



STOBER

AES battery module Commissioning instructions



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1 User information

This documentation describes the connection of the AES (Absolute Encoder Support) battery module and the replacement of the associated battery.

Information

To ensure proper functionality, we recommend using cables from STÖBER that are matched to the complete system. In case of use of unsuitable connection cables, we reserve the right to reject claims under the warranty.

1.1 Storage and transfer

As this documentation contains important information for handling the product safely and efficiently, it must be stored in the immediate vicinity of the product until product disposal and be accessible to qualified personnel at all times.

Also pass on this documentation if the product is transferred or sold to a third party.

1.2 Timeliness

Check whether this document is the most up-to-date version of the documentation. We provide the latest document versions for our products for download on our website: <http://www.stoeber.de/en/download>.

1.3 Original language

The original language of this documentation is German; all other language versions are derived from the original language.

1.4 Limitation of liability

This documentation was created taking into account the applicable standards and regulations as well as the current state of technology.

STÖBER shall assume no responsibility for damage resulting from failure to comply with the documentation or from use that deviates from the intended use of the product. This is especially true for damage caused by individual technical modifications to the product or projecting and operation of the product by unqualified personnel.

1.5 Formatting conventions

Orientation guides in the form of signal words, symbols and special text markups are used to emphasize specific information so that you are able identify it in this documentation quickly.

1.5.1 Use of symbols

Safety instructions are identified with the following symbols. They indicate special risks when handling the product and are accompanied by relevant signal words that identify the extent of the risk. In addition useful tips and recommendations for efficient and faultless operation are specially highlighted.

ATTENTION!

Notice

This indicates that damage to property may occur

- if the stated precautionary measures are not taken.

⚠ CAUTION!

Caution

This word with a warning triangle indicates that minor personal injury may occur

- if the stated precautionary measures are not taken.

⚠ WARNING!

Warning

This word with a warning triangle means there may be a considerable risk of fatal injury

- if the stated precautionary measures are not taken.

⚠ DANGER!

Danger

This word with a warning triangle indicates that there is a considerable risk of fatal injury

- if the stated precautionary measures are not taken.

Information

Information indicates important information about the product or serves to emphasize a section in the documentation that deserves special attention from the reader.

1.5.2 Distinction of text elements

Certain elements of the continuous text are distinguished as follows.

Quick DC-Link module	Words or expressions with a special meaning
Interpolated position mode	Optional: File or product name or other name
Detailed information	Internal cross-reference
http://www.stoeber.de	External cross-reference

2 General safety instructions

There are risks associated with the product described in this documentation that can be prevented by complying with the described warning and safety instructions as well as the included technical rules and regulations.

2.1 Applicable documentation

This documentation is a supplement to the drive controller manual. You may use this documentation only in combination with the applicable documents; see the chapter [Detailed information](#) [► 16].

2.2 Qualified personnel

In order to be able to perform the tasks described in this documentation, the persons instructed to perform them must have the appropriate professional qualification and be able to assess the risks and residual hazards when handling the products. For this reason, all work on the products as well as their operation and disposal may be performed only by professionally qualified personnel.

Qualified personnel are persons who have acquired authorization to perform these tasks either through training to become a specialist and/or instruction by specialists.

Furthermore, valid regulations, legal requirements, applicable basic rules, this documentation and the safety instructions included in it must be carefully read, understood and observed.

2.3 Intended use

The AES battery module may be used exclusively for buffering the supply voltage when using an inductive EnDat 2.2 digital absolute encoder with battery-buffered multi-turn stage (e.g. EBI1135, EBI135). Furthermore, it may be used solely in conjunction with a STÖBER standard motor and in the following drive controller series:

- SC6
- SI6
- SD6
- POSIDRIVE MDS 5000
- POSIDYN SDS 5000

Use with other encoders, motors or drive controllers is not permitted.

The connection of other electronic loads or operation outside applicable technical specifications constitutes improper use.

2.4 Transport and storage

Inspect the delivery for any transport damage immediately after you receive it. Notify the transport company of any damage immediately. Do not put a damaged product into operation.

