and storing them on the drive. Once programmed as a speed or positioning controller via the analog input, as step motor or electronic gear unit, the drive can operate independently of the RS232 interface.

Versions with CAN CF or CO

Two controller versions with a CANopen interface are available for optimal integration within a wide range of applications. CANopen is the perfect choice for networking miniature drives because the interface can also be integrated into small electronics. Due to their compact size and efficient communication methods, they are the ideal solution for complex fields of application such as industrial automation.

CF version: CANopen with FAULHABER channel

The CF version supports not only CiA 402 standard operating modes but also a special FAULHABER Mode. Via PDO2, operator control is thus analogous to that of the RS232 version. Extended operating modes such as operation with analog setpoint input or the stepper or gearing mode are also supported. The CF version is therefore particularly suitable for users who are already familiar with the RS232 version and wish to exploit the benefits of CAN in networking.

CO version: pure CANopen

The CO version provides the CiA 402 standard operating modes. All the parameters are directly stored in the object directory. Configuration can therefore be performed with the help of the FAULHABER Motion Manager or by applying available standardized configurators tools common to the automation market. The CO version is particularly suitable for users who already use various CANopen devices or operate the Motion Controllers on a PLC. With dynamic PDO mapping it is possible to achieve highly efficient networking on the CAN.

CF / CO comparison

	CF	CO
NMT with node guarding	•	•
Baud rate	1 Mbit max., LSS	1 Mbit max, LSS
EMCY object	•	•
SYNCH Objekt	•	•
Server SDO	1x	1x
PDOs	3 x Rx 3 x Tx each with static mapping	4 x Rx 4 x Tx each with dynamic mapping
PDO ID	fixed	adjustable
Configuration	Motion Manager	Motion Manager from V5
Trace	PDO3 (fixed)	Any PDO
Standard operating modes	•	•
- Profile Position Mode - Profile Velocity Mode - Homing		
Ext. operating modes	FAULHABER channel	-

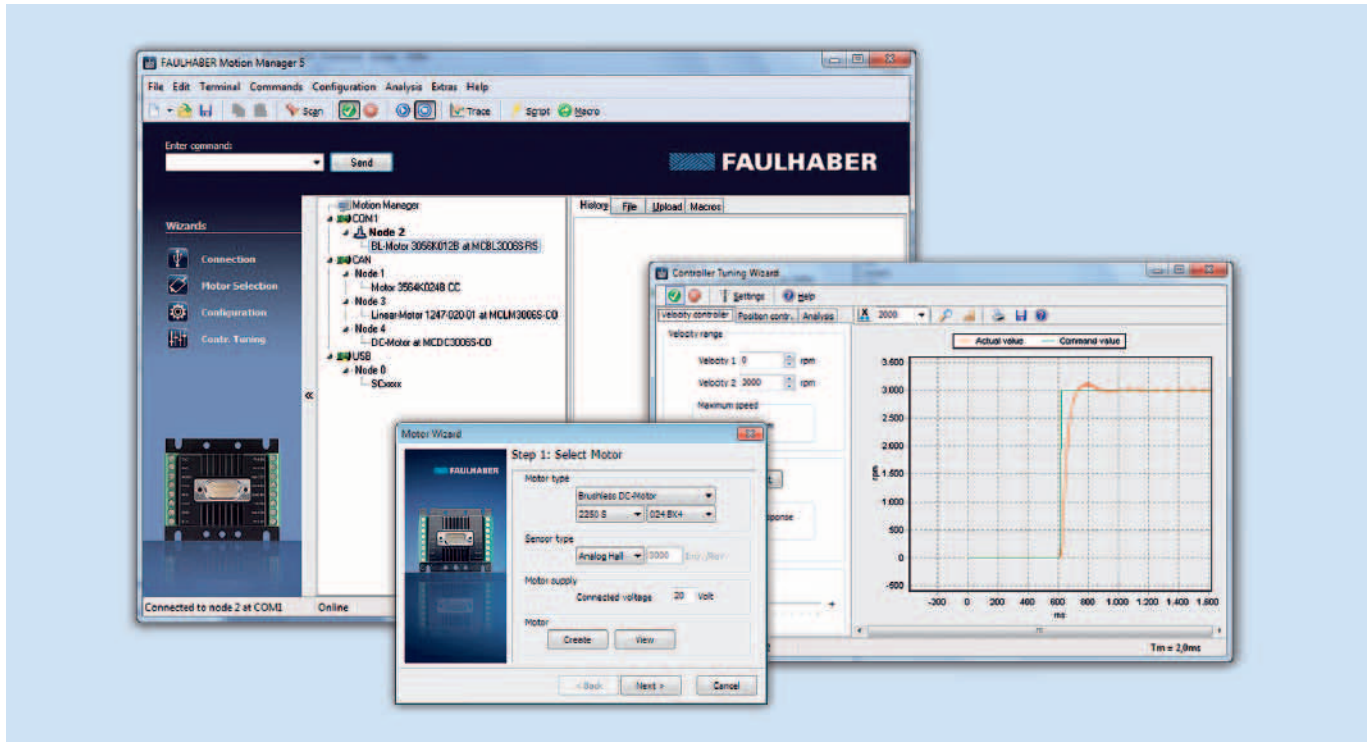
Both versions support the CANopen communication profile to CiA 301 V4.02. The transfer rate and node number are set via the network in accordance with the LSS protocol conforming to CiA 305 V1.11.

For this purpose, we recommend using the latest version of the FAULHABER Motion Manager.

Notes

Device manuals for installation and start up, communication and function manuals, and the „FAULHABER Motion Manager“ software are available on request and on the Internet at www.faulhaber.com.

Motion Controller Software



Motion Manager

The high-performance software solution „FAULHABER Motion Manager“ enables users to control and configure drive systems with Speed- and Motion Controllers.

The RS232, USB and CAN interfaces are supported. All the interface versions can be operated in a standardized manner via a graphical user interface. This also represents a user-friendly introduction to CAN technology, especially when using the CANopen Motion Controllers with FAULHABER-CAN (CF version).

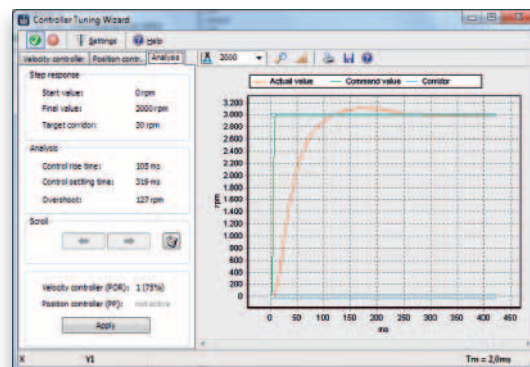
„FAULHABER Motion Manager“ for Microsoft Windows can be downloaded free of charge from www.faulhaber.com.

Startup and Configuration

The software provides convenient access to the settings and parameters of connected motor controls.

The graphical user interface can be used to read out, change and reload configurations. Individual commands or complete parameter sets and program sequences can be entered and transferred to the control.

In addition, analysis options are available in the form of status displays and graphic trace windows.



Operation of drives is also supported by a

- connection assistant
- motor selection assistant
- configuration assistant
- controller tuning assistant

The program also includes an Online Help and the integrated Visual Basic Script language.