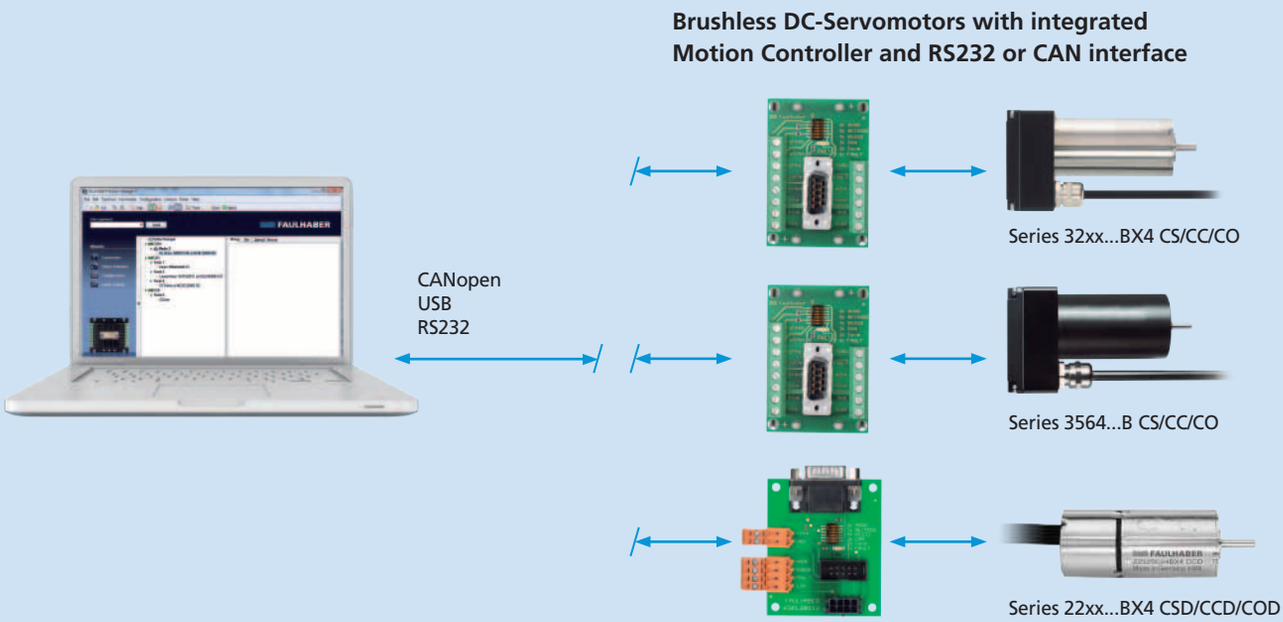
Motion Control Systems

Technical Information

Terminal Variations



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 drives can be supplied with an RS232 interface or with a CAN interface and CANopen protocol.

Using this technology, up to 127 drives can be interconnected and controlled with maximum efficiency.

Motion Control Systems – highly dynamic, low-maintenance BLDC servomotors with integrated motion control functionality – 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
- Modular design, various performance ratings
- Minimal wiring
- Parametrization via „FAULHABER Motion Manager“ software
- Extensive accessories
- Adapter for connection to USB interface

Product Code

3268	motor series
G	shaft type
024	nominal voltage
BX4	electronic commutation brushless
CS	Serial interface RS232

3268 G 024 BX4 CS

Motion Control Systems

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 I^2t 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). No third input is required in such cases. Depending on the drive, 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 input
For evaluating reference switches.

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 automously 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.

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 configuratons 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.

