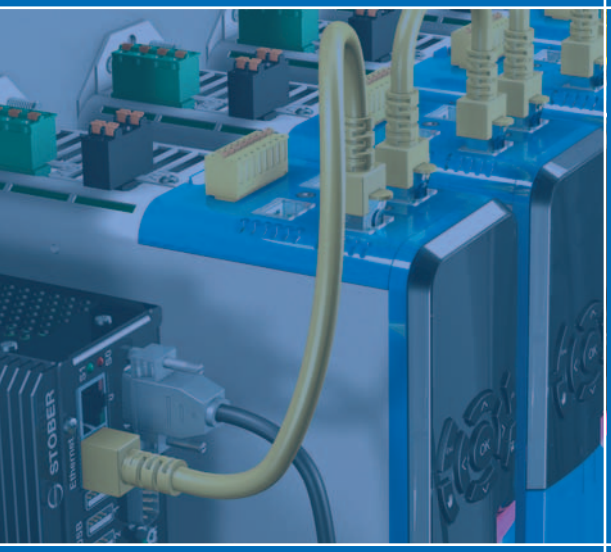
SD6 Drive Controller

The highest dynamics and limitless precision for multi-axis applications



STÖBER

Equipped for all tasks with a Dual-Core processor

Precise movements of servo axes

The use of EnDat® 2.2 digital encoders allows the determination of approx. 33 million positions per revolution.

The 32 bit Dual-Core processor of the SD6 drive controller processes the encoder data with the highest accuracy and velocity. Due to the large processing capacity, the SD6 drive controller can also be used for future encoder systems with a higher resolution.

The 32 bit Dual-Core control performance opens a new dimension in movement precision.

The position, velocity and torque/force control of the servo axes is calculated with a cycle time of 62.5 µs (16 kHz).

This allows for extraordinarily high dynamics and precision of the drives due to the shortest recovery times for fast changes in reference value and load jumps.

Despite the ever more complex functions, the SD6 drive controller significantly increases the precision and productivity for automation technology and machine manufacturing.

SPEED | FLEXIBILITY | DESIGN

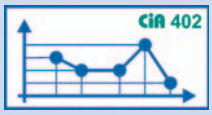
Tailored packages for every application

For demanding multi-axis applications

The SD6 drive controller is ideally suited for multi-axis controllers with EtherCAT® or CANopen®. The seamless integration of the international CiA 402 device profile for electric drives allows a simple and automatic integration in the control environment. Against this background, the MC6 motion controller provides the perfect addition.

The controller-based controller supports the full range of possible operation modes: Cycle reference value processing of position, velocity or torque/force (IP, CSP, CSV, CST).

Despite this controller-based control, the drive controller can independently apply motion tasks such as referencing or jogging due to the drive-based functions.



CiA 402 Controller Based

Lean standard for single-axis applications

The drive-based operation modes of the CiA 402 with complete movement calculation and design due to the drive controller are provided for single-axis applications. The assignments for position, velocity, acceleration/delay and jerk (PP, PV, PT) are converted accurately and precisely to movements. Referencing and jogging are performed with jerk limitation during commissioning.

CiA 402 Drive Based

Universal solutions in the package

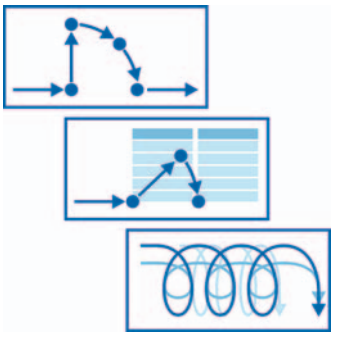
Whenever universal and flexible solutions are necessary, the drive-based application package from STOBER is the appropriate choice. A drive-based movement controller for positioning, velocity and torque/force is provided with the PLCopen® motion control command set. These standard commands were combined into operation modes for different applications and supplemented with additional functions such as jerk limit, motion block linking, cams and much more.

The command operation mode provides the maximum flexibility for controllers. All properties of the movements are specified directly by the controller.

The properties of the movements in the drive are predefined in the motion block operation mode so that only a start signal for the execution of the movement is necessary. Complete motion sequences can be defined by linking. This allows for the fast execution of sequences – independent of the power of the controller.

There is a separate operation mode available for applications controlled by velocity or torque/force such as pumps, fans or conveyor belts. This also allows for operation without a controller.