To ensure the faultless and safe operation of the products, they must be professionally configured, installed, operated and maintained. If you have to transport or store the products, you must protect them from mechanical impacts and vibrations as well as observe the recommended transport and storage conditions in the technical data.

Store the products in a dry and dust-free room if you do not install them immediately.

2.5 Operational environment and operation

Always operate the products within the limits specified by the technical data.

The following applications are prohibited:

- Use in potentially explosive atmospheres
- If not otherwise specified in the technical data: Use in environments with harmful substances as specified by EN 60721, such as oils, acids, gases, vapors, dust and radiation

2.6 Working on the machine

Before all work on machines and systems, apply the 5 safety rules in accordance with DIN VDE 0105-100 (Operation of electrical installations – Part 100: General requirements) in the order listed:

- Disconnect (also ensure that the auxiliary circuits are disconnected).
- Ensure power cannot be switched on again.
- Ensure that everything is de-energized.
- Ground and short circuit.
- Cover adjacent live parts.

Information

Note that the you can only determine that voltage is no longer present once the discharge time has elapsed. The discharge time depends on the self-discharge of the drive controller. You can find the discharge time in the general technical data of the drive controller.

2.7 Disposal

Observe the current national and regional regulations when disposing of the product! Dispose of the individual product parts depending on their properties, e.g. as:

- Electronic waste (circuit boards)
- Plastic
- Sheet metal
- Copper
- Aluminum
- Battery

3 Technical Data

The technical data can be found in the following tables.

AES battery module

Technical data	Value
Nominal voltage	3.6 V
Buffer period with the drive controller switched off	5 years
Upper limit for the storage and operation period at 25 °C	10 years
Self-discharge with storage at 25 °C	0.5% per year
Maximum change time when replacing the battery (with drive controller switched off)	Approx. 2 min.

Tab. 1: Technical data of the battery

Information

Note that the battery is ready-made and therefore can be ordered only through STÖBER Antriebstechnik GmbH + Co. KG. You can order the battery under ID No. 55453.

Transport conditions	Value
Vibration in accordance with DIN EN 60068-2-6	5 Hz ≤ f ≤ 9 Hz: 3.5 mm 9 Hz ≤ f ≤ 200 Hz: 10 m/s ² 200 Hz ≤ f ≤ 500 Hz: 15 m/s ²

Tab. 2: Transport conditions

Operating environment	Value
Permitted surrounding temperature	0 – 55 °C
Protection class	IP42
Vibration in accordance with DIN EN 60068-2-6	5 Hz ≤ f ≤ 9 Hz: 0.35 mm 9 Hz ≤ f ≤ 200 Hz: 1 m/s ²

Tab. 3: Operating environment

Drive controller

For the **SC6** drive controller series, observe the following discharge times:

Discharge times	
Self-discharge of DC link	15 min

Tab. 4: Discharge times of the DC link circuit

For the **SI6** drive controller series, observe the following discharge times:

Discharge times	
Self-discharge of DC link	15 min
DC link circuit fast discharge	Thanks to PS6 supply module in combination with a braking resistor: < 1 min

Tab. 5: Discharge times of the DC link circuit

For the **SD6, SDS 5000 or MDS 5000** drive controller series, observe the following discharge times:

Discharge times	
Self-discharge of DC link	5 min

Tab. 6: Discharge times of the DC link circuit

Additional technical data for the drive controller can be found in the associated manual; see the chapter [Detailed information \[► 16\]](#).

4 Connection and battery replacement

The following section describes the connection of the battery module AES as well as the replacement of the associated battery.

4.1 Safety instructions for connection

Connection work is permitted only when no voltage is present. Observe the 5 safety rules; see the chapter [Working on the machine](#) [► 6].

The drive controller housing must be closed before you turn on the supply voltage.

When the power supply voltage is turned on, hazardous voltages may be present on the connection terminals and the cables connected to them.

The device is not reliably de-energized simply because the voltage supply is switched off and all displays are blank!

Information

Note that the you can only determine that voltage is no longer present once the [discharge time](#) has elapsed. The [discharge time](#) depends on the [self-discharge](#) of the drive controller. You can find the discharge time in the general technical data of the drive controller.