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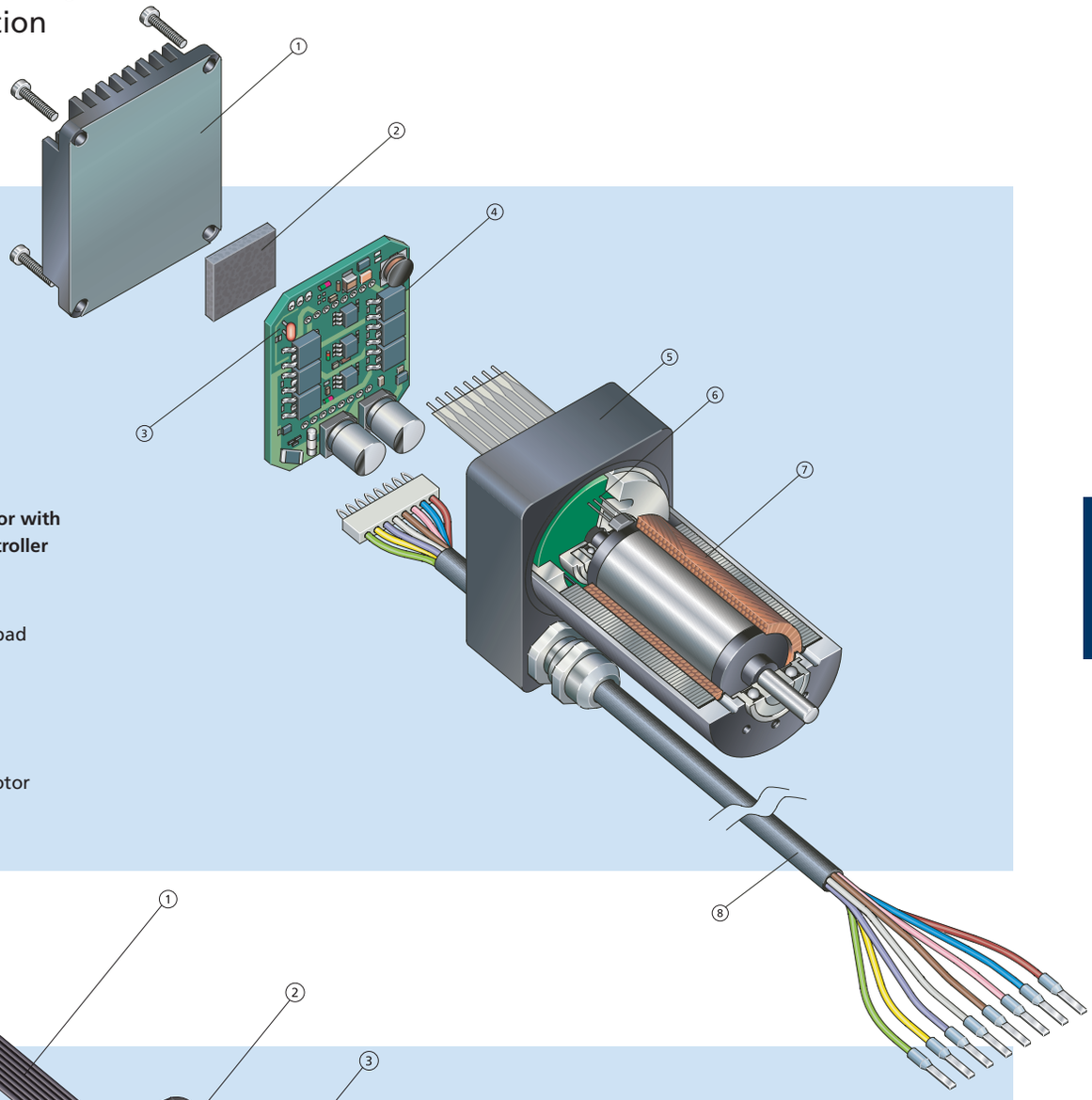
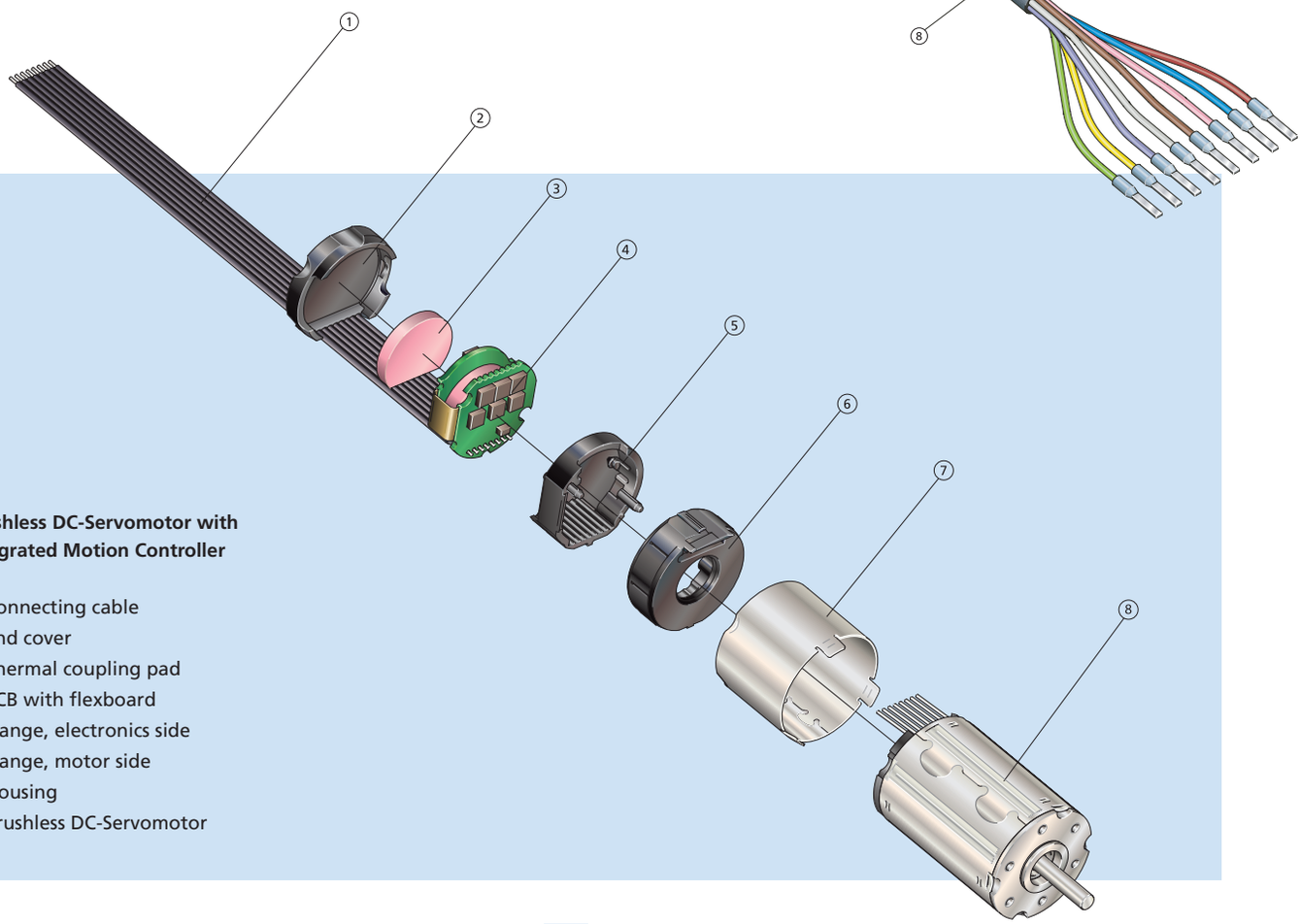


Brushless DC-Servomotor with integrated Motion Controller

① Heat sink/cover
② Thermal conduction pad
③ Thermal protection
④ Motion Controller
⑤ Housing
⑥ Analog Hall sensors
⑦ Brushless DC-Servomotor
⑧ Interface cable



Brushless DC-Servomotor with integrated Motion Controller

① Connecting cable
② End cover
③ Thermal coupling pad
④ PCB with flexboard
⑤ Flange, electronics side
⑥ Flange, motor side
⑦ Housing
⑧ Brushless DC-Servomotor