Device generation 6



STOBER Drive Based

For drive axes from 0.75 to 45 kW

SD6
Size 0
for motors
up to 1.5 kW

SD6
Size 1
for motors
up to 7.5 kW

SD6
Size 2
for motors
up to 15 kW

SD6
Size 3
for motors
up to 45 kW

Modern design

The high-quality design of the SD6 series is characterized by the dark front glazing the multi-line text and graphic display, operation via a control pad as well as the distinctive housing shape.

EMC protection

The housing structure made of sheet steel is part of the STOBER EMC concept for electromagnetic shielding. This design increases interference immunity and reduces interference.

Control cabinet installation

With a housing depth of 194 mm or 284 mm, the sizes 0, 1 and 2 are suitable for installation in 300 mm deep compact control cabinets.

The connections for motor, DC link/quick DC link, braking resistor and holding brake are located on the bottom of the device.

The network and 24 V connection on the top of the device is made via pluggable spring-loaded terminals.

Modular flexibility and reliable safety

Adaptable to all requirements

The SD6 drive controller features the tried and tested circuit board architecture and its universal options.

STOBER offers different option modules for the connection of analog and binary signals as well as encoders or fieldbuses.

Fully electronic safety technology

There is already a wear-free, fully electronic interface for the Safe Torque Off (STO) safety function available in the standard series version.

The technologically innovative solution works without any system tests interrupting production. In practical terms this means an impressive increase in the availability of machines and systems. Time-consuming planning and documentation of tests are also eliminated.

In multi-axis applications with SD6 drive controllers, the STO safety function can simply be looped through.

The safety-relevant functions were developed together with Pilz GmbH & Co. KG.

Safety connector of the ST6 safety module.

**SD6 – housing cover for terminal module open,
XI6 and IO6 (left) terminal module and RI6 terminal module.**

PROFINET® EtherCAT® CANopen®

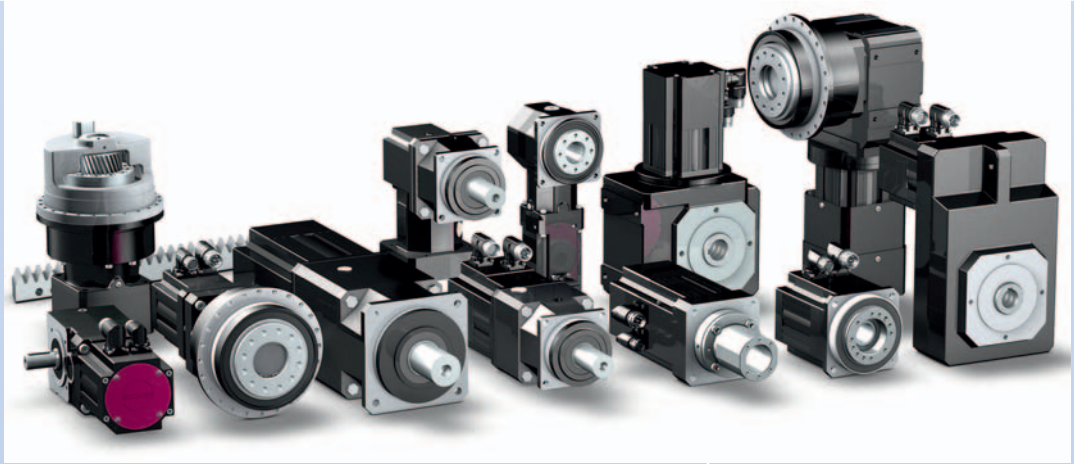
Designed for multi-axis operation

Drive controller in multi-axis mode, controlled by STOBER MC6 motion controller via EtherCAT®.

High-performance electronics for complex movements ...

Each drive has its task and conditions in multi-axis mode. Multi-axis application can only be realized with high dynamics when the drive controller can ensure precision and timing at any time.

The high-performance SD6 drive controller is predestined for such applications and perfectly matched to the MC6 motion controller.



Extract from the product range of STOBER servo drives.

... complemented by STOBER synchronous servo motors

With this extensive hardware program, practically all the requirements of machine manufacturing and automation can be individually solved.

Compound DC link system for more energy efficiency

Options for the energetic use of a DC link connection

All the SD6 drive controller series have the option for DC link connection.