Opening the housing, plugging in or unplugging connection terminals, connecting or removing connecting wiring, and installing or removing accessories are prohibited while the voltage supply is switched on.

Protect the devices against falling parts (bits or strands of wire, pieces of metal, etc.) during installation or other work in the control cabinet. Parts with conductive properties may result in a short circuit inside the devices and device failure as a result.

4.2 Connect AES

DANGER!

Electrical voltage! Risk of fatal injury due to electric shock!

- Always switch off all power supply voltage before working on the devices!
- Note the discharge time of the DC link capacitors. You can only determine the absence of voltage after this time period.

The following applies to drive controllers of the SC6 or SI6 series:

Information

Note that a 15-pin extension cable between the socket and the AES may be necessary for the connection to the drive controller due to limited space.

- a) A commercially available shielded extension cable with a 15-pin D-sub connector and a length of ≤ 1 m can be used between the socket and the AES.

Requirements and connection

The following requirements apply to the connection of the AES battery module:

- You have installed the drive controller.
- You have routed the encoder cable to the drive controller.
- Optional: You have connected the extension cable to the X4 connection of the drive controller.

Connecting the AES

1. Connect the encoder cable to the AES.
2. Tighten the screws of the D-sub connector on the encoder cable so that the cable is connected securely to the AES.
3. Connect the AES to the X4 connection of the drive controller or to the extension cable. Make sure that the encoder cable is installed without tension.
4. Tighten the knurled screws so that the AES is securely connected to the drive controller or the extension cable.

4.3 Replacing the battery

DANGER!

Electrical voltage! Risk of fatal injury due to electric shock!

- Always switch off all power supply voltage before working on the devices!
- Note the discharge time of the DC link capacitors. You can only determine the absence of voltage after this time period.

ATTENTION!

Loss of absolute position!

The absolute position in the encoder is lost if the encoder cable is disconnected from the AES battery module.

- Do not disconnect the encoder cable from the AES during service work! Disconnect the AES from the drive controller.

ATTENTION!

Loss of absolute position!

If the battery is not replaced quickly enough, the AES battery module is no longer able to buffer the encoder supply. The absolute position in the encoder is lost as a result.

- Familiarize yourself with the following instructions before replacing the battery.
- Carry out the replacement within a maximum of 2 minutes.

Requirements and replacement

The following requirements apply to the replacement of the battery:

- SD6, MDS 5000 or SDS 5000 series: The AES does not have to be disconnected from the X4 connection of the drive controller to replace the battery.
- SC6 or SI6 series: The AES is rotated by 90° with respect to the drive controller and plugged into the X4 connection. If you are not using an extension cable, you have to disconnect the AES from the drive controller before replacing the battery in order to access the battery compartment without any trouble.

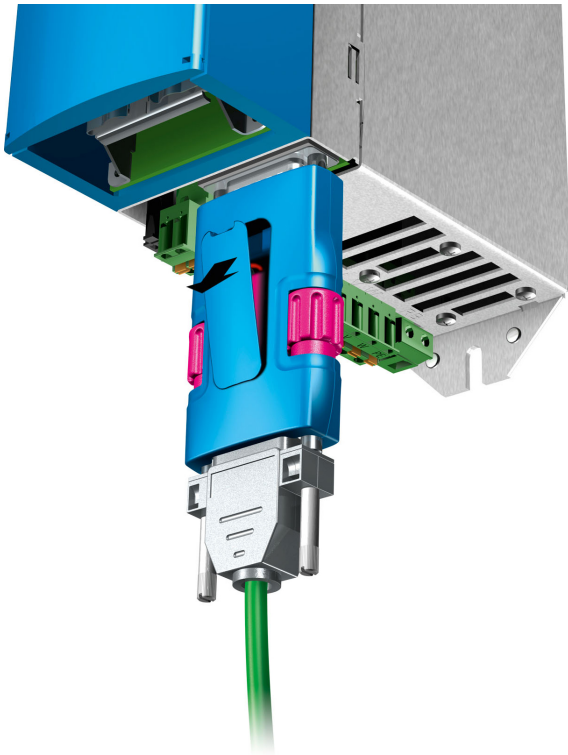
Tools and material

You will need:

