

DriveControlSuite V 6.7-A

With the new version of DriveControlSuite, you can configure the new **SB6 drive controller** for your drive projects for the first time. With the introduction of the new **SX6 safety module** for the drive controllers of the SC6 and SI6 series, DriveControlSuite V 6.7-A also focuses on extended safety technology. In addition, the **Drive Based Center Winder** application provides new winding methods and numerous other innovations for the center winder.

- **SB6 drive controller**

The new SB6 series is now available in the configuration dialog: The powerful drive controller offers high control performance and can be flexibly configured for individual solutions thanks to its modular interface concept. With its integrated power supply, the SB6 is primarily designed for drive-based applications, but can also be seamlessly integrated into control-based applications with CiA 402 and PROFIdrive device controls. For further information on the SB6 drive controller, refer to the corresponding manual.

- **SX6 safety module**

SC6, SI6: The new SX6 safety module enables you to use extended safety technology via Safety over EtherCAT (FSoE) for drive controllers of the SC6 and SI6 series. In addition to a wide range of safety functions such as SS1, SS2, STO or SOS, the new safety module gives you the option of controlling 2 brakes. The associated wizards have been expanded accordingly. Additional information on the extended safety technology can be found in the new manual for the SX6 safety module and in the manuals for the respective drive controllers.

- **PASmotion Safety Configurator**

SE6, SX6: The new PASmotion Safety Configurator version v1.5.1 is now included in DriveControlSuite for the configuration of extended safety technology.

- **Device state machine**

SC6, SI6: With the introduction of the SX6 safety module, the device state machines for the respective series have been revised with regard to the triggering of safety functions and the brake release override (device state: E48). In addition, the time for the self-test phase and the flashing pattern of the green LED are extended when the drive controller starts up. For further information, refer to the manual of the drive controller.

- **Drive Based Center Winder**

New winding methods and functionalities, including the associated wizards, have been added to the Drive Based Center Winder application for the central winder. For further information, refer to the corresponding Drive Based Center Winder manual in version 03 or later.

- **Winding methods**

In addition to open-loop tensile force control, the following additional winding methods are now available for the center winder: closed-loop tensile force control, open-loop velocity control, closed-loop velocity control and dancer position control (winding method: L00; wizard: Center winder). A new, application-specific PID controller has been implemented for closed-loop control processes (wizard: PID controller).

- **Material tear monitoring**

You can now use a sensor or an algorithm to monitor the material for tears or looseness (wizard: Material tear monitoring). If a material tear or looseness is detected, the corresponding bit is set in the application status word and application event 0 can also be triggered and evaluated as a message, warning or fault (status word: L155, bit 7; event level: U100).

- **Material length**

The length of the material on the winder can now be calculated based on the winding diameter and material thickness L40 (wizard: Material length). When the comparison value L42 for the material length is reached, the corresponding bit can be set in the status word of the center winder (status word: L155, bit 9).

More new features

■ Drive Based Center Winder

For the Drive Based Center Winder application, you can expect further innovations that may have an impact on your existing drive project. Check and update your parameterization if necessary.

• Velocity override

The parameterization of a velocity override is now required for L00 = 1: Tensile force control (open loop) (override: L07). The absolute velocity override L06 now refers to the set material velocity L420 instead of the set velocity of the motor L102. The relative velocity override is now applied according to the winding direction, i.e. at L05 = 10%, the set material velocity is increased by 10% during winding and reduced by 10% during unwinding. During unwinding, the velocity override is dynamically deactivated if the friction is greater than the set material tensile force.

• Friction & mass inertia compensation

The torques for compensating for the friction and mass inertia of the axis now refer to the set material velocity instead of the set velocity of the motor (set material velocity: L420; set motor velocity: L102). The mass moment of inertia of the gearbox now refers to the gearbox input J_1 instead of the gearbox output J_2 , (parameter: L200).

• Diameter change limit

Parameter L35 no longer defines the winding direction (winding, unwinding), but now serves as a source for the diameter change limit. For further information, refer to the corresponding Drive Based Center Winder manual in version 03 or later. Due to the adjustments, the associated bits in the control word of the center winder (control word: L150, bit 2, bit 4) are no longer functional.

• Winding direction

The sign of the set material velocity L420 now determines the winding direction (positive: winding; negative: unwinding). The polarity of the center winder L10 defines the direction of interpretation between the winding direction and motor movement, i.e. the relationship between the signs of the set material velocity L420 and set velocity of the motor L102.

• Sources: Digital inputs

The digital inputs of the drive controller (sources: L28, L30, L35) can now also be used as a source for maintaining the diameter, activating the start diameter and for the diameter change limit.

• Material tensile force: Limit

There is now a limit for the material tensile force (limit: L497; default value: 1 N).

■ Wizards: Actions

The wizards for executing actions have been visually reworked, standardized and streamlined. The progress bar now reflects the status of the action using color, and a corresponding result icon is also displayed once the action has been completed. The parameter description for the action can be displayed by starting the action, clicking on the parameter name or clicking on the info icon (icon: ).

■ Security logger

SC6, SI6: The security logger now also records changes to the safety configuration of SX6.

■ Default directory: Drive controller comparison, load matrix, ESI file

The default directory for the export of drive controller comparisons now also applies to the export of load matrices and ESI files (Settings menu > Settings > General).