This technology makes it possible for the regeneratively produced energy of a servo drive to be used as motor energy by another servo drive.

Regenerative energy arises when a load drives the motor and thus energy is returned to the drive controller.

If the motor and generator operating states change frequently or regularly, the excessive energy that arises can be fed to one or more drive controllers. This takes place via the DC link connection.

SD6 with DL6 Quick DC-Link for DC link connection, supplemented with a braking resistor.

DL6 Quick DC-Link

The *DL6 Quick DC-Link* rear structure element was developed to set up a reliable and efficient rail connection to the DC link connection. Contact between the SD6 drive controllers is made via standard busbars (e.g. 5 mm x 12 mm). The rail mounting is designed without tools with quick fastening clamps.

Reliable and safe due to motion control

Typical applications can be found in the areas of winding technology, rack feeders, conveyor and handling technology or in systems with gravity-loaded axes.

In addition, an indication of the sensible use of a DC link connection is when several drives with braking resistors are used for an application.

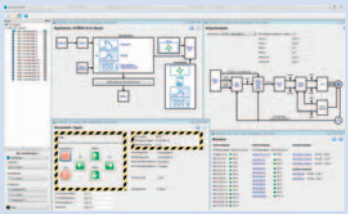
For the optimum use of regenerative energy, it is necessary to match and control the drive sequences and movement profiles via the MC6 motion controller, for example.

Software, solutions and application training

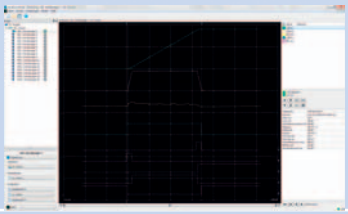
DS6 DriveControlSuite

The DriveControlSuite project planning and commissioning software of the 6th generation has convenient functions for the efficient use of drive controllers in single-axis and multi-axis applications.

The program guides you step by step through the complete project planning and parameterization process using wizards.



The integrated oscilloscope function with 12 channels is available as a professional tool for the visualization of the entire drive system and its optimization.



Complete solutions from STOBER

The SD6 drive controller combined with the MC6 motion controller from the STOBER product portfolio allows for the realization of lean, convenient engineering solutions for drive technology.

The combination of the SD6 drive controller and MC6 motion controller simplifies programming in many cases. This also applies for complex functions with a high demand for timing and precision.

Commissioning and program maintenance of the multi-axis application takes place centrally at the MC6 motion controller with the aid of a development environment based on CODESYS V3.

Application consultation and services to suit custom requirements

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

Use the STOBER technology consultation also for problem solving or optimization of an existing system.

With the design and programming of customer- and application-specific solutions (STOBER tailor made applications), you get uncompromising optimized solutions as a complete packet ready for use.

STOBER electronics application training

STOBER offers a multi-stage training program with the focus on practical use. Basic courses and advanced training as well as expert training are offered.

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

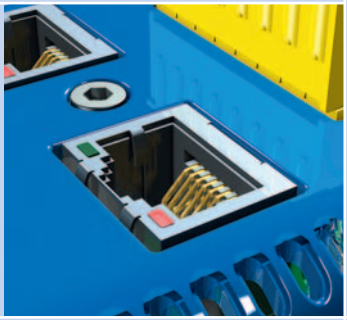
After taking part, you will be able to use the STOBER product program efficiently and be able to start up the system dependably.

You can find further information in the STOBER Electronics Application Training information brochure and on the website at www.stober.com (Services).

Integrated bus (IGB)

SD6 drive controllers have two interfaces for the integrated bus in the standard version. The integrated bus is used for easy project planning via Ethernet and isochronic data exchange for the following functions:

- Direct connection for remote maintenance of individual and multiple drive controllers.
- Direct connection between one or more drive controllers and a PC.

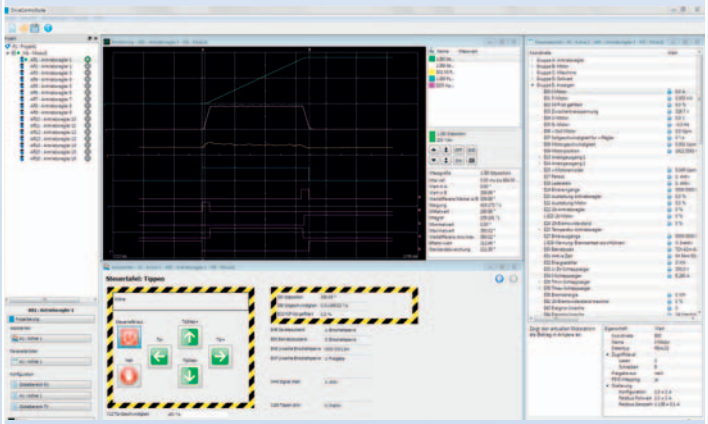


Interface for the integrated bus IGB.