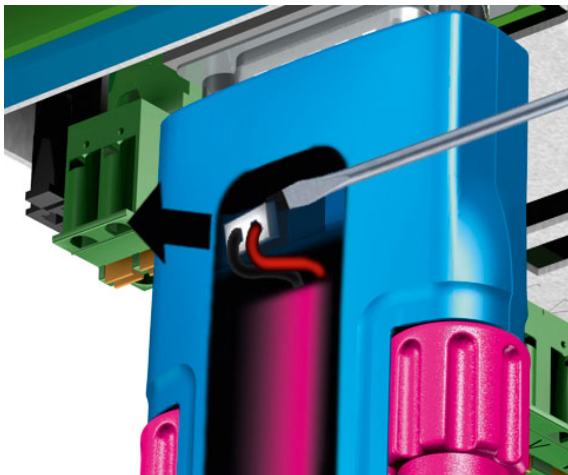
- A small slotted screwdriver with a blade width of approximately 2 mm.
- The replacement battery, ID No. 55453

Replacing the battery (using the SDS 5000 as an example)

1. Open the cover of the AES:

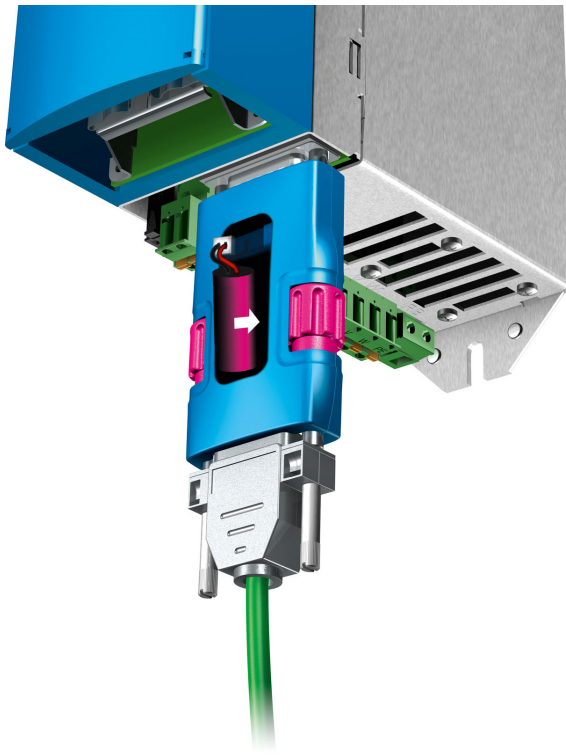


2. Lift the connector off of the terminal strip using the screwdriver:

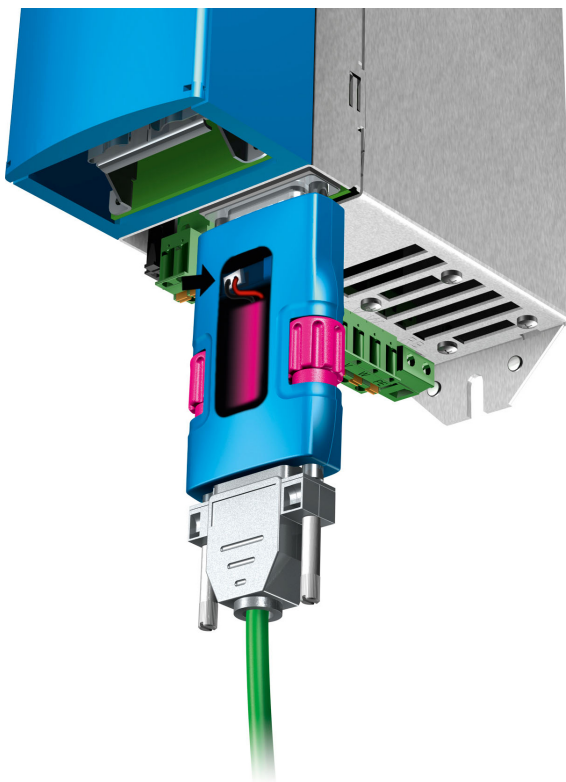


3. Remove the battery.

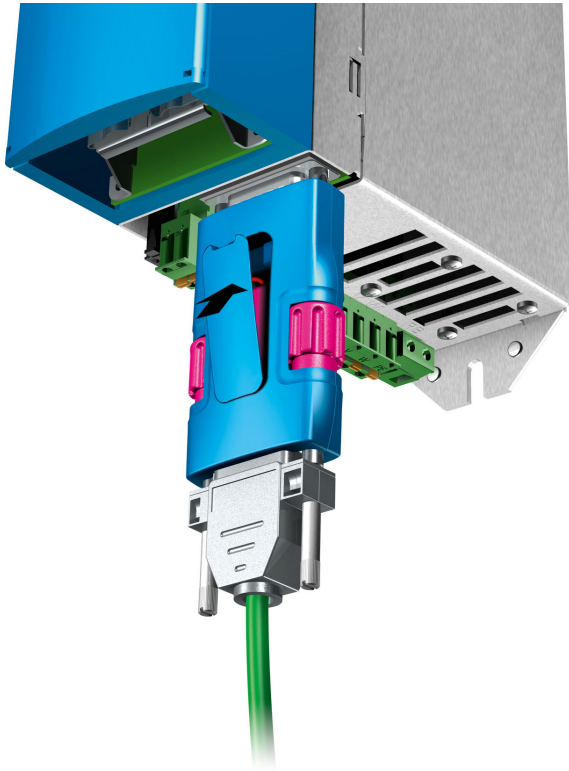
4. Insert the new battery into the compartment:



5. Connect the connector:



6. Close the cover of the AES:



7. SC6 or SI6 series: Once you have disconnected the AES from the drive controller to replace the battery, plug the AES back into the X4 connection of the drive controller and tighten the knurled screws.

5 Accessories

AES replacement battery



ID No. 55453

Replacement battery for AES battery module.

6 Appendix

6.1 Detailed information

The documentation listed in the following table offers additional relevant information on the 6th STÖBER drive controller generation.

Current document versions can be found at <http://www.stoeber.de/en/download>.

Device/Software	Documentation	Contents	ID
SC6 drive controller	Manual	System setup, technical data, project configuration, storage, installation, connection, commissioning, operation, service, diagnostics	442790
SC6 drive controller	Commissioning instructions	System setup, technical data, storage, installation, connection, commissioning	442793
Multi-axis drive system with SI6 and PS6	Manual	System setup, technical data, project configuration, storage, installation, connection, commissioning, operation, service, diagnostics	442728