Optimizations

- **Scope: Image editor, scope settings**

In the image editor, you can now switch the display of integer values between the number systems using the 3 new buttons **hex**, **bin** and **dec**. The scope settings are now saved as part of the project file so that the channel assignment and trigger settings are retained if the project file or the **Scope** window is closed without first taking a scope image. The scope settings can now be closed using the **Cancel** button without applying changed settings. In the **Channel assignment register**, you can now also assign a name for physical addresses.

- **Predictive Maintenance: Geared motor replacement**

SC6, SI6: The event: 91: PM geared motor replacement is only displayed for double-axis controllers for the axis for which the geared motor replacement is actually recommended.

- **PROFIsafe control word**

SC6, SI6: Bits 2–7 of PROFIsafe control word **S_STW1** are reserved for internal functions of the safety module and must be 0 (parameter: **S42**). If bits 2–7 $\neq 0$, event 50: Safety module is now triggered with the new cause 20: Safety control word Error.

- **Drive Based Center Winder: Axis model**

The movement type of the axis is now preset for applications of type Drive Based Center Winder and cannot be changed (axis type: **I05 = 2: Rotational**).

- **SSI encoder: Alarm bit**

SC6, SI6: For SSI encoders with Gray code, decoding is only applied to the position bit of the SSI data bit, not to the alarm bit if present (code format: **H05, H125 = 0: Gray**).

- **PID controller: Value range**

The proportional coefficient K_p and the derivation time T_D of the PID controller are now limited to positive values (parameters: **G01, G03**).

- **Graphical programming: Writing parameters, parameter description**

The block for writing parameters has been optimized for writing in real time (block: **300006**). The description of parameter blocks is now retained when the parent block is converted from a local block to a library block.

- **Asynchronous motor: Display of actual torque/actual force**

The display of the actual torque/actual force of the motor has been corrected for asynchronous motors without a motor encoder (control mode: **B20 = 0: ASM - V/f-control**; display: **E90**).

- **Brake chopper: Display of braking energy, braking resistor**

The braking energy and the drag indicator for the thermal $i2t$ model of the braking resistor are now also calculated correctly with reduced on and off limits of the brake chopper (braking energy: **E38**; drag indicator: **E41**; limit brake chopper: **A24**).

- **Reference loss: battery-buffered encoder**

If a reference loss due to a power fail occurs for EnDat 2.2 digital inductive encoders with battery-buffered multi-turn stage, the reference can now be set again after the first restart of the drive controller.

- **Variable parameter list: Scrolling**

If you scroll up or down outside the visible area using the arrow keys on the keyboard, the view in the variable parameter list now also scrolls.

- **Fault memory wizard**

A column has been added to the wizard for displaying the fault memory that shows the local time at the location of DriveControlSuite at the time of the event (wizard: **Fault memory**).

- **Wizards: PLL status**

On the wizards, a single PLL status LED now visualizes the information as to whether the PLL is engaged or not (wizards: **Diagnostics, PLL synchronization**).

- **Wizards: Additional fieldbus-controlled output function**

The parameters and wizards for the additional fieldbus-controlled output function are only displayed if the configured drive controller has analog outputs.

DriveControlSuite V 6.7-A SP1

This release is a product update and includes general optimizations.

- **Brake control**

SC6, SI6: For drive controllers from hardware version > 100, the firmware has been optimized regarding brake control when brake monitoring is active (parameter: R01[1] > 100): If the 24 V_{DC} power supply of the brake is switched on externally, the brake status now remains correctly in the engaged state for the activation delay time of 1 s. When the brake is engaged, the 24 V_{DC} power supply of the brake can now be switched on and off externally without event 49: Brake being triggered (monitoring: F105; status: F08, F09).

- **Update DriveControlSuite**

The selection Search for updates when starting DS6 is now saved when the window is closed (menu Help for DS6 > Search for updates).

- **Scope: Display of negative integer values**

The display of negative integer values in the channel list in Scope has been corrected.

DriveControlSuite V 6.7-A SP2

This release is a product update and includes general optimizations.

- **Asynchronous motor: Mass moment of inertia**

For asynchronous motors with sensorless vector control 2.0, the mode for determining the mass moment of inertia in the controlled range is now used correctly (control mode: B20 = 4: ASM - Sensorless vector control 2.0; mode: C124).

- **Analog inputs**

SB6, SD6: When transferring the configuration to the drive controller, the zero point for the analog input AI1 is no longer overwritten by its operating mode (zero point: F110; operating mode: F116).

DriveControlSuite V 6.7-A SP3

This release is a product update and includes general optimizations.

- **Asynchronous motor: sensorless vector control 2.0**

Sensorless vector control for asynchronous motors has been revised (control mode: B20 = 4: ASM - Sensorless vector control 2.0).

- **SE6 safety module**

SD6: The handshake between drive controller and SE6 safety module on device start-up has been optimized.

DriveControlSuite V 6.7-A SP4

This release is a product update and includes general optimizations.

- **Brake control**

SB6, SC6, SI6: The brake control after switching on the supply voltage with active brake monitoring has been optimized (monitoring: F105 = 1: Active).

DriveControlSuite V 6.7-A SP5

This release is a product update and includes general optimizations.

- **Brake control**

SB6, SC6, SI6: There was a correction to the brake control when the brake is connected indirectly via a contactor with active brake monitoring (monitoring: F105 = 2: Active in engaged state).



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11/2025

STÖBER Antriebstechnik GmbH + Co. KG
Kieselbronner Str. 12
75177 Pforzheim
Germany
Tel. +49 7231 582-0
mail@stoeber.de
www.stober.com

24 h Service Hotline
+49 7231 582-3000

www.stober.com