Projecting and commissioning

Flexible handling as required

For project planning and parameterization, the SD6 drive controller can be addressed directly via the device software DS6 DriveControlSuite.



Simple and fast commissioning with the DS6 DriveControlSuite.

You can find information about the state of the SD6 drive controller directly on the display of the machine – without additional tools.

Important information and settings directly on the display of the SD6.

A convenient development software based on CODESYS V3 is provided for the commissioning of complex multi-axis applications.

Central commissioning of a CODESYS multi-axis application.

Customer benefits and facts

High performance equipment for demanding applications

- Dual-Core RISC processor (200 MHz) with floating point Unit 32 bit.
- Power, velocity and position control in 62.5 µs.
- Power unit for 250 % Acceleration current.
- Motor protection via PTC or KTY.
- Control with the highest encoder resolution EnDat® 2.2 digital (25 bit per revolution).

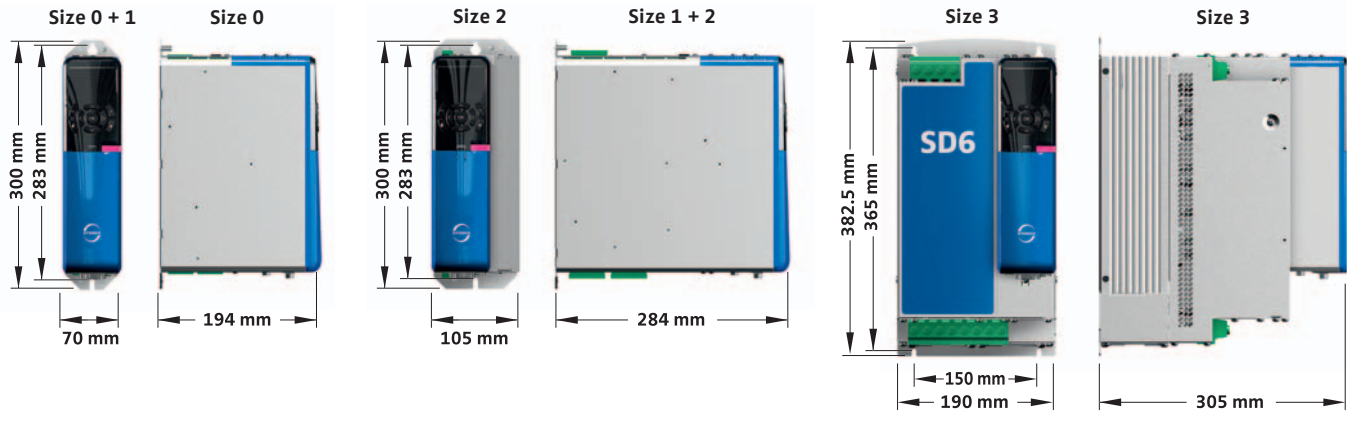
Easy-to-Use – Clear added value for the total cost consideration

- **Ethernet-based interface**
  For programming and parameterization for the IGB network for communication with multi-axis systems and for remote maintenance via the Internet.
- **Removable Data Storage Paramodule**
  With integrated microSD card for commissioning and service.
- **Easy to assemble**
  All terminals can be connected with spring-loaded technology. The network and motor power connections are physically separated.
  Easily accessible EMC plate for simple shield assembly of the motor line.
- **Display and keyboard with One-Touch-Save key**
  Self-illuminating keyboard and display.
- **Reference value in user-defined units**
  Guarantees simple and transparent use.
- **Windows software**
  DS6 DriveControlSuite.