Multi-axis drive system with SI6 and PS6	Commissioning instructions	System setup, technical data, storage, installation, connection, commissioning	442731
SD6 drive controllers	Manual	System setup, technical data, project configuration, storage, installation, connection, commissioning, operation, service, diagnostics	442426
SD6 drive controller	Commissioning instructions	System setup, technical data, storage, installation, connection, commissioning	442537

The documentation listed in the following table offers additional relevant information on the 5th STÖBER inverter generation. Current document versions can be found at http://www.stoeber.de/en/stoeber_global/service/downloads/downloadcenter.html.

Device/Software	Documentation	Contents	ID
MDS 5000 servo inverter	Commissioning instructions	New installation, replacement, function test	442297
MDS 5000 servo inverter	Configuration manual	Technical data, installation and connection	442273
SDS 5000 servo inverter	Commissioning instructions	New installation, replacement, function test	442301
SDS 5000 servo inverter	Configuration manual	Technical data, installation and connection	442277

Glossary

DC link discharge

Process that causes the DC link capacitors to discharge. Requirements for the discharge process: The power grid supply is disconnected and no energy flows back from the motor to the drive controller.

DC link discharge time

Time until the DC link capacitors are discharged enough that the device can be worked on safely.

Self-discharge

Passive running process that causes the capacitors to discharge even when no electrical load is connected.



Technische Änderungen vorbehalten.
Errors and changes excepted.



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