Adaptable for many drive tasks

- **Motor types**
  Asynchronous motors, synchronous servo motors, linear motors and torque motors.
- **Encoder interfaces**
  EnDat® 2.1/2.2 digital, incremental, SSI, EnDat® 2.1 Sin/Cos, resolver, pulse/direction signals, sin/cos.
- **Communication modules**
  CANopen®, EtherCAT®, PROFINET.
- **Terminal modules**
  IO6, RI6, XI6.
- **Braking resistors**
  UL-compliant, available as base module or for control cabinet assembly, 40 W to 8000 W power, protection class up to IP54.

Dimensions



Safety Integrated (ST6)

- **Expertise**
  Cooperation with the industry leader for safety technology, Pilz GmbH & Co. KG.
- **STO**
  Wear-free, electronic safety function.

  The drive is safely switched without torque with the STO safety function.
  This function is the basis for many additional safety functions.

  Response time < 10 ms.

TÜV certification according to:

– SIL3 (HF1)
  in accordance with EN 61800-5-2.

– PLe (cat. 4)
  in accordance with EN ISO 13849.

  PLe (cat. 4) makes it possible to also use the SD6 drive controller in applications with challenging safety requirements.

DC link connection with Quick DC-Link

More energy efficiency
If there is an opportunity to use mutual braking energy, the energy efficiency can be increased by a DC link connection.

- Easy DC link connection with Quick DC-Link.
- Able to reduce energy consumption for multi-axis applications.
- No additional control cabinet space required due to the rear structure element design.
- All sizes of the SD6 drive controller can be connected to each other via the Quick DC-Link.

Conformity

CE-compliant
All SD6 drive controllers comply with EMC Directives and meet the criteria of the Low Voltage Directives. The standard configuration includes an effective package of measures. This includes an integrated EMC filter and the elaborate zinced sheet steel housing. The level and terms are defined according to IEC 1131. All SD6 drive controllers have the CE symbol.

UL-compliant
The UL-certified and cUL-certified SD6 drive controllers meet the requirements of the UL 508C and UL 840 standards.

Technical Data

Type	Size	Nominal output current $I_{2N,PU}$ (4 kHz)	Nominal output current $I_{2N,PU}$ (8 kHz)
SD6A02	0	4 A	3 A
SD6A04	0	2.3 A	1.7 A
SD6A06	0	4.5 A	3.4 A
SD6A14	1	10 A	6 A
SD6A16	1	16 A	10 A
SD6A24	2	22 A	14 A
SD6A26	2	32 A	20 A
SD6A34	3	44 A	30 A
SD6A36	3	70 A	50 A
SD6A38	3	85 A	60 A

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The consistent solution

As a system manufacturer, STOBER has an extensive product portfolio for digital drive technology. STOBER offers many opportunities for optimization with the merging of controllers and drive technology.

① MC6 motion controller

The MC6 motion controller uses the AS6 AutomationControlSuite development environment to serve the trend for open systems in the automation world.

② SD6 drive controller

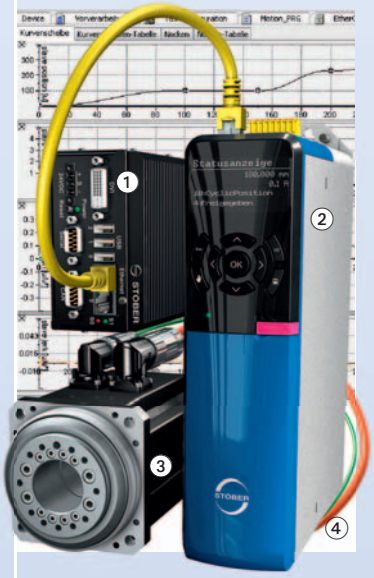
The SD6 offers maximum precision and productivity for automation technology and machine manufacturing despite ever more complex functions. It features a large power range, very good control performance and high ease of service.

③ Synchronous servo motors EZ/EZHD

The EZ and EZHD motor series features a super compact, weight-saving design, maximum torque and high dynamics.

④ Connection cable

STOBER provides a specially pre-assembled power and encoder cable for quick, correct assembly.



Note on the design of axes and drives

For an optimum design of the axes, it makes sense to initially focus on the gear units and geared motors. The SERVOsoft® design software is helpful.

Use the specific expertise of STOBER application consultants for an integrated approach.

Contact and consultation:
applications@stoeber.de

Service

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.

In addition STOBER offers maintenance by remote access for its drive controllers.

24/7 service hotline
+49 180 5 786323

(14 cents/min. on German landline, max. 42 cents/min. on mobile networks